

Happiness and the Parenthood Paradox

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Abstract

There is a great deal of conflicting evidence in the existing literature on whether children are associated with greater subjective wellbeing. We here provide a systematic analysis of this question based on three different datasets, two cross-national and one national panel. We find that the overall association between children and life satisfaction is negative. However, this correlation is more likely to be positive in countries with lower fertility and higher income. Equally, the negative effect of children in rich countries seems to be confined to those who become parents before the age of 30. We last show that, in a rich country, there is selection into parenthood, with happier individuals more likely to have children. But even for this “happy” group, panel analysis (in a rich, low-fertility country) shows that having a child reduces life satisfaction. Our overall conclusion is that there is negative self-selection into parenthood in developing countries, but positive selection in developed countries. This helps to explain the wide variety of results in the existing cross-section analysis.

Keywords: Happiness, fertility, children, income, selection.

JEL codes: D1, J13.

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Highlights

- The relationship between children and happiness is generally negative.
- The association changes from negative to positive at a GDP level of around 20 000 Dollars.
- Children are positively correlated with happiness for wealthy people aged over 30.
- Whenever it exists, the positive association between parenthood and happiness is due to self-selection.
- Years before the event, those who are destined to become parents are already happier than those who will never have children.
- When they eventually do have a child, individuals who start with a higher baseline level of happiness see their subjective wellbeing decline.
- The data is consistent with negative self-selection into parenthood in developing countries, but positive selection in developed countries.
- These results are similar no matter how subjective wellbeing is measured: cognitive evaluation (Cantril ladder or life satisfaction) or more emotional measures of wellbeing.

I. Introduction

The analysis of subjective wellbeing and children brings together two rather conflicting phenomena. The first is that many people have a deep-seated conviction that children are a source of happiness. The second is that the empirical literature on exactly this topic does not confirm this intuition. Rather, it has produced a spectacular variety of findings covering the entire spectrum of possible relationships between parenthood and happiness.

Some research has supported our instincts by uncovering a positive effect of having children on wellbeing (Aassve *et al.*, 2012, Herbst and Ifcher, 2012), while other work suggests that the relationship is negative (McLanahan and Adams, 1987, Alesina *et al.*, 2004, Clark *et al.*, 2008, and Umberson and Williams, 1999). The same diversity of findings pertains regarding the order of children, their age, and the gender of the parent (Hansen *et al.*, 2008). In summary, the empirical evidence about having children and subjective wellbeing is all over the place: it varies by the datasets and methods used, but has probably produced a slight predominance of negative relationships.

This state of affairs is particularly frustrating. In general, subjective wellbeing data tend to confirm nicely the simple intuitions that lay-people have in mind about the foundations of happiness. Subjective wellbeing increases with income, with having a job, a partner, social capital, religious faith, nice personality traits, etc. It is lower as unemployment, inflation and macroeconomic volatility rise. To be sure, another intriguing and still unexplained phenomenon is the U-shaped happiness-age relationship, but even this U-shape is an empirical regularity. Apart from the parenthood paradox, the structure of subjective wellbeing is well-behaved and this is often invoked in the defence of using such data.

This conflicting evidence about parenthood and subjective wellbeing is a good opportunity for researchers in this domain to take a step back and reflect on choices and preferences. In a perfectly predictable world, *a priori*, there is no reason to expect any correlation between people's life circumstances and happiness, as long as these life circumstances are the result of people's choice. Concerning children for instance, suppose that people have different tastes, i.e. some want to have children while others don't. Once both types have been able to turn their desire into reality, there is no reason to expect the former to be happier than the latter. This could come about, however, if some preferences are more conducive to happiness than other, or if people with certain preferences, a preference for children for instance, are more prone to happiness, as a result of their characteristics (their personality, education or wealth). Of course, if everybody had the same preferences over having children, but some are not able to achieve their goals, we would naturally expect these latter to be less happy.

Even in this framework, the general finding that parenthood is associated with lower happiness is perplexing. Can it really be the case that most people spend a large part of their time and energy doing something that reduces their happiness? Such apparent irrationality would then call for other models of behaviour: natural instinct, social pressure, or insurance motives (attempting to insure for old age by counting on transfers from children). Another explanation could be that individuals have biased expectations of the impact of having a child, due to the slow adaptation of their expectations to the change in family structure, gender roles, increasing individualism and the opportunity cost of children (McLanahan and Adams, 1987).

Cross-country comparisons raise a particular problem: due to the demographic transition, low-fertility countries are generally richer than high-fertility countries. As subjective wellbeing rises with development, even if parenthood were a source of higher happiness, this would not necessarily be

detectable in cross-country data (see Billari, 2009). Moreover, fertility is certainly more of a choice in developed countries, as opposed to poorer ones, so that it should be associated with higher wellbeing.

In sum, the simple, intuitive, positive relationship between parenthood and happiness is not necessarily what we would expect to be found in empirical work.

We here take an agnostic view and simply try to establish some robust empirical associations between fertility and happiness. If there is no such relationship, then parenthood could be considered as a choice variable with there being little heterogeneity between parents and the childless. A positive relationship could reflect heterogeneity or self-selection, and a negative relationship the fact that parenthood is a constrained choice or a choice that is not driven by hedonic purpose.

To help disentangle these interpretations, it is useful to look at happiness both before and after parenthood. Is it the happier or less happy who self-select into parenthood? And how does happiness change when children appear? In a way, this question is a test of the rationality of childbearing. If people become happier once they have children, this may reflect the satisfaction of preferences. But if they become less happy, it means that they have made a happiness-reducing choice, which calls for another type of explanation.

We look at both the static and dynamic relationship between parenthood and happiness over a wide set of countries, using cross-section data from the Gallup World Poll and the European Social Survey, and German Socio-Economic Panel (SOEP) data in which we are able to follow the same individuals for a very long time.

We uncover a number of stylized facts. First, the average relationship between parenthood and subjective wellbeing is negative in cross-country data. Second, there is heterogeneity in this average relationship, with a sharp contrast between developing and developed countries. In high-fertility less-developed countries, parenthood is associated with lower happiness, whereas the opposite holds in low-fertility richer countries, especially when it comes at the “right time” (between the ages of 30 and 50). We suggest however that this positive correlation probably reflects selection into parenthood in rich countries. We use long-run panel data to show, for the first time in this literature, that happier people are more likely to become parents: those who will never have children are initially less happy than those who will have children at some future point in their life. Beyond this positive selection effect, parenting has an overall negative relationship with happiness. In poorer countries the selection effect works in the opposite sense, with parents having less-favourable characteristics. All of our findings are qualitatively similar whether we use life satisfaction or measures of emotional wellbeing.

Literature

The existing literature on parenthood and happiness is fairly substantial, but has essentially come to the conclusion that the sign and size of this link is undetermined.

In the first instance, in much empirical research in subjective wellbeing life satisfaction or some other wellbeing measure is regressed on a series of control variables, where these controls include the presence of children. The association between parenthood and subjective wellbeing (although not the main focus of the research) is usually found to be negative (see for example, Di Tella *et al.*, 2004, Kahneman *et al.*, 2004, and Alesina *et al.*, 2004).

Other research has been more specifically focused on happiness and parenthood, confirming a negative relationship between parenthood and life satisfaction, the quality of married life and psychological distress (e.g. McLanahan and Adams, 1987, Rollin and Cannon, 1974, and Rollin and Feldman, 1970). In particular, it is often shown that parenthood is associated with strain, time stress and depression. For example, Buddelmeyer *et al.* (2015) find that births increase both time stress and

financial stress in Australian and German couples, especially among mothers, and that these effects persist for a number of years. In Deaton and Stone (2014) general life evaluation (evaluated by the Cantril ladder) is slightly worse for those with at least one child at home, and worry, stress and anger are markedly higher in Gallup World Poll data. Similar results are found in Stanca (2012) using the World Values Survey: parenthood is associated with lower life satisfaction but also more emotions, both positive and negative. Evenson and Simon (2005) also look at the same type of self-declared emotional wellbeing data (from the American *National Survey of Families and Households*), and show that parents of all types (married, single parents or cohabiting) report higher depression scores than do nonparents, although some types of parenthood are associated with more depression than others.

On the contrary, other work has uncovered positive effects of parenthood, such as Hansen *et al.* (2009), who find that life satisfaction and self-esteem are higher among Norwegian mothers than non-mothers (with no effect on emotional wellbeing, and no impact for men). Evenson and Simon (2005) suggest that the impact of children on mental health depends on the age of the children, with young children increasing distress and adult children improving parental mental health. Clark *et al.* (2008) use SOEP data to show that the birth of a child has a positive effect on women's life satisfaction (but not on men's), but that this effect withers away by the time the child is 2-3 years old, with the estimated coefficients turning negative thereafter.

Finally, some research has underlined the instability of the relationship, with the results depending on the statistical specification, the type of wellbeing measure and sometimes on the countries analysed. In Deaton and Stone (2014), individuals with children sometimes have lower life evaluations irrespective of age in Africa, Latin America and Caribbean, the Middle East and South Asia, but sometimes have higher life evaluations in East Asia, the former Communist countries, and the non-English speaking countries of Northern and Southern Europe.

As mentioned in the introduction, this instability could reflect self-selection into parenthood. In Deaton and Stone (2014), individuals who live with children are more likely to be married, richer, better educated, more religious, and healthier. All of these characteristics are well-known to be correlated with higher evaluative and hedonic wellbeing. As the authors note: *"for life evaluation, the factors that cause people to select into parenthood are essentially indistinguishable from the factors that generate wellbeing directly..."* (p.4). Controlling for these background factors turns the presence of a child from a positive to a negative correlate of happiness. This point also appears in the analysis of WVS data in Margolis and Myrskylä (2011).

Another finding consistent with self-selection is that the parenthood-wellbeing relationship depends on the country's degree of development, being particularly negative in poorer countries. In richer countries adults may well sort into parenthood based on their preferences, thanks to birth control, whereas in poor countries, fertility is less of a choice (see McLanahan and Adams, 1987). As such: *"The lower the country's fertility, the happier are those who have children compared to those without. This may be the result of selection of those who value children the most into childbearing"* (Margolis and Myrskylä, 2011, p.43).

Reverse causality may also play a role. In Le Moglie *et al.* (2014) subjective wellbeing in a given year positively predicts childbearing the following year, controlling for a large set of characteristics (personality traits, age, education, marital status, the number of previous children, current health, immigration status, working hours, housing conditions and characteristics, having a cleaning lady, % of housework, scaled income, and share of household income). Parr (2010) is along the same lines using Australian HILDA data, with happier people at a certain time being more likely to have had a child two years later. We can however wonder whether the short lag between wellbeing measurement and childbearing makes it possible to distinguish selection from anticipation. Billari (2009) shows that, in Europe, happier people are more likely to plan to have a child within the next three years. In Baetschmann *et al.* (2012), the wellbeing of German women who are going to have children starts to diverge from those who will not five years before the event.

Another source of heterogeneity is parental age. It is generally found that the association between parenthood and subjective wellbeing is positive for those aged over 30. Deaton and Stone (2014), for example, find that children improve all well-being outcomes for Americans aged 34–46, with the exception of stress. Margolis and Myrskylä (2011) make the same point in WVS data. In the youngest age groups (under 30), happiness falls roughly monotonically with the number of children. At ages 30–39, the negative association vanishes, and at older ages (40–49, 50 and above) the association between children and happiness becomes positive, so that those with three children are happiest. In general, those who have children at older ages and those with more socioeconomic resources have a more positive and lasting happiness response to a first birth than do younger or less-educated parents.

We here revisit these issues in three different surveys. We replicate the main findings in the literature regarding age and economic development, i.e. that children tend to lower (raise) life evaluation in higher (lower) fertility countries. We also dig deeper into the question of self-selection. In a 2006 paper, Frey and Stutzer asked whether marriage makes people happy or happy people get married. Using panel data, they showed evidence of positive self-selection by happier people into marriage, but also that marriage does bring an additional happiness increment. We address a similar question and find evidence of self-selection into parenthood using long panel data that enables us to distinguish selection from anticipation. Once we control for self-selection, parenthood reduces subjective wellbeing: the happy are more likely to ever have children than those with lower happiness, but when they do the wellbeing of the former falls.

2. Data

Our analysis here will be based on two cross-national repeated cross-section databases, and one long-running national panel dataset. We start with the most wide-ranging in terms of country coverage, the Gallup World Poll survey.

2.1 Gallup data

The Gallup World Poll contains cross-sectional data on 163 countries, surveyed from 2006 to 2013. These surveys cover around 1000 respondents per country, typically on an annual basis.¹ There are a number of wellbeing questions in the Gallup data: life satisfaction² (on a 0-10 scale), positive affect, negative affect (both on a 0-100 scale)³, and happiness and stress (which are both binary variables).

¹ The Gallup codebook notes that *"Gallup Worldwide Research continually surveys residents in more than 150 countries, representing more than 98% of the world's adult population, using randomly selected, nationally representative samples. Gallup typically surveys 1,000 individuals in each country, using a standard set of core questions that has been translated into the major languages of the respective country. In some regions, supplemental questions are asked in addition to core questions. Face-to-face interviews are approximately 1 hour, while telephone interviews are about 30 minutes. In many countries, the survey is conducted once per year, and fieldwork is generally completed in two to four weeks."*

² Life satisfaction is measured by the Cantril ladder: *"Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?"*

³ **Positive affect** is measured with the following five questions: (wp60) "Did you feel rested yesterday?"; (wp61) "Were you treated with respect all day yesterday?"; (wp63) "Did you smile or laugh a lot yesterday?"; (wp65) "Did you learn or do something interesting yesterday?"; and (wp67) "Did you experience the following feelings during a lot of the day yesterday? How about enjoyment?". The Gallup codebook notes that *"all items are recoded so that positive answers are scored as a 1 and all other answers (including don't know and refused) are scored as a 0. If a record has no answer for an item, then that item is not eligible for inclusion in the calculations. The record's final score is the mean of valid items"*

The latter two variables are hedonic, and refer to experiencing stress/happiness yesterday (with Yes or No answers). In particular this hedonic happiness variable in the Gallup data cannot be directly compared to the happiness variable which appears in the ESS, which is more cognitive/evaluative in nature (*"Taking all things together, how happy would you say you are?"*).

We estimate a number of subjective wellbeing regressions in this paper. Our main explanatory variable in these regressions is a dummy for the respondent currently living with children aged under 15. As those answering Yes to this question include young people who live with their siblings, we focus on respondents who are aged over 30. We also analyse the particular sample of individuals who are aged from 30 to 50, which may be considered as the typical ages at which individuals live with their children.

All of our Gallup regressions include controls for gender, partnership status, age and age-squared divided by 100, log household income (in international purchasing power parity Dollars), labour-force status, education, religion, and wave and country dummies. Appendix Tables 1 and 2 show the descriptive statistics of the variables used in the "all countries" Gallup regressions, where there are no sample restrictions in terms of countries (for all ages and ages 30-50).

2.2 European Social Survey (ESS) data

Our second main database is also cross-country and repeated cross-section. The ESS data is biannual starting in 2002, and covers many European countries; we here focus on 16 countries that were present during the 6 waves from 2002 to 2012.

The subjective wellbeing variables in the ESS are life satisfaction⁴ (on a 0-10 scale), happiness⁵ (on a 0-10 scale), and positive and negative affect.⁶ Here, we use two fertility variables: living with children and having children. Unlike the Gallup data (which asks about living with children under 15), the ESS dummy "living with children" does not put any restrictions on the age of the children. The constructed dummy variable "having children" reflects a positive answer to either of the two following questions "Have you ever lived with children" and "Are you currently living with children", and thus proxies the actual share of parents in the sample (it may include individuals who currently live or used to live with their partner's children, but does not pick up individuals who have children but never lived with them). All ESS regressions include gender, age and age-squared divided by 100, marital status, log household income,⁷ years of education, labour-force status, religion, and year and country dummies.

multiplied by 100". **Negative affect** is calculated analogously from: "Did you experience the following feelings during a lot of the day yesterday? How about... (wp68) physical pain?", (wp69) "... worry?", (wp70) "... sadness?", (wp71) "... stress?" and (wp74) "... anger?".

⁴ *All things considered, how satisfied are you with your life as a whole nowadays? Please answer using this card, where 0 means extremely dissatisfied and 10 means extremely satisfied.*

⁵ *Taking all things together, how happy would you say you are?*

⁶ **Negative affect** is the mean score based on the following questions, which were asked only once in 2006. All questions are on the same 1 to 4 scale, (1 = none of the time, 4= most of the time): (fltdpr) "Felt depressed, how often past week"; (flteeff) "Felt everything did as effort, how often past week"; (fltsd) "Felt sad, how often past week"; (fltttrd) "Felt tired, how often past week"; (fltanx) "Felt anxious, how often past week"; and (slprl) "Sleep was restless, how often past week". **Positive affect** is analogously calculated as the mean of the following questions, asked only once in 2012, on the same 1 to 4 scale: (fltpcfl) "Felt calm and peaceful, how often past week"; (enjl) "Enjoyed life, how often past week"; and (enrglot) "Had lot of energy, how often past week".

The descriptive statistics for our ESS sample (for all ages, and ages 30-50) appear in Appendix Tables 3 and 4.

2.3 SOEP data

The German Socio-Economic Panel (SOEP) was started in West Germany in 1984 and extended to East Germany in 1990. The relevant data come from the individual long format data files (\$PL and \$PGEN), the household long format data file (\$HL) and two biography datasets for men and women that describe the fertility history of each respondent (\$BIOBIRTH for women and \$BIOBRTHM for men). We use data going up to 2012.

The SOEP subjective wellbeing variable is life satisfaction (on a 0-10 scale).⁸ The fertility variables come from of each respondent's biography data. This latter includes information on the total number of children that each individual ever had and their year of birth. We construct a dummy "has children" (children) that equals 1 after the year of birth of the first child.⁹ Our regressions include controls for gender, age and age-squared divided by 100, partnership, log household income, educational level, labour-force status and year dummies. The descriptive statistics of the SOEP variables appear in Appendix Table 5.

The following section describes our main results from these three datasets in terms of the relationship between subjective wellbeing and children.

3. Results

In this section, we describe our main empirical results: i) the average relationship between children and subjective wellbeing is negative; ii) this average relationship is sharply modified by country fertility and income; iii) younger parents do worse; iv) happier people are more likely to have children; v) but once they do, they are worse off; and vi) the type of self-selection into parenthood depends on the country's level of development.

3.1 On average, the association between children and happiness is negative

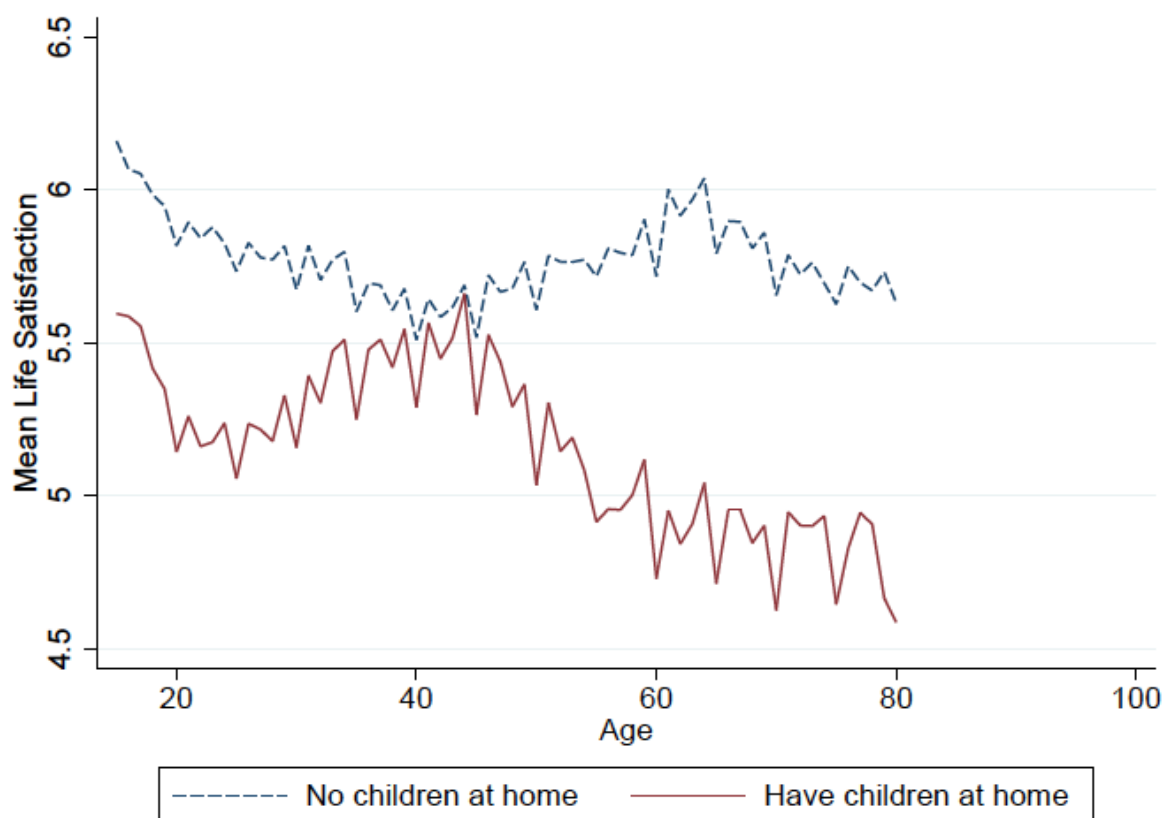
In the Gallup data from 2006-2013, taking all countries together, living with children is associated with lower life satisfaction, positive affect and experienced happiness; it is also associated with greater negative affect and stress. We illustrate the results for the Cantril ladder in the raw data in Figure 1 below. As can be seen, the wellbeing score of those with children at home is almost always lower than that of those without children at home.

⁷ In the ESS, individuals are asked to report to which income decile they belong. We linearise income by taking the mean income value of each decile. For the lowest decile we take the lowest value and divide by 1.5; for the highest decile, we take the highest value and multiply it by 1.5.

⁸ The SOEP first asks questions about satisfaction with various domains of life, and then that on overall life satisfaction: *In conclusion, we would like to ask you about your satisfaction with your life in general. Please answer on a scale from 0 to 10, where 0 means completely dissatisfied and 10 means completely satisfied.*

⁹ There are six observations in which the year of birth of the first child is missing, but the year of birth of subsequent children appear. In these cases, the dummy "children" equals 1 after the year of birth of the second child.

Figure 1: The Cantril ladder by age and children at home. Gallup data.



Sample: Gallup (2006-2013), 163 countries. Individuals under 80 years old.

This gap continues to hold for all of our subjective wellbeing measures (except happiness) in the Gallup data when we introduce the controls that were described in Section 2.1 above. The regression results for those aged 30 to 50 appear in Table 1 below (those for all ages, and for individuals aged 25 and over are similar in nature, and are available on request)¹⁰.

¹⁰ The data is now from 2009 to 2013 because labour-force status variables are only available since 2009. However, not controlling for labour-force status and using data from 2006 barely changes the results.

Table 1: Subjective wellbeing and children at home. Regression results, ages 30-50. Gallup data

	(1) Cantril ladder	(2) Positive affect	(3) Negative affect	(4) Happiness	(5) Stress
Living with children under 15	-0.0814*** (0.00966)	-0.658*** (0.143)	1.161*** (0.148)	0.00663*** (0.00243)	0.0150*** (0.00240)
Male	-0.159*** (0.00864)	-0.0792 (0.129)	-2.323*** (0.133)	-0.0145*** (0.00222)	-0.0227*** (0.00215)
Age	-0.0142 (0.00928)	-0.525*** (0.138)	0.361** (0.144)	-0.00798*** (0.00236)	0.00807*** (0.00229)
Age squared divided by 100	0.00608 (0.0116)	0.460*** (0.173)	-0.274 (0.181)	0.00679** (0.00297)	-0.00995*** (0.00287)
Partnered	0.240*** (0.0104)	2.504*** (0.153)	-2.708*** (0.159)	0.0589*** (0.00263)	-0.0209*** (0.00255)
Log HH income	0.300*** (0.00523)	2.345*** (0.0629)	-1.967*** (0.0644)	0.0323*** (0.00110)	-0.0156*** (0.000975)
Completed secondary school	0.442*** (0.0114)	3.934*** (0.161)	-2.546*** (0.174)	0.0465*** (0.00275)	-0.00997*** (0.00268)
Completed tertiary school	0.853*** (0.0149)	7.970*** (0.214)	-4.233*** (0.226)	0.0741*** (0.00364)	-0.00468 (0.00365)
<i>N</i>	217046	214068	209659	185838	207930

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of various measures of subjective wellbeing on living with children under 15. All regressions also include controls for labour-force status, religion, year dummies and country dummies.

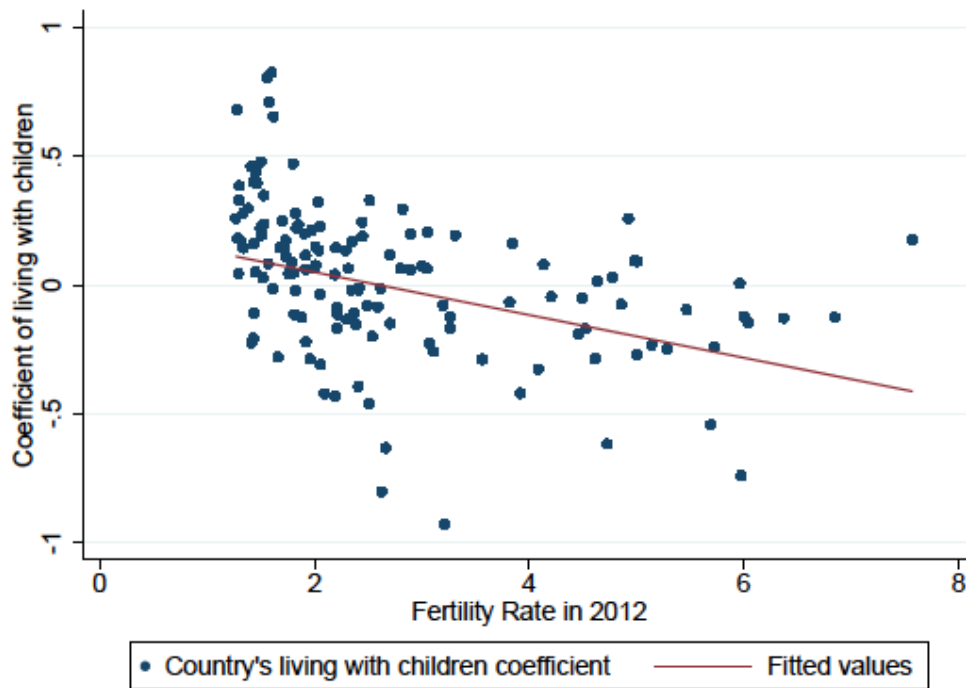
Sample: Gallup (2009-2013), 163 countries. All individuals are aged between 30 and 50.

3.2 The association between children and happiness depends on fertility and income

There are many different countries in the Gallup data, which differ of course over a variety of dimensions. One useful dimension to consider here in the context of the current paper is the country fertility rate itself. In particular, we can run the regression in column 1 of Table 1 using 2012 data only, separately for each country, and plot the estimated coefficient on having a child at home against the country fertility rate. As the regressions are OLS here, the estimated coefficients are the marginal effects, and can be compared across regressions.

When there are no other controls in the regression, we obtain Figure 2. Individuals in countries with high fertility rates (these are usually countries with lower GDP per capita) report significantly lower wellbeing when they have children at home. This is a first suggestion that the relationship between wellbeing and children may well be moderated by other variables.

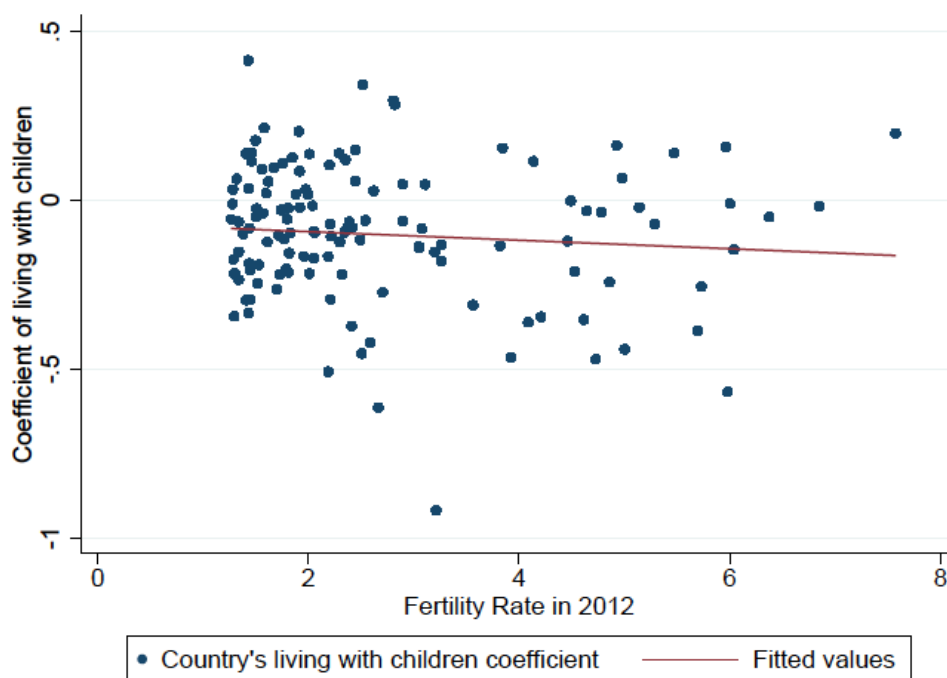
Figure 2: The effect of children at home on the Cantril ladder, by fertility rate. Gallup data, 2012



Each point corresponds to the coefficient of living with children in a country-specific OLS regression of life satisfaction on living with children (without controls) in 2012. Each country's fertility rate data comes from the World Bank. Sample: Gallup (2012), 163 countries, no age restriction.

When we add column 1's other controls, we obtain the regression line in Figure 3. This is much flatter than that in Figure 2, suggesting that some of these controls explain a considerable part of the relationship between children and wellbeing. In particular, the country-level controls here include PPP household income, which is strongly correlated with the fertility rate, as noted above. This leads us to ask whether income is a key moderator in the regression: Are children associated with greater subjective wellbeing, if you can afford to have them?

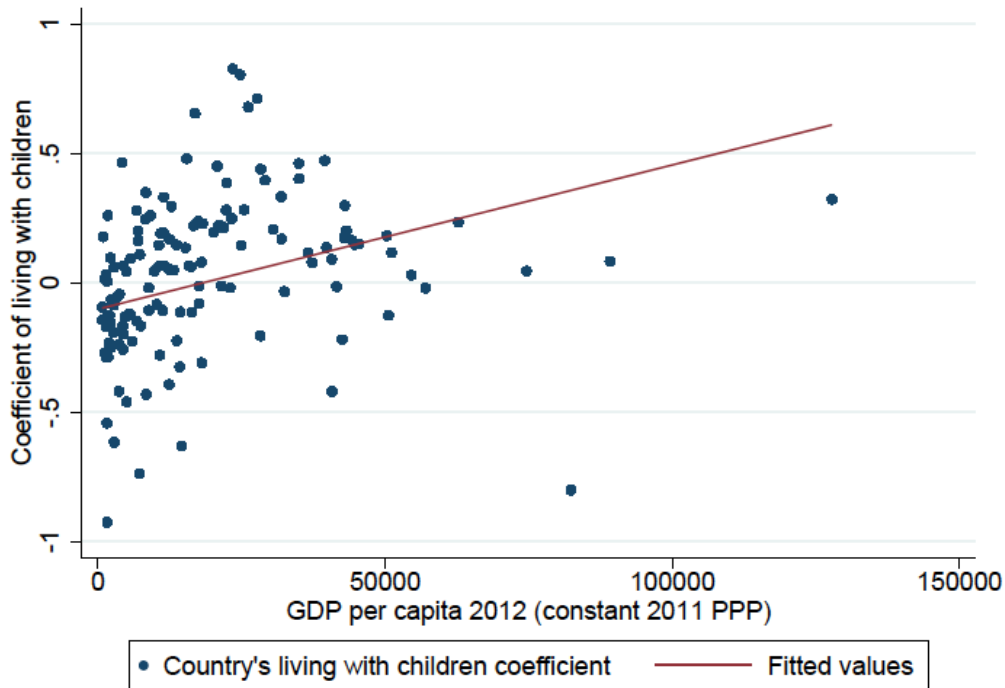
Figure 3: The effect of children at home on the Cantril ladder, by fertility rate, with controls. Gallup data, 2012



Each point corresponds to the coefficient of living with children in a country-specific OLS regression of life satisfaction on living with children (with controls for gender, partnership, age, age squared, log household income, educational level, labour-force status dummies and religion dummies) in 2012. Each country's fertility rate data comes from the World Bank. Sample: Gallup (2012), 163 countries, no age restriction.

Following on from the above, we consider the relationship between children and wellbeing as a function of country development and income. Figure 4 below shows that the impact of having children on the Cantril ladder becomes more positive as country GDP per capita rises. In particular, the regression line suggests that the relationship between children and wellbeing changes from being negative to positive at a GDP level of around 20 000 Dollars.

Figure 4: The effect of children at home on the Cantril ladder, by GDP per capita. Gallup data, 2012

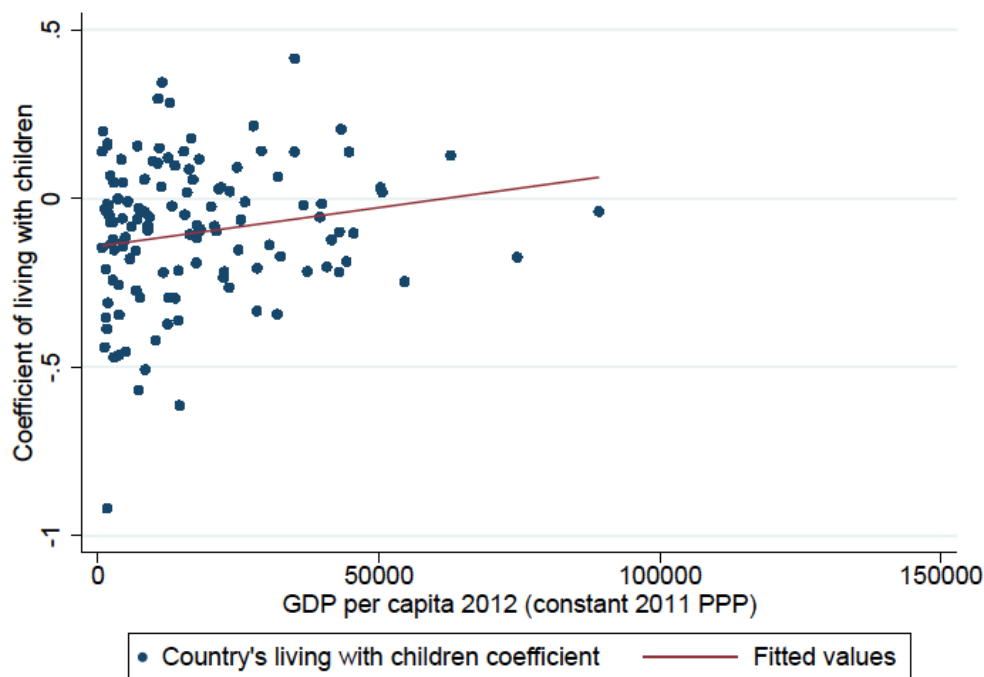


Each point corresponds to the coefficient of living with children in a country-specific OLS regression of life satisfaction on living with children (without controls), depending on GDP per capita in 2012, purchasing power parity (with constant 2011 international dollars). Data on GDP per capita come from the World Bank. Sample: Gallup (2012), 163 countries, no age restriction.

Unlike the fertility-rate relationship in Figures 2 and 3, the above slope is only somewhat muted by the introduction of the standard demographic controls, as shown in Figure 5, suggesting that income is indeed the key moderator in the children and wellbeing relationship.¹¹

¹¹ In Figure 5, there is one point missing: Qatar, in which the religion questions are not asked.

Figure 5: The effect of children at home on the Cantril ladder, by GDP per capita. Gallup data, 2012.
With controls



Each point corresponds to the coefficient of living with children in a country-specific OLS regression of life satisfaction on living with children (with controls for gender, partnership, age, age squared, log household income, educational level, labour-force status dummies, and religion dummies) in 2012, depending on GDP per capita in 2012, purchasing power parity (with constant 2011 international dollars). Data on GDP per capita come from the World Bank. Sample: Gallup (2012), 163 countries, no age restriction.

Splitting the Gallup sample into developing and developed countries makes things even clearer. Doing so reveals that the impact of children varies sharply depending on countries' level of development. If we restrict the sample to developing countries (i.e. Latin America, the Middle East, Africa, South East Asia, South Asia, East Asia, except Japan), the impact of children on every subjective wellbeing measure is very negative in a regression analysis on those aged from 30 to 50: see the top panel of Table 2. The bottom panel of Table 2 shows the same regression, but this time on the sample of developed countries: in Gallup data (these cover the European Union, US, Canada, Japan, Australia and New Zealand), the impact of children at home on wellbeing is more often positive. In particular, there is no evidence that children reduce the Cantril ladder or positive affect, and the correlation with happiness is positive in the developed-country sample. However, parenthood does remain correlated with negative affect (although only with an estimated coefficient that is half the size of that in the developing-country sample). Last, it is worth noting that the positive correlation between children and stress seems to be universal, with a similar coefficient in the top and bottom panels of Table 2.

We can confirm the mostly positive relationships in the bottom half of Table 2 by using European data from the ESS, as described in Section 2.2. The results in Table 3 below reveal that all significant correlations point to greater wellbeing of those with children, or children at home.

Table 2: Subjective wellbeing and children at home. Developed v. developing countries, ages 30-50. Gallup data

	(1) Cantril ladder	(2) Positive affect	(3) Negative affect	(4) Happiness	(5) Stress
<i>Gallup, developing countries only, ages 30-50</i>					
Living with children under 15	-0.147*** (0.0128)	-1.255*** (0.182)	1.543*** (0.196)	-0.0103*** (0.00306)	0.0149*** (0.00308)
<i>N</i>	143444	140431	136022	126878	134981
<i>Gallup, developed countries only, ages 30-50</i>					
Living with children under 15	0.0315* (0.0181)	0.192 (0.283)	0.706** (0.292)	0.0386*** (0.00468)	0.0199*** (0.00521)
<i>N</i>	44812	44590	44590	37524	44435

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of various measures of subjective wellbeing on living with children under 15. All regressions also include all the controls of Table 1.

Sample: Gallup (2009-2013), developed countries (European Union, Japan, US, Canada, New Zealand and Australia), developing countries (South Asia, East Asia, South-East Asia, Latin America, Middle East, North Africa, Sub-Saharan Africa, excluding Japan). All individuals are aged between 30 and 50.

Table 3: Subjective wellbeing, children and children at home. Regression results, ages 30-50. ESS data.

	(1) Life Sat.	(2) Life Sat.	(3) Happy	(4) Happy	(5) Positive	(6) Positive	(7) Negative	(8) Negative
Having children	0.0229 (0.0234)		0.129*** (0.0205)		0.0141 (0.0186)		0.0245* (0.0141)	
Living with children		0.0810*** (0.0208)		0.160*** (0.0181)		0.0226 (0.0170)		-0.0158 (0.0129)
<i>N</i>	53433	53793	53466	53822	9050	9063	8609	8638

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of various measures of subjective wellbeing (life satisfaction, happiness, positive affect and negative affect.) on fertility. All regressions include controls as described in Section 2.2.

Sample: 6 ESS waves (2002-2012) of Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Sweden and Slovenia. All individuals are aged between 30 and 50.

An alternative to Table 2 is to include an interaction between children at home and a developing-country dummy in the Gallup data. This interaction term attracts a negative and statistically significant estimated coefficient in the Cantril ladder, positive affect and happiness regressions; it is positive and significant for negative affect, and statistically insignificant only for stress (as was suggested in Table 2 above).¹² The relationship between living with children and subjective wellbeing is thus more negative for individuals who live in developing countries. The analysis in the following sub-section will show that there are also differences within developed countries, and in particular that younger parents do less well.

¹² These results are available on request.

3.3 Having children at the “right time” (not before age 30)

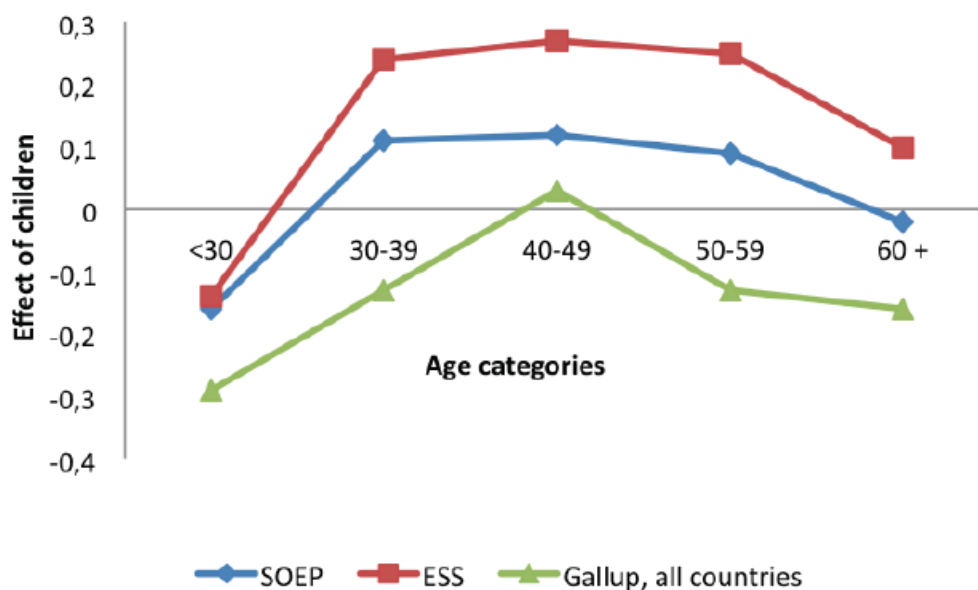
The results in the bottom panel of Table 2 (for developed countries in Gallup) and Table 3 (for European countries in ESS) above revealed a positive relationship between having children (or having children at home) and life satisfaction for individuals aged from 30 to 50. There is thus some suggestion that children are more likely to make you happy if you have sufficient resources. We now suggest that it is not only resources that matter, but also the age at which individuals have their children. In particular, the data suggest that the relationship between children and subjective wellbeing is more positive for those who have children after the age of 30.

It is worth underlining that these two conditions are related, as the relatively richer are on average older than the relatively poorer. They do however seem to be distinct, in that controlling for income does not completely wipe out the age effect.

We here regress life satisfaction on the presence of children and dummies for age categories in a number of different datasets, with the omitted category being those under the age of 30. We also include interactions between children and age category. We show that the interactions of age category and children attract positive and significant estimated coefficients. Appendix Tables 6 to 10 present the regression results.

We use three datasets: the SOEP (from 1984 to 2012), the ESS (the sample of 16 European countries) and the Gallup World Poll (all countries, developing countries, and developed countries). The subjective wellbeing variable is life satisfaction on a 0 to 10 scale in all cases. We progressively add a number of controls. The first column in each table includes only year dummies (and country or world region dummies in the ESS and Gallup), while the second column adds controls for gender, marital status and household income. The third column includes the full set of controls. All of the coefficients on the age*children interaction terms can be seen to fall in size when income is introduced as a control, but do remain positive and significant. This suggests that age and income act separately here. The graph below sums up the main results.

Figure 6: Relationship between children and life satisfaction by age windows



OLS regressions of life satisfaction on fertility and fertility interacted with age categories. Individuals under 30 are the omitted category. Each point corresponds to the sum of the coefficient of the fertility measure (having children in SOEP and ESS, and living with children under 15 in Gallup) and the coefficient of a factor term interacting fertility and the relevant age category. All regressions include year dummies. These results are obtained from the column 1 of Appendix Tables 6, 7 and 8. Samples: SOEP (1984-2012); Gallup (2006-2013), 163 countries; ESS (2002-2012), 16 European countries.

The broad story that emerges from this analysis is consistent across the three datasets. With few controls, children are positively correlated with life satisfaction, except for parents under the age of 30, for whom the correlation is negative. With the addition of the variety of different controls as discussed above, the conclusion remains that children are negatively correlated with life satisfaction for younger parents, with the correlation for older parents mostly being statistically insignificant.

3.4 Selection into Parenthood (SOEP)

Our last analysis of the relationship between parenthood and subjective wellbeing appeals to the fact that having children is not a random event. Different kinds of individuals may be more likely to become parents. As such, comparing the life satisfaction of parents to non-parents may not be comparing like with like. The analysis here is along the same lines as Stutzer and Frey (2006), who show that most of the subjective wellbeing difference between the married and the non-married reflects that those with higher initial subjective wellbeing are more likely to become married in the first place.

We would like to know whether parents are a particular group, in terms of subjective wellbeing, even before they gave birth to their first child. As in Stutzer and Frey (2006), our empirical strategy here is then to appeal to panel data (the SOEP), so as to compare two groups of people who do not currently have children. The first group will subsequently have children later on in their lives, while the second group never has children.

To carry out this analysis we focus on a cohort of individuals who have completed their fertility cycle in 2012. The SOEP data enables us to track these people 29 years backwards. We thus create a first “large” sample of men and women who are aged from 45 to 60 in 2012 (most people have completed their fertility by 2012) and have been present in the panel for a minimum of 23 years and up to a

maximum of 29 years. In this sample, 270 individuals never had children (7334 observations) and 1153 individuals already have or will have children (30,387 observations). The more detailed composition of the sample is described in Table 4 below. The descriptive statistics of this sample appear in Appendix Table 11.

Table 4: Composition of the large sample used to study selection into parenthood. SOEP data.

	Individuals born between 1952 and 1967 who are childless in 2012	Individuals born between 1952 and 1967 who already have or will have children	Number of observations
Present between 23 and 29 years	270	1153	37721
<i>Of which present for exactly</i>			
23 years	63	415	10994
24 years	7	31	912
25 years	3	23	650
26 years	10	35	1170
27 years	10	46	1512
28 years	21	116	3836
29 years	156	487	18647

Sample: SOEP 1984-2012, large sample of men and women born between 1952 and 1967, thus aged 45 to 60 by 2012 (last year of the panel), and who were present at least 23 waves in the panel.

As a robustness check, we also consider two smaller samples: the first is composed of men and women aged 50 to 60 in 2012, and who have been present in the panel for a minimum of 23 years. In this sample there are 4513 observations on 166 individuals who never have children, and 21,169 observations on 804 individuals who did have children.

As some men may have their first child after the age of 45 or 50, we also consider another sample composed of women only, aged from 45 to 60 in 2012, and who have been present in the panel for a minimum of 23 years. This sample contains 2405 observations on 90 women who will never have children, and 17,418 observations on 663 women who already have or will have children.

The figures below illustrate the flavour of our results regarding selection into parenthood. They plot the evolution of life satisfaction over time for the three groups of people in the first “large” sample:

1. Individuals who will always remain childless;
2. Individuals who do not have children now, but will have children later on; and
3. Individuals who currently have children in the year under consideration.

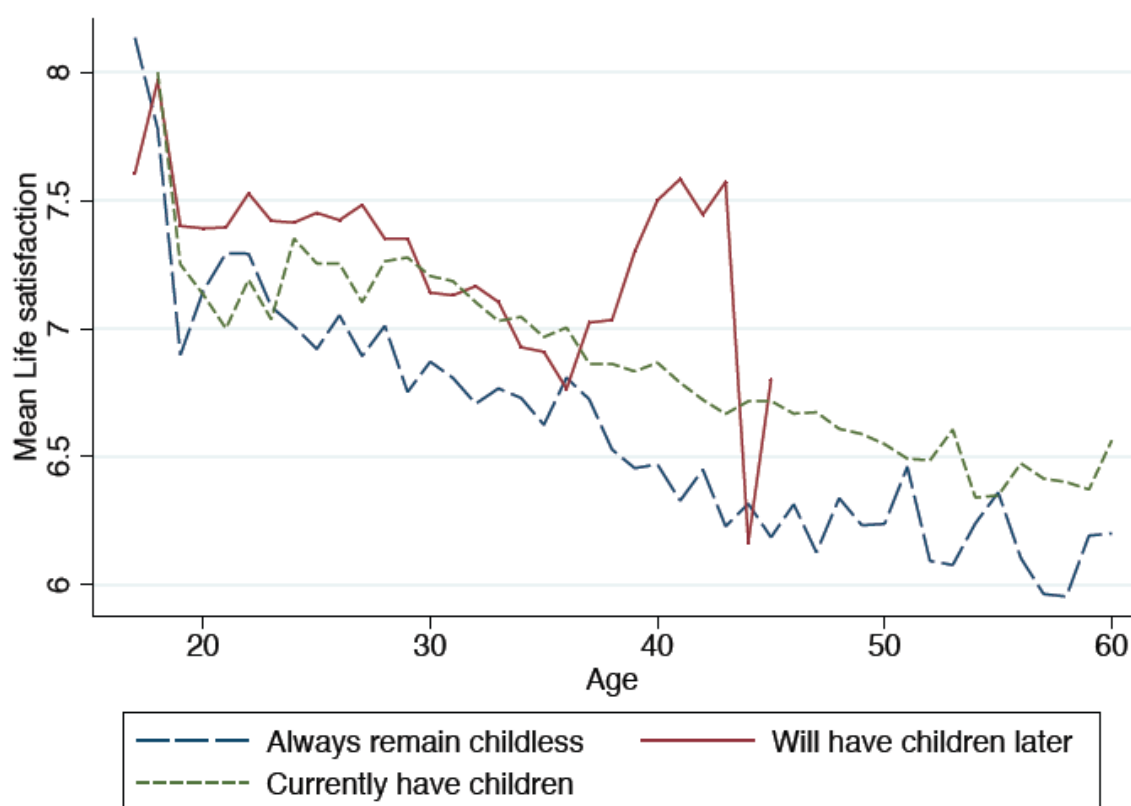
The first group always contains the same individuals in all years, while individuals who have children at some point move from the second to the third category when they become parents for the first time. In the first “large” sample, at age 25, there are 266 individuals who will have children later, and 189 who already have children; by age 35, there are 66 individuals who will have children later and 1002 who already have children.¹³

¹³ These numbers do not add up to the total number of individuals in the sample who will have children, as it is not possible to go far enough back in time to cover every individual’s full fertility history. For instance, the sample includes individuals who are aged 60 in 2012 and who have been present for 23 waves: they thus appear for the first time in our sample when they are aged 38.

The numbers in Figure 7 show the mean value of life satisfaction by age for each of these three groups; Figure 8 shows the same three groups but this time with life satisfaction conditional on the full set of control variables described in Section 2.3 (excluding the control variables related to presence and number of children, of course): we thus condition on age, age squared, gender, marital status, log household income, education, labour-force status and wave.

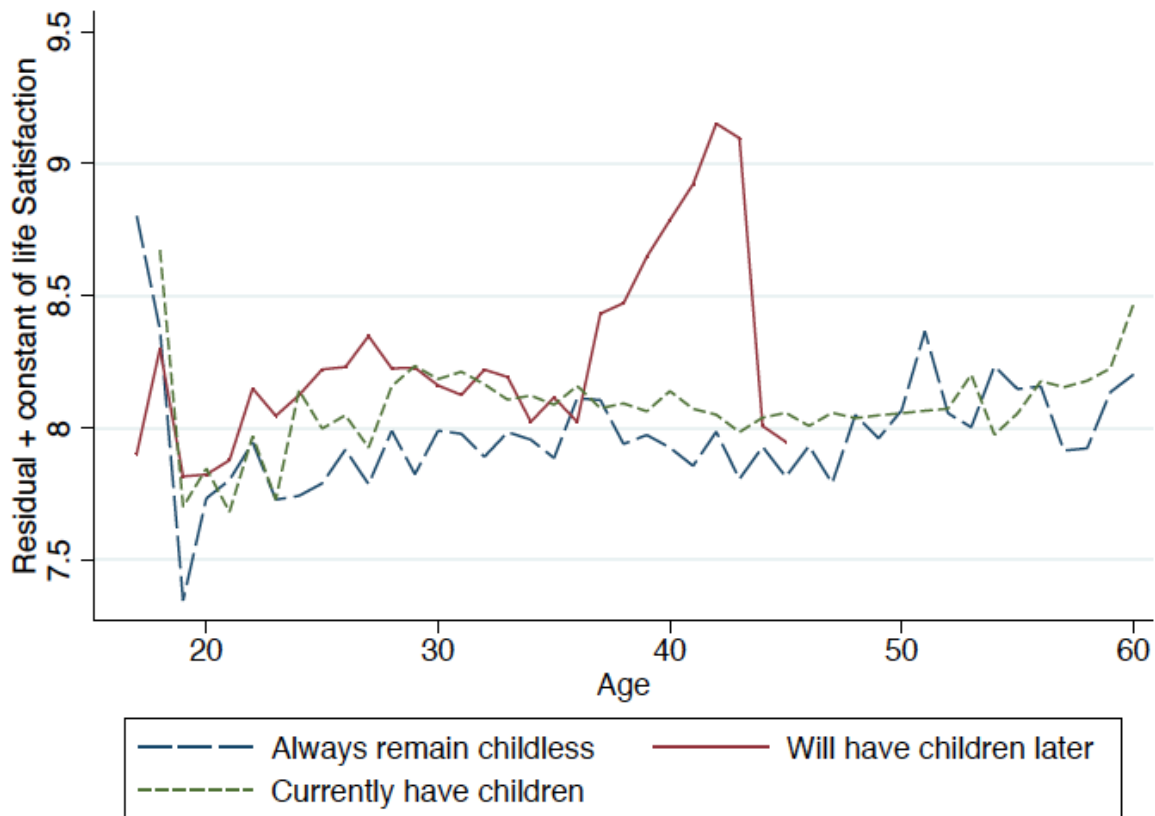
Both Figures suggest that there is positive selection into parenthood, in terms of life satisfaction. In Figure 7, the blue line (always remain childless) is almost always below the green line (currently have children), except for a brief period when the individuals are in their early 20's (which ties up with the analysis regarding the wellbeing effects of early parenthood in Section 3.3 above). Equally, the blue line is almost always below the red line (for those who will become parents later on).

Figure 7: Life satisfaction and ever fertility: Raw data. SOEP



Sample: SOEP (1984-2012), individuals who are aged 45 to 60 by 2012 (last year of the panel) and who were present at least 23 waves.

Figure 8: Life satisfaction and ever fertility: Including control variables. SOEP



Group specific residuals from one OLS regression of life satisfaction on gender, age, age squared, partnership, log household income, years of education, employment status and year dummies. The constant of the regression is added to the residuals. Sample: SOEP (1984-2012), individuals who are aged 45 to 60 by 2012 (last year of the panel) and who were present at least 23 waves.

The regression versions of this analysis of selection into parenthood for the large sample appear in Appendix Table 12. We estimate the probability of ever having a child. The main explanatory variable is a dummy for being satisfied with life before giving birth to the first child. An individual is in the “satisfied” category if her average life satisfaction, before becoming a parent, was greater than 7. We progressively add a variety of control variables. In the first column, we only control for year fixed-effects. Column 2 adds the exogenous variables of sex and age, while column 3 includes the full set of controls. As can be seen, being satisfied with life is positively correlated with future parenthood, with the size of the raw effect in column (1) being attenuated by about 25-30% by the controls. These results can be reproduced on the more conservative sample (of those aged 50-60 in 2012) with no qualitative change in the results. The results for the sample of women only are also displayed in Appendix Table 13 and are similar to the results for men and women together, although the coefficients are slightly smaller in magnitude.

These first regressions do not distinguish between individuals who will have children soon and those who will only have their children much later on. As such, the estimated coefficients in Appendix Table 12 and 13 pick up two associated effects: (i) Selection into parenthood, with individuals with higher subjective wellbeing being more likely to become parents; and (ii) Anticipation effects, with individuals recording higher subjective wellbeing because they expect to become parents (see Clark *et al.*, 2008, and Clark and Georgellis, 2013, for example). Our second set of regressions aims at disentangling selection and anticipation effects by excluding individuals who will have children within the next two years from the sample.

The results appear in Appendix Table 14 for the large sample and Appendix table 15 for women only. Removing individuals who will have their first child within the next two years does attenuate the estimated coefficients slightly, but these remain positive and statistically significant: those with higher life satisfaction are more likely to become parents later.

The ESS data is not panel, so that we cannot trace backwards the previous life satisfaction of those who ended up (or not) having children. We can however use some prospective information regarding future plans to have children.¹⁴ Appendix Table 16 shows that those with higher current levels of life satisfaction are more likely to plan to have children within the next three years.

3.5 Do children make happy people happier?

Finally, to close the circle, we would like to know what happens to people once they have children, conditional on their initial predisposition to happiness. In other words, we know that happier people are more likely to have children in the future, but what happens once they do? Does this raise their wellbeing even more? And what happens to people who initially had medium or low levels of life satisfaction once they have children?

We focus on people who experience their first childbirth during the time span of the SOEP panel (66,501 observations, 4128 individuals). We compute the average life satisfaction of these individuals over the years before they give birth to their first child. We then create two samples: the first is constituted of “satisfied” people before they had children, i.e. their average life satisfaction over the years before becoming a parent was over 7 (42,809 observations, 2629 individuals); the second comprises all people with lower initial life satisfaction (23,681 observations, 1491 individuals).¹⁵

We then estimate the impact of childbirth on life satisfaction for each group. It turns out that the coefficient on having children is negative for people who were satisfied with their lives before becoming a parent, while it is positive for people who were less satisfied with their lives. Appendix Table 17 shows the result in the form of a regression of life satisfaction on having children, being satisfied with life before becoming a parent, and a factor term interacting both variables. The interaction term is negative and significant.

Hence, the positive association between parenthood and life satisfaction that we uncovered in certain circumstances seems to be entirely due to self-selection. Happier people are more likely to have children, but the occurrence of the event does not push their life satisfaction higher. If anything, the birth of a child is less conducive to happiness for this category than for less happy people.

3.6 A different type of self-selection depending on the degree of development

How can we reconcile the idea of positive self-selection into parenthood (in Germany) with the general negative association between parenthood and subjective wellbeing? A closer look at the cross-country data shows that the nature of selection seems to depend on the country’s level of development.

Going back to Table 1, column 1 shows the estimated coefficient on “living with children under 15” in a life satisfaction regression in all Gallup World Poll countries, which is -0.08. This is three times

¹⁴ We create a dummy variable for individuals answering “Definitely yes” to the question “*Do you plan to have children within the next three years*”. This variable is available in 2004 and 2010, and is only asked to those aged under 45.

¹⁵ The numbers of individuals in both samples do not add up to 4128 because 8 individuals did not produce valid life satisfaction answers, and thus could not be assigned to the “satisfied” or “less satisfied” groups.

smaller in magnitude than the coefficient obtained in a regression without controls. Over all countries then, individuals who have children have observable characteristics that are less favourable to wellbeing. When we restrict the Gallup World Poll dataset to developing countries, the coefficient on “living with children under 15” is -0.26 without controls, which is halved with controls (see Table 2). Conversely, the reverse holds in developed countries. In Table 3, based on the ESS (16 European countries), the coefficient on “having children” in the life satisfaction regression is 0.18 without controls, and ten times smaller with controls.

These data patterns are then consistent with selection into parenthood, with this selection being negative in developing countries but positive in developed countries.

4. Conclusions

In this paper we have considered the correlations between children and subjective wellbeing. We have argued that some sense can be made of the divergent findings in the existing literature by distinguishing when, where and for whom children are positively associated with subjective wellbeing. Parenthood is associated with lower wellbeing in developing countries, but not in richer ones. The birth of a child is associated with higher subjective wellbeing only for parents aged over 30, in developed countries. The positive association that is commonly found between parenthood and subjective wellbeing in developed countries essentially reflects self-selection, whereby wealthier people are both more likely to become parents and to be happy.

We further document this self-selection phenomenon by analysing the wellbeing of a cohort of future parents or nonparents, whom we are able to follow for 30 years until they reach the age when they have completed their fertility, in 2012. Years before the event, those who are destined to become parents were already happier than those who will never have children. This holds even two or more years before childbirth, thus avoiding anticipation effects. When individuals do have children, those who started with higher baseline happiness see their subjective wellbeing decline (whereas the opposite is true for people with low or medium baseline happiness).

Hence, when parenthood is a choice (in developed countries), this decision is associated with increased happiness, under certain conditions of age and affluence. However, outside these favourable conditions, it is not always utility-maximising. Moreover, when it exists, the positive association is largely due to self-selection into parenthood rather than to the causal impact of parenthood on happiness. Overall, the issue of parenthood and subjective wellbeing is a good illustration of the possibility of using subjective data to examine heterogeneity in preferences. It also illustrates the necessity of taking a step back with respect to the spontaneous interpretation of the correlates of happiness as representing the sources of happiness.

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Appendix

Table A.1: Gallup, summary statistics, all countries, all ages

Variable	Mean	Std. Dev.	Min.	Max.	N
Subjective wellbeing					
Cantril ladder	5.5	2.2	0	10	1175606
Positive affect	68.2	29.0	0	100	1160066
Negative affect	25.9	28.8	0	100	1136094
Happiness	0.70	0.46	0	1	822249
Stress	0.29	0.45	0	1	1042233
Fertility					
Living with children under 15	0.53	0.50	0	1	1113773
Demographic characteristics					
Developed country	0.22	0.42	0	1	1199609
Developing country	0.64	0.48	0	1	1199609
Male	0.46	0.5	0	1	1199587
Age	40.6	17.6	15	100	1196308
Age under 20	0.1	0.3	0	1	1196308
Age 20-29	0.23	0.42	0	1	1196308
Age 30-39	0.2	0.4	0	1	1196308
Age 40-49	0.43	0.5	0	1	1196308
Age 50-59	0.06	0.23	0	1	1196308
Age over 60	0.17	0.38	0	1	1196308
Partnered	0.58	0.49	0	1	1167154
Household income	15724	24502	0	4548485	924262
Low educational level	0.33	0.47	0	1	1106697
Completed secondary school	0.52	0.5	0	1	1106697
Completed tertiary school	0.15	0.36	0	1	1106697
Self employed	0.13	0.33	0	1	762628
Employed	0.27	0.44	0	1	762628
Part-time	0.07	0.26	0	1	762628
Part-time want full time	0.06	0.25	0	1	762628
Unemployed	0.06	0.24	0	1	762628
Out of the labor force	0.41	0.49	0	1	762628
Catholic	0.25	0.43	0	1	999702
Protestant	0.14	0.35	0	1	999702
Orthodox	0.08	0.28	0	1	999702
Muslim	0.29	0.46	0	1	999702
Hinduist	0.04	0.19	0	1	999702
Buddhist	0.05	0.22	0	1	999702
Jewish	0.006	0.08	0	1	999702

Sample: Gallup (2006-2013), 163 countries. No age restriction.

Table A.2: Gallup, summary statistics, all countries, age 30-50

Variable	Mean	Std. Dev.	Min.	Max.	N
Subjective wellbeing					
Cantril ladder	5.4	2.2	0	10	463460
Positive affect	67.3	29.2	0	100	456224
Negative affect	27.0	29.3	0	100	445829
Happiness	0.70	0.46	0	1	323883
Stress	0.32	0.47	0	1	409465
Fertility					
Living with children under 15	0.68	0.47	0	1	438091
Demographic characteristics					
Developed country	0.20	0.40	0	1	471952
Developing country	0.67	0.47	0	1	471952
Male	0.46	0.5	0	1	471948
Age	39.4	6.16	30	50	471952
Age 30-39	0.51	0.5	0	1	471952
Age 40-49	0.43	0.5	0	1	471952
Age 50-59	0.06	0.23	0	1	471952
Partnered	0.77	0.42	0	1	459072
Household income	16968	25053	0	1200000	374000
Low educational level	0.31	0.46	0	1	435087
Completed secondary school	0.51	0.5	0	1	435087
Completed tertiary school	0.18	0.38	0	1	435087
Self employed	0.17	0.38	0	1	299269
Employed	0.37	0.48	0	1	299269
Part-time	0.07	0.26	0	1	299269
Part-time want full time	0.08	0.26	0	1	299269
Unemployed	0.06	0.23	0	1	299269
Out of the labor force	0.25	0.43	0	1	299269
Catholic	0.23	0.42	0	1	388510
Protestant	0.13	0.33	0	1	388510
Orthodox	0.08	0.27	0	1	388510
Muslim	0.32	0.47	0	1	388510
Hinduist	0.04	0.21	0	1	388510
Buddhist	0.06	0.23	0	1	388510
Jewish	0.01	0.08	0	1	388510

Sample: Gallup (2006-2013), 163 countries. All individuals are aged between 30 and 50.

Table A.2: Gallup, summary statistics, all countries, age 30-50

Variable	Mean	Std. Dev.	Min.	Max.	N
Subjective wellbeing					
Cantril ladder	5.4	2.2	0	10	463460
Positive affect	67	29	0	100	456224
Negative affect	27	29	0	100	445829
Happiness	0.70	0.46	0	1	323883
Stress	0.32	0.47	0	1	409465
Fertility					
Living with children under 15	0.68	0.47	0	1	438091
Demographic characteristics					
Male	0.46	0.5	0	1	471948
Age	39.4	6.16	30	50	471952
Age 30-39	0.51	0.5	0	1	471952
Age 40-49	0.43	0.5	0	1	471952
Age 50-59	0.06	0.23	0	1	471952
Partnered	0.77	0.42	0	1	459072
Household income	16968	25053	0	1200000	374000
Low educational level	0.31	0.46	0	1	435087
Completed secondary school	0.51	0.5	0	1	435087
Completed tertiary school	0.18	0.38	0	1	435087
Self employed	0.17	0.38	0	1	299269
Employed	0.37	0.48	0	1	299269
Part-time	0.07	0.26	0	1	299269
Part-time want full time	0.08	0.26	0	1	299269
Unemployed	0.06	0.23	0	1	299269
Out of the labor force	0.25	0.43	0	1	299269
Catholic	0.23	0.42	0	1	388510
Protestant	0.13	0.33	0	1	388510
Orthodox	0.08	0.27	0	1	388510
Muslim	0.32	0.47	0	1	388510
Hinduist	0.04	0.21	0	1	388510
Buddhist	0.06	0.23	0	1	388510
Jewish	0.01	0.08	0	1	388510

Sample: Gallup (2006-2013), 163 countries. All individuals are aged between 30 and 50.

Table A.3: ESS, summary statistics, all 16 European Countries, all ages

Variable	Obs	Mean	Std. Dev.	Min	Max
Subjective wellbeing					
Life satisfaction	183454	7.1	2.2	0	10
Happiness	183447	7.5	1.9	0	10
Positive affect	31317	2.8	.68	1	4
Negative affect	28226	1.68	.53	1	4
Fertility					
Having children	180303	.68	.47	0	1
Living with children	183614	.37	.48	0	1
Demographic characteristics					
Male	183982	.47	.5	0	1
Age	183477	47.8	18.6	14	123
Age under 20	183477	.06	.24	0	1
Age 20-29	183477	.14	.34	0	1
Age 30-39	183477	.17	.37	0	1
Age 40-49	183477	.18	.38	0	1
Age 50-59	183477	.17	.37	0	1
Age over 60	183477	.29	.45	0	1
Married	181312	.53	.5	0	1
Widowed	181312	.09	.28	0	1
Divorced	181312	.09	.29	0	1
Household Income	147685	2675	2393	99	19027
Years of education	182397	12.2	4.2	0	56
Employed	181112	.35	.48	0	1
Self Employed	181112	.06	.25	0	1
Unemployed	184135	.06	.24	0	1
Out of the labor force	184135	.52	.5	0	1
Above median religiosity	182854	.41	.49	0	1

Sample: 6 ESS waves (2002-2012) of Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Sweden and Slovenia. No age restriction.

Table A.4: ESS, summary statistics, all 16 European Countries, age 30-50

Variable	Obs	Mean	Std. Dev.	Min	Max
Subjective wellbeing					
Life satisfaction	66125	7.1	2.1	0	10
Happiness	66148	7.5	1.8	0	10
Positive affect	10733	2.8	.67	1	4
Negative affect	10260	1.6	.51	1	4
Fertility					
Having children	65665	.77	.42	0	1
Living with children	66155	.67	.47	0	1
Demographic characteristics					
Male	66280	.48	.5	0	1
Age	66301	40.1	5.9	30	50
Age under 20	66301	0	0	0	0
Age 20-29	66301	0	0	0	0
Age 30-39	66301	.46	.5	0	1
Age 40-49	66301	.49	.5	0	1
Age 50-59	66301	.05	.21	0	1
Age over 60	66301	0	0	0	0
Married	65407	.62	.49	0	1
Widowed	65407	.01	.1	0	1
Divorced	65407	.11	.32	0	1
Household income	56195	3098	2530	99	19027
Years of education	65856	13.5	3.9	0	42
Employed	64951	.54	.5	0	1
Self-employed	64951	.1	.29	0	1
Unemployed	66301	.08	.27	0	1
Out of the labor force	66301	.29	.45	0	1
Above median religiosity	65899	.36	.48	0	1

Sample: 6 ESS waves (2002-2012) of Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Sweden and Slovenia. Individuals are aged 30 to 50.

Table A.5: SOEP Summary statistics, all ages

Variable	Obs	Mean	Std. Dev.	Min	Max
Life satisfaction	437532	7	1.8	0	10
Fertility					
Having children	442634	.63	.48	0	1
Living with children	442613	.33	.47	0	1
Demographic characteristics					
Male	442611	.44	.5	0	1
Age	442608	46.4	17.5	16	102
Age under 20	442608	.04	.2	0	1
Age 20-29	442608	.16	.37	0	1
Age 30-39	442608	.18	.39	0	1
Age 40-49	442608	.19	.4	0	1
Age 50-59	442608	.17	.37	0	1
Age over 60	442608	.25	.43	0	1
Partnered	442584	.62	.49	0	1
Household income	420153	2432	1771	0	200000
Years of education	425176	11.7	2.6	7	18
Employed	442602	.57	.49	0	1
Unemployed	442602	.05	.22	0	1
Out of the labor force	442602	.37	.48	0	1

Sample: SOEP 1984-2012, no age restriction.

Table A.6: Children by age windows. SOEP data

	(1)	(2)	(3)
Dependent variable: Life Satisfaction			
Having Children	-0.157*** (0.0147)	-0.106*** (0.0157)	-0.0688*** (0.0160)
Age 30-39	-0.302*** (0.0132)	-0.304*** (0.0132)	-0.341*** (0.0137)
Age 30-39 X Having children	0.268*** (0.0199)	0.0946*** (0.0199)	0.0968*** (0.0202)
Age 40-49	-0.482*** (0.0156)	-0.546*** (0.0157)	-0.551*** (0.0159)
Age 40-49 X Having children	0.281*** (0.0215)	0.0681*** (0.0215)	0.0493** (0.0217)
Age 50-59	-0.528*** (0.0156)	-0.579*** (0.0162)	-0.542*** (0.0165)
Age 50-59 X Having children	0.249*** (0.0220)	0.0702*** (0.0224)	0.0399* (0.0226)
Age over 60	-0.272*** (0.0123)	-0.148*** (0.0136)	-0.124*** (0.0147)
Age over 60 X Having children	0.136*** (0.0193)	0.0552*** (0.0201)	0.0263 (0.0205)
Male		-0.0566*** (0.00565)	-0.0672*** (0.00586)
Partnered		0.134*** (0.00749)	0.147*** (0.00755)
Log HH income		0.771*** (0.00607)	0.656*** (0.00650)
Years of education			0.0236*** (0.00112)
Labour-force status	No	No	Yes
<i>N</i>	437528	415520	399432

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of life satisfaction on having children and age groups interacted with having children. Controls are progressively added. All regressions include year dummies. The age category under 30 is omitted. Sample: SOEP (1984-2012).

No age restriction

Table A.7: Children by age windows. ESS data

	(1)	(2)	(3)
Dependent variable: Life Satisfaction			
Having children	-0.140*** (0.0292)	-0.208*** (0.0330)	-0.168*** (0.0333)
Age 30-39	-0.461*** (0.0230)	-0.511*** (0.0253)	-0.542*** (0.0254)
Age 30-39 X Having children	0.393*** (0.0380)	0.232*** (0.0408)	0.220*** (0.0411)
Age 40-49	-0.705*** (0.0304)	-0.700*** (0.0333)	-0.717*** (0.0332)
Age 40-49 X Having children	0.406*** (0.0425)	0.190*** (0.0457)	0.168*** (0.0458)
Age 50-59	-0.748*** (0.0334)	-0.715*** (0.0370)	-0.729*** (0.0368)
Age 50-59 X Having children	0.390*** (0.0449)	0.193*** (0.0484)	0.166*** (0.0484)
Age over 60	-0.353*** (0.0247)	-0.133*** (0.0303)	-0.217*** (0.0305)
Age over 60 X Having children	0.265*** (0.0379)	0.137*** (0.0420)	0.121*** (0.0421)
Male		-0.119*** (0.0105)	-0.0742*** (0.0107)
Log HH income		0.603*** (0.00878)	0.508*** (0.00921)
Years of education			0.0172*** (0.00145)
Marital status	No	Yes	Yes
Labour-force status	No	No	Yes
Religiosity	No	No	Yes
<i>N</i>	179187	142415	139116

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of life satisfaction on having children and age groups interacted with having children. Controls are progressively added. All regressions include year and country dummies. The age category under 30 is omitted. Sample: 6 ESS waves (2002-2012) of Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Sweden and Slovenia. No age restriction

Table A.8: Children by age windows, worldwide. Gallup data

	(1)	(2)	(3)
Dependent variable: Cantril ladder			
Living with children under 15	-0.289*** (0.00698)	-0.271*** (0.00795)	-0.285*** (0.00995)
Age 30-39	-0.263*** (0.0101)	-0.294*** (0.0113)	-0.338*** (0.0141)
Age 30-39 X Living with children	0.153*** (0.0122)	0.138*** (0.0133)	0.153*** (0.0165)
Age 40-49	-0.503*** (0.00938)	-0.492*** (0.0106)	-0.466*** (0.0133)
Age 40-49 X Living with children	0.324*** (0.0120)	0.251*** (0.0130)	0.232*** (0.0161)
Age 50-59	-0.560*** (0.00865)	-0.551*** (0.0100)	-0.552*** (0.0123)
Age 50-59 X Living with children	0.158*** (0.0135)	0.184*** (0.0147)	0.252*** (0.0180)
Age over 60	-0.653*** (0.00793)	-0.514*** (0.00930)	-0.459*** (0.0118)
Age over 60 X Living with children	0.132*** (0.0143)	0.097*** (0.0157)	0.182*** (0.0191)
Male		-0.0932*** (0.00435)	-0.118*** (0.00556)
Partnered		0.103*** (0.00507)	0.108*** (0.00622)
Log HH income		0.473*** (0.00258)	0.353*** (0.00312)
Completed secondary education			0.467*** (0.00697)
Completed tertiary education			0.819*** (0.00957)
Labour-force status	No	No	Yes
Religion	No	No	Yes
<i>N</i>	1093957	848679	545513

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of the Cantril ladder on living with children under 15 and age groups interacted with living with children under 15. Controls are progressively added.

The age category under 30 is omitted. All regressions also include year dummies and 12 world region dummies. Labour-force status variables are only available since 2009 Sample: Gallup (2006-2013), 163 countries. No age restriction.

Table A.9: Children by age windows, developing countries. Gallup data

	(1)	(2)	(3)
Dependent variable: Cantril ladder			
Living with children under 15	-0.205*** (0.00810)	-0.201*** (0.00910)	-0.171*** (0.0116)
Age 30-39	-0.228*** (0.0126)	-0.216*** (0.0140)	-0.198*** (0.0181)
Age 30-39 X Living with children	0.0730*** (0.0146)	0.0654*** (0.0160)	0.0559*** (0.0204)
Age 40-49	-0.406*** (0.0126)	-0.361*** (0.0142)	-0.263*** (0.0186)
Age 40-49 X Living with children	0.142*** (0.0151)	0.115*** (0.0165)	0.0619*** (0.0213)
Age 50-59	-0.485*** (0.0125)	-0.421*** (0.0142)	-0.333*** (0.0183)
Age 50-59 X Living with children	0.124*** (0.0169)	0.117*** (0.0184)	0.12*** (0.0232)
Age over 60	-0.588*** (0.0124)	-0.421*** (0.0141)	-0.293*** (0.0182)
Age over 60 X Living with children	0.169*** (0.0178)	0.0864*** (0.0197)	0.0799*** (0.0243)
Male		-0.0955*** (0.00528)	-0.114*** (0.00707)
Partnered		0.0250*** (0.00636)	0.0386*** (0.00798)
Log HH income		0.344*** (0.00305)	0.257*** (0.00359)
Completed secondary education			0.460*** (0.00811)
Completed tertiary education			0.832*** (0.0132)
Labour-force status	No	No	Yes
Religion	No	No	Yes
<i>N</i>	692513	558337	345059

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of the Cantril Ladder on living with children under 15 and age groups interacted with living with children under 15. Controls are progressively added.

The age category under 30 is omitted. All regressions also include year and country dummies. Labour-force status variables are only available since 2009.

Sample: Gallup (2006-2013), developing countries (South Asia, East Asia, South-East Asia, Latin America, Middle East, North Africa, Sub-Saharan Africa, excluding Japan). No age restriction.

Table A.10: Children by age windows, developed countries. Gallup data

	(1)	(2)	(3)
Dependent variable: Cantril ladder			
Living with children under 15	-0.0657*** (0.0181)	-0.194*** (0.0244)	-0.128*** (0.0315)
Age 30-39	-0.452*** (0.0179)	-0.531*** (0.0211)	-0.684*** (0.0257)
Age 30-39 X Living with children	0.277*** (0.0259)	0.192*** (0.0320)	0.160*** (0.0401)
Age 40-49	-0.623*** (0.0155)	-0.746*** (0.0189)	-0.845*** (0.0230)
Age 40-49 X Living with children	0.319*** (0.0244)	0.266*** (0.0305)	0.191*** (0.0384)
Age 50-59	-0.638*** (0.0135)	-0.782*** (0.0172)	-0.896*** (0.0209)
Age 50-59 X Living with children	0.0687** (0.0313)	0.109*** (0.0378)	0.0517 (0.0473)
Age over 60	-0.620*** (0.0121)	-0.583*** (0.0161)	-0.613*** (0.0208)
Age over 60 X Living with children	-0.0353 (0.0425)	-0.0237 (0.0527)	-0.0178 (0.0664)
Male		-0.137*** (0.00860)	-0.136*** (0.0105)
Partnered		0.272*** (0.0103)	0.255*** (0.0122)
Log HH income		0.451*** (0.00858)	0.343*** (0.00970)
Completed secondary education			0.428*** (0.0200)
Completed tertiary education			0.780*** (0.0220)
Labour-force status	No	No	Yes
Religion	No	No	Yes
<i>N</i>	263890	182505	124918

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of the Cantril ladder on living with children under 15 and age groups interacted with living with children under 15. Controls are progressively added. The age category under 30 is omitted. All regressions also include year and country dummies. Labour-force status variables are only available since 2009.

Sample: Gallup (2006-2013), developed countries (European Union, Japan, US, Canada, New Zealand and Australia). No age restriction.

Table A.11: SOEP Summary statistics for the large sample used to study selection into parenthood

Variable	Obs	Mean	Std. Dev.	Min	Max
Life Satisfaction	37642	6.8	1.8	0	10
Fertility					
Having children	37721	.72	.45	0	1
Living with children	37719	.51	.5	0	1
Demographic characteristics					
Male	37717	.47	.5	0	1
Age	37717	39.38	9.09	17	60
Age under 20	37717	.01	.08	0	1
Age 20-29	37717	.15	.36	0	1
Age 30-39	37717	.34	.47	0	1
age 40-49	37717	.35	.48	0	1
Age 50-59	37717	.15	.35	0	1
Age over 60	37717	0	.04	0	1
Partnered	37717	.7	.46	0	1
Household Income	36409	2400	1319	0	30678
Years of education	37125	12.06	2.5	7	18
Employed	37717	.8	.4	0	1
Unemployed	37717	.05	.22	0	1
Out of the labor force	37717	.15	.35	0	1

Sample: SOEP 1984-2012, men and women aged 45 to 60 by 2012 (last year of the panel) and who were present at least 23 waves in the panel. This sample is the one used for Table 4 and the Figures 7 and 8.

Table A.12: SOEP self-selection into parenthood. Sample of men and women aged 45-60 in 2012, who stayed more than 23 years in panel

	(1)	(2)	(3)
Dependent variable: Probability of future parenthood			
Satisfied with life before becoming a parent	0.137*** (0.00782)	0.106*** (0.00774)	0.102*** (0.00830)
Male		-0.0329*** (0.00768)	-0.0213*** (0.00804)
Age		-0.0568*** (0.00371)	-0.0693*** (0.00389)
Age squared divided by 100		0.0505*** (0.00425)	0.0631*** (0.00441)
Partnered			0.0834*** (0.00881)
Log HH income			-0.0190** (0.00756)
Years of education			0.0110*** (0.00149)
Labour-force status	No	No	Yes
<i>N</i>	10733	10730	10108

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of the probability of having children before the end of one's fertility cycle on a dummy for being satisfied with life before giving birth to the first child (average life satisfaction greater than 7 before becoming a parent). All regressions include wave dummies. Controls are progressively added. Sample: SOEP (1984-2012), sample of men and women aged 45 to 60 by 2012 (last year of the panel) and who were present at least 23 waves, using only observations pertaining to years when they did not have children.

Table A.13: SOEP self-selection into parenthood. Sample of women aged 45-60 in 2012, who stayed more than 23 years in panel

	(1)	(2)	(3)
Dependent variable: Probability of future parenthood			
Satisfied with life before becoming a parent	0.105*** (0.0130)	0.0794*** (0.0123)	0.0887*** (0.0131)
Age		-0.0875*** (0.00551)	-0.0934*** (0.00584)
Age squared divided by 100		0.0821*** (0.00630)	0.0874*** (0.00664)
Partnered			0.0473*** (0.0143)
Log HH income			-0.000668 (0.0118)
Years of education			0.00508** (0.00238)
Labour-force status	No	No	Yes
<i>N</i>	3809	3809	3524

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of the probability of having children before the end of one's fertility cycle on a dummy for being satisfied with life before giving birth to the first child (average life satisfaction greater than 7 before becoming a parent). All regressions include wave dummies.

Controls are progressively added. Sample: SOEP (1984-2012), women aged 45 to 60 by 2012 (last year of the panel) and who were present at least 23 waves, using only observations pertaining to years when they did not have children.

Table A.14: SOEP self-selection into parenthood, men and women, excluding observations of those who will have their first child within the next two years.

	(1)	(2)	(3)
Dependent variable: Probability of future parenthood			
Satisfied with life before becoming a parent	0.116*** (0.00770)	0.0858*** (0.00759)	0.0846*** (0.00823)
Male		-0.0225*** (0.00754)	-0.0156** (0.00795)
Age		-0.0694*** (0.00375)	-0.0766*** (0.00396)
Age squared divided by 100		0.0686*** (0.00425)	0.0763*** (0.00445)
Partnered			0.0270*** (0.00876)
Log HH income			-0.0200*** (0.00745)
Years of education			0.00993*** (0.00144)
Labour-force status	No	No	Yes
<i>N</i>	9818	9815	9233

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of the probability of having children before the end of one's fertility cycle on a dummy for being satisfied with life before giving birth to the first child (average life satisfaction greater than 7 before becoming a parent). All regressions include wave dummies. Controls are progressively added. Sample: SOEP (1984-2012), men and women aged 45 to 60 by 2012 (last year of the panel) and who were present at least 23 waves. The observations two years before the birth of the first child are excluded in order to disentangle the selection effect from the anticipation effect.

Table A.15: SOEP self-selection into parenthood, sample of women, excluding observations of those who will have their first child within the next two years.

	(1)	(2)	(3)
Dependent variable: Probability of future parenthood			
Satisfied with life before becoming a parent	0.0906*** (0.0130)	0.0677*** (0.0122)	0.0793*** (0.0132)
Age		-0.0992*** (0.00554)	-0.100*** (0.00591)
Age squared divided by 100		0.1*** (0.00628)	0.1*** (0.00667)
Partnered			-0.00926 (0.0146)
Log HH income			0.00315 (0.0121)
Years of education			0.00383* (0.00230)
Labour-force status	No	No	Yes
<i>N</i>	3395	3394	3130

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions of the probability of having children before the end of one's fertility cycle on a dummy for being satisfied with life before giving birth to the first child (average life satisfaction greater than 7 before becoming a parent). All regressions include wave dummies.

Controls are progressively added. Sample: SOEP (1984-2012), women aged 45 to 60 by 2012 (last year of the panel) and who were present at least 23 waves. The observations two years before the birth of the first child are excluded in order to disentangle the selection effect from the anticipation effect.

Table A.16: Plans to have children. ESS, Individuals under 45 without children

	(1)	(2)	(3)
Dependent variable: Planning to have children			
Life satisfaction over 7	0.0158*** (0.00561)	0.0324*** (0.00558)	0.0129* (0.00710)
Male		-0.0428*** (0.00533)	-0.0406*** (0.00691)
Age		0.0586*** (0.00223)	0.0564*** (0.00344)
Age squared divided by 100		-9.17*** (0.384)	-9.34*** (0.558)
Log HH income			0.0218*** (0.00432)
Years of education			-0.00105 (0.00121)
Religiosity			0.0219*** (0.00776)
Marital status	No	No	Yes
Labour-force status	No	No	Yes
<i>N</i>	12831	12829	8417

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

OLS regressions. The dependent variable is a dummy equal to 1 if the individual answered "definitely yes" to the question: "Do you plan to have children within the next three years". Controls are progressively added. Year and country dummies are always included.

Sample: 6 ESS waves (2002-2012) of Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Sweden and Slovenia.

Individuals under 45 without children only.

Table A.17: SOEP, early life satisfaction and parenthood

	(1)	(2)	(3)
Dependent variable: Life satisfaction			
Having children	0.438*** (0.0238)	0.489*** (0.0249)	0.430*** (0.0267)
Satisfied with life before becoming a parent	1.844*** (0.0209)	1.842*** (0.0209)	1.721*** (0.0217)
Having children X Satisfied with life before becoming a parent	-0.864*** (0.0267)	-0.855*** (0.0267)	-0.836*** (0.0273)
Male		-0.00872 (0.0119)	-0.0131 (0.0125)
Age		0.00765* (0.00463)	-0.0319*** (0.00533)
Age squared divided by 100		-0.0264*** (0.00638)	0.0124* (0.00718)
Partnered			0.281*** (0.0164)
Log HH income			0.349*** (0.0147)
Years of education			0.0328*** (0.00240)
Labour-force status	No	No	Yes
<i>N</i>	66297	66297	61480

OLS regressions of life satisfaction on having children and an interaction term.

Sample: SOEP (1984-2012), individuals who experience their first childbirth during the time span of the panel. People fall in the category "satisfied with life before becoming a parent" if their average life satisfaction was greater than 7 over the years before their first childbirth. All regressions include wave dummies.