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## **A Global Perspective on Happiness and Fertility**

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## **A Global Perspective on Happiness and Fertility**

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### **Abstract**

The literature on fertility and happiness has neglected comparative analysis. We investigate the fertility-happiness association using data for 86 countries. We find that globally, happiness decreases with the number of children. This association, however, is strongly modified by individual and contextual factors. Most importantly, we find that the association between happiness and fertility evolves from negative to neutral to positive above age 40, and is strongest among those who are likely to benefit most from upward intergenerational transfers. In addition, analyses by welfare regime show that the negative fertility-happiness association for younger adults is weakest in countries with high public support for families, and the positive association above age 40 is strongest in countries where old-age support depends mostly on the family. Overall these results suggest that children are a long-term investment in well-being, and highlight the importance of the life-cycle stage and contextual factors in explaining the happiness-fertility association.

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## **Introduction**

Much of the world is pervaded by strong cultural beliefs that children increase the well-being of parents, and especially women (Baumeister 1991; Blake 1979). These beliefs have bolstered norms about the desirability of having children (McQuillan, Stone, and Greil 2007; Thornton and Young-deMarco 2001), and even though the taboo against childlessness has decreased in much of Europe and North America (Connidis 2001; Park 2002), levels of childlessness have remained low (Kohler, Billari, and Ortega 2002). However, given a few exceptions (Hoffman, Thornton, and Manis 1978; Jones and Brayfield 1997; Kohler, Behrman, and Skytthe 2005), most of the research on parenthood and well-being finds a negative or insignificant relationship between the happiness of parents and their fertility (Cleary and Mechanic 1983; Gore and Mangione 1983; Hakim 2000; Lovell-Troy 1983; McLanahan and Adams 1987; Nomaguchi and Milkie 2003). The vast majority of the literature, however, has focused on the U.S. or Northern Europe, ignoring the rest of the world and comparative analysis. This paper investigates the fertility-happiness association globally and across countries using the World Values Surveys data for 86 countries. Our results shed new light on the association between well-being and number of children by showing how the relationship depends strongly on the macro context and life-cycle stage.

Parenthood changes lives in both positive and negative ways, many of them unexpected. Having a child deepens joy, strengthens social ties with family and friends (Gallagher and Gerstel 2001; Umberson and Gove 1989) and creates a new role for adults which carries rights, responsibilities, and a sense of adulthood (Sieber 1974; Hoffman and Manis 1982). However, becoming a parent also increases housework (Sanchez and Thomson 1997), decreases relationship quality between parents (Crohan 1996; Lavee, Sharlin and Katz 1996), and strains

psychological well-being (McLanahan and Adams 1987; Ross, Mirowsky and Goldsteen 1990; Umberson and Williams 1999).

The relative importance of these countervailing forces may depend on the institutional context and individual level factors. However, the relationship between subjective well-being and childbearing has been understudied, especially in the light of its potential to explain demographic behavior in a time when fertility is a choice for most people in the world (Hobcraft 2006). While some analyses suggest that the fertility differences across Europe could be partially explained by the compatibility between subjective well-being and the number of children (Billari 2008), there are no global, comparative analyses of the happiness-fertility association. Such a global and comparative examination of the fertility-happiness association may inform us about the determinants of fertility in a world that is characterized by unprecedented differences in fertility levels, ranging from less than one child to more than seven children per woman (World Bank 2010). In addition, more research is needed on the individual determinants of the happiness-fertility link, as several theories predict that individual factors importantly influence the association, but relatively little empirical work has been done to study the importance of these factors.

This paper focuses on the association between fertility and subjective well-being globally and across contexts, and analyzes how individual level factors modify the relationship. We draw on research from sociology, psychology, and economics which suggests that the association between fertility and happiness differs for population subgroups, at different stages of the life cycle, and in different contexts.

First, the relationship between fertility and happiness may vary by gender and marital status. Women and men experience the transition to parenthood differently (Cowan et al. 1985;

LaRossa and LaRossa 1981), with women experiencing greater stress and stronger negative shocks in well-being (Nomaguchi and Milkie 2003; Scott and Alwin 1989; Simon 1992). This may be because women are more often the primary caregiver (Ross and VanWilligen 1996), experience greater work family conflict (Goldsteen and Ross 1989), or have less leisure time (LaRossa and LaRossa 1981). Similarly, the unmarried may experience more strain from childbearing than the married (Nomaguchi and Milkie 2003; Umberson and Williams 1999). Both unmarried mothers and fathers report higher levels of distress than the married in the U.S. which may be due to higher levels of distress, fewer coping resources, or distress caused by being a non-resident parent (Nomaguchi and Milkie 2003).

Second, the relationship between fertility and happiness may change throughout the life cycle. For example, research in North America found that among those in childbearing years, those with children have higher levels of distress than non-parents (Cleary and Mechanic 1983; Gore and Mangione 1983; Lovell-Troy 1983; McLanahan and Adams 1987), however among the elderly, there is no relationship between parenthood and well-being (Connidis and McMullin 1993; Koropecj-Cox, Pienta, and Brown 2007; Rempel 1985; Ross and Huber 1985). This may be due to the financial and emotional costs of rearing children which are greatest when children are young. However, later in the life course, when parents are elderly, children may provide needed care to parents in poor health or act as insurance or social protection in old age if those institutions are weak, for example in developing countries (Caldwell 1978).

Third, the relationship between fertility and well-being may vary according to institutional and cultural context (Mirowsky and Ross 2003). Research focusing on North America has found either a negative or insignificant relationship between parenthood and well-being (Cleary and Mechanic 1983; Connidis and McMullin 1993; Gore and Mangione 1983;

Koropeckyj-Cox, Pienta, and Brown 2007; Lovell-Troy 1983; McLanahan and Adams 1987; Rempel 1985). However, studies using European data find either no differences between parents and non-parents (Bergman and Daukantaite, 2006; Hansen, Slagsvold, and Moum 2009; Savolainen et al. 2001) or a weak positive relationship between children, especially the first child, and life satisfaction (Daukantaite and Zukauskiene 2006; Dykstra and Wagner 2007; Kohler et al. 2005). Hansen and colleagues (2009) interpret the fact that parenthood is either unrelated to or positively related to well-being in Northwest Europe because the welfare state equalizes the costs of raising children and eases the combination of parenthood, marriage and work. Similarly, Aassve and colleagues (2008) find that among European countries, parents in social democratic countries are happier than parents in countries with conservative or liberal welfare regimes. As the relationship between fertility and well-being is theorized to vary according to institutional and cultural context, our understanding of the topic will benefit from a global and cross-national perspective. However to date, little research on happiness and fertility has been done in comparative perspective and outside of Europe and North America.

Our article examines the relationship between the subjective well-being of parents and fertility cross-nationally and tests various mechanisms through which well-being and the number of children may be related. We first examine how the relationship between subjective well-being and number of children varies globally. Then we examine how the relationship between happiness and fertility varies on seven key dimensions- five at the individual level and two at the contextual level. We consider the demographic characteristics of age, sex, and partnership status, and two measures of well-being, relative income and health status. Last, we examine how the relationship between subjective well-being and number of children differs for countries in different welfare regimes and in different phases of the fertility transition. Our study contributes

to the literature on well-being and fertility by providing, to our knowledge, the first global overview on how childbearing and well-being are related. We also show how this relationship is modified by individual and contextual factors. Compared to prior research, our study has the additional strength of having a very rich and large data set which allows us to test various mechanisms by stratification while controlling for potentially important moderating factors such as socioeconomic status, partnership status, and health.

## **Data**

We use the World Values Surveys (WVS) to examine the relationship between subjective well-being and fertility, globally and cross-nationally. The WVS assesses the state of socio-cultural, moral, and political values through a series of questionnaires implemented with face-to-face interviews. It is the largest international survey that includes questions on life satisfaction and happiness. In this analysis, we use survey waves conducted between 1981 and 2005 and respondents aged 15 and above at the time of the interview. Of the 328,449 respondents, we exclude 126,461 respondents because of missing data for key variables or differences in the country questionnaires omitting questions of interest. This leaves us 201,988 respondents from 86 countries or regions (Germany is broken into its former East and West boundaries). The samples in developed countries are often close to representative, however samples from developing countries are not random (Inglehart et al. 2000).

## *Dependent Variable*

The dependent variable is the respondent's level of happiness about his or her life. Respondents were asked, "Taking all things together, would you say you are very happy, quite

happy, somewhat happy or not at all happy?" We treat happiness as a continuous variable with observed range from one (not happy at all) to four (very happy). Although cross-national comparisons in happiness are relatively standard (Cantril 1965; Deaton 2008; Diener, Helliwell, and Kahneman 2010), the validity of these comparisons may be questionable as people from different backgrounds, languages, and cultures may use different scales in reporting happiness, despite the best efforts to frame the questions to be culture- and context-sensitive. Thus differences in observed happiness levels may be at least partially due to differences in reporting and partially due to real differences in well-being (Borooah 2006). Therefore, in our analysis of the relationship between number of children and happiness, we always control for the county-specific overall level of happiness and the year of interview. This effectively removes the problem of country-specific differences in observed happiness levels, be they due to reporting differences or true differences in well-being. The assumption that we make is that the observed differences in the relationship between happiness and number of children across countries and contexts reflect true differences in the relationship, not differences in reporting practices. For this assumption to hold we only need to believe that the number of children does not influence the way happiness is being reported within countries although it may influence the level of happiness, which interests us. This is a markedly weaker assumption and more likely to hold.

### *Key Explanatory Variable*

Our key explanatory variable is the number of children that the respondent has. Respondents were asked, "Have you had any children?" We code the number of children as: none, one, two, three, or four or more.



### *Other Independent Variables*

We explore how the fertility/happiness relationship varies with the demographic factors of age, sex, and marital status. Respondents' age at interview was reported in years and we code age as: 15-19, 20-29, 30-39, 40-49, and 50 and above. When conducting analysis on subpopulations when sample sizes are smaller, we collapse age groups to 15-19, 20-39, and 40 and above. Thus, our analysis is based on a synthetic cohort, constructed from cross-sectional data, rather than a true cohort using longitudinal data. Marital status is coded as whether the respondent is single, married, living as married, separated or divorced, or widowed. Occasionally, we combine marital status groups to a two category variable coded as partnered (married or living as married) or not partnered (single, separated or divorced, widowed) to increase statistical power. We also examine the individuals' subjective state of health. Respondents were asked, "All in all, how would you describe your state of health these days?" We code responses as either good/very good or fair/poor/very poor.

We use two measures of socioeconomic status. The first is relative household income level. Respondents were shown a card representing a scale of incomes ranging from 1 "lowest income decile" to 10, the "highest income decile". Respondents were asked in which group their household was, "including all wages, salaries, pensions and other incomes that come in." We code relative household income into three groups: low (deciles 1-4), medium (deciles 5-6), and high (deciles 7-10<sup>1</sup>). Our second measure of socioeconomic status is self-reported social class. Respondents were read "People sometimes describe themselves as belonging to the working class, the middle class, or the upper or lower class. Would you describe yourself as belonging to the: upper class, upper middle class, lower middle class, working class, or lower class?" We code socioeconomic status as: low (working or lower class), middle (middle and lower middle), or

high (upper middle or upper class). We focus on relative income and social class instead of educational attainment since the former are relative measures within each country and thus comparable across countries, whereas the latter depends more on the country's overall educational level than on the individual's characteristics, decreasing validity in cross-country comparisons. Moreover, relative status within a society seems to matter more for subjective well-being than the overall income level of the country (Easterlin 1995).

We also examine two contextual level variables- welfare regime and stage of fertility decline. Welfare regime is an extended categorization of Esping-Andersen's typology (1990), which describes the ways in which welfare production is allocated between the state, the market, and households. Social democratic states are the Nordic countries which are committed to comprehensive risk coverage, generous benefits, and egalitarianism, conservative states are those of continental Europe which blend public and familial support, and liberal states are the Anglophone countries which promote market solutions to individual risks. We add countries to his social democratic, conservative, and liberal welfare regimes that fit his criteria and create three additional categories: southern Europe, former socialist countries, and developing nations. The list of countries in each welfare regime is included in Table A1 in the Appendix. We examine the stage of fertility decline of each country by coding the total fertility rate (TFR) for each country and survey year into categories. The source for TFR is the World Bank Development Indicators Database (World Bank 2010), with the following exceptions. Data for Taiwan, East and West Germany, and Andorra were not available from this database. We gathered these fertility data from Lee (2009) for Taiwan, Lechner (2001) for East and West Germany, and from the CIA World Fact Book (2010) for Andorra. The TFR for each country and survey year is shown in Table A2 in the Appendix. We use linear interpolation to fill in the

TFR for years in which it is missing, using data from prior and later years. We construct a categorical fertility variable for the fertility of the country in that period. It is coded as: lowest low (TFR<1.3), low (TFR 1.3-2), moderate (TFR 2-3), high (TFR≥3).

## **Methods**

We use linear regression models to estimate the association between number of children and happiness.<sup>2</sup>We estimate the association using global models which use all the data, and stratified models which focus on specific individual and contextual variables. Global Model 1 estimates the association between happiness and number of children while controlling for only age, sex, country, and year of interview. In order to see how potentially important confounders affect the global relationship between happiness and fertility, we estimate Model 2, which adds controls for marital status, relative income, and socioeconomic status. Next, we examine how the relationship between fertility and happiness varies on seven key dimensions. We estimate models stratified by three demographic characteristics of the respondent (age, sex, and partnership status) two measures of well-being (relative income and health status); and two contextual variables (welfare regime and stage of fertility transition).

We chart the coefficients for the number of children by these key variables in Figures 1-8. On each chart, statistical significance from zero is noted with squares or circles on each point. However, our figures allow much more than a comparison between parity zero and higher parities. As the coefficients are based on linear regression models, it is straightforward to change the reference group while reading the graphs. In particular, for any regression model that is charted in the graphs, the difference between any two regression coefficients represents the happiness difference between the respective parities. This allows comparing the happiness levels

between any two parities, not just between parity zero and higher parities. For example, one can compare those with two children to those with one child, or those with three children to those with two. Such comparisons are conducted in the discussion of the results.

## **Results**

Sample characteristics in Table 1 reveal large contextual differences in happiness and number of children in our analytic sample. In the table, we rank countries according to the mean level of happiness. Tanzania, El Salvador, and Venezuela rank highest in happiness, with mean happiness above 3.4 in these countries. Moldova, Belarus, and Albania rank the lowest, with mean happiness below 2.5. The number of children respondents have at the time of the survey also varies between countries, from the Dominican Republic, Andorra, and Ethiopia under 1.20 to Jordan with 3.09.<sup>3</sup> As the countries sampled have different age distributions, the mean age of each country's sample varies from 28.8 in the Dominican Republic to almost 50 in Switzerland. Similarly, there are large differences in the proportions married. Although less than twenty percent of respondents in Indonesia were married, more than 85 percent were married in China.

TABLE 1 ABOUT HERE

### *Global Results*

First, we examine the relationship between subjective well-being and number of children globally. Tables 2 and 3 present coefficients for linear regression models predicting the level of reported happiness among all respondents in all countries in the analytic sample. We show results from two models. Model 1 estimates the association between number of children and happiness, controlling for age, sex, country, and year. Model 2 includes all the variables from Model 1 and also income, socioeconomic status, and marital status. The coefficients for the

number of children (one, two, three, four or more) are estimated in reference to those with no children.<sup>4</sup>

#### TABLES 2 AND 3 ABOUT HERE

The results from Model 1 suggest that compared to those with no children, those with one, two, or three children have significantly *higher* reported happiness. At parity four and above, there is no significant difference in reported happiness from those with no children. In Model 2, we add controls for marital status, income, and socioeconomic status, which are all related to both fertility and happiness. Including these confounders yields different associations between fertility and happiness than those found in Model 1. Results from Model 2 show that having one, two, three, or four or more children is associated with significantly *lower* reported happiness than those who are childless, after controlling for potentially important confounders. Having one or two children is associated with 0.03 unit decrease in happiness ( $p < 0.001$ ), and having 4 or more children is associated with even larger decrease in happiness (0.06 units; comparison to 1 or 2 children:  $p < 0.05$ ). As Model 2 better controls for the potentially confounding variables of marital status and socioeconomic position than Model 1, our results suggest that globally, having children is associated with decreased happiness. The size of the coefficients may seem small, in that they are about 5% and 8% of a standard deviation in happiness. However they are comparable in magnitude to associations between happiness and other better studied variables. For example, the difference in happiness between those with zero children and those with one or two children (0.03 units) is similar to women compared to men (0.03), and the happiness difference between childless and those with 4 children (0.06) is similar to the difference in happiness between middle and high income respondents (0.05).

### *Results by Age, Sex, and Partnership Status*

Next we explore how the relationship between subjective well-being and number of children varies by demographic factors- age, sex, and partnership status. Both happiness and number of children vary throughout the life course with age. Moreover, the relationship between happiness and number of children may depend on age because the way in which the nature and demands of parenthood change as children develop. Figure 1 plots coefficients from linear regression models for the number of children, estimated separately for the respondents' age group (15-19, 20-29, 30-39, 40-49, 50 and above). The results indicate that the association between number of children and happiness strongly depends on age. In the youngest age groups (less than 30), happiness decreases approximately monotonically with number of children. At ages 30-39, the negative association vanishes, and at older ages (40-49, 50 and above) the association of number of children and happiness changes to positive so that those with three children are happiest.

### FIGURES 1 AND 2 ABOUT HERE

The observed age gradient in the happiness-fertility link in Figure 1 could indicate that the effect of having children changes as people and their children age, or it could signal cohort or period differences in happiness-fertility link. To study this, we estimated the happiness-fertility association for two periods, 1981-1996 and 1997-2007, which divides our sample into two parts. Comparing the age gradient for these two time periods allows us to analyze whether the aging or cohort explanation is more accurate. Figure 2 shows that although there is weak evidence of the happiness-fertility relationship being marginally different for the two time periods, we still observe a strong and similar age gradient in the happiness-fertility link for both periods. This result does not support the idea that the age gradient is an artifact of cohort or period differences,

but is consistent with the aging explanation for the gradient in the happiness-fertility association. Given the strong age gradient in the happiness-fertility link, in all our further analyses we stratify the results by age.

#### FIGURES 3 AND 4 ABOUT HERE

We next explore whether there are sex differences in the relationship between happiness and children. To retain large sample sizes we have collapsed age categories to 15-19, 20-39, and 40 and above. We do not present results for parity three or more for the 15-19 age group because of the small sample size. Figure 3 shows that negative association of having children and happiness at ages 20-39 does not differ markedly by sex. At older ages, the positive association between children and happiness is slightly stronger for women than for men, although not statistically significantly.

We next turn to whether the relationship between children and happiness varies by partnership status. Figure 4 shows the happiness-fertility relationship by age and partnership status. We observe that within each age group, the happiness-fertility association is remarkably similar between those who are partnered and not partnered.<sup>5</sup> Further analyses (results not shown) indicate that this is also true when stratifying by sex.

#### *Results by Economic Well-Being and Health Status*

Next we analyze how the fertility-happiness relationship varies by economic well-being and health status. Figures 5a-5c show the association between fertility and happiness by age and income group. Figures 5a and 5b, which show the results for 15-19 and 20-39 year age groups, indicate that while the income differences are small, the negative association between happiness and fertility is strongest among those with fewer financial resources, and weakest among those

with best financial resources (Ages 20-39 Parity 4,  $p < 0.01$ ). A high income may help alleviate the burden of raising children, for example through paid childcare. A high income may also be a proxy for postponement. In this case, the high income group would include more people who in their 30s are still voluntarily in parity 0 or 1, whereas among the low income group low parity may signal infertility or problems finding a partner. However, at ages 40 and above (Figure 5c), where the associations between happiness and fertility is positive, there are no differences between income groups.

FIGURES 5A, 5B AND 5C ABOUT HERE

We next turn to the health status of respondents, shown in Figure 6. We have categorized health status as good/very good and fair/poor/very poor. The results do not suggest any strong differences in the happiness-fertility link by health. In both health groups, we observe a similar age gradient. The largest difference is in the magnitude of the positive happiness-fertility relationship at ages above 40 between those in good or poor health. The finding that the association is stronger for those in poor health could indicate that children provide care for their ill parents. Among the healthy this care is not needed, thus the association between having children and happiness is weaker.

FIGURE 6 ABOUT HERE

#### *Analysis by Welfare Regime*

Our next research question asks whether the relationship between subjective well-being and number of children varies by type of welfare regime, where the public support for parenthood differs. We hypothesized that during prime childbearing years, the relationship between fertility and happiness would be less negative in the social democratic and conservative



states which provide the greatest support for childbearing. We also hypothesized that people with children at older ages would be much happier than those without children in places with weak welfare states such as developing nations because children often act as insurance for old age.

Figure 7a shows the association between fertility and happiness for the age group 20-39. In all welfare regimes except social democratic and conservative, happiness declines monotonically with number of children so that childless people are happiest and those with four or more children are the least happy. In the social democratic welfare regime, happiness declines until parity two, but then starts to rise, and is the same for those with four or more children as it is for childless people. In the continental European countries with conservative welfare regimes, happiness is relatively flat by parity. This partially supports our hypothesis that the relationship between happiness and childbearing would be the least negative in countries with strong welfare states, however for social democratic countries only above parity three. Moreover, at parity three and above, happiness is lowest for those in former socialist, southern European, and developing countries, groups of countries with lower state support for families with small children.

#### FIGURES 7A AND 7B ABOUT HERE

Figure 7b shows the happiness-fertility association for the age group 40 and above by welfare regime. The association between happiness and fertility is flat for social democratic, conservative, and developing countries' welfare regimes. For the liberal regime, there is weak indication that first children may be associated with decreased happiness. For former socialist countries there is a strong positive association between fertility and happiness so that those with three children are happiest. The negative association between fertility and happiness in the age group 20-39 was strongest for the former socialist countries demonstrating the importance of the life cycle stage in the happiness-fertility relationship. Happiness was also significantly higher

among those with one child in southern European countries, underlining the value of familial support in this region. Our hypothesis about the importance of children at older ages in states with weak welfare states partially held up. Older respondents in both former socialist states and in southern European states were significantly happier with children than those without. These countries have much weaker welfare states than continental or Nordic countries and rely much more on familial support. We did not however, find a significantly positive relationship for developing countries which also have lower state support than social democratic or conservative countries. However, the unrepresentative nature of the samples in developing countries might oversample wealthy and urban respondents and therefore underestimate the degree to which parents need to rely on children for old age support.

Taken together, the results by welfare regime suggest that the negative association between fertility and happiness in young adult ages is weakest in social democratic and conservative welfare regimes, and the positive association between fertility and happiness in mid- to old ages is strongest in former socialist countries. These country groups include states with mostly low or very low fertility rates (for example, Sweden year 2005 TFR = 1.77, Bulgaria year 2005 TFR = 1.31, Czech Republic year 1999 TFR = 1.13). In the social democratic and conservative states, comparatively high happiness levels for those with children may be related to the policies aimed at collectively alleviating the burden an individual faces in childrearing. In the former socialist states, the positive association between happiness and fertility at mid- to older ages may be related to the long-standing tradition of governments to promote pronatalist ideas and policies, both before and after the collapse of the Soviet Union (Zhurzhenko 2001; Yelizarov 2008) and to the increasingly important role of adult children in providing care for their elderly parents in the post-Soviet era (Iecovich et al. 2004).

### *Analyses by Stage of Fertility Decline*

We next analyze how the happiness-fertility link depends on the stage of the fertility decline. Figure 8a shows the association between fertility and happiness by overall fertility level for the age group 20-39. The figure indicates that in all fertility regimes, with the exception of lowest-low fertility (TFR<1.3), happiness declines with the number of children so that those with none or only one child are happiest, and those with three or more children are least happy. In lowest-low fertility regimes, the decline in happiness by parity stops at parity three, and those with four or more children are happier than those with only one child but not quite as happy as childless people.

#### FIGURES 8A AND 8B ABOUT HERE

Figure 8b presents similar results for the age group 40 and above. The figure indicates a gradient in the happiness-fertility relationship, similar to what was observed for age. In high fertility regimes, the happiness-fertility relationship is flat, but the lower the overall fertility level, the more positive the happiness-fertility relationship becomes, strongest in the lowest-low fertility countries. The results by stage of fertility decline suggest that the demographic transition modifies the fertility-happiness relationship in a straightforward, yet unexpected way. The lower the overall fertility of the society, the happier those are who have children compared to those without. This may be because of selection of those who value children the most into childbearing.

## **Discussion**

This paper examined the relationship between fertility and well-being globally, considering both individual and contextual level factors. We find that globally, happiness decreases with the number of children. This association, however, is strongly modified by individual and contextual factors. Most importantly, we find that the association between happiness and fertility evolves from negative to neutral to positive above age 40, and is strongest among those who are likely to benefit most from upward intergenerational transfers. This age gradient is present for both sexes, at all income levels, for those in good and bad health, for those who are partnered and who are not, for all welfare regimes, at all stages of fertility decline, and for our period of study from 1981 to 2005. In addition, analyses by welfare regime show that the negative fertility-happiness link at young adult ages is weakest in countries with high public support for families, and that the positive association at ages above 40 is strongest in countries where old-age support depends mostly on the family. Overall, these results suggest that children are a long-term investment in well-being, and highlight the importance of both the life-cycle stage and macro contexts the happiness-fertility association.

Prior research has found differences in the relationship between fertility and happiness among the elderly versus non-elderly. Among the non-elderly in the U.S., those with children have similar or higher levels of distress than those without children (Cleary and Mechanic 1983; Gore and Mangione 1983; Lovell-Troy 1983; McLanahan and Adams 1987). However, prior research focusing on the U.S. has not found significant differences in life satisfaction between elderly parents and elderly childless people (Connidis and McMullin 1993; Koropeckyj-Cox et al. 2007; Rempel 1985). We document more subtle age differences in the relationship between happiness and fertility throughout the life course. We find that in the youngest age groups,

happiness decreases approximately monotonically with the number of children. However, at ages 30-39, the negative association disappears and at older ages the association between the number of children and happiness changes to positive.

There are several possible mechanisms that could cause the observed age gradient in the happiness-fertility association. For example, the age gradient could indicate period or cohort differences in the happiness-fertility link. Our analysis, however, showed that the gradient exists independently of survey period. In addition, the age gradient exists independently of sex, income, partnership status, health status, welfare regime, and stage of demographic transition. Thus the age gradient may be better explained by the life cycle. When parents and children get older, children usually leave the parental home which may decrease the negative effect the children have on the quality of spousal relationships and on the amount of support provided for partners (Pleck 1983). In addition, and potentially more importantly, at younger ages the time and monetary costs of raising children are generally higher than they are at older ages.<sup>6</sup> As children get older, they become more independent and require less care and fewer resources. As children reach adulthood, when parents are approximately 40-60 years old, the children may become a resource themselves, providing financial and emotional support and care for aging parents. This explanation for the age gradient in the association between happiness and fertility would imply that older people who are more in need of kin support gain more from having children than those who are more independent. Our findings that the positive fertility-happiness association is stronger for those in poor health than those in good health, and for the Former Socialist States than for other welfare regimes are consistent with this explanation.

A theme in the literature is that women and men experience the transition to parenthood in different ways (Cowan et al. 1985; LaRossa and LaRossa 1981; Umberson and Williams

1999). Women may experience more costs to having children than men, especially in stress and mental well-being (Scott and Alwin 1989; Simon 1992). Some have argued that this is because women are more often the primary caregiver (Ross and Van Willigen 1996). However, it is unclear whether parenthood is differentially related to mental health for women and men (Nomaguchi and Milkie 2003). Unlike prior literature we find that the negative association between happiness and children during prime childbearing years does not differ by sex. The sex difference in the happiness-fertility association, however, may vary by context and should be explored in future work.

The degree to which parenting might affect well-being may depend on marital status and socioeconomic position (Ross and Huber 1985; Umberson and Williams 1999). In the U.S., single mothers are more likely to report higher levels of stress than married mothers (Avison 1995), but this may be confounded by differences in socioeconomic position by marital status. Therefore in investigating childrearing and happiness, it is important to take socioeconomic position into account. In our analyses we control for socioeconomic position and find little difference in the relationship between fertility and happiness between the partnered and unpartnered. We also tested for differences by socioeconomic position in the relationship between fertility and happiness. We find that while differences by income groups are small in magnitude, the negative effects of children on happiness below age 40 are strongest among those with lowest incomes and weakest among those with highest incomes. As shown by Ross and Huber (1985), children increase economic hardship. A high income may help alleviate the burden of raising kids, for example through childcare. A high income may also be a proxy for postponement, so that the high income group may include more people who in their 30s who are

voluntarily childless or have only one child, whereas the low income group may include more involuntary low fertility.

Our analysis of the fertility-happiness link by health status did not reveal qualitative, but did reveal small quantitative differences. For those in good *and* poor health, the association of fertility with happiness changes from negative to positive as age increases. However, the negative association at young adult ages is weaker for those in poor health than for those in good health, and the positive association at mid- to old ages is stronger for those in poor health than for those in good health. This may be related to the care and support adult children provide to their parents. Among the healthy, the demand for such care is lower, potentially explaining why the positive association of children and happiness is weaker than it is for less healthy parents.

In contrast to research conducted in the U.S. where parents report similar to slightly higher distress than non-parents, research in Europe has found either insignificant or slightly positive associations between children and life satisfaction (Bergman and Daukantaite 2006; Daukantaite and Zukauskiene 2006; Dykstra and Wagner 2007; Hansen et al.2009; Kohler et al. 2005; Savolainen et al. 2001). This may be because the family-friendly policies in strong European welfare states help new parents cope with the stress of combining work and family and alleviate the financial burdens on parents. We found that the negative association between fertility and happiness at young ages is weakest in social democratic and conservative welfare regimes, where the public support for parenthood is strongest. However, we also find that the positive association between fertility and happiness above age 40 is strongest in former socialist and southern European countries. This may be related to the strong pronatalist policies promoted by some of the former socialist states, which may influence attitudes towards parenthood, and

also to the important role of adult children in providing care for their elderly parents in these states.

We also examine how the relationship between happiness and fertility varies by the fertility of the society. We find that countries at different stages in the demographic transition have different relationships between fertility and happiness. The lower the overall fertility, the stronger the positive relationship between having children and happiness at older ages. This may be because of two related factors. The first is selection. In low fertility societies, those who value children the most decide to have children, and childlessness may be voluntary. In higher fertility contexts, social pressure may force a less select group of people to have children. Therefore the association may reflect compositional differences rather than causal effects. Second, norms about childbearing differ in places with different fertility levels. The stigma associated with being childless may be lower in countries with low levels of fertility, whereas it may be higher in places where fertility is high and childlessness less common. These differences may be reflected in the happiness level of our reference group, the childless. However, such force should cause the happiness difference between those who have children and those who are childless to be small in low fertility countries where childlessness is (by the argument) voluntary, and large in high fertility countries where childlessness is outside the norm and rare. We observe the opposite. Further, when we compare those with two children to those with only one child, we find that the happiness difference favoring those with two children is largest in countries with the lowest overall fertility. These results suggest that the social norms and potential stigma related to childbearing and childlessness are not the forces driving our results.

Our analysis sheds light on the puzzling discrepancy between the widespread belief that children bring happiness and the fact that most research finds either a negative or insignificant



relationship between parenthood and well-being. In the early stages of parenting, the positive aspects of having children are difficult to detect in surveys because they may be sporadic and be dominated by the negative aspects such as lack of sleep, concerns about the safety and development of the child, and financial strains, especially when answering questions about global happiness. Powdthavee (2009) calls this phenomenon where parents' responses reflect more of the negative aspects of parenting than the positive, a focusing illusion. However, our finding that parents above age 40 are happier than those without children suggests that at a later life stage the positive aspects of parenting, and potentially also grandparenting, might dominate and be easier to detect. Moreover, our results mirror the life-cycle net production pattern of humans: at young ages, consumption dominates production, but at ages close to 20 (when parents are approximately 40-60 years) production starts to dominate consumption (Lee 1994). These ages correspond to the ages at which we observe childless people to be less happy than those with children.

There are four major limitations to this analysis. Choice of the reference group, childless people, may be criticized in two ways. First, as childlessness is rare in most societies, this group of people is probably different from those who have one or more children on many unobserved dimensions, including health, social skills, and career perceptions. However, implicit in our regression analyses, and explicit in our discussions, is the comparison of those with two or more children to those with only one child; those with three or more children to those with one or two children, and so on. In fact, the effect of having one *additional* child (compared to those with one fewer child) can easily be seen from the slopes of the results in Figures 1 to 8. A potentially more important criticism is that the childless group may be compositionally different in different contexts. For example, those who intrinsically strongly desire to have children are likely to have

them both in high and low fertility societies, whereas those who would rather not have children may forego having them more often in low fertility societies, but may have children due to social pressures in higher fertility societies. Thus the proportions of childless people and the degree of selection may differ by context. However as discussed above, our results also show comparisons of those with different numbers of children. Therefore the potential specificity of the childless group does not prevent a meaningful interpretation of our results.

Second, having children is a decision, which exposes our regression results to endogeneity bias. More specifically, although we control for a large array of observed characteristics, we do not control for unobservable differences in people's preferences for children. An example of a study on the happiness-fertility link in which unobserved characteristics are partially controlled for is that of Kohler and colleagues (2005), which uses twin data to control for unobserved social and genetic differences. However, the results by Kohler and colleagues (2005) indicate that the sign and magnitude for the coefficient for the number of children in a regression on happiness is in most cases the same in standard ordinary least squares regressions and in twin-differences models. This suggests that the unobserved heterogeneity bias in our ordinary least squares regression results may not be large.

Third, the design of our study assumes that life events such as having children matter for happiness. This is in contrast with the setpoint theory of happiness, which asserts that a large fraction of variation in well-being is due to social or biological endowments, and while life events may temporarily change experienced well-being level, this change is transitory (Kahneman 1999). However, several recent studies have demonstrated that important life events do change happiness and not just temporarily (Kohler et al. 2005; Zimmerman and Easterlin 2006). Our results, which suggest that significant life events such as having a child have long-

lasting but potentially time-varying effects on happiness, are consistent with these findings which suggest that happiness is not set to a point.

Lastly, we use a synthetic cohort constructed from cross-sectional data to examine the association between fertility and happiness throughout the life cycle. This approach is widely used because of the ease at which comparisons can be made across age groups. However, it makes it difficult to generalize about the life course experience, as it uses many cohorts which experienced different life course trajectories. To make sure our results are not driven by cohort differences, we conducted the analyses separately for two time periods (1981-1996 and 1997-2007) and found that our key results on the age-gradient in the happiness-fertility association was present in both periods. These results add to the evidence suggesting that the association is age, not period or cohort related. Still, future research would benefit from longitudinal data in examining actual life cycle experiences and to compare the associations between fertility and happiness across parities, periods, and cohorts. Clark et al. (2008) make an important step towards this end in comparing life satisfaction before and after important life events, including the birth of a child.

In discussing the associations between fertility and happiness, we have focused on explanations from which the direction of influence goes from fertility to happiness. The effect of happiness on demographic behavior has been much less studied but is an area for upcoming research (Diener et al. 1999). Although we do not know if happier people have more children than less happy people, having children may be a strategy to improve happiness, for example by increasing the level of certainty in life (Friedman, Hechter, and Kanazawa 1994). There is also some recent evidence that people who have higher expected happiness from having a child are more likely to have one in the short to medium term (Billari and Kohler 2009). However, our

results show that people in their twenties and thirties with children are less happy than those without. We can reconcile this in two ways. First, people seem to poorly predict how children affect their lifestyles and underestimate the costs (Belsky, Ward, and Rovine 1986). Second, people may place a high value on the gains in happiness in older ages from having children more than the short term costs. Further research is needed to compare these and other mechanisms which may explain why people still have children, even though the immediate effects on subjective well-being seem to be negative.

Our analysis contributes to the literature on well-being and fertility in several ways. To the authors' knowledge, this is the first analysis that takes a global, cross-cultural look at the relationship between fertility and happiness. We find both similarities and differences in the happiness-fertility relationship across contexts. Our strongest finding, which has not been well established before, is that the link between happiness and fertility evolves from negative to neutral to positive over age. The fact that the happiness-fertility association depends so strongly on age might explain some of the discrepancies in earlier literature. This age gradient is present for both sexes, at all income levels, for those in good and bad health, for those who are partnered and who are not, for all welfare regimes, at all stages of fertility decline, and for at least the period from 1981 to 2005. We find that those who are likely to have a higher demand for care from kin at mid- to older ages are more likely to gain in terms of happiness from having children. This point is illustrated by the findings that the positive happiness-fertility association at ages above 40 is stronger for those in poor health than for those in good health, and in the former socialist countries where old-age support is largely based on family ties than in social democratic, conservative or liberal states where much of old-age support comes from the state or from own savings. Taken together, these findings indicate that the relationship between the

number of children and well-being is sensitive to context, and highlight the importance of the broader context such as the country's stage in the fertility transition, as well as individual level factors such as the stage in the life-cycle and financial resources.

## Notes

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<sup>1</sup> We include the 7<sup>th</sup> decile of self-reported income in the high income category. Otherwise the high income group would have been small, comprising only 14 percent of the sample. With the current classification of income groups, 36.5% of respondents are in the low income group, 41.1% in the middle income group, and 22.4% in the high income group.

<sup>2</sup>The results shown in the paper are estimated using OLS regression and thus assume the cardinality of happiness. However, similar to the finding of Ferrer-i-Carbonell and Frijters (2004) that assuming the ordinality or cardinality of happiness scores makes little difference, our results are robust to estimation using ordered logit regressions.

<sup>3</sup> The Ethiopian and Dominican samples are considerably younger than the overall sample. The mean age of the sample is 29.9 for Ethiopia, 28.8 for the Dominican Republic, and 41.5 for the whole sample. Moreover, as mentioned above, the sampling for the World Values Surveys is not random, especially in developing countries.

<sup>4</sup>The childless are an important reference group in examining the relationship between parenthood and well-being. Thus, we graph regression results in reference to parity 0. However, comparisons of happiness at various fertility levels (i.e. the effect of having one additional child) is possible by examining the slopes of results in Figures 1-8. These comparisons are implicitly in our regression analyses and explicitly in our discussion.

<sup>5</sup>There are no statistically significant differences between the partnered and unpartnered in either age group 20-39 or 40+.

<sup>6</sup> Our data did not have information on the ages of children or whether the children are present in the household. Therefore we have to use parent's age as a proxy for the family life cycle.

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TABLES

**TABLE 1 Unweighted Sample Characteristics by Country, (N=201,988)**

<b>Country</b>	<b>#</b>	<b>Mean Happiness</b>	<b>Mean # Children</b>	<b>Mean Age</b>	<b>Percent Married</b>
All Countries	201988	3.03	1.97	41.50	61.90
Tanzania	1001	3.49	2.81	38.30	52.90
El Salvador	977	3.47	2.39	37.70	39.40
Venezuela	2104	3.46	2.27	36.40	41.60
Nigeria	3872	3.39	2.23	32.50	56.90
Netherlands	1313	3.38	2.02	43.90	70.40
Ireland	1147	3.37	2.65	45.70	67.80
Saudi Arabia	1303	3.34	2.19	32.20	59.60
Switzerland	1976	3.34	1.59	49.20	56.30
Trinidad and Tobago	973	3.34	2.09	42.40	38.80
USA	3962	3.34	2.02	45.90	59.20
Sweden	2466	3.33	1.55	45.80	49.80
Australia	2998	3.32	1.82	45.80	56.30
Thailand	1477	3.32	2.16	45.60	69.70
Belgium	3516	3.31	1.81	46.40	64.80
Malaysia	1195	3.31	1.64	31.80	50.00
Colombia	2962	3.30	1.99	36.60	42.00
Luxembourg	589	3.30	1.41	42.50	61.50
Denmark	674	3.27	2.29	47.20	75.50
New Zealand	930	3.27	2.13	46.20	60.70
Philippines	1181	3.27	2.74	38.80	72.60
Britain	2412	3.26	1.53	46.30	65.80
Cyprus	1031	3.26	1.71	41.60	64.80
Norway	952	3.25	1.69	43.40	55.20
Vietnam	2412	3.25	2.37	41.50	74.30
Canada	3026	3.24	1.89	44.30	55.20
Ghana	1421	3.24	1.99	33.90	46.20
Austria	2549	3.23	1.76	46.80	65.90
Andorra	936	3.21	1.05	40.40	40.00
Mali	981	3.21	2.87	36.70	69.50
Mexico	5154	3.20	2.48	37.20	56.50
South Africa	7461	3.20	1.98	38.50	45.90
France	2683	3.19	1.97	44.80	62.40
Malta	931	3.19	1.95	45.60	70.10
Finland	1696	3.17	1.60	44.90	43.90
Indonesia	2515	3.17	2.16	39.20	17.70
Japan	3487	3.16	1.80	47.40	80.20
Uganda	526	3.12	2.21	31.40	43.70
Taiwan	1875	3.11	2.01	42.80	68.80
Argentina	2590	3.10	2.11	43.60	55.40
Chile	4040	3.10	2.26	41.80	58.20
Brazil	3703	3.09	2.24	39.20	52.10
Turkey	7545	3.07	2.20	36.90	72.50

NOTE: Happiness is measured on a linear scale from 1 (not at all happy) to 4 (very happy).

SOURCE: World Values Surveys 1981-2005

**TABLE 1 Continued.**

<b>Country</b>	<b>#</b>	<b>Mean Happiness</b>	<b>Mean # Children</b>	<b>Mean Age</b>	<b>Percent Married</b>
Dominican Republic	325	3.06	1.19	28.80	32.60
Spain	7617	3.04	1.98	46.10	67.40
Kyrgyzstan	982	3.03	2.05	37.30	60.20
Morocco	2318	3.03	1.79	35.60	55.60
Uruguay	909	3.01	1.98	46.50	56.20
West Germany	3981	3.01	1.53	46.10	60.10
South Korea	2388	3.00	1.65	40.00	66.60
Burkina Faso	1170	2.99	2.52	34.30	55.20
Egypt	5636	2.99	2.68	39.80	72.70
India	6556	2.99	2.67	40.20	85.70
Algeria	835	2.98	2.29	37.30	52.80
Italy	3971	2.98	1.52	45.20	66.30
Bangladesh	2833	2.96	2.33	34.60	76.70
China	4541	2.96	1.88	41.90	86.10
Pakistan	2525	2.96	2.19	37.30	69.80
Rwanda	1336	2.96	2.40	34.40	52.50
Peru	3754	2.94	2.04	36.20	40.90
East Germany	2741	2.93	1.64	46.20	59.90
Jordan	1109	2.91	3.09	36.30	67.40
Poland	3657	2.91	1.94	46.30	65.80
Czech Republic	4554	2.89	1.73	46.70	66.10
Azerbaijan	1698	2.88	1.76	36.50	63.30
Ethiopia	1406	2.87	1.03	29.90	39.70
Portugal	1109	2.85	1.62	42.50	60.40
Croatia	1992	2.84	1.42	41.70	63.20
Macedonia	1608	2.83	1.68	42.20	73.40
Iran	1992	2.82	1.78	34.30	56.90
Slovenia	1889	2.80	1.52	44.30	60.30
Hungary	1919	2.78	1.65	47.10	65.70
Zambia	1035	2.77	1.72	29.40	31.00
Latvia	1087	2.72	1.29	42.70	52.40
Georgia	1934	2.71	1.43	40.70	60.50
Slovakia	3116	2.70	1.88	44.30	69.40
Estonia	962	2.65	1.49	43.60	57.00
Zimbabwe	809	2.65	2.71	35.50	60.40
Ukraine	3001	2.58	1.48	45.00	67.70
Armenia	1785	2.56	1.72	38.30	59.30
Lithuania	863	2.55	1.63	44.50	66.90
Romania	2697	2.54	1.60	46.30	69.00
Bulgaria	2490	2.50	1.55	45.90	70.30
Russia	1786	2.50	1.56	46.60	62.70
Moldova	2764	2.47	1.77	42.80	67.50
Albania	1877	2.43	2.14	40.90	71.90
Belarus	1869	2.43	1.63	44.10	65.60

NOTE: Happiness is measured on a linear scale from 1 (not at all happy) to 4 (very happy).

SOURCE: World Values Surveys 1981-2005

**TABLE 2 Coefficients from Linear Regression Models Predicting Happiness, Model 1, (N=201,988)**

<b>Variable</b>	<b>Coefficient</b>	<b>SE</b>	<b>t</b>	<b>p value</b>	<b>95% CI</b>	
Number of Children (None)						
One	0.041	0.005	7.95	0.000	0.031	0.051
Two	0.062	0.005	13.09	0.000	0.053	0.072
Three	0.060	0.005	10.80	0.000	0.049	0.071
Four or more	0.002	0.006	0.30	0.766	-0.009	0.013
Demographic Variables						
Female	0.007	0.003	2.47	0.014	0.001	0.014
Age (15-19)						
Ages 20-39	-0.094	0.008	-11.66	0.000	-0.110	-0.079
Age 40+	-0.192	0.009	-22.25	0.000	-0.209	-0.175

NOTE: Coefficients for country and year dummy variables not shown.

\* R squared = 0.12

\*Happiness is measured on a linear scale from 1 (not at all happy) to 4 (very happy)

SOURCE: World Values Surveys 1981-2005

**TABLE 3 Coefficients from Linear Regression Models Predicting Happiness, Model 2, (N=201,988)**

<b>Variable</b>	<b>Coefficient</b>	<b>SE</b>	<b>t</b>	<b>p value</b>	<b>95% CI</b>	
Number of Children (None)						
One	-0.032	0.006	-4.77	0.000	-0.045	-0.020
Two	-0.034	0.006	-5.40	0.000	-0.046	-0.022
Three	-0.026	0.007	-3.39	0.000	-0.039	-0.012
Four or more	-0.055	0.007	-6.64	0.000	-0.069	-0.041
Demographic Variables						
Female	0.035	0.003	11.36	0.000	0.029	0.041
Age (15-19)						
Ages 20-39	-0.111	0.008	-13.79	0.000	-0.127	-0.095
Age 40+	-0.181	0.009	-20.88	0.000	-0.198	-0.164
Income (High)						
Low Income	-0.164	0.005	-34.84	0.000	-0.173	-0.155
Mid Income	-0.054	0.004	-12.57	0.000	-0.062	-0.045
Socioeconomic Status (Low)						
Middle	0.121	0.004	32.70	0.000	0.114	0.129
High	0.121	0.004	42.68	0.000	0.201	0.220
Marital Status (Married)						
Cohabiting	-0.083	0.007	-11.27	0.000	-0.097	-0.069
Separated/Divorced	-0.277	0.007	-38.12	0.000	-0.291	-0.263
Widowed	-0.243	0.007	-36.78	0.000	-0.256	-0.230
Single	-0.157	0.006	-24.95	0.000	-0.169	-0.144

NOTE: Coefficients for country and year dummy variables not shown.

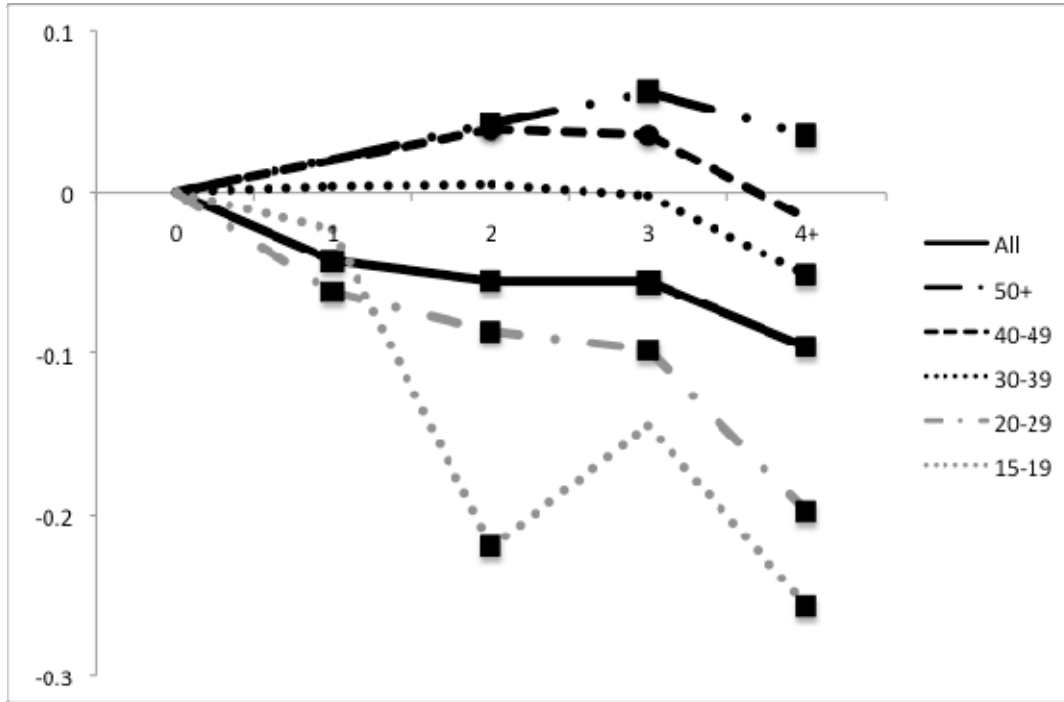
\* R squared = 0.16

\*Happiness is measured on a linear scale from 1 (not at all happy) to 4 (very happy).

SOURCE: World Values Surveys 1981-2005

**FIGURES**

**FIGURE 1 Happiness and Number of Children by Age**

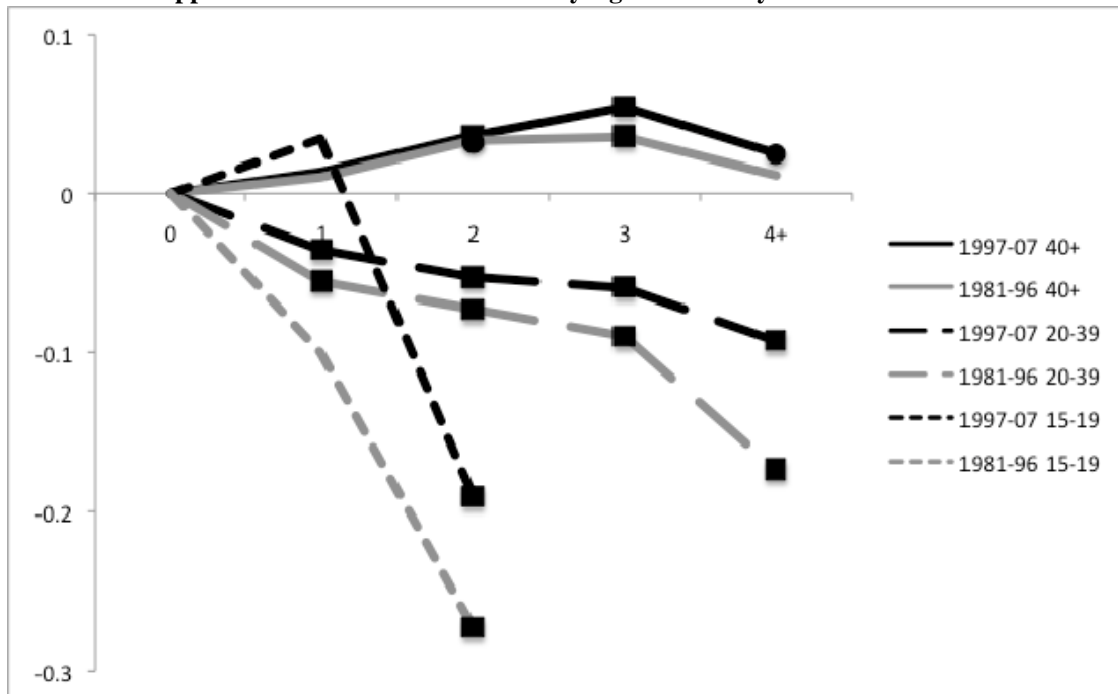


Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, income, marital status, country, and year.

■ p<.05 ● p<.10

SOURCE: World Values Surveys 1981-2005, N=201,988

**FIGURE 2 Happiness and Number of Children by Age and Survey Period**



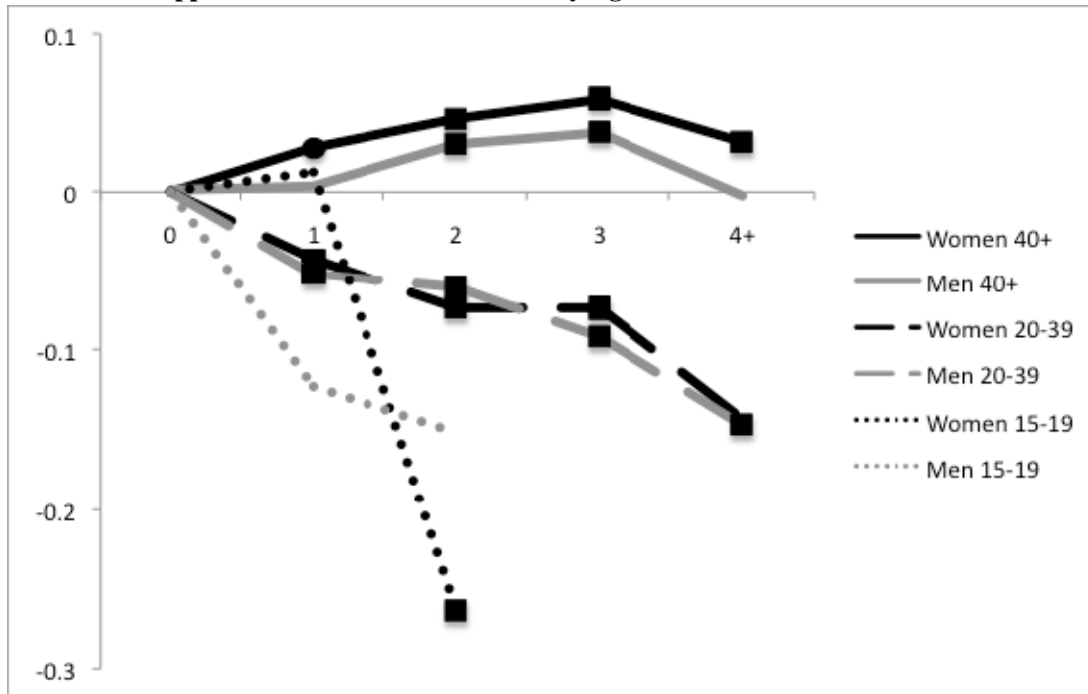
Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy)) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, income, marital status, country, and year.

■  $p < .05$  •  $p < .10$

SOURCE: World Values Surveys 1981-2005, N=201,988



**FIGURE 3 Happiness and Number of Children by Age and Sex**

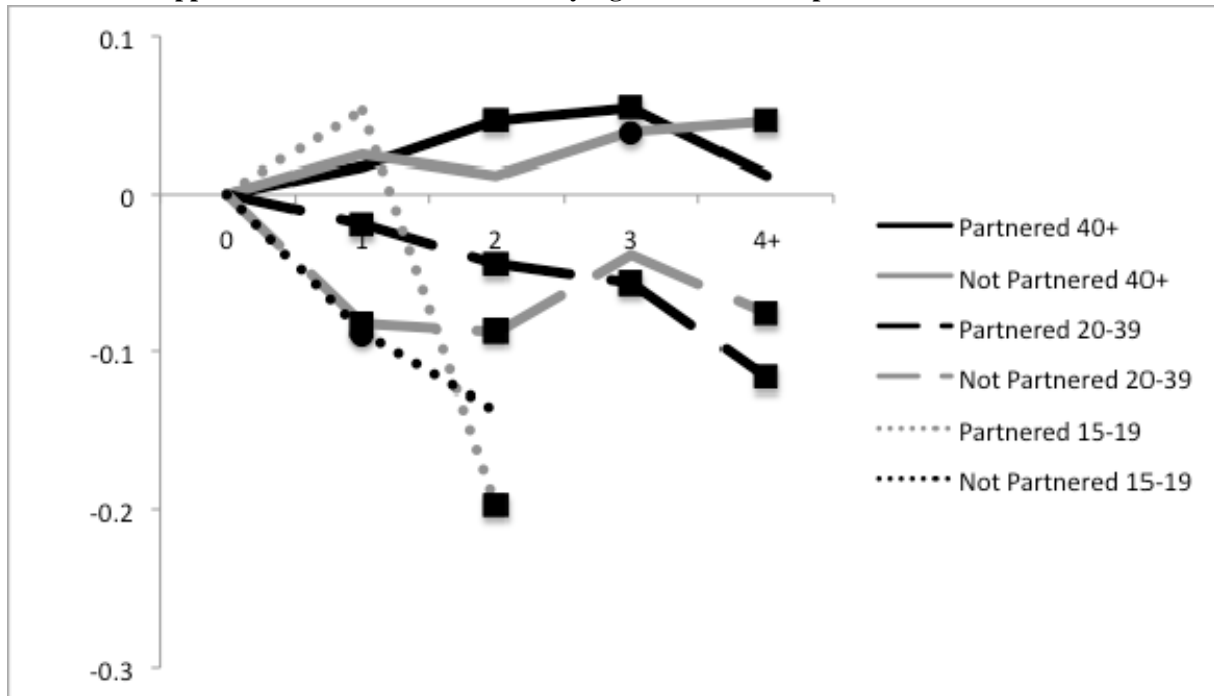


Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy)) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, income, marital status, country, and year.

■  $p < .05$  •  $p < .10$

SOURCE: World Values Surveys 1981-2005, N=201,988

**FIGURE 4 Happiness and Number of Children by Age and Partnership Status**

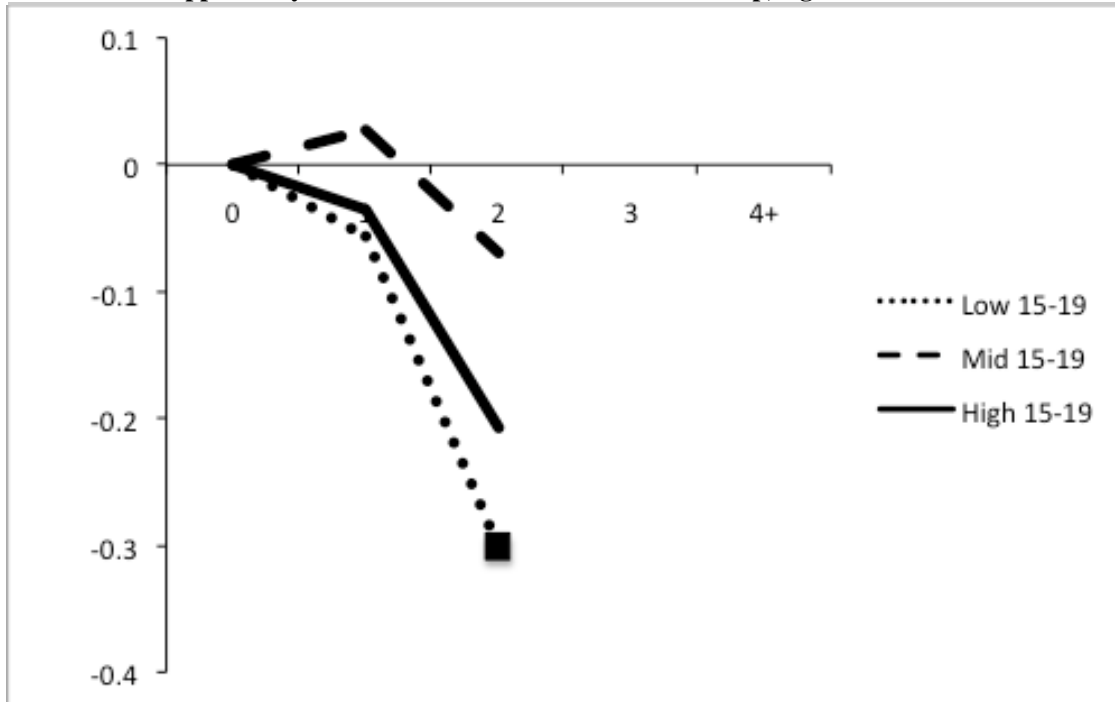


Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, income, marital status, country, and year.

■ p<.05   ● p<.10

SOURCE: World Values Surveys 1981-2005, N=201,988

**FIGURE 5a Happiness by Number of Children and Income Group, Ages 15-19**

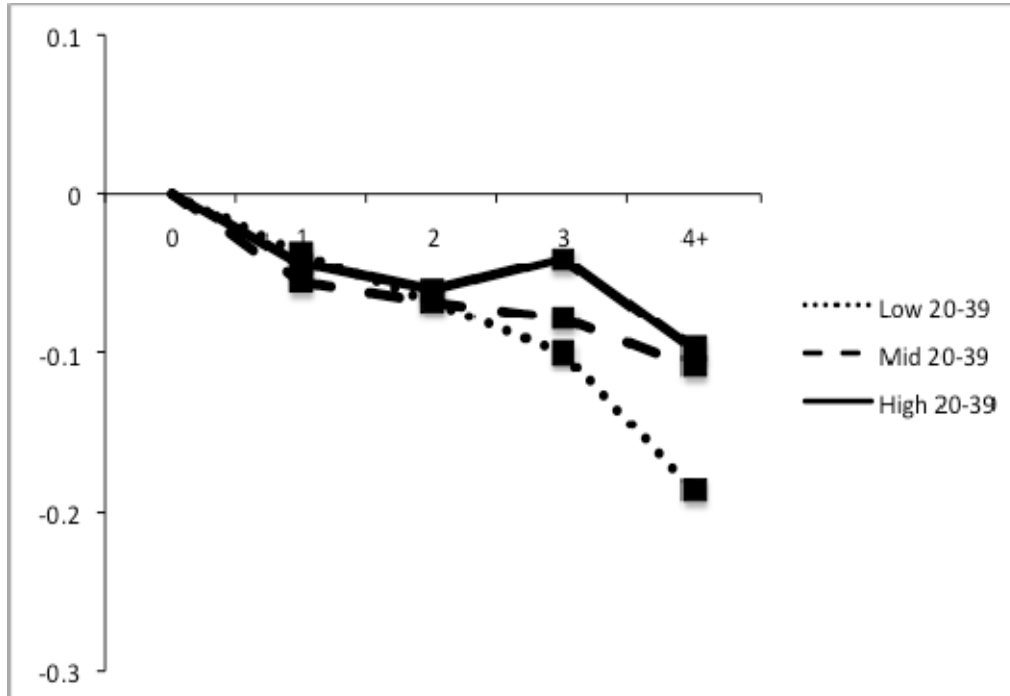


Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, marital status, country, and year.

■  $p < .05$  •  $p < .10$

SOURCE: World Values Surveys 1981-2005, N=8,850

**FIGURE 5b. Happiness by Number of Children and Income Group, Ages 20-39**



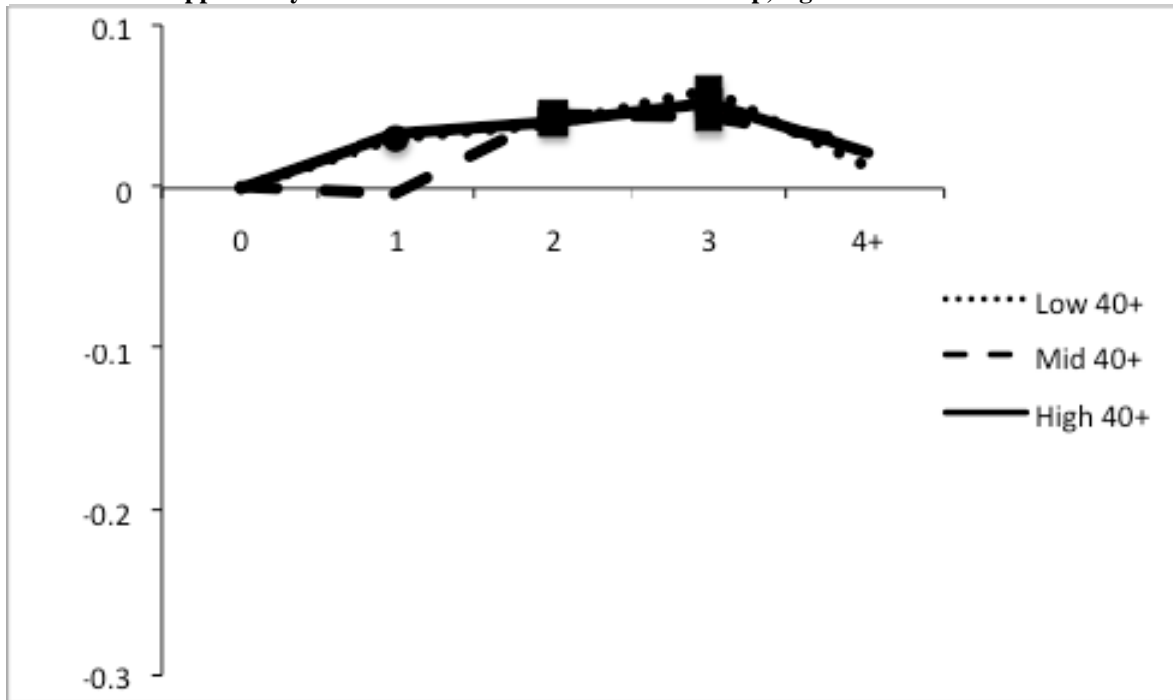
Notes: Lines

connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy)) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, marital status, country, and year.

■  $p < .05$  •  $p < .10$

SOURCE: World Values Surveys 1981-2005, N=93,450

**FIGURE 5c Happiness by Number of Children and Income Group, Ages 40+**

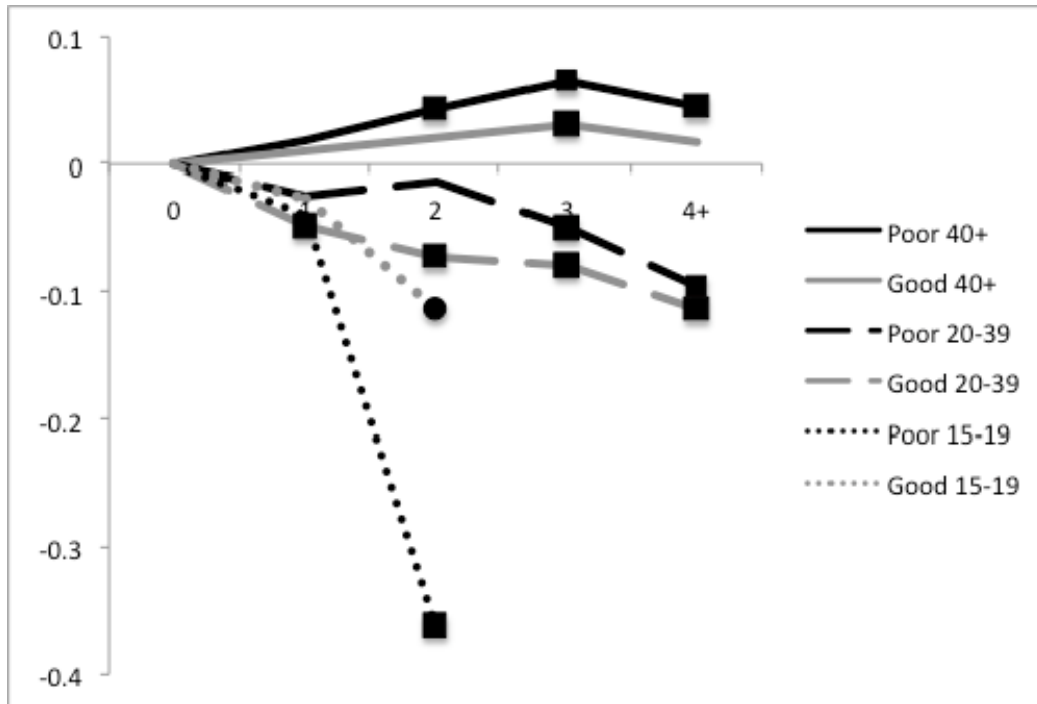


Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, marital status, country, and year.

■ p < .05    ● p < .10

SOURCE: World Values Surveys 1981-2005, N=99,688

**FIGURE 6 Happiness and Number of Children by Health Status**

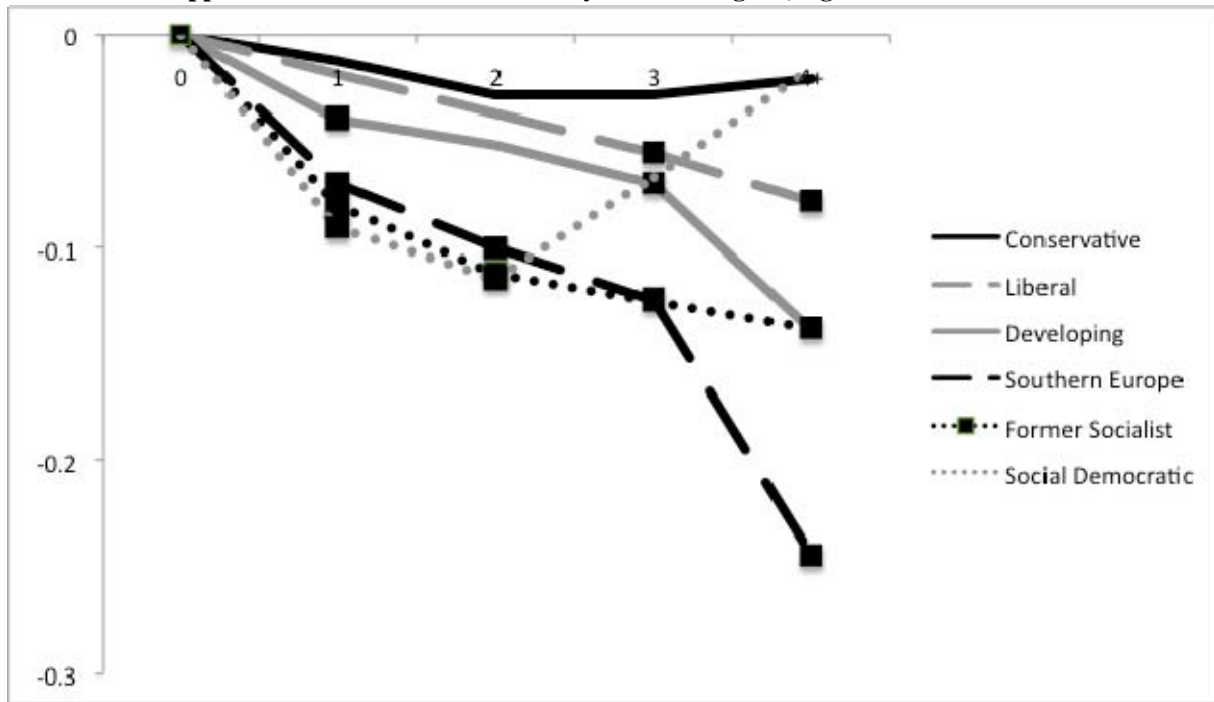


Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy)) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, income, marital status, country, and year.

■  $p < .05$  •  $p < .10$

SOURCE: World Values Surveys 1981-2005, N=201,988

**FIGURE 7a Happiness and Number of Children by Welfare Regime, Ages 20-39**

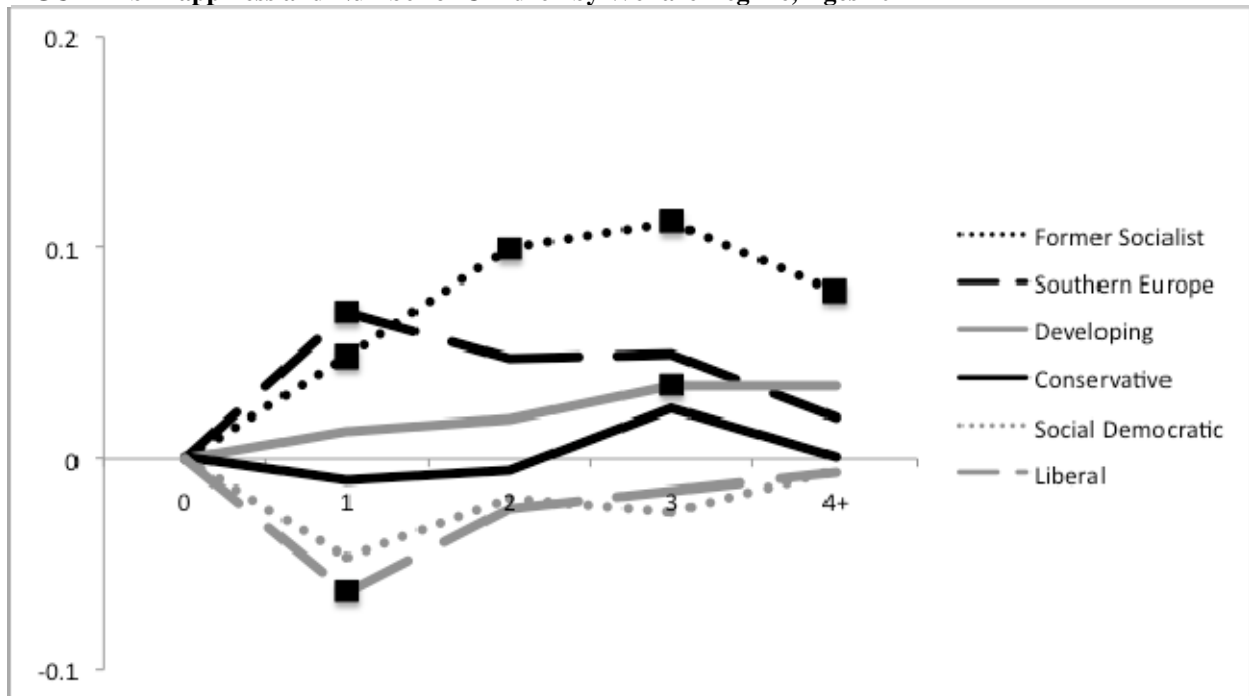


Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, income, marital status, country, and year.

■  $p < .05$  •  $p < .10$

SOURCE: World Values Surveys 1981-2005, N=93,450

**FIGURE 7b Happiness and Number of Children by Welfare Regime, Ages 40+**



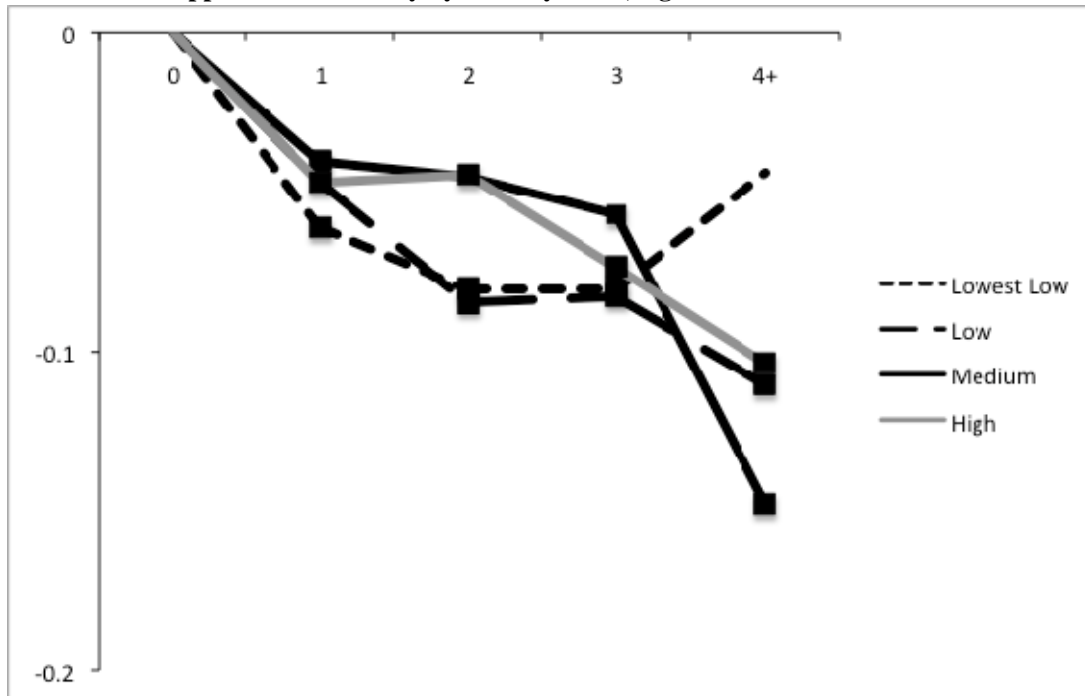
Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy)) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, income, marital status, country, and year.

■  $p < .05$  •  $p < .10$

SOURCE: World Values Surveys 1981-2005, N=99,688



**FIGURE 8a Happiness and Fertility by Fertility Level, Ages 20-39**

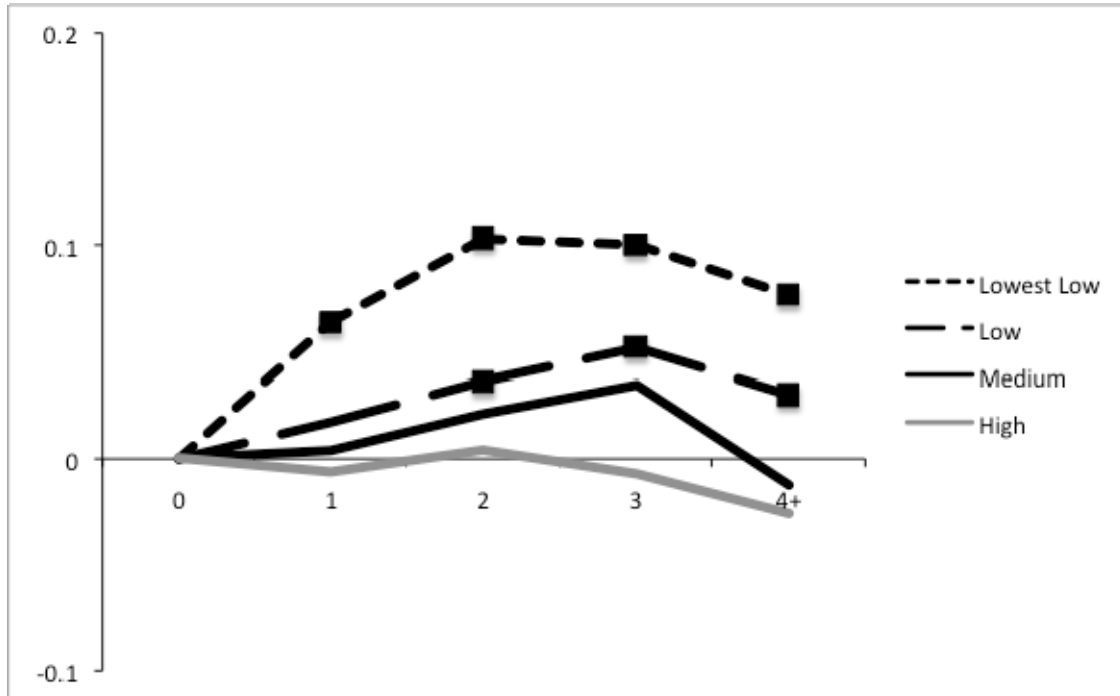


Notes: Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, income, marital status, country, and year.

■  $p < .05$  •  $p < .10$

SOURCE: World Values Surveys 1981-2005, N=93,450

**FIGURE 8b Happiness and Fertility by Fertility Level, Ages 40+**



Notes:

Lines connect coefficients from regression models predicting happiness (measured on a linear scale from 1 (not at all happy) to 4 (very happy)) with number of children (0, 1, 2, 3, 4+), controlling for sex, socioeconomic status, income, marital status, country, and year.

■  $p < .05$  •  $p < .10$

SOURCE: World Values Surveys 1981-2005, N=99,688

**APPENDIX****TABLE A1 Welfare Regime Categorization**

<b>Social Democratic</b>	<b>Conservative</b>	<b>Southern Europe</b>	<b>Liberal</b>	<b>Former Socialist</b>	<b>Developing</b>
Denmark	Andorra	Portugal	Australia	Albania	Algeria
Finland	Austria	Spain	Canada	Azerbaijan	Argentina
Norway	Belgium	Italy	Ireland	Armenia	Bangladesh
Sweden	France	Malta	New Zealand	Bulgaria	Brazil
Netherlands	Japan		Britain	Belarus	Chile
	Luxembourg		USA	Croatia	China
	Switzerland			Czech Republic	Colombia
	West Germany			East Germany	Cyprus
				Estonia	Dominican Republic
				Georgia	Egypt
				Hungary	El Salvador
				Kyrgyzstan	Ethiopia
				Latvia	Ghana
				Lithuania	India
				Macedonia	Indonesia
				Moldova	Iran
				Poland	Jordan
				Romania	Malaysia
				Russia	Mali
				Slovakia	Mexico
				Slovenia	Morocco
				Ukraine	Nigeria
				Macedonia	Pakistan
					Peru
					Philippines
					Rwanda
					Saudi Arabia
					South Africa
					South Korea
					Taiwan
					Tanzania
					Thailand
					Trinidad & Tobago
					Turkey
					Uganda
					Uruguay
					Venezuela
					Vietnam
					Zambia
					Zimbabwe

**TABLE A2 Total Fertility Rate by Country and Survey Year**

SOURCE: World Bank (2010)

Country	Year	TFR	Country	Year	TFR	Country	Year	TFR
Albania	1998	2.40	Dominican Repub.	1996	3.08	Malaysia	2005	2.71
Albania	2002	2.29	East Germany	1990	1.45	Mali	2005	6.59
Algeria	2002	2.53	East Germany	197	1.05	Malta	1991	2.04
Andorra	2005	1.31	East Germany	1999	1.17	Malta	1999	1.71
Argentina	1991	2.93	Egypt	2000	3.43	Mexico	1990	3.31
Argentina	1995	2.74	Egypt	2005	2.99	Mexico	1996	2.75
Argentina	1999	2.52	El Salvador	1999	3.05	Mexico	2000	2.41
Armenia	1997	1.75	Estonia	1996	1.33	Mexico	2005	2.20
Australia	1995	1.82	Ethiopia	2005	5.57	Moldova	1996	1.67
Australia	2005	1.79	Finland	1996	1.76	Moldova	2002	1.28
Austria	1990	1.45	Finland	2005	1.80	Moldova	2005	1.50
Austria	1999	1.34	France	1981	1.94	Morocco	2001	2.50
Azerbaijan	1997	2.07	France	1990	1.78	Morocco	2005	2.43
Bangladesh	1996	3.66	France	1999	1.79	Netherlands	1981	1.56
Bangladesh	2002	3.00	Georgia	1996	1.65	Netherlands	1990	1.62
Belarus	1996	1.31	Ghana	2005	4.4	New Zealand	1998	1.97
Belgium	1981	1.67	Hungary	1991	1.86	Nigeria	1990	6.71
Belgium	1990	1.62	Hungary	1999	1.29	Nigeria	1995	6.40
Belgium	1999	1.61	Iceland	1984	2.08	Nigeria	2000	5.92
Brazil	1991	2.70	Iceland	1990	2.31	Norway	1996	1.89
Brazil	1997	2.45	Iceland	1999	1.99	Pakistan	1997	5.00
Brazil	2005	2.04	India	1990	3.80	Pakistan	2001	4.59
Britain	1981	1.81	India	1995	3.39	Peru	1996	3.30
Britain	1990	1.83	India	2001	3.00	Peru	2001	2.93
Britain	1998	1.71	India	2005	2.68	Peru	2005	2.67
Bulgaria	1990	1.81	Indonesia	2001	2.39	Philippines	2001	3.52
Bulgaria	1997	1.09	Indonesia	2005	2.26	Poland	1990	2.04
Bulgaria	2005	1.31	Iran	2000	2.29	Poland	1997	1.51
Burkina Faso	2005	6.15	Ireland	1981	3.07	Poland	1999	1.37
Canada	1990	1.83	Ireland	1990	2.12	Poland	2005	1.24
Canada	2000	1.49	Italy	1981	1.62	Portugal	1990	1.43
Chile	1990	2.59	Italy	1990	1.26	Romania	1998	1.32
Chile	1996	2.28	Italy	1999	1.23	Romania	2005	1.32
Chile	2000	2.08	Italy	2005	1.32	Russia	1995	1.34
Chile	2005	1.97	Japan	1990	1.54	Rwanda	2005	5.58
China	1995	1.92	Japan	1995	1.42	S. Africa	1990	3.32
China	2001	1.88	Japan	2000	1.36	S. Africa	1996	3.04
China	2005	1.71	Japan	2005	1.26	S. Africa	2001	2.86
Colombia	1998	2.77	Jordan	2001	3.69	S. Africa	2005	2.78
Croatia	1996	1.67	Kyrgyzstan	2003	2.50	S. Korea	1996	1.58
Croatia	1999	1.38	Latvia	1996	1.16	S. Korea	2005	1.08
Cyprus	2005	1.42	Latvia	1999	1.16	Saudi Arabia	2003	4.09
Czech Republic	1991	1.86	Lithuania	1997	1.47	Slovakia	1991	2.05
Czech Republic	1998	1.16	Luxembourg	1999	1.73	Slovakia	1998	1.38
Czech Republic	1999	1.13	Macedonia	1998	1.90	Slovakia	1999	1.33
Denmark	1981	1.43	Macedonia	2001	1.75	Slovenia	1992	1.34

**TABLE A2 CONTINUED**

<b>Country</b>	<b>Year</b>	<b>TFR</b>	<b>Country</b>	<b>Year</b>	<b>TFR</b>	<b>Country</b>	<b>Year</b>	<b>TFR</b>
Slovenia	2005	1.26	Taiwan	2005	1.11	USA	1999	2.01
Spain	1981	2.03	Tanzania	2001	5.62	Uruguay	1996	2.5
Spain	1990	1.33	Thailand	2005	1.81	Venezuela	1996	3.04
Spain	1995	1.18	Trinidad & Tobago	2005	1.62	Venezuela	2000	2.83
Spain	1999	1.20	Turkey	1990	3.00	Vietnam	2001	1.88
Spain	2000	1.24	Turkey	1996	2.76	Vietnam	2005	2.21
Spain	2005	1.35	Turkey	2001	2.52	West Germany	1981	1.43
Sweden	1996	1.60	Turkey	2005	2.17	West Germany	1990	1.45
Sweden	1999	1.50	Uganda	2001	6.9	West Germany	1997	1.39
Sweden	2005	1.77	Ukraine	1996	1.30	West Germany	1999	1.39
Switzerland	1996	1.50	Ukraine	2005	1.20	Zambia	2005	5.96
Switzerland	2005	1.42	USA	1990	2.08	Zimbabwe	2001	3.66
Taiwan	1994	1.75	USA	1995	1.98			
Czech Republic	1991	1.86	Lithuania	1997	1.47	Slovakia	1991	2.05
Czech Republic	1998	1.16	Luxembourg	1999	1.73	Slovakia	1998	1.38
Czech Republic	1999	1.13	Macedonia	1998	1.90	Slovakia	1999	1.33
Denmark	1981	1.43	Macedonia	2001	1.75	Slovenia	1992	1.34