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Happy People Have Children: Choice and Self-Selection into Parenthood

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ABSTRACT

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There is mixed evidence in the existing literature on whether children are associated with greater subjective well-being, with the correlation depending on which countries and populations are considered. We here provide a systematic analysis of this question based on three different datasets: two cross-national and one national panel. We show that the association between children and subjective well-being is positive only in developed countries, and for those who become parents after the age of 30 and who have higher income. We also provide evidence of a positive selection into parenthood, whereby happier individuals are more likely to have children.

JEL Classification: D1, J13

Keywords: happiness, fertility, children, income, selection

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Highlights

- The average relationship between children and happiness differs sharply across countries and populations.
- This relationship changes from negative to positive at a GDP level of around 20 000 US Dollars.
- Having a child is associated with greater happiness only for wealthy people aged over 30.
- Whenever it exists, the positive association between parenthood and happiness may reflect self-selection: years before the event, those who will later become parents are already happier than those who will never have children.
- This higher happiness of future parents is not entirely due to their more favourable living conditions.

1. Introduction

The analysis of subjective well-being 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 unreservedly confirm this intuition: it has rather 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 well-being (Aassve *et al*., 2012, Herbst and Ifcher, 2012, and Nelson *et al*., 2013), while other work finds a negative relationship (McLanahan and Adams, 1987, and Umberson and Williams, 1999). The same diversity of findings appears regarding the order of children, their age, and the gender of the parent (Hansen *et al*., 2009). In summary, the empirical evidence about having children and subjective well-being is very mixed, varying by the datasets and methods used.

This state of affairs is particularly frustrating. In general, subjective well-being data tend to confirm nicely the simple intuitions that lay-people have in mind about the foundations of happiness. Subjective well-being increases with income (at least in cross-sectional analysis), with having a job, a partner, social capital, religious faith, nice personality traits, etc. At the aggregate level it also falls 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, subjective well-being data seem to be well-behaved, and this is often invoked in the defence of the use of such data.

This mixed evidence on parenthood and subjective well-being is a good opportunity for researchers in this domain to take a step back and reflect on choices and preferences. *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 realised their wishes, there is no reason to expect the former to be happier than the latter. Happiness differences would appear, were some preferences more conducive to happiness than others, or were people with certain preferences (such as a preference for children) 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 were not able to achieve their goals, we would naturally expect the latter to be less happy.

In this context, it is perhaps perplexing to find that in a certain number of countries, parenthood tends to be associated with lower happiness (Deaton and Stone, 2014). Can it really be the case that so many people spend a large part of their time and energy doing something that reduces their well-being? Such apparent irrationality would call for other models of behaviour: natural instinct, social pressure, or insurance motives (old-age insurance from anticipated future transfers from children). Another possibility is that individuals have biased expectations of the impact of having a child, due to the slow adaptation of their expectations to changes in family structure, gender roles, increasing individualism and the opportunity cost of children (McLanahan and Adams, 1987).

At the aggregate level, cross-country comparisons call for particular caution: due to the demographic transition, low-fertility countries are generally richer than high-fertility countries. As subjective well-being rises with development, even were parenthood to be a source of higher happiness this would not necessarily appear in cross-country data (see

Billari, 2009). In sum, there are good reasons why the intuitive positive relationship between parenthood and happiness may not necessarily be uncovered in empirical work.

This paper concentrates on the choice to become a parent. We consider both the static and dynamic relationships 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 over long time-periods. On the one hand, using two of the most important international databases gives some generality to our results. On the other hand, the recourse to the long German panel survey allows us to analyse the effect of parenthood on individuals' entire life cycle. Hence, we hope to provide a somewhat systematic view of the relationship between parenthood and subjective wellbeing. Note that all of our findings are qualitatively similar whether we use life satisfaction or measures of emotional wellbeing as the dependent variable.

In simple cross-country correlations, there is 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. In developed countries, the first demographic transition has led to a fall in the number of children per woman, while the second has postponed the first child to later ages. By contrast, in many poorer countries, birth control is still less easily accessible. The extent to which fertility is a choice could explain this contrast. The same difference is found with respect to parents' age and income.

Our results suggest that the relationship between parenthood and happiness in developed countries comes from the context of the choice of parenthood. It may then be that happier people choose to have children, rather than children causing happiness as such. We use long-run German panel covering individuals' entire period of fertility to ask whether happier people are more likely to have children. We find, for the first time in this literature, that those who will never have children are already initially less happy than those who will have children at some future point in their life, and remain so during their entire life cycle. This greater happiness of future parents is not only due to their more favourable socio-economic circumstances.

The remainder of the paper is organised as follows. Section 2 reviews the existing literature. Section 3 then sets out our data, and Section 4 our main results. Last, Section 5 concludes.

2. Literature

The existing literature on parenthood and happiness is fairly substantial, and has broadly come to the conclusion that the sign and size of this relationship is not well-established. In the first instance, there is a great deal of empirical research in which parenthood is not the main concern, and a subjective well-being measure is regressed on a series of control variables including the presence of children. This latter often attracts a negative estimated coefficient (see for example, Di Tella *et al*., 2004, Kahneman *et al*., 2004, and Alesina *et al*., 2004). Other work has more specifically focused on happiness and parenthood, confirming a negative relationship between parenthood and life satisfaction, the quality of married life and psychological state (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), who

use Gallup World Poll data, 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. 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) look at the same type of self-declared emotional well-being 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 found a positive effect 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 well-being, 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 produced mixed findings, with the results depending on the statistical specification, the type of well-being measure and sometimes the countries analysed (e.g. Deaton and Stone, 2014). As noted in the introduction, this instability could reflect self-selection into parenthood. Deaton and Stone (2014) show that individuals who live with children are more likely to be married, richer, better educated, more religious, and healthier. All of these characteristics have well-known positive correlations with evaluative and hedonic wellbeing. Once these background factors are controlled for, the coefficient on the presence of a child in wellbeing regressions changes from positive to negative (see also Margolis and Myrskylä, 2011, for an analysis of WVS data).

Another finding consistent with self-selection is that the parenthood-wellbeing relationship is more likely to be negative in poorer countries. In richer countries, parenthood is more of a choice, based on preferences, thanks to birth control, whereas this is less the case in poorer countries (see McLanahan and Adams, 1987). As such: "*The lower the country's fertility, the happier are those who have children compared to those without*" (Margolis and Myrskylä, 2011, p.43).

The relationship is also generally found to be more positive for those aged over 30. In Deaton and Stone (2014), for example, children improve all well-being outcomes (apart from stress) for Americans aged 34–46. Margolis and Myrskylä (2011) make the same point in WVS data: for those under 30, happiness falls roughly monotonically with the number of children; this negative relationship vanishes at ages 30–39; and for the over-40s the relationship becomes positive, so that those with three children are happiest. In general, the happiness of those who have children at older ages and those with more socioeconomic resources is more positively correlated with first birth than that of younger or less-educated parents (see Myrskylä and Margolis, 2014, for additional results along these lines). On the same note, Myrskylä et al. (2009) show that the upswing in fertility that is observed in some rich countries takes place among those aged over 30.

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. As explained above, we interpret these differences as reflecting the conditions under which the choice whether to have children is taken. To avoid duplicating results, we refer to Myrskylä and Margolis (2014) who document this heterogeneity in the association between parenting and happiness depending on whether

couples are "ready" to have a child. We then dig deeper into the question of self-selection. In a 2006 paper, Frey and Stutzer asked whether marriage makes people happy or whether happy people get married. Using panel data, they showed evidence of positive self-selection of happier people into marriage, but also that marriage does bring an additional happiness increment on top of this higher baseline level. We here take an analogous approach and find evidence of self-selection into parenthood using long panel data.

The possibility of selection into parenthood via happiness has already been evoked in the literature. Le Moglie *et al.* (2014) show that subjective well-being 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, percentage of housework, scaled income, and share of household income). Along the same lines, Parr (2010) analyses Australian HILDA data to show that being happy increases the likelihood of having a child in the two subsequent years. Baetschmann *et al.* (2012) find that the well-being of German women who are going to have children starts to differ from those who will not five years before the event. This is because there is some time between the fertility decision and childbirth. Equally, Balbo and Arpino (forthcoming) apply propensity-score matching to data two years before childbirth to uncover a causal effect of childbirth on happiness. The matching variables include happiness to account for selection. Last, Billari (2009) shows that, in Europe, happier people are more likely to plan to have a child within the next three years. However, all of these studies suffer from the relatively short period of time that they consider: first, the short lag between well-being measurement and childbearing, makes it impossible to disentangle selection from anticipation effects, and second, because individuals' fertility is not complete, some of the currently observed childless may have children later on.

We overcome these problems by adopting an ex-post point of view and consider women (and men) with completed fertility. We then ask whether those who have had children have always been happier than those who have not. The emphasis on completed fertility avoids misclassifying those with delayed fertility (who will have children in the future) as permanently childless. Our data is long enough to cover the fertility life cycle of cohorts, allowing the measurement of the happiness of both (future) parents before childbirth and those who remain childless. We are also able to separate out anticipation effects by looking at well-being up to five years before childbirth.

3. Data

Our empirical analysis is 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.

3.1 Gallup data

The Gallup World Poll contains cross-sectional data on 163 countries, surveyed from 2006 to 2013. Their sample represents more than 98% of the world's adult population. Gallup typically surveys 1,000 randomly selected respondents per country, typically on an annual basis, using a standard set of core questions that has been translated into the major languages of the respective country. Face-to-face interviews are approximately 1 hour, while telephone interviews are about 30 minutes. There are a number of well-being questions in the Gallup data. The first one is life satisfaction (on a 0-10 scale). 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?*" Positive affect and negative affect are both measured on a 0-100 scale. 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 positive-affect score is the mean of the valid items 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?*" Finally, the survey asks respondents about their feelings of happiness and stress (which are both binary variables). The latter two variables are hedonic, and refer to experiencing stress/happiness yesterday (with Yes or No answers). Note that this hedonic happiness variable in the Gallup data is not directly comparable to the happiness variable that 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 well-being regressions using Gallup data. 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 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. As labour-force status information is only available from 2009, our regressions are based on 2009-2013 Gallup data and 158 countries. Appendix Table A1 shows the descriptive statistics of the sample of people aged 30-50 with no country restrictions.

3.2 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 six waves from 2002 to 2012.

The subjective well-being variables in the ESS are life satisfaction (*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*), happiness (*Taking all things together, how happy would you say you are?* on a 0-10 scale), and positive and negative affect. Negative affect is the mean score from the following questions, which were asked only once in 2006, with all questions answered 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*; (flttrd) "*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*"; (enjlf) "*Enjoyed life, how often past week*"; and (enrglot) "*Had a lot of energy, how often past week*.)

Here, we use two measures of parenthood: 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, years of education, labour-force status, religion, and year and country dummies. In the ESS, individuals are report their income according to deciles, the thresholds of which are defined by money amounts on a showcard. We linearise income by taking the mean income value of each interior decile. For the lowest decile (defined as income below some amount) we take two-thirds of the threshold, and for the highest decile we take 1.5 times the threshold. The descriptive statistics for our ESS sample (for all ages, and ages 30-50) appear in Appendix Tables A2 and A3.

3.3 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, the household long format data file and two biography datasets for men and women that describe the fertility history of each respondent (see Appendix B for more details of the data construction). We use data going up to 2012.

The SOEP subjective well-being variable is life satisfaction (on a 0-10 scale). The SOEP first asks questions about satisfaction with various domains of life and then 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.* The parenthood variables come from each respondent's biography data. This latter includes information on the total number of children that each individual ever had and these children's year of birth. We construct a dummy variable "has children" (children) that equals 1 after the year of birth of the first child. (There are six observations in which the year of birth of the first child is missing but the year of birth of subsequent children appears. In these cases, the dummy "children" equals 1 after the year of birth of the second child). 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 A4.

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

4. Results

This section describes our main empirical results: i) the average relationship between children and subjective well-being is sharply modified by country fertility and income; ii) younger parents do worse; and iii) happier people are more likely to have children.

4.1 The association between children and happiness depends on how much children are a choice

As discussed in Section 1, parenting is likely more of a choice in rich countries than in poor and developing countries. This is due to the differences in birth-control availability, women's literacy and freedom, and non-fertility means of insuring oneself against the future. How does this affect the association between parenting and subjective well-being?

We first look at the relationship between children and well-being as a function of country development in 2012 Gallup data. Figure 1 shows that the relationship between children and life satisfaction is more positive in richer countries. Each point in this figure reflects the estimated coefficient of living with children in a country-specific regression. The regression line in Figure 1 suggests that the relationship between children and well-being changes from being negative to positive at a GDP level of around 20,000 Dollars. This regression line is only slightly affected by the introduction of standard demographic controls in the satisfaction regressions (graph available on request), suggesting that income is indeed the key moderator of the children-well-being relationship. The pattern of the observations suggests that the relationship might be non-linear. We investigate the possibility of an inverted U-shape by fitting the data with an additional GDP-squared regressor. This new coefficient is significant at the 10% level. In that case, the relationship between children and well-being changes from negative to positive at a GDP level of 10,000 dollars (graph available on request).[1]

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[1] A number of high-GDP countries appear below the fitted line. Dropping the top 5% countries by GDP leads to a fitted line that is steeper and more significant, reinforcing our conclusion that the correlation between children and subjective well-being is more positive in richer countries. Without these high-GDP countries, the relationship between children and well-being turns positive at a GDP level of around 15,000 dollars. We investigate again the possibility of an inverted U-shape and find that the coefficient of GDP-squared is negative and significant at the 1% level. The GDP threshold to obtain a positive relationship between children and the Cantril ladder now stands at 10,000 dollars.

Figure 1: The effect of children at home on the Cantril ladder, by GDP per capita. Gallup data, 2012
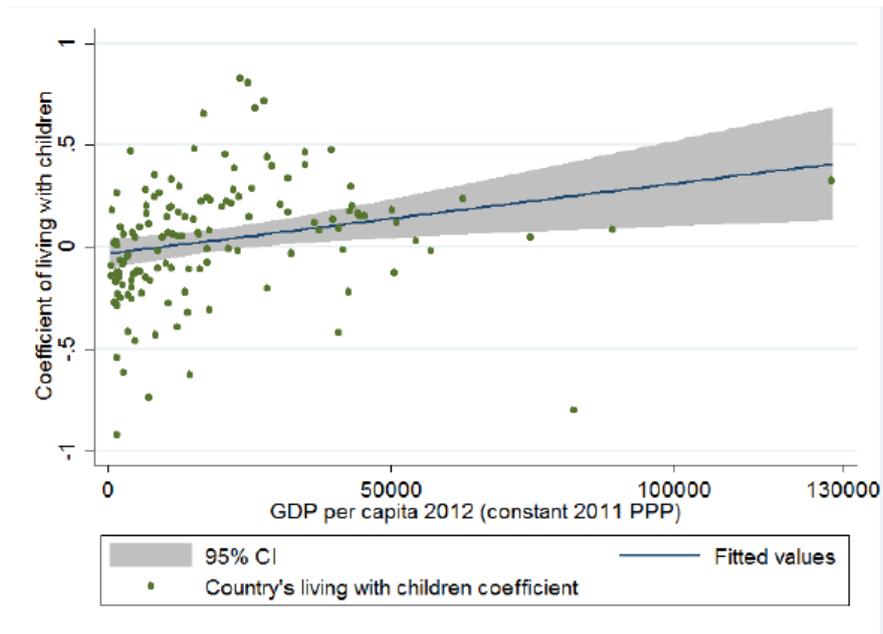
Each point corresponds to the coefficient of living with children in a country-specific OLS regression of life satisfaction on living with children (without controls), matched to GDP per capita in 2012, purchasing power parity (with constant 2011 international dollars). Data on GDP per capita come from the World Bank. Sample: Gallup (2012), 152 countries, no age restriction.

Table 1: Subjective well-being and children at home, depending on fertility and development levels, ages 30-50. Gallup data

	(1) Cantril ladder	(2) Positive affect	(3) Negative affect	(4) Happiness	(5) Stress
Developing and above median fertility countries					
Living with children under 15	-0.171***	-0.895***	1.445***	-0.007	0.015***
	(0.021)	(0.292)	(0.314)	(0.005)	(0.005)
N	69077	67143	64554	59615	64121
R^2	0.133	0.106	0.094	0.081	0.086
Developing and below median fertility countries					
Living with children under 15	-0.125***	-1.252***	1.353***	-0.008*	0.013***
	(0.0182)	(0.256)	(0.28)	(0.004)	(0.004)
N	57935	57582	56819	51684	56287
R^2	0.232	0.143	0.079	0.075	0.076
Developed and above median fertility countries					
Living with children under 15	0.0629***	-0.0285	0.171	0.0376***	0.0102
	(0.0236)	(0.374)	(0.396)	(0.0061)	(0.007)
N	24837	24557	24557	20882	24468
R^2	0.212	0.080	0.065	0.106	0.041
Developed and below median fertility countries					
Living with children under 15	-0.027	-0.198	1.455***	0.0291***	0.0276***
	(0.0253)	(0.393)	(0.387)	(0.007)	(0.007)
N	25104	25169	21526	21526	25062
R^2	0.262	0.073	0.090	0.131	0.045

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. OLS regressions of subjective well-being on living with children under 15. Positive affect is measured on a 0 to 100 scale, from questions asking whether the individual felt rested, was treated with respect, smiled or laughed, learned something interesting or felt enjoyment, yesterday. Negative affect is an index on a 0 to 100 scale, constructed from questions asking whether the respondent felt anger, sadness, physical pain, stress, or worry, yesterday. All regressions also include controls for gender, age, age-squared, marital status, log household income, education dummies, labour-force status, religion, year and country dummies. Sample: Gallup (2009-2013), developed countries (European Union, Iceland, Norway, Switzerland, Cyprus, Japan, South Korea, Singapore, Israel US, Canada, New Zealand and Australia), developing countries (South Asia, East Asia, South-East Asia, Latin America, Middle East, North Africa, Sub-Sahara Africa, excluding Japan, South Korea, Singapore and Israel). The median fertility rate is 1.53 in developed countries and 2.5 in developing countries (World Bank data, 2012). All individuals are aged between 30 and 50.

Table 2: Subjective well-being, children and children at home. Regression results, ages 30-50. ESS data

	(1) Life Satisfaction	(2) Life Satisfaction	(3) Happiness	(4) Happiness	(5) Positive Affect	(6) Positive Affect	(7) Negative Affect	(8) Negative Affect
Having children	0.0229		0.129***		0.0141		0.0245*	
	(0.0234)		(0.0205)		(0.0186)		(0.0141)	
Living with children		0.0810***		0.160***		0.0226		-0.0158
		(0.0208)		(0.0181)		(0.0170)		(0.0129)
N	53433	53793	53466	53822	9050	9063	8609	8638
R^2	0.224	0.224	0.168	0.168	0.079	0.079	0.146	0.147

Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. OLS regressions of subjective well-being (life satisfaction, happiness, positive affect and negative affect) on fertility. Positive affect is measured on a 1 to 4 scale, from questions asking how often the past week the individual felt calm and peaceful, enjoyed life and had a lot of energy. Negative affect is measured on a 1 to 4 scale, from questions asking how often the past week the individual felt depressed, sad, tired, anxious and whether sleep was restless. All regressions include controls as described in Section 2.2. Sample: six ESS waves (2002-2012) of Belgium, Denmark, Germany, Finland, France, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and United Kingdom. All individuals are aged between 30 and 50.

Splitting the Gallup sample into different groups of countries makes the above point even clearer. Table 1 shows the results for four groups of countries according to development level and fertility rate. The results for the two groups of developing countries[2] (above and below median fertility) are qualitatively similar, with children being associated with lower levels of the Cantril ladder, positive affect and happiness. There are however interesting differences between the two groups of developed countries.[3] In above median fertility developed countries children have a larger positive effect on life satisfaction and smaller effect on ill-being (negative affect and stress). This is perhaps most easily-read as reflecting the possibility of the choice to have children. Table 1 also shows that the relationships between parenthood and measures of ill-being are more universal. The estimated coefficient on children in the negative-affect regressions is positive and significant in three out of the four panels of Table 1 (the exception being above median fertility developed countries, where we also found the positive effect on the Cantril ladder). Equally, children are associated with higher stress in all four groups.

The results above revealed a positive relationship between having children (or having children at home) and well-being for individuals aged from 30 to 50 in developed countries in Gallup data. We find the same qualitative relationship for 30-50 year-olds in the European developed countries in the ESS in Table 2.

The results in Tables 1 and 2 apply to almost all parents (except the very few who have their first child after the age of 50). We suspect that the correlation between well-being and children may well depend on the age of the parents when they first had children. We do not have this information directly, but can infer it by including interaction terms between having children and respondent's age: those who are observed with children when aged under 30 by definition had their children in their twenties or earlier. Figure 2 shows the children-well-being relationship by age in two datasets: the SOEP (from 1984 to 2012) and the ESS (the sample of 16 European countries). Well-being here is life satisfaction on a 0 to 10 scale. The right-hand-side variables are year dummies, country dummies in the ESS, a dummy for children, age-category dummies and the children dummy interacted with the age categories (with the under-30s being the omitted category). The coefficients on these interaction terms are always positive and significant, as illustrated in Figure 2. The same qualitative results apply when we control for standard demographic variables. This is in line with the idea of being "ready" to make the choice of parenthood, which, as pointed by Myrskylä and Margolis (2014), could depend on age as well as socioeconomic resources.

Figure 3 explicitly addresses the role of parents' economic resources (here their income quintile) in developed countries using SOEP and ESS data. In both cases, the slope is positive: individuals become happier/less unhappy with children as their income rises.

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[2] Latin America, the Middle East, Africa, South-East Asia, South Asia, and East Asia except Japan, South Korea, Singapore and Israel.

[3] European Union, Iceland, Norway, Switzerland, Cyprus, US, Canada, Japan, South Korea, Singapore, Israel, Australia and New Zealand.

Figure 2: Relationship between children and life satisfaction by age categories
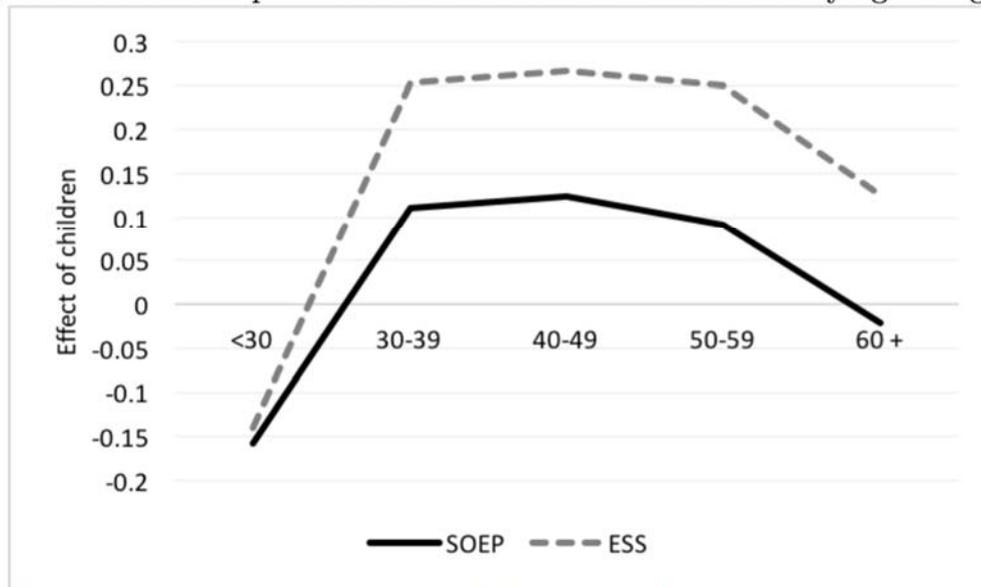
OLS regressions of life satisfaction on children and children interacted with age categories. Individuals under 30 are the omitted category. Each point corresponds to the sum of the coefficient of having children and the coefficient of the interaction between children and the relevant age category. All regressions include year dummies (and country dummies for ESS). These results come from column 1 of Appendix Tables 5 and 6. Samples: SOEP (1884-2012); ESS (2002-2012), 16 European countries.

Figure 3: Relationship between children and life satisfaction by income quintiles
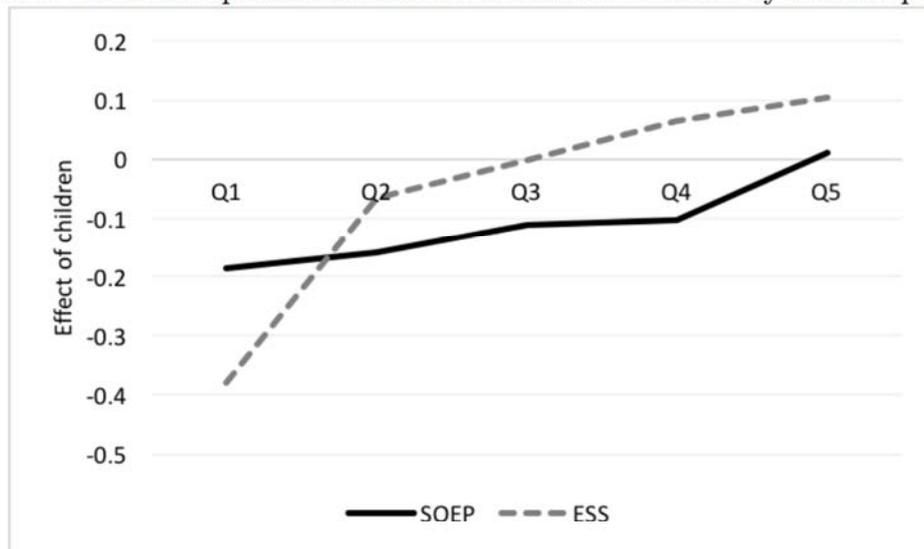
OLS regressions of life satisfaction on children and children interacted with income quintiles (Q1 being the poorest income quintile and Q5 the richest). Q1 is the omitted quintile in the regression. Each point corresponds to the sum of the coefficient of having children and the coefficient of the interaction between children and the relevant income quintile. All regressions include year dummies (and country dummies for ESS). These results come from column 1 of Appendix Tables 7 and 8. Samples: SOEP (1884-2012); ESS (2002-2012), 16 European countries.

4.2 Selection into Parenthood (in Germany)

We now reverse the question and explore the potential causality running from subjective well-being to parenthood, along the lines of Stutzer and Frey (2006) who showed that most of the subjective well-being difference between the married and the non-married reflects that those with higher initial subjective well-being were more likely to get married in the first place.

We here use SOEP panel data to create a first sample of men and women aged between 45 and 60 in 2012, who were present in the panel for a minimum of 23 years and up to a maximum of 29 years. In this sample, 270 individuals had not had children by 2012 (producing 7334 observations) and 1153 individuals had children in 2012 (30,387 observations). Our supposition is that in this group of people who are aged between 45 and 60, fertility is almost always complete. We also consider alternative groups of older people (and women). The composition of this sample is described in Table 3 below, with descriptive statistics in Appendix Table A9.

Table 3: Composition of the 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
Of which present for exactly			
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, 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.

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 this sample:

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

The first group contains the same individuals in all years, while those who have children at some point move from the second to the third category as they have their first child. 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. 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.

Figure 4 displays unconditional average life satisfaction by age for each of these three groups; Figure 5 is similar, but here life satisfaction is conditional on age, age-squared, gender, marital status, log household income, education, labour-force status and wave. Both Figures suggest positive selection into parenthood, in terms of life satisfaction. In Figure 4,

the long-dashed line (always remain childless) is almost always below the short-dashed line (currently have children), except for a brief period when the individuals are in their early 20's (which ties up with the above analysis regarding the negative well-being effects of early parenthood). Equally, the long-dashed line line is almost always below the unbroken line (for those who will become parents later on). The gap between the long-dashed and unbroken lines is larger in Figure 4 than in Figure 5, suggesting that the higher happiness of future parents is partly due to their social success, but not entirely. The regression versions of selection into parenthood appear in Table 4 (Panel A), where we estimate the probability of ever having a first child. The main explanatory variable is a dummy for high satisfaction on average (defined as a value over 7) before having the first child. We progressively add controls. The first column only includes year dummies, column 2 adds controls for sex and age, and column 3 includes the full set of controls. Life satisfaction 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. As suggested by Figures 4 and 5, the greater satisfaction of future parents is partly, but not entirely, explained by their socio-economic circumstances.

Figure 4: Life satisfaction and ever fertility: Raw data. SOEP data
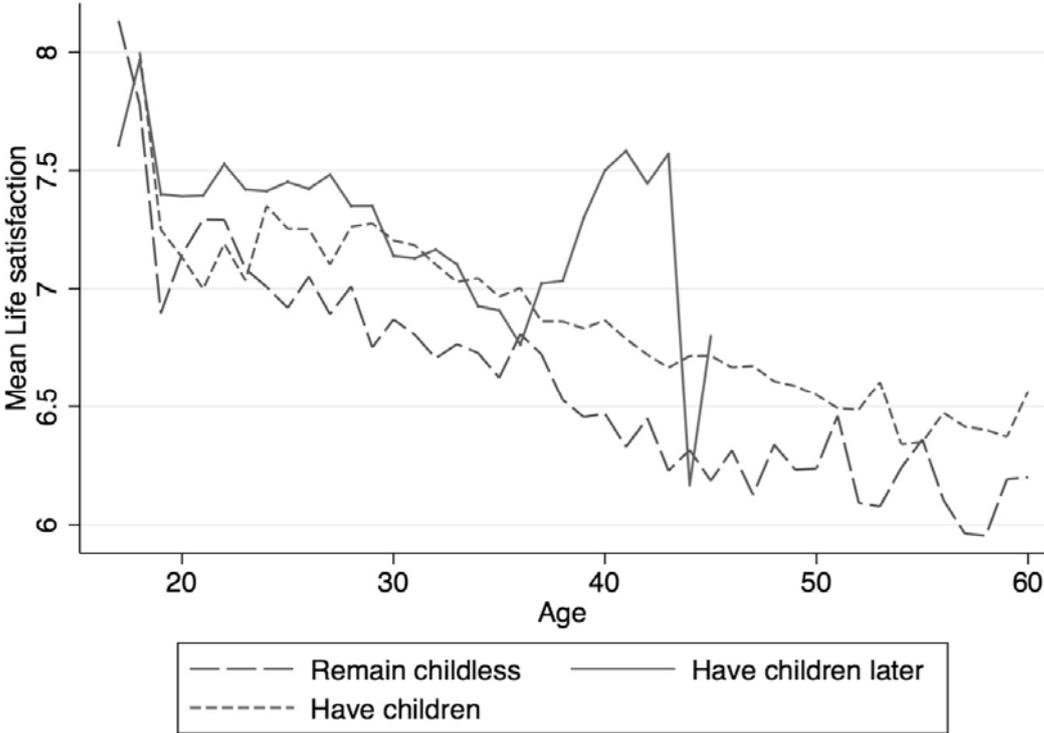
Sample: SOEP (1984-2012), individuals who are aged 45 to 60 by 2012 (last year of the panel) and who were present at least 23 waves.

Figure 5: Life satisfaction and ever fertility: Including control variables. SOEP data
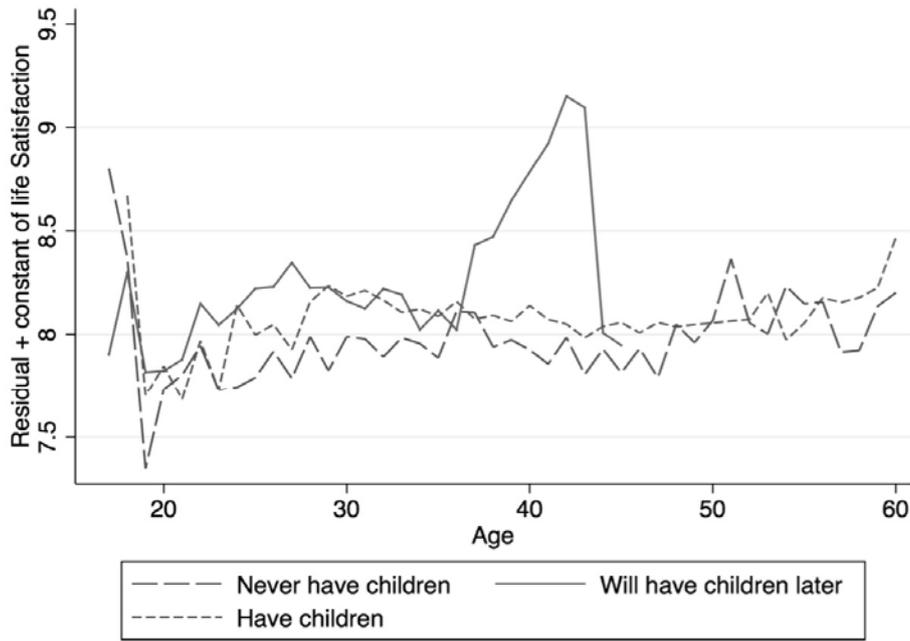
Group-specific residuals from one OLS regression of life satisfaction on gender, age, age-squared, partnership, log household income, years of education, labour-force status and year dummies. The constant of the regression is added to the residuals. Sample: SOEP (1984-2012), individuals who are aged 45 to 60 by 2012 (last year of the panel) and who were present at least 23 waves.

Table 4: Self-selection into parenthood. Individuals aged 45-60 in 2012, who stayed more than 23 years in panel. SOEP data

| | Panel A: Men and Women | | | Panel B: Women only | | |
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Probability of future parenthood						
Satisfied with life before first childbirth	0.137***	0.106***	0.102***	0.105***	0.0794***	0.0887***
	(0.0078)	(0.0077)	(0.0083)	(0.013)	(0.012)	(0.013)
Male		-0.0329**	-0.0213***			
		(0.0077)	(0.008)			
Age		-0.0568***	-0.0693***		-0.0875***	-0.0934***
		(0.0037)	(0.0039)		(0.0055)	(0.058)
Age-squared divided by 100		0.0505***	0.0631***		0.0821***	0.0874***
		(0.0043)	(0.0044)		(0.0063)	(0.0066)
Partnered			0.0834***		0.0473***	
			(0.0088)		(0.014)	
Log HH income			-0.0190**		-0.000668	
			(0.0076)		(0.012)	
Years of education			0.0110***		0.00508**	
			(0.0015)		(0.0024)	
Labour-force status	No	No	Yes	No	No	Yes
N	10733	10730	10108	3809	3809	3524
R^2	0.294	0.336	0.343	0.342	0.426	0.433

Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. OLS regressions of a dummy for ever having a first child 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 seven before becoming a parent). All regressions include wave dummies. Sample of Panel A (Columns 1 to 3): 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. Sample of Panel B (Columns 4 to 6): same sample keeping women only.

These first regressions do not distinguish between earlier and later fertility. The estimated coefficients in Table 4 then pick up both selection into parenthood (with those with greater satisfaction being more likely to have children) and anticipation effects (with individuals reporting greater satisfaction because they will shortly become parents). To isolate the selection effect, we run the same regression excluding individuals who will have children within the next two years: the results appear in Table 5, Panel A. Removing anticipation attenuates the estimated coefficients slightly, as expected, but these remain positive and statistically significant: people with higher life satisfaction are more likely to become parents later on.

Table 5: Self-selection into parenthood, excluding observations of those who will have their first child within the next two years. SOEP data

	Panel A: Men and Women			Panel B: Women only		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Probability of future parenthood						
Satisfied with life before first childbirth	0.116***	0.0858***	0.0846***	0.0905***	0.0677**	0.0793***
	(0.0077)	(0.0076)	(0.0082)	(0.013)	(0.012)	(0.013)
Male		-0.0225**	-0.0156***			
		(0.0075)	(0.008)			
Age		-0.0694***	-0.0766***		-0.0992***	-0.100***
		(0.0037)	(0.004)		(0.0055)	(0.059)
Age-squared divided by 100		0.0686***	0.0763***		0.100***	0.100***
		(0.0043)	(0.0045)		(0.0063)	(0.0067)
Partnered			0.0270***		-0.00926	
			(0.0088)		(0.014)	
Log HH income			-0.0200***		-0.00315	
			(0.0075)		(0.012)	
Years of education			0.00993***		0.00383*	
			(0.0014)		(0.0023)	
Labour-force status	No	No	Yes	No	No	Yes
N	9818	9815	9233	3394	3394	3130
R^2	0.284	0.335	0.337	0.333	0.439	0.435

Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. OLS regressions of a dummy for ever having a first child 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 seven before becoming a parent). All regressions include wave dummies. Sample of Panel A (Columns 1 to 3): 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. The observations two years before the birth of the first child are excluded in order to disentangle the selection effect from the anticipation effect. Sample of Panel B (Columns 4 to 6): same sample keeping women only.

Selection into parenthood: women only

The above exercise relies on the comparison of those who will always remain childless and those who will become parents. This distinction is less clear for men than for women, as men may have their first child after the age of 45 or 50. We thus also consider the sub-sample of women, aged from 45 to 60 in 2012, 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 (i.e. who do not have children in any of the survey years), and 17,418 observations on 663 women who already have or will have children. The results appear in Panel B of Tables 4 and 5. The coefficient of interest ("Satisfied with life before becoming a parent") remains positive

and very significant. Along the same lines, we also considered the smaller sample of men and women who were aged 50 to 60 in 2012 (instead of the previous 45 to 60) and were present in the panel for a minimum of 23 years. There were no qualitative changes in the results of Figures 4 and 5 and Table 4.

Earlier selection into parenthood

It might be thought that the positive anticipation effect starts earlier than two years before first childbirth: we thus considered wider anticipation windows by excluding observations up to 5 years before first childbirth. Columns 1 to 3 in Table 6 show the results when 3 to 5 years of preceding observations are excluded. The estimated satisfaction coefficient falls slightly across these columns, but remains significant throughout.

Table 6: Self-selection into parenthood, with larger anticipation periods. SOEP data

	3 years	4 years	5 years
Dependent variable: Probability of future parenthood			
Satisfied with life before first childbirth	0.0754***	0.0660***	0.0574***
	(0.0081)	(0.0079)	(0.0076)
Male	-0.0108	-0.00776	-0.00374
	(0.0078)	(0.0076)	(0.0074)
Age	-0.0785***	-0.0793***	-0.0791***
	(0.004)	(0.004)	(0.0039)
Age-squared divided by 100	0.0806***	0.0834***	0.0846***
	(0.0044)	(0.0044)	(0.0044)
Partnered	0.00842	-0.00501	-0.00791
	(0.0085)	(0.0080)	(0.0076)
Log HH income	-0.0189***	-0.0147**	-0.0114
	(0.0073)	(0.0072)	(0.0069)
Years of education	0.00907***	0.00792***	0.00684***
	(0.0014)	(0.0013)	(0.0013)
Labour-force status	Yes	Yes	Yes
N	8860	8526	8227
R^2	0.331	0.323	0.312

Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. OLS regressions of a dummy for ever having a first child 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 seven before becoming a parent). All regressions include wave dummies. 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. Column 1 excludes the observations three years before the birth of the first child, column 2 excludes four years of observations before childbirth, and column 3 excludes five years of observations.

The findings here thus demonstrate a significant selection effect of happier people into parenthood that is not reflecting anticipation. We cannot here conclude as to whether selection accounts for the entire cross-section correlation between subjective well-being and children. In this context, existing work, Clark *et al.* (2008) and Myrskylä and Margolis (2014), reveals only a small and short-lived within-person effect of parenthood. It may well therefore be the case that the selection effect dominates in the cross-section correlation.

4. Conclusions

This paper has shown that the link between parenthood and subjective well-being depends on the extent to which children are chosen. In contexts that make it possible for parenthood to be a choice, children are associated with greater happiness: this applies to parents aged over 30, with greater income, who live in developed countries. In other circumstances, children may be less of a hedonic choice. These findings help making some sense of the divergent results in the existing literature: the picture becomes clearer when one distinguishes the very different context of parenthood.

However, even when there is a positive relationship, the latter may be due to self-selection into parenthood rather than to a causal impact of children on happiness. We here follow a cohort of individuals for around 30 years until they reach the age at which their fertility is completed. Some of these individuals have children and others do not. Pre-childbirth, those who will later become parents are significantly more satisfied than those who will never have children. This does not reflect anticipation, as the satisfaction gap is apparent up to five years before the first childbirth, nor does it entirely reflect future parents' better socio-economic circumstances.

The analysis of parenthood and subjective well-being illustrates that simple correlations have multiple readings. A positive relationship seems to be found only for certain groups of parents, and can equally be read as happy adults being more likely to have children. Sometimes our intuition may not be the best guide to the general causal relationships behind individual happiness.

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Appendix A

Table A.1: Gallup, summary statistics, all countries, age 30-50

Variable	Obs	Mean	Std. Dev.	Min	Max
Subjective wellbeing					
Cantril ladder	318461	5.4	2.2	0	10
Positive affect	312030	67.4	28.9	0	100
Negative affect	303487	27.5	29.4	0	100
Happiness	276217	0.70	0.46	0	1
Stress	299853	0.33	0.47	0	1
Fertility					
Living with children under 15	316678	0.68	0.47	0	1
Demographic characteristics					
Developed country	323025	0.22	0.42	0	1
Developing country	323025	0.66	0.47	0	1
Male	323025	0.46	0.5	0	1
Age	323025	39.42	6.18	30	50
Partnered	320006	0.77	0.42	0	1
Household income	278306	17227	25315	0	1200000
Low educational level	319983	0.32	0.47	0	1
Completed secondary school	319983	0.5	0.5	0	1
Completed tertiary school	319983	0.18	0.39	0	1
Self-employed	299269	0.17	0.38	0	1
Employed	299269	0.37	0.48	0	1
Part-time	299269	0.07	0.26	0	1
Part-time want full time	299269	0.08	0.26	0	1
Unemployed	299269	0.06	0.23	0	1
Out of the labor force	299269	0.25	0.43	0	1
Catholic	280836	0.23	0.42	0	1
Protestant	280836	0.13	0.33	0	1
Orthodox	280836	0.08	0.28	0	1
Muslim	280836	0.34	0.47	0	1
Hinduist	280836	0.05	0.21	0	1
Buddhist	280836	0.04	0.21	0	1
Jewish	280836	0.01	0.07	0	1

Sample: Gallup (2009-2013), 158 countries. All individuals are aged between 30 and 50.

Table A2: Summary statistics ESS all ages

Variable	Obs	Mean	Std. Dev.	Min	Max
Subjective Wellbeing					
Life satisfaction	183454	7.15	2.16	0	10
Happiness	183447	7.45	1.87	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					
Man	183982	.47	.5	0	1
Age	183477	47.75	18.56	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	2674.81	2393.42	98.99	19026.6
Years of education	182397	12.21	4.25	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: six ESS waves (2002-2012) of Belgium, Denmark, Germany, Finland, France, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and United Kingdom. No age restriction.

Table A3: ESS, summary statistics, all 16 European Countries, age 30-50

Variable	Obs	Mean	Std. Dev.	Min	Max
Subjective well-being					
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: six ESS waves (2002-2012) of Belgium, Denmark, Germany, Finland, France, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and United Kingdom. Individuals are aged 30 to 50.

Table A.4: 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 A5: Children by age categories. SOEP data

Dependent variable: Life Satisfaction	(1)	(2)	(3)
Having Children	-0.157***	-0.106***	-0.0688***
	(0.0147)	(0.0157)	(0.0160)
Age 30-39	-0.302***	-0.304***	-0.341***
	(0.0132)	(0.0132)	(0.0137)
Age 30-39 X Having children	**0.268***	**0.0946***	**0.0968***
	(0.0199)	(0.0199)	(0.0202)
Age 40-49	-0.482***	-0.546***	-0.551***
	(0.0156)	(0.0157)	(0.0159)
Age 40-49 X Having children	**0.281***	**0.0681***	**0.0493**
	(0.0215)	(0.0215)	(0.0217)
Age 50-59	-0.528***	-0.579***	-0.542***
	(0.0156)	(0.0162)	(0.0165)
Age 50-59 X Having children	**0.249***	**0.0702***	**0.0399*
	(0.0220)	(0.0224)	(0.0226)
Age over 60	-0.272***	-0.148***	-0.124***
	(0.0123)	(0.0136)	(0.0147)
Age over 60 X Having children	**0.136***	**0.0552***	**0.0263**
	(0.0193)	(0.0201)	(0.0205)
Male		-0.0566***	-0.0672***
		(0.00565)	(0.00586)
Partnered		0.134***	0.147***
		(0.00749)	(0.00755)
Log HH income		0.771***	0.656***
		(0.00607)	(0.00650)
Years of education			0.0236***
			(0.00112)
Labour-force status	No	No	Yes
N	437528	415520	399432
R^2	0.011	0.070	0.084

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 A6: Children by age categories. ESS data

	(1)	(2)	(3)
Dependent variable: Life Satisfaction			
Having children	-0.140***	-0.208***	-0.168***
	(0.0292)	(0.0330)	(0.0333)
Age 30-39	-0.461***	-0.511***	-0.542***
	(0.0230)	(0.0253)	(0.0254)
Age 30-39 X Having children	**0.393*****	**0.232*****	**0.220*****
	(0.0380)	(0.0408)	(0.0411)
Age 40-49	-0.705***	-0.700***	-0.717***
	(0.0304)	(0.0333)	(0.0332)
Age 40-49 X Having children	**0.406*****	**0.190*****	**0.168*****
	(0.0425)	(0.0457)	(0.0458)
Age 50-59	-0.748***	-0.715***	-0.729***
	(0.0334)	(0.0370)	(0.0368)
Age 50-59 X Having children	**0.390*****	**0.193*****	**0.166*****
	(0.0449)	(0.0484)	(0.0484)
Age over 60	-0.353***	-0.133***	-0.217***
	(0.0247)	(0.0303)	(0.0305)
Age over 60 X Having children	**0.265*****	**0.137*****	**0.121*****
	(0.0379)	(0.0420)	(0.0421)
Male		-0.119***	-0.0742***
		(0.0105)	(0.0107)
Log HH income		0.603***	0.508***
		(0.00878)	(0.00921)
Years of education			0.0172***
			(0.00145)
Marital status	No	Yes	Yes
Labour-force status	No	No	Yes
Religiosity	No	No	Yes
N	179187	142415	139116
R^2	0.136	0.187	0.205

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

Table A.7: Children by income quintiles. SOEP data

	(1)	(2)	(3)
Dependent variable: Life Satisfaction			
Having children	-0.187***	-0.170***	-0.132***
	(0.0144)	(0.0147)	(0.0148)
Q2	0.425***	0.402***	0.333***
	(0.0149)	(0.0148)	(0.0150)
Q2Xchildren	**0.0269**	**0.0320***	**0.0293**
	(0.0193)	(0.0192)	(0.0194)
Q3	0.613***	0.566***	0.460***
	(0.0149)	(0.0148)	(0.0151)
Q3Xchildren	**0.0746***	**0.108***	**0.0901***
	(0.0191)	(0.0191)	(0.0193)
Q4	0.828***	0.775***	0.648***
	(0.0147)	(0.0147)	(0.0151)
Q4Xchildren	**0.0839***	**0.147***	**0.109***
	(0.0188)	(0.0189)	(0.0192)
Q5	1.108***	1.053***	0.885***
	(0.0143)	(0.0144)	(0.0150)
Q5Xchildren	**0.197***	**0.285***	**0.227***
	(0.0181)	(0.0183)	(0.0187)
Male		-0.0594***	-0.0575***
		(0.00567)	(0.00587)
Partnered		0.185***	0.195***
		(0.00741)	(0.00748)
Age		-0.0554***	-0.0518***
		(0.00106)	(0.00119)
Age squared divided by 100		0.0535***	0.0492***
		(0.00107)	(0.00123)
Years of education			0.0290***
			(0.00111)
Labour-force status	No	No	Yes
N	415544	415520	399432
R^2	0.052	0.059	0.074

Robust standard errors in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. OLS regressions of life satisfaction on having children and income quintiles groups interacted with having children. Controls are progressively added. All regressions include year dummies. The poorest income quintile Q1 is omitted. Sample: SOEP (1984-2012). No age restriction

Table A8: Children by income quintiles. ESS data

	(1)	(2)	(3)
Dependent variable: Life Satisfaction			
Having children	-0.379***	-0.314***	-0.271***
	(0.0228)	(0.0258)	(0.0257)
Q2	-0.0244	-0.0481*	-0.00452
	(0.0285)	(0.0284)	(0.0282)
Q2 X children	**0.314***	**0.251***	**0.263**
	(0.0354)	(0.0352)	(0.0350)
Q3	0.278***	0.349***	0.222***
	(0.0270)	(0.0271)	(0.0270)
Q3 X children	**0.378***	**0.297***	**0.302***
	(0.0328)	(0.0329)	(0.0327)
Q4	0.525***	0.569***	0.399***
	(0.0252)	(0.0255)	(0.0255)
Q4 X children	**0.443**	**0.401***	**0.374***
	(0.0301)	(0.0303)	(0.0301)
Q5	0.678***	0.680***	0.495***
	(0.0271)	(0.0275)	(0.0275)
Q5 X children	**0.483***	**0.492***	**0.428***
	(0.0319)	(0.0321)	(0.0320)
Male		-0.107***	-0.0696***
		(0.010)	(0.0102)
Age		-0.0852***	-0.0865***
		(0.0018)	(0.0019)
Age-squared divided by 100		0.0840***	0.0845***
		(0.0017)	(0.0019)
Years of education			0.0305***
			(0.0014)
Marital status	No	Yes	Yes
Labour-force status	No	No	Yes
Religiosity	No	No	Yes
N	161093	158325	154419
R^2	0.150	0.173	0.195

Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. OLS regressions of life satisfaction on having children and income quintiles groups interacted with having children. Controls are progressively added. All regressions include year and country dummies. The poorest income quintile Q1 is omitted. Sample: six ESS waves (2002-2012) of Belgium, Denmark, Germany, Finland, France, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and United Kingdom. No age restriction.

Table A9: Summary statistics for the sample used to study selection into parenthood. SOEP data

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 3 and Figures 4 and 5

Appendix B: The creation and description of the SOEP data

The individual long format file ($PL) is our master SOEP dataset. This contains information on year of birth, gender, and subjective well-being of 60,114 respondents, producing 482,288 observations. We merge the master dataset and the generated individual long format file ($PGEN). The latter creates synthetic variables for marital status, labour-force status and years of education, assembled from a number of different questions in the main individual dataset. $PGEN has 1882 extra observations that cannot be matched with observations in the master dataset. These are deleted since no subjective well-being information is available for them.

Fertility data are obtained from two biography datasets, $BIOBIRTH for women and $BIOBRTHM for men. $BIOBIRTH contains the fertility history of each woman with at least one interview from 1984 onwards, and $BIOBRTHM that of men with at least one interview since 2000. These datasets are not in long format: they provide summary information on the fertility history of each individual. The relevant variables for our purpose are the year of birth of each child and the total number of children that the individual has had up to 2012. $BIOBRTHM is appended to $BIOBIRTH before merging the resulting dataset to the long-format individual file described above. 39,458 observations from the individual dataset could not be matched to fertility data, mainly due to missing fertility information for men who dropped out of the survey before 2000.

Finally, we merge the dataset to the household long format file ($HL) to obtain information on monthly household net income, dropping 196 observations for which household data was not available. We end up with a dataset of 442,634 observations on 52,161 individuals, of which 437,532 observations include both subjective well-being and fertility information.