

Do Children Bring Happiness and Purpose in Life?

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December 10, 2010

1 Introduction

Conventional wisdom arguably suggests that parenting is satisfying for parents: individuals in early to mid adulthood often claim to look forward to entering parenthood and having children, and even in contexts of highly developed societies where childbearing has become financially expensive and are associated often with considerable trade-offs in terms of professional careers and pursuing other goals in life, childbearing has remained an important aspect of most adults. An overwhelming majority of high-school seniors in the U.S. for example believe that motherhood and fatherhood will be fulfilling, and this fraction has been increasing during the 1970s–1990s (Thornton and Young-DeMarco 2001). Mothers also report about intense emotions evoked by their children (Preston and Hartnett 2008), and parents of feel “madly in love” with their children and report high levels of agreement with statements such as “I have an overwhelming love for my children unlike anything I feel for anyone else” (Erickson 2005). fMRI studies have documented that picture of own—but not other—children activate regions of the brain rich in oxytocin and vasopressin receptors, i.e., receptors neurohormones associated with pair-bonding and happiness (Bartels and Zeki 2004). Moreover, despite declines of the fertility rates to below-replacement levels in virtually all developed countries, and to “lowest-low fertility levels” in many southern and central/eastern European countries during the 1990s, childlessness remains relatively low and often below 20% (Kohler et al. 2002; Sobotka 2004). Parenthood remains a widespread experience, even when contraceptive control is easily accessible and life-style options other than parenthood are widely accepted in highly developed countries. It does not appear as if this pattern is fundamentally changing in advanced societies. For example, Myrskylä et al. (2009) document a fundamental change in the well-established negative relationship between fertility and development as the global population entered the 21st century. While development continues to promote fertility decline at low and medium levels of the human development index (HDI), Myrskylä et al’s analyses show that at advanced HDI levels, further development can *reverse* the declining trend in fertility. The previously negative development–fertility relationship has therefore become J-shaped, with HDI being *positively* associated with fertility among highly developed countries (for related

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Acknowledgment: This paper is importantly based on work that the author conducted with Jere Behrman, Francesco Billari and Axel Skytthe and has been published/presented as Kohler et al. (2005) and Billari and Kohler (2009).

analyses, see Goldstein et al. 2009). Interpreting these trends in light of the Second Demographic Transition theory—a leading theoretical framework for explaining low fertility that emphasizes the emergence of self-fulfillment as an increasingly important goal of life in the most developed societies (van de Kaa 1987)—these trends would seem to confirm the conventional wisdom that parenthood is rewarding for individuals, and that having children would tend to increase individuals’ satisfaction with life and possibly their social relationships.

In sharp contrast to the conventional wisdom about parenthood and happiness, and potentially puzzling in light of the Second Demographic Transition theory and recent trends in fertility, several recent articles in the popular press have questioned the notion that children and childrearing increase the subjective well-being of their parents. In a recent *New York Magazine* article, Senior (2010) summarized the relationship between parenthood and happiness as “All Joy and No Fun: Why Parents Hate Parenting”, pointing to the fact that children often “expose the gulf between our fantasies about family and its spikier realities; [they] mean parting with an old way of life, one with more freewheeling rhythms and richer opportunities for romance”. In a related *Times Magazine* article on “The Only Child: Debunking the Myths”, Sandler (2010) discusses the pros- and cons of progressing to the second child, and writes “Talk to parents and you’ll often hear that they opt to have another because they think it will be better for the child they already have. Not many say they do it for themselves, no matter how much they may love the experience of parenting.” In both cases, the authors suggest that parenting may be much less rewarding in terms of subjective well-being than is suggested by the conventional wisdom about parenthood and happiness.

How can we reconcile these different viewpoints and perspectives? In trying to answer this question about whether children bring happiness—and perhaps purpose—in life, this paper reverses the most often asked question about contemporary fertility trends in developed countries. In particular, while much of the existing literature on low fertility focuses on the questions of why fertility is low or lowest-low in many European countries, this paper turns this question around: *Why isn’t fertility even lower?* And perhaps related, a question asked by Golini (1998) more than a decade ago: “How low can fertility be?”

2 Fertility and Happiness

The two leading theoretical framework explaining contemporary fertility trends in the rich world, with numerous variations, are the economic theory based on Becker’s seminal work (e.g., Becker 1991) and the “Second Demographic Transition” (SDT) framework proposed by Lesthaeghe and van de Kaa (Lesthaeghe and van de Kaa 1986; Lesthaeghe and Neidert 2006; van de Kaa 1987). In the economic theory framework, individuals or couples maximize life-cycle well-being and by considering the quantum and quality of children in the context of various other possible allocations of scarce resources such as time and money. According to the “cultural perspective” in the SDT framework, self-fulfillment is the main goal of life, and childbearing is predicted to occupy an increasingly less central role in the life of individuals and couples. As such, childbearing and marriage are often postponed until other goals in life—such as completing education and establishing oneself in the labor-market are fulfilled. A third, re-emerging area, related to both the mentioned

approaches is the “value of children” approach (Friedman et al. 1994; Hoffman et al. 1978; Nauck 2007; Nauck and Klaus 2007).

To explain continued childbearing and partnership formation in low fertility contexts, most economic and rational-choice approaches to fertility and union formation assume that individuals derive “utility” from having children or being in unions (e.g., Becker 1991). Decisions about fertility and union formation are based on the utility gains attained by having children and/or being in unions as compared to the utility gains that are incurred from alternative allocations of resources, like income or time, that are required to raise children and maintain partnerships. The basic implication of this conceptual framework that individuals engage in partnerships or have children because this increases their utility and makes them better off can be empirically investigated. In particular, several recent studies suggest that utility can be measured using information about subjective well-being or “happiness” (e.g., Frey and Stutzer 2002; Layard 2005). If individuals (i) do not have systematic misconceptions about the benefits of children and partnerships, and (ii) make conscious and informed choices about the formation of partnerships and their level of fertility, one would expect that the relation “Partner + Children = Happiness” holds: individuals form unions or have children because these decisions increase their subjective well-being or “happiness”.

In sharp contrast, however, as Easterlin (2003, 2005) notes, a growing number of psychologists have argued for a “setpoint theory” of happiness, in which happiness is primarily determined by personality traits and other genetic factors and is highly stable over the life course. In this view, significant life events, such as the formation or dissolution of unions and the birth of children, only transitorily change an individual’s happiness from a setpoint given by personality and other genetic traits. Easterlin (2005) provides a number of quotations from the psychological literature that encapsulate this theory: “Each individual may be on a personal treadmill that tends to restore well-being to a predetermined setpoint after each change of circumstances” (Kahneman 1999, p. 14). “Chance events like personal tragedies, illness, or sudden strokes of good fortune may drastically affect the level of happiness, but apparently these effects do not last long” (Csikszentmihalyi and Jeremy 2003, pp. 185–186). “Objective circumstances appear to be limited in the magnitude, scope, and particularly duration of their effects on psychological well-being, which, in the long run, is likely to reflect instead stable characteristics of the individual” (Costa et al. 1987, p. 54). Setpoint theory thus predicts that a substantial fraction of variation in well-being is due to social or biological endowments that are unobserved in social science data sets. Several empirical studies support this prediction. For example, Lykken and Tellegen (1996) report that variation in the well-being component of the Multidimensional Personality Questionnaire (MPQ) for twins in the Minnesota Twin Register in the 1980s is primarily associated with genetic variation: genetic effects account for about 50% of the variation in one-time survey reports of well-being, and up to 80% of the variance in happiness indicators obtained by averaging repeated measures of well-being. Moreover, neither socioeconomic status, schooling, family income, marital status, nor religious commitment account for more than 3% of the variance in these averaged measures of well-being. In addition to these behavior genetic studies, there is also an emerging literature linking specific genes to variation in well-being. Using data from the National Longitudinal Study of Adolescent

Health, for example, De Neve et al. (2010) show that individuals with a transcriptionally more efficient version of the serotonin transporter gene (5HTT) are significantly more likely to report higher levels of life satisfaction. Having one or two alleles of the more efficient type raises the average likelihood of being very satisfied with one's life by 8.5% and 17.3%, respectively. In light of this evidence, therefore, the economic models of fertility would seem to have it wrong. Changing the nature of partnerships or having children would only have temporary effects on happiness. In the now-famous metaphor of Brickman and Campbell (1971), each individual would seem to be on a "hedonic treadmill".

After decades of research on the determinants of fertility decline (e.g., see Bulatao and Casterline 2001), an increasing number of studies have started to address the question of "Why do individuals in developed countries continue to form unions and have children?" (Foster 2000; Hakim 2003; Morgan and King 2001; Schoen et al. 1997). This recent research in part builds on the value of children approach of the 1970s that argues that children (and also marriage) contribute to individuals' well-being (e.g., Billari 2009; Fawcett 1988; Friedman et al. 1994; Hoffman and Manis 1979; Hoffman et al. 1978; Jones and Brayfield 1997; Margolis and Myrskylä forthcoming). For instance, Morgan and King (2001) relate the motivations to have children in contemporary societies to three areas: biological predispositions, social coercion and rational choice. They conclude that humans are likely to have *evolved* preferences for children, and Morgan and King emphasize the opportunity that evolutionary theories and behavioral genetics provide for improving our understanding of human preferences for children. The arguments in Morgan and King are thus closely related to other work that has tried to interpret the preferences for children and related behaviors, such as sexual intercourse and changing fertility rates, in an evolutionary perspective. For instance, Foster (2000) draws on evidence from evolutionary biology, ethology, quantitative genetics, developmental psychobiology, and psychology, and argues that humans' evolved biological predisposition is toward nurturing behaviors, rather than having children per se. In her view, humans also have the unique ability to be aware of such biological predispositions and translate them into conscious, but nevertheless biologically-based, fertility motivation or preferences for children. Consistent with these findings, Kohler et al. (1999) and Rodgers et al. (2001) have interpreted their findings of heritability patterns in fertility and fertility precursors as evidence for systematic genetic influences on fertility motivations and preferences. Several other studies also have proposed relations between evolved dispositions/preferences and desires for children. On one hand, Carey and Lopreato (1995) suggest a "two-child psychology" that implies a strong desire for two surviving children. Hakim (2003), on the other hand, stresses the heterogeneity in women's desires for children and proposes three idealized preference categories: home centered (about 20% of women), work centered (about 20%), and adaptive (a combination of work and home; about 60%). Hakim (2003) also argues that, after the contraceptive revolution, women are happy if they can achieve their preferred lifestyle, that is, a lifestyle that is a good match between their preferences regarding being with/without a job and with/without children. In contrast to the above literature that emphasizes preferences for children, Potts (1997) emphasizes humans' evolved desire to have sexual relations, rather than children per se. In contemporary modern societies with effective contraception, Potts claims, these inherited predispositions mix with un-

conscious physiological mechanisms working towards optimal birth spacing to make modern humans seek personal wealth and health rather than large families.

Reproduction is also at the core of many evolutionary explanations for marriage or long-term unions (for recent reviews, see for instance Daly and Wilson 2000; Gangestad 2003; Hrdy 1999; Kaplan and Lancaster 2003; Lawson and Mace 2010). In the context of sexual reproduction, however, evolutionary models also predict marked male-female differences in fertility behavior and motivations to engage in partnerships. A husband is seen as gaining sexual access to his wife and the ability to sire her children, while women obtain support in raising their children. As a consequence, youth and the ability to reproduce is often associated with increased value of women in the marriage market, while social status and wealth enhance the desirability of males. Conflicts over reproduction and resource allocation to children are hence seen as one of the prime causes of tensions within marriage and divorce. For instance, men are profoundly concerned that the children in whose welfare they invest are their own, and infertility is frequently a reason to divorce. Sexual jealousy is also found to be different, with male jealousy more focused on the sexual act and female jealousy focused on the alienation of the partner's attention and material resources. From an evolutionary perspective, these dissimilarities between males and females are rooted in the asymmetrical efforts of males and females in producing egg and sperm cells, and they result in different short- and long-term mating strategies, differences in attachment to children and willingness to invest in offspring. For instance, females commonly invest vastly more time and energy in nurturing each offspring than do males, who can "disappear" after conception and still gain the evolutionary fitness benefit from a successfully raised biological child. This often stronger attachment of women to their offspring puts women at the risk of being "prisoners of love" (England and Folbre 2002): men can exploit the stronger maternal attachment to children in bargaining within the household or in divorce settlements because mothers are likely to take care of their common children even if their mates withdraw resources from the partner or child.

Despite the strong evolutionary arguments linking the motivation for children and partnerships to evolved preferences and associated levels of subjective well-being, with possibly important differences across gender, studies of the contribution of children and partnerships to happiness are few. For instance, several studies on subjective well-being—including some by a leading economic demographer—do often not address the contributions of fertility to well-being in detail (e.g., Argyle 2001; Diener et al. 1999; Easterlin 2001, 2003; Kahneman et al. 1999; Layard 2005; Myers 1993). Exceptions include McLanahan and Adams (1987) who conclude that adults with children at home often report lower levels of happiness and life-satisfaction than other groups, and these reports of lower happiness are associated with increased worries and higher levels of anxiety and depression. In a similar vein, Nomaguchi and Milkie (2003) find that becoming a parent is both detrimental and rewarding, unmarried parents tend to report lower self-efficacy and higher depression than their childless counterparts; married mothers' lives are marked by more housework and more marital conflict but less depression than their childless counterparts. Angeles (2009) document an effect of children on life satisfaction that is positive, large and increasing in the number of children. This effect in Angeles (2009), however, is contingent on individual's characteristics, with children making married people better off, while most unmarried individu-

als appear to be worse off with children. Aassve et al. (2008) and Margolis and Myrskylä (forthcoming) also document important country differences in the association between happiness and childbearing, and particularly point to the fact that the association between fertility and happiness is strongest in Social Democratic countries. Hakim (2003) also reports findings that women's general happiness and satisfaction with life displays a U-shaped trend among people who have children. Contrary to the popular stereotype, Hakim concludes from these studies, children seem to seriously depress satisfaction levels in the middle years of marriage; marital satisfaction seems to decline from the time children are born up to the teenage years, then rises again to former levels after children leave home. Consistent with this observation, Margolis and Myrskylä (forthcoming) find that the negative association between happiness and number of children decreases with age, and changes to positive above 40, suggesting that small children may have a negative effect on well-being, but as children grow older, the positive aspects of parenthood dominate.

In contrast to the effects of children on women's satisfaction levels, parental status has been found to have little influence on the lives of married men (Nomaguchi and Milkie 2003). Some of these results, however, change once unobserved factors are taken into account. Clark and Oswald (2002), for instance, find that children are not associated with well-being in longitudinal analyses with controls for individual longitudinal fixed effects, except for third or higher-order children that have a negative effect. Using longitudinal data, Clark et al. (2008), moreover, show that the anticipation of a birth in the near future leads to increases in subjective well-being for women (but not for men), an effect that turns negative 2–3 years after the birth of the child. Clark et al. (2008) thus summarize their findings as “the birth of a child provides a larger satisfaction boost to women than to men when it happens but four years later both sexes are equally unhappy”. No data on the long-term effects of children on well-being is available in this study. Stanca (2009) argue that the negative effect of parenthood on well-being is explained by a large adverse impact on financial satisfaction, that on average dominates the positive impact on non-financial satisfaction. Powdthavee (2009) speculates if current and prospective parents accept a “comfortable illusion” because of necessity to cope with the difficulties of childrearing: “[the findings of a negative effect of having children on happiness] are, of course, extremely depressing. Yet perhaps they represent something we know deep down to be true: Raising children is probably the toughest and the dullest job in the world. But what if we do not give in to this comfortable illusion? What if all of us decided one day—for the sake of our own personal happiness—not to have children any more? Then chances are that the future will stop at our generation, which is perhaps worse beyond our comprehension.”

Recent psychological studies also provide a rich—albeit not necessarily consistent—set of findings about the contribution of children to well-being. Rogers and White (1998), for instance, find that own children give more satisfaction with parenting than adopted children; Buss (2000) argues that humans have evolved mechanisms for mating bonds and close kinship that produce “deep sources of happiness” (see also Miller and Rodgers 2001); and Hilleras et al. (2001) show that having children contributes to the well-being and happiness of the elderly (see also Pinquart and Sörensen 2000). In addition to these studies on overall well-being, there has been active research on associations between having children and marital satisfaction (e.g., Bradbury et al. 2000;

McLanahan and Adams 1987; Mizell and Steelman 2000; Russell and Wells 1994), which indicate associations, but at times positive and at times negative ones. In a recent study focusing on Italy and France, for example, Coppola et al. (2009) study the short-term effect of the first marriage and of the first childbearing satisfaction with the financial situation and with the amount of leisure time. The results show that the first marriage positively affects the satisfaction with the financial situation, while the first childbirth has no significant impact on it. In contrast, both events negatively affect the satisfaction with the amount of leisure time, showing that these transitions are in conflict with the need for determining one's autonomy. Moreover, differences across country show that in contexts characterized by a higher gender equity and by a stronger welfare state's support, the stressing impact of these events are weakened. Consistent with these findings, a recent review of the (small) economic literature on subjective well-being states that "The evidence with regard to the well-being effects of having children is mixed and differs across measure and country" (Dolan et al. 2008, p. 107). This might be due to the difficulty of taking into account potential unobserved factors that affect the number of children and that are likely to bias the effect of the number of children on happiness.

In understanding the possibly contributions of children to well-being, however, it is also important to highlight the possibly two-way relationship between happiness on the one, and fertility/partnerships on the other. For example, Jokela et al. (2009) argue that there is a two-way relationship between personality traits—which are also closely linked to happiness and life satisfaction—and having children: on the one hand, high emotionality among Finish respondents who are longitudinally followed decreased the probability of having children, whereas high sociability and, in men, high activity increased this probability; similarly, Parr (2010) found among Australian male and female respondents that a strong positive relationship between prior satisfaction with life and fertility two years later. On the other hand, having children seems to affect personality characteristics, and as we will show below also happiness, and in Jokela et al.'s (2009) study, predicted increasing emotionality, particularly in respondents with high baseline emotionality and two or more children. Moreover, the personality characteristics of children (which might be inherited from the parents) have been shown to affect future childbearing. Jokela (2010), for example, has shown that child's cognitive ability, adaptability to novelty, and prosocial behavior, may be relevant to parents' future childbearing.

At older ages, the evidence about the relationship between having had children and well-being is also mixed. For example, Dykstra and Keizer (2009) investigate whether there are variations in wellbeing by parenthood status among 40–59 year old men in the Netherlands, and find that in terms of psychological wellbeing, men's partner history counts, not their parenthood status: Being single contributes to low levels of psychological wellbeing. In a Norwegian sample of men and women at midlife to old age, Hansen et al. (2009) find that childless women report significantly lower life satisfaction and self-esteem than both mothers with residential children and empty nest mothers, while motherhood is inconsequential for affective well-being. Similarly to the findings for the Netherlands, parental status is unrelated to any of the well-being aspects among men.

2.1 Expected change in happiness due to having a child

In summary, the review of the literature provides a mixed picture about the relationship of having children with subjective well-being. Why parents report being in love with their children and perceiving children as extremely valuable in their lives, studies of happiness and children often find small or even no effect of having children on subjective well-being. If positive associations between well-being and fertility exist, they have mostly been shown for first children—or the entry into parenthood—while for second and higher order children the associations with happiness that have been documented in the literature are at best mixed.

To perhaps better integrate these divergent findings, we investigate in this paper the ex-ante anticipated changes in well-being that individuals expect from entering parenthood or having an additional child, and compare them with the ex-post realization of happiness changes that occur after individuals had children. We begin our discussion of the relationship between happiness and childbearing with focusing on the (arguably) conventional wisdom that parenthood on average is perceived as desirable by young adults. In this section we therefore accept a forward looking perspective and ask: do individuals, and in particular, prospective parents, expect that having children and entering parenthood will increase their subjective well-being? And, do these expected happiness gains vary across countries and institutional contexts in ways that are consistent with observed fertility patterns?

Our discussion in this Section draw primarily on Billari and Kohler (2009) who analyzed the relationship between fertility and its effect of future well-being using data from the Generations and Gender Survey (GGS). GGS is a comparative cross-country and individual-level survey effort (Vikat et al. 2007), and the analyses in Billari and Kohler (2009) draw on six countries (Bulgaria, France, Georgia, Germany, Hungary, and Russia) for which data was available at the time of the analyses. In all these countries surveys have taken place between 2004 and 2006, and sample design guidelines and survey documentation are found in UNECE & UNFPA (2002).

The GGS targeted a representative sample of the adult population (aged 18 and over) collecting data about a broad range of subject, including retrospective reconstructions of event histories, current assessment of the situation, values and attitudes, and prospective evaluations Vikat et al. (2007). A measure of predicted happiness from childbearing is included in the fertility section of the Wave 1 GGS standard questionnaire. Specifically, Billari and Kohler's (2009) focus on the responses to the question: "Now, suppose that during the next 3 years you were to have a/another child. I would like you to tell me what effect you think this would have on various aspects of your life." Part "f" of this question pertains to the "joy and satisfaction" that the respondent gets from life, with possibly answers ranging from "much better", "better", "neither better nor worse", "worse", "much worse". Recoding the responses as -2 ("much worse") to +2 ("much better"), with 0 being "neither better nor worse", results in a measure that reflects the extent to which individuals—and most importantly, also prospective parents—associate fertility and childrearing with increases in their subjective well-being or "happiness". Across the six countries included in the analyses, this information on the expected changes of having a child on well-being is available for a total of 11,609 men and 14,305 women.

Figure 1 reports for each country the average expected change in subjective well-being result-

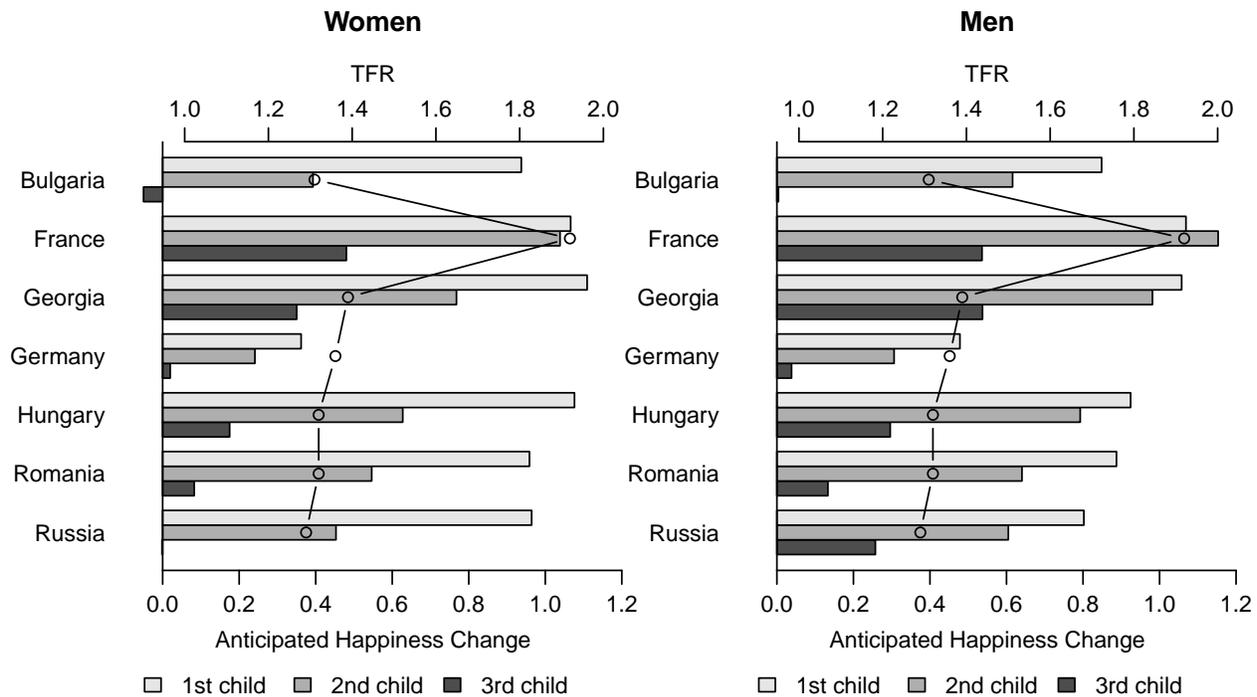


Figure 1: Average expected change in subjective well-being resulting from having a first, second or third child
TFR shown by superimposed line/points

Note: Respondents aged 18–40 years old; based on GGS question: “Now, suppose that during the next 3 years you were to have a/another child. I would like you to tell me what effect you think this would have on [the joy and satisfaction you get from life].” Answers are coded as “much better” (= +2), “better” (= +1), “neither better nor worse” (= 0), “worse” (= -1), “much worse” (= -2). All estimates are significantly positive according to a t-test, except Bulgaria (men, 2 children; women, 2 children), Germany (men, 2 children; women, 2 children), Russia (women, 2 children). Adjusting for different age-structures populations at risk of having first/second or third children across countries does not change the overall pattern in this graph.

Source: adapted from Billari and Kohler (2009).

ing from having a first, second or third child for both men and women. The key finding of this graph is that for both men and women, and for the progression to the first and second child child, the average expected change in happiness is positive across the seven countries with very different socioeconomic and demographic contexts. So, on average, this graph is consistent with the conventional wisdom that childless adults on average look forward to entering parenthood, and that parents with one child on average perceive that they would be happier if they had a second child. It is important to note, however, that there is considerable variation in this pattern: First, cross-country differences are following a simple link between expected happiness from having a/another child and actual fertility (Billari 2009) (see the TFR levels included in Figure 1), with happiness gains being highest in France and Georgia and lowest in Bulgaria, Germany, Hungary and Russia, corresponding roughly to the ranking of current fertility levels in these countries. Second, the expected happiness gains decline substantially with the number of children an individual already has. Specifically, in all but one case, first children are perceived are perceived by making larger contributions to the subjective well-being of individuals than second children, with the gaps between the happiness gains for first and second children being usually larger for women, and for women, being often large in countries that are characterized by relatively low parity pro-

gression probabilities from the first to the second child (including, for example, Bulgaria, Georgia, Hungary and Russia). The progression to the third child is perceived with considerably smaller gains in subjective well-being, particularly for women, and in Bulgaria and Russia, the average perception among women even seems to be that having a third child would lead to reductions in subjective well-being.

In addition to the variation between first, second and third children, it is important to ask if entering parenthood—which arguable is the most important fertility decisions individuals make—is perceived as desirable at particular ages, and if entering parenthood at ages other than the “optimal age range” would be perceived with lower gains in happiness from having a child. To shed some light on this issue, even if selectivity the individuals who remain childless at older ages cannot be controlled for, Billari and Kohler (2009) also investigate the age pattern in the perceived gains in happiness by having a/another child during the next 3 years. In our discussion here we focus on childless women and the age-pattern of the expected happiness gains from having a child by entering parenthood in the near future (for further analyses, see Billari and Kohler 2009). In general, one would expect these age profiles of expected happiness gains from having a first child to correspond to the well-known shape of the fertility-age relationships: happiness gains increase as fertility rates rise at relatively young adult ages, and happiness gains from children decline as fertility rates decrease at later childbearing ages. In all the six countries depicted in Figures 2, the pattern is as expected. With the exception of Russia, childless women associate the largest happiness gains from entering parenthood during the late 20s and early to mid 30s, and most pronounced in France, Germany and Hungary, entering parenthood at earlier or older ages is perceived as resulting in much smaller gains in subjective well-being. As already mentioned above, there is important country variation in the level of these happiness gains, with German standing out as expecting particularly small gains in happiness from entering parenthood. In Russia, consistent with a generally earlier pattern of childbearing, the peak happiness gains from entering parenthood occur at a relatively earlier and during the early to mid 20s.

In summary, the above analyses based on Billari and Kohler (2009) suggest that, in the low fertility context studied prevailing in Bulgaria, France, Georgia, Germany, Hungary, and Russia, predicted happiness from having a(nother) child is generally positive, but it diminishes with the number of children an individual already has, with important differences across countries, following a pattern that approximately mirrors observed parity progression ratios in these countries. Second, the anticipated changes in subjective well-being from having a first birth approximately follow the observed age-pattern of fertility in all countries. Hence, consistent with the conventional wisdom about parenthood discussed in the introduction of this paper, entering parenthood across of the low fertility countries included in the analyses is perceived with increases in subjective well-being on average, and these expected gains in happiness are particularly pronounced if birth of the first child occurs at the “right age”, which in the countries studied here is often in the late 20s and early 30s. Germany, a country that has a long tradition of relatively low fertility (with TFR around 1.3–1.4 for more than two decades) stands out as a country in which entering parenthood and progressing to the second child is associated with the smallest gains in happiness among adults. Additional analyses in Billari and Kohler (2009) also show that several macro-level vari-

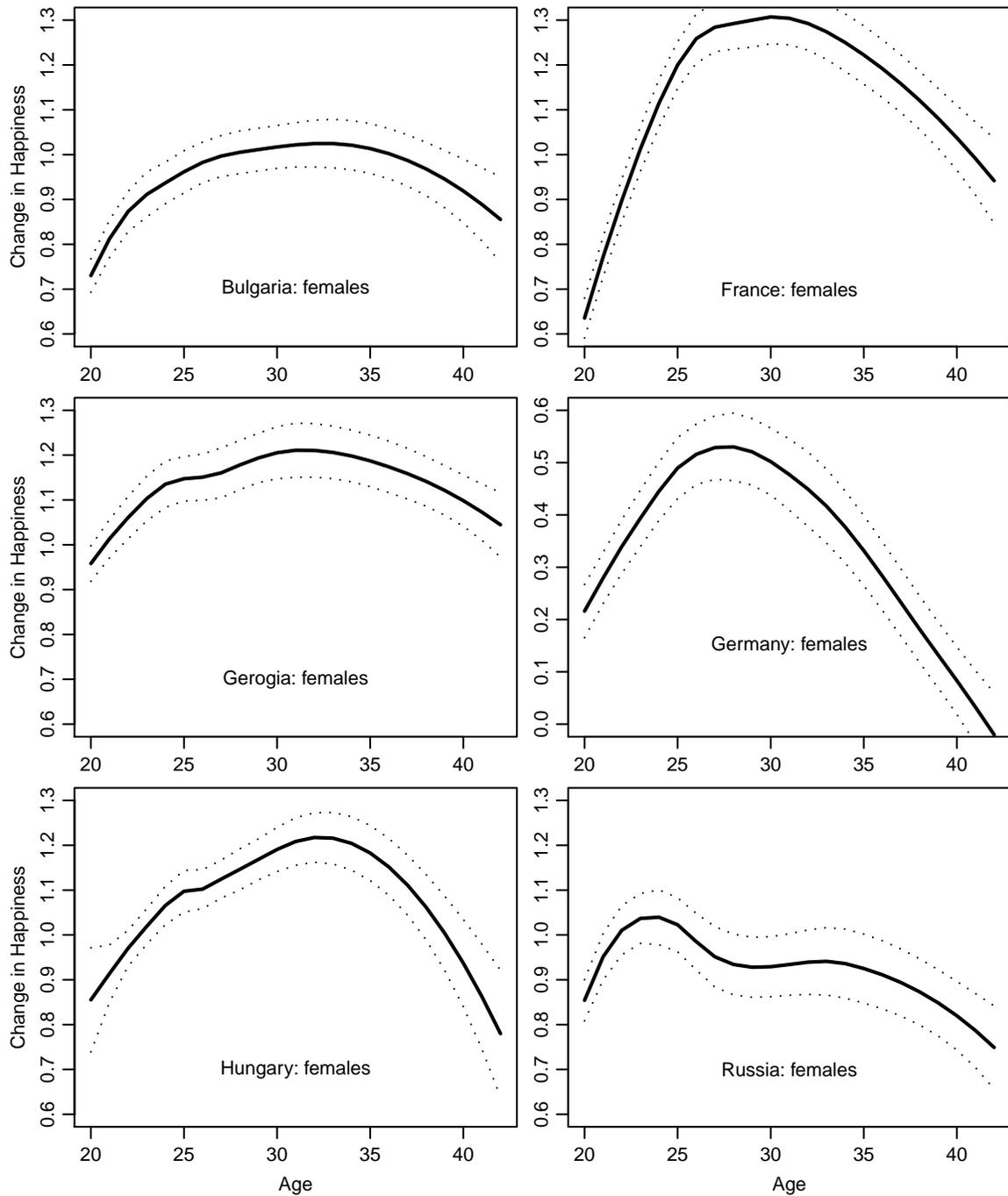


Figure 2: Average expected change in subjective well-being resulting from having a child for childless individuals

Note: The scale for Germany is different from the other counties because of relatively low values for expected change in subjective well-being resulting from having a child. 95% confidence intervals are shown by the dotted lines.

Source: adapted from Billari and Kohler (2009).

ables reflecting institutional contexts and local cultures are importantly related to the anticipated well-being changes from having a(nother) child, although the direction is not always as hypothesized and the interpretation of these interactions between institutional contexts and socioeconomic conditions and expected happiness gains from having a/another child remains somewhat poorly understood.

2.2 Partner + Children = Happiness?

A natural question to ask after the previous discussion that emphasized the expected gains in happiness from entering parenthood or having another child is: “Are these expectations about gains in happiness fulfilled after individuals have children?” Our review of the literature above has already indicated that the answer to this question may not be as clear-cut as one might expect—many studies have documented no or only small gains in happiness as a result of children. However, many of the existing studies have mostly been able to identify associations between fertility and happiness, which might be different from the causal contributions of children on well-being if unobserved factors—such as personality traits, ability, preferences and attractiveness—affect both an individual’s fertility outcomes as well as his/her subjective well-being. For example, Jokela et al. (2009) assessed whether three personality traits—sociability, emotionality, and activity—predicted the probability of having children and whether having children predicted personality change, and documented that high emotionality decreased the probability of having children, whereas high sociability and, in men, high activity increased this probability. Similarly, behavioral genetic analyses of the Danish Twin data in (Rodgers and Kohler 2008) reveal for males aged 25–45 a systematic positive association between the genetic components of variation in subjective well-being and of variation in fertility/partnership behaviors: genetic dispositions that tend to increase subjective well-being—say, dispositions towards a “happy personality”—are associated with a higher number of partnerships, a higher probability of being currently in a partnership, and a larger number of children. For females aged 25–45, the relationships are similar, except that dispositions towards a “happy personality” tend to be associated with increased partnership stability rather than a higher number of partnerships.

In order to better understand the potential causal contributions of having children on subsequent well-being, we present in this section results from Kohler et al. (2005) on the contribution of children and partnership to subjective well-being. In particular, in contrast to the majority of studies on this topic, the estimates in Kohler et al. (2005) are based on monozygotic twins, and it can be argued that these estimates better reflect the causal impact (rather than just the associations) of fertility on subjective happiness through the first estimates of such effects that use a sample of monozygotic twins (MZ or identical twins) to control for unobserved endowments that influence both subjective well-being. For example, an important caveat of the findings in Billari and Kohler (2009) is that the analyses do not necessarily show causal relationships as the cross-sectional are subject to important endogeneity concerns, for example, due to the fact that happier persons might be more likely to have children. Kohler et al. (2005) overcome the estimation problems caused in non-experimental data by unobserved endowments that simultaneously affect the left-side variable in regression models—in our case, subjective well-being—and the right-side explanatory variables—

in our case, measures of fertility and partnership behaviors—by utilizing the fact that monozygotic (identical) twins share the same genetic endowment as well as the same parental background and various social or economic endowments related to parental households (e.g., neighborhoods, schools). The analyses can therefore use fixed-effect analyses within monozygotic (identical) twins in order to control for a wide range of unobserved factors that may affect both subjective well-being and fertility and partnerships. In particular, these *within-MZ twin pair analyses* can eliminate the influence of unobserved endowments resulting from genetic dispositions (MZ twins share the same genetic information) and shared parental households (the vast majority of MZ twins in the data grew up together) and other common socioeconomic contexts (e.g., neighborhood effects, cohort influences). The data used for these analyses are based on the Danish Twin Registry that was established in 1954 as the first nationwide twin registry in the world (see Hauge 1981; Hauge et al. 1968; Kyvik et al. 1996, 1995; Skytthe et al. 2002). In 2002, the Danish Twin Register conducted a Twin-Omnibus Survey of all registered male and female twins born in 1931-82, resulting in a total of 34,944 completed questionnaires (a response rate of 75.4%). This 2002 survey included a measure of subjective well-being, or “happiness”, that was obtained through the question “How satisfied are you with your life, all things considered?” with responses ranging from very satisfied to not satisfied at all. In contrast to other investigations focusing on satisfaction with some particular aspects of life such as marriage or work, this survey question attempts to elicit *overall* well-being. Descriptive statistics for this measure of well-being are reported in Table A.1. In the analyses below, subjective well-being is represented through a “happiness indicator” that is obtained from the twins’ responses to the question “How satisfied are you with your life, all things considered?” as 0 = not satisfied or not particularly satisfied, 1 = rather satisfied and 2 = very satisfied.

In our discussion in this section about the realized contributions of children to their parents happiness we focus on the results for men and women during their primary ages of childbearing (ages 25–45), i.e., an age range that matches those for our previous analyses of anticipated changes in well-being. The top panel in Figure 3 reveals the effect of the number of biological children on subjective well-being, allowing for a possibly non-linear effect where the effect of the first child (boy or girl) may differ from that of higher order children. These initial analyses do not control for partnership status of the respondents, that is, they reflect the overall effect of having children on happiness including those that might operate through the fact that individuals who have children are much more likely to be in a partnership. The key finding of these analyses is that the first-born child—independent of its sex—has a large positive effect on subjective well-being: having at least one child improves happiness by .20–.23, which is equivalent to 35–39% of one standard deviation (and 39–44% of one within-twin pair standard deviation). In contrast to the large positive effect of the first child on well-being, additional children beyond the first child are not associated with higher levels of happiness; instead, the within-MZ results reveal that additional children beyond the first tend to be associated with *lower* levels of happiness for females. Each child beyond the first decreases the happiness indicator by 13% of one standard deviation for females, and three additional children almost completely compensate for the positive effect resulting from the first child. The corresponding analyses for males result in a strikingly different pattern. First, there is

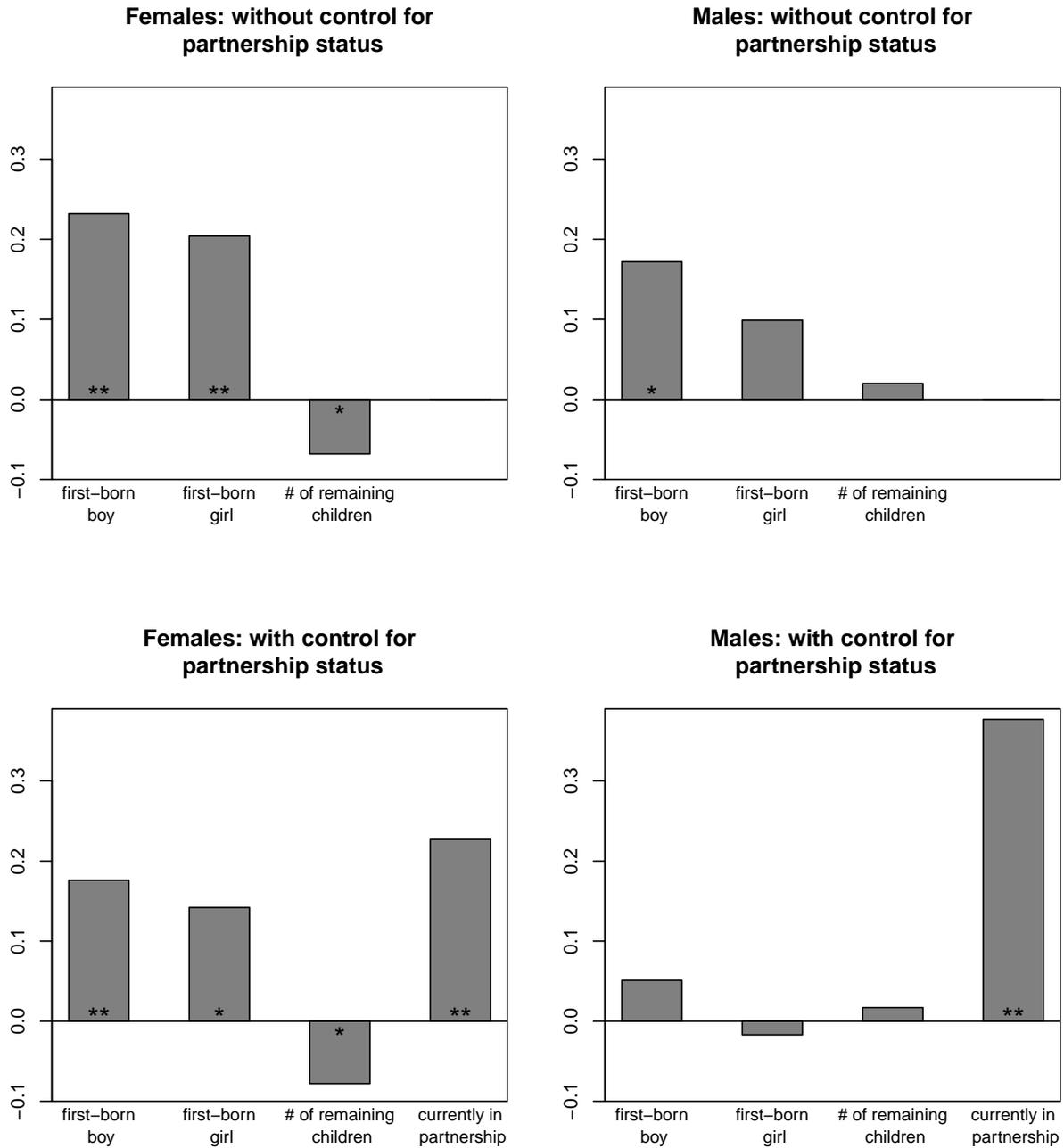


Figure 3: Effect of children on subjective well-being for females and males age 25–45 based on within-MZ twins estimates

Top panel: without control for partnership status

Bottom panel: with control for partnership status

Note: Significance levels are indicated as + $p \leq 0.10$; * $p \leq 0.05$; ** $p \leq 0.01$.

Source: adapted from (Kohler et al. 2005).

an important sex difference associated with the happiness gains resulting from a first child: first-born boys have an effect on happiness equal to .172 (29% of one standard deviation of well-being) and almost 75 percent larger than that of a first-born girl (.099 or 17% of one standard deviation). Hence, male children not only tend to increase marital stability (Dahl and Moretti 2004; Morgan et al. 1988) and cause fathers to work longer hours at higher wages (Lundberg and Rose 2002), first-born sons also make fathers happier than first-born daughters. This effect is important since there is no revealed sex-preference in parity progression probabilities: the probability of having a second child and the overall number of children do not significantly differ between male twins having a boy or girl as their first child. While males therefore enjoy greater happiness from a first-born son than a first-born daughter, this does not translate into higher levels of fertility. Second, additional children beyond the first child have virtually no effect on subjective well-being. Males therefore do not suffer the same declines in happiness with additional children that do females, but they also do not gain from additional children in terms of their subjective well-being.

These findings about the happiness gains from the first child and from additional children are important since they are consistent with evidence from earlier studies of the costs and satisfactions associated with childbearing (e.g., Bulatao 1981; Fawcett 1983) and some recent studies of happiness and fertility in a global and/or comparative context (Aassve et al. 2008; Margolis and Myrskylä forthcoming). In particular, respondents' motivation for the first child emphasize family status, role, and emotional rewards for the parent, while the values motivating second births are strongly associated with providing companionship for the first child. Consistent with the focus on emotional rewards and family status, first children are associated with significant increases in parents' well-being, with males enjoying higher happiness gains from first-born boys than first-born girls. The differential motivations for higher-order children, however, is also reflected in the results presented in Figure 3. For females, additional children beyond the first decrease well-being, and for males the effect of additional children is not distinguishable from zero.

The analyses in the bottom panel of Figure 3 control for the current partnership status in the analyses of how well-being is affected by children. These models therefore identify the extent to which children affect the happiness of parents up-and-beyond the contributions to subjective well-being that parents derive from currently being in a partnership. One aspect of these additional analyses is particularly noteworthy because an important sex-difference emerges in the comparison between the top and bottom panels in Figure 3 with respect to the effect of fertility on well-being. For females, the effect of children on subjective well-being remains strong and significant even after the current partnership status is included (bottom left graph in Figure 3). Similar to our earlier analyses, the first child has a strong positive effect, independent of its sex, and additional children have a negative effect on happiness. For males, however, the effect of children on happiness vanishes once the current partnership status is included (bottom right graph in Figure 3). The happiness of males increases strongly if they are in a partnership, but after controlling for the current partnership status, children no longer significantly affect subjective well-being. The coefficients for first-born boys and first-born girls are of opposite sign, consistent with our earlier discussion about the influence of the first child on happiness, but neither of the coefficients is significant.

In summary, the results in the bottom panel of Figure 3 reveal a striking male-female difference with respect to the impact of children on well-being after controlling for the current partnership. Females aged 25–45 derive happiness gains from children even after controlling for the current partnership status. The happiness of males, however, depends primarily on the partnership status; once the current partnership status is controlled, men’s happiness does not vary systematically with fertility. These findings suggest a somewhat provocative interpretation about the motivations of men and women to engage in partnerships: in particular, the results can be interpreted to suggest that women are in partnerships, among other reasons, in order to have children that increase their subjective well-being. Males aged 25–45, on the other hand, have children in order to remain in the partnerships that strongly affect their happiness. Having children is a strong predictor of currently being in partnerships for males (as well as for females), but conditional on the current partnership status, children do not contribute to men’s subjective well-being. The male preference for boys, revealed by our earlier analyses in Figure 3, may in this context be the result of the higher divorce probabilities of couples who have a first-born daughter as compared to a first-born son (Dahl and Moretti 2004; Morgan et al. 1988).

Additional analyses in Kohler et al. (2005) also investigate the effects of having had children and partnerships on well-being at post-reproductive years at ages from 50–70. One of the important findings of these analyses is that the effect of having had children on subjective well-being are relatively small—if they exist at all—for men and women at ages 50–70. Neither the number of children ever had has a large or significant effect, nor is there a strong positive effect due to “at least one child”. If the current partnership is included, a current partner is strongly associated with increases in subjective well-being, while the number of children does not affect happiness at ages 50–70. These findings are surprising because children are often thought to be a source of social contacts and support at older ages. The results, however, suggest that the effect of having children on happiness is quite small for both males and females in the age range 50–70, similar to what has been found in some related studies (Dykstra and Keizer 2009; Hansen et al. 2009). In part, this small effect of children on well-being found by Kohler et al. (2005) may be due to the fact that respondents aged 50–70 years are not yet old enough to encounter widespread health problems that may be associated with an increased demand for care and support provided by children.

3 Discussion and Conclusions

In some general sense, the above results are consistent with evolutionary psychological and biological theories that claim to provide an evolutionary rationale for the motivation to have children and form long-term partnerships. In particular, besides establishing the basic contribution of children and partnerships to well-being that is predicted by these theories, the analyses discussed above show that (i) adults in childbearing ages generally seem to expect increases in their subjective well-being as a result of having a/another child, with these effects being particularly strong for childless men and women in the primary ages of childbearing, and (ii) the expected happiness gains from children differ importantly by institutional contexts, especially at higher parities. The

perceived conventional wisdom may therefore be correct: on average, individuals expect gains in their subjective well-being from entering parenthood, especially if this occurs during a “desirable age window”, and the progression to the second child is mostly seen as adding to the happiness of parents. In the low fertility contexts studied here, having a third child is not generally expected to increase parental happiness to a relevant extent. However, the ex-post experience of individuals after they had entered parenthood and/or had an additional child can importantly differ from the anticipated changes in well-being. While this is expected on an individual-bases due to idiosyncratic influences on the satisfaction derived from parenting, it is important to observe that this may also be the case for the experience on average—especially higher order children. In particular, in terms of the contributions of children and partnerships to subjective well-being, the analyses by Kohler et al. (2005) provide a number of important results about the demographic determinants of happiness: *First*, the estimates raise questions about the almost complete dominance of endowments in affecting happiness, as suggested by the setpoint theory of happiness. To the contrary, the analyses suggest that some dimensions of partnership formation and childbearing have persistent effects on happiness. *Second*, it is primarily the first-born children that are an important source of happiness at ages 25–45 for females, and also for males if we do not condition on partnership status. Additional children reduce the subjective well-being of females while leaving the well-being of males unaffected. Moreover, the estimates for respondents aged 25–45 reveal that (i) men, but not women, experience larger happiness gains from a first-born son than a first-born daughter, (ii) children directly contribute to happiness for women, but only indirectly through increasing the probability of a current partnership for men, and (iii) children have no indirect effect on well-being by increasing the happiness gains obtained from a current partnership.

The fact that it primarily first children that increase individual’s subjective well-being, which is broadly consistent with the anticipated happiness change for entering parenthood, the contributions of second children often seem to fall short of their expected impact on parental happiness. This finding raises important questions about the motivations for having a second child, and in particular, if motivations other than subjective well-being may be underlying the progression to additional children after the first child. After experiencing the positive happiness gains after the first child, men and, even more so, women, may underpredict the additional work implied by a second child or overpredict the increases in happiness resulting from an additional child. The latter possibility is suggested by recent psychological research on “projection biases” or “impact biases” in the evaluation of future well-being (Gilbert et al. 2002; Loewenstein et al. 2003), showing that people tend to overestimate the enduring impact—positive as well as negative—of important life events on their future emotional well-being. Gilbert et al. (2002, p. 117), for instance, claims that persons “predictably mispredict” how novel events, like having another child, will unfold. An alternative explanation is that parents who get a good draw in endowments for their first child have higher than warranted expectations about the endowments that their subsequent children are likely to have; therefore they decide to have more children, but are often disappointed with the outcome.

Happiness in live is of course distinct from the “purpose” of life, and some studies have argued that children may be important for individual’s purpose in life, even if narrowly defined

happiness with life may not be increased as a result of parenting. For example, in the U.S. a vast majority of mothers continues to agree with the statement that “being a mother is the most important thing that I do” (Erickson 2005). Religion might be an important factor influencing the extent to which children are seen as important aspects of an individual’s purpose in life. For example, recent studies have consistently documented higher fertility among more religiously active women across denominations (Hayford and Morgan 2008), an effect that might be due to a different meaning of children for religious individuals, an increased social support through religious institutions and/or a selection of more child-oriented individuals towards religiosity. While disentangling these aspects is beyond the scope of this paper, it is important to note that religiosity may modify the extent to which considerations about individual happiness and subjective well-being may affect fertility decisions.

In some general sense, the results about the interrelations between happiness and children that were discussed in this paper are consistent with evolutionary psychological and biological theories that claim to provide an evolutionary rationale for the motivation to have children and form long-term partnerships. In particular, besides establishing the basic contribution of children and partnerships to well-being that is predicted by these theories, our analyses additionally show that important sex differences exist between women and men with respect to the influence on well-being of the number of children, stepchildren, the timing of fertility and the role of current partnerships. Despite this general agreement with biosocial predictions, however, the support for evolutionary perspectives is much less strong in terms of specifics. For example, once there is control for current partnerships, neither do past partnerships increase happiness significantly more for males than for females as would seem to be suggested by the evolutionary approach, nor do our analyses provide evidence that males benefit in terms of well-being from a large number of children. Nevertheless, the differential effect of additional children on well-being is consistent with the evolutionary argument that females and males invest differentially in children, and that females may therefore have a lower “optimal fertility” in terms of subjective well-being than men. However, gender specialization in child care also could lead to this result if, as a result of this specialization, women bear most of the costs in raising children.

In addition to these interpretations in terms of the evolutionary basis for the motivations for childbearing and union formation, the analyses in this paper are relevant because they provide empirical support about recent speculations about the limits to low fertility and related patterns of union formation. In particular, the substantial happiness gains associated with first children may limit the extent to which present and future fertility declines are driven by reductions in first-birth childbearing. Our discussion suggests that women may be willing to have at least one child even if this child is associated with considerable costs to them. The first child seems to provide an important part of women’s fulfillment in life, even if they are in partnerships, and childlessness may remain relatively low even in contemporary industrialized countries with low or lowest-low fertility. These findings about the happiness gains from first children therefore corroborate demographic analyses that have found relatively low estimates of childlessness in lowest-low fertility countries with total fertility rates below 1.3 after distortions in the data have been removed (e.g., Kohler et al. 2002).

Since happiness gains are primarily associated with the first child and not with additional children beyond the first child, however, women's and couples' motivations to have additional children may be less robust with respect to changes in the costs and benefits of children than is the motivation to have at least one child. Fertility for second and higher-order children may thus react strongly in response to altered socioeconomic conditions, family policies, social norms or ideational contexts. While this study suggests a potential lower limit to low fertility due to the strong happiness gains associated with first children, our analysis does *not* suggest that the individual motivation in terms of subjective well-being for second or third children is sufficiently strong to result in a fertility level close to replacement level. The emergence of stated sub-replacement fertility preferences found in recent analyses of Eurobarometer surveys (Goldstein et al. 2003) may be an indication that levels of desired fertility decline as they become increasingly motivated by individualistic considerations focused on self-fulfillment and subjective well-being. In addition, our results about the contributions of additional children to happiness also suggest that changes in family or related policies aimed towards increasing fertility, motivated for instance by the substantial positive externalities associated with childbearing in low fertility contexts (e.g., see Lee 2001), may not necessarily result in increases in subjective well-being for parents. This may make broad support for such policies in a democratic decision process unlikely.

It is important to realize that the relationship between anticipated and/or realized happiness changes and fertility importantly differs across countries and institutional contexts. Our discussion in this context has primarily focused on the variation in the extent to which individuals in different countries associated the entry into parenthood with differential changes in subjective well-being. Some other studies have shown that the realized changes in happiness after having children varies across countries (Aassve et al. 2008), with happiness gains being largest in countries with a fairly generous welfare state, and the financial stress and trade-off that children imply for parents may be lowest in these context (Aassve et al. 2005). Given the heterogeneity of institutional, cultural and policy contexts across developed countries, further research is required to investigate the different mechanisms that may underlie these heterogeneous implications of children for well-being, an improved understanding of how labor market flexibility, social security and individual welfare, gender and economic equality, human capital, and social/family policies can facilitate a relatively high satisfaction with parenthood in advanced societies is needed (Brewster and Rindfuss 2000; Kohler et al. 2002; McDonald 2000; Neyer and Andersson 2008). For instance, analyses on Europe show that nowadays a positive relationship is observed between fertility and indicators of innovation in family behavior or female labor force participation (Bilari and Kohler 2004). Also, at advanced levels of development, governments might explicitly address fertility decline by implementing policies that improve gender equality or the compatibility between economic success, including labor force participation, and family life (Balter 2006; McDonald 2000; Neyer and Andersson 2008). In addition to government policies, religious and other formal or informal institutions can possibly help balance the tensions between parenthood and other domains that seem to underlie the low happiness gains from parenting in some contexts. Failure to answer to the challenges of parenthood in advanced societies with institutions that facilitate work-family balance and gender equality might explain the exceptional pattern for

rich countries in which parenthood is—ex-ante and/or ex-post—not associated with high levels of individual satisfaction.

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Table A.1: Subjective well-being in Danish MZ (identical) twins

	Females	Males
Age 25–45		
Not particularly satisfied / not satisfied	4.9%	4.8%
Rather satisfied	44.4%	43.7%
Very satisfied	49.7%	50.1%
n/a	1.0%	1.5%
<i>Mean</i>	1.45	1.46
<i>Overall std. dev</i>	(0.59)	(0.59)
<i>Within-twin pair std. dev</i>	(0.52)	(0.52)
<i>Within-twin pair correlation</i>	0.21	0.21
<i>N</i>	2,114	1,314
Age 50–70		
Not particularly satisfied / not satisfied	3.7%	2.6%
Rather satisfied	46.0%	43.1%
Very satisfied	48.8%	53.3%
n/a	1.5%	0.9%
<i>Mean</i>	1.46	1.51
<i>Overall Std. Dev</i>	(0.57)	(0.55)
<i>Within-twin pair std. dev</i>	(0.49)	(0.48)
<i>Within-twin pair correlation</i>	0.25	0.24
<i>N</i>	1,112	874

Notes: Means, standard deviations and within-pair correlations are calculated by converting the responses into a single happiness indicator using 0 = not satisfied or not particularly satisfied, 1 = rather satisfied and 2 = very satisfied. Within-twin pair standard deviation is estimated using a one-way analysis of variance (ANOVA) of this happiness indicator.