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Working Paper

Testing the Social Investment Principle around childbirth: Little evidence for personality maturation before and after becoming a parent

SOEPpapers on Multidisciplinary Panel Data Research, No. 1082

Provided in Cooperation with:
German Institute for Economic Research (DIW Berlin)

Suggested Citation: Asselmann, Eva; Specht, Jule (2020) : Testing the Social Investment Principle around childbirth: Little evidence for personality maturation before and after becoming a parent, SOEPpapers on Multidisciplinary Panel Data Research, No. 1082, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin

This Version is available at:
https://hdl.handle.net/10419/224089

SOEP The Socio-Economic Panel

1082 2020

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Eva Asselmann and Jule Specht

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ISSN: 1864-6689 (online)

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Asselmann, E. & Specht, J. (2020). Testing the Social Investment Principle around childbirth: Little evidence for personality maturation before and after becoming a parent. *European Journal of Personality.* Advance online publication. doi: 10.1002/per.2269

Abstract

In line with the Social Investment Principle, becoming a parent should lead to more mature behavior and an increase in conscientiousness, agreeableness, and emotional stability. However, previous research provided mixed results that do not support this idea. Here, we used data from a nationally representative household panel study from Germany (N = 19,875) to examine whether becoming a parent relates to personality maturation. Whether a child was born was assessed yearly and the Big Five personality traits were measured in four waves from 2005 to 2017. We used multilevel analyses to investigate whether personality differs between individuals who will or will not become parents, whether personality differs before and after becoming a parent, and whether these effects vary by gender, age, and living status. In sum, our findings revealed that less open and more extraverted individuals were more likely to start a family, and openness and extraversion both decreased after the transition to parenthood. Some other effects varied by gender, age, and living status. Taken together, our findings suggest that the Big Five personality traits differ before and across the transition to parenthood and that these differences especially apply to openness and extraversion.

Keywords: Personality development; Big Five; parenthood; life event; longitudinal.

Introduction

Becoming a parent constitutes one of the most striking and long-lasting experiences in life. New parents must be available around the clock, respond to their newborn's needs, and adjust their life accordingly (van Scheppingen et al., 2016). How does this major life event relate to personality development? In line with the Social Investment Principle (Roberts & Wood, 2006), having a baby should promote more mature behavior and lead to an increase in conscientiousness, agreeableness, and emotional stability. However, longitudinal studies concerning the role of childbirth for personality development challenge this idea (Denissen, Luhmann, Chung, & Bleidorn, 2019; Galdiolo & Roskam, 2012; Jokela, Kivimäki, Elovainio, & Keltikangas-Järvinen, 2009; Neyer & Asendorpf, 2001; Specht, Egloff, & Schmukle, 2011; van Scheppingen et al., 2016).

Evidence from related fields suggests that personality development before and after the transition to parenthood might differ between mothers and fathers (Bleidorn et al., 2016; Doss, Rhoades, Stanley, & Markman, 2009; van Scheppingen, Denissen, & Bleidorn, 2018; van Scheppingen, Denissen, Chung, Tambs, & Bleidorn, 2017), younger and older parents (van Scheppingen et al., 2016), as well as parents living with and without a partner (van Scheppingen et al., 2017). However, additional studies are needed to examine the role of gender, age, and living status for Big Five personality differences across the transition to parenthood. Studying these factors might help to clarify why theoretically plausible associations have not been found so far. Here, we used data from a nationally representative household panel study from Germany (N = 19,875) to investigate (a) whether personality differs between individuals who will or will not become parents, (b) whether personality differs in the years before and after becoming a parent, and (c) whether these effects vary by gender, age, and living status.

Personality development across the lifespan

Personality changes throughout life, including young adulthood, a developmental period characterized by many challenges and changes that might trigger adaptational processes. Several studies revealed that young adults became more conscientious, agreeable, and emotionally stable (Bleidorn et al., 2013; Roberts & Mroczek, 2008; Roberts, Walton, & Viechtbauer, 2006), a pattern sometimes referred to as the maturity principle (Roberts, Wood, & Smith, 2005). What factors drive these changes?

In line with endogenous theories such as Five-Factor Theory (McCrae & Costa, 2008), personality should primarily develop due to genetically determined biological factors and intrinsic maturation processes. According to endogenous theories, such factors might affect whether individuals select into specific environments, but environmental experiences themselves should have little impact on personality changes.

In contrast, contextual theories and previous research highlight the role of age-graded major life events for personality development (Asselmann & Specht, 2019; Bleidorn, Hopwood, & Lucas, 2018; Denissen et al., 2019; Specht, 2017; Specht et al., 2014; Specht et al., 2011). Such events typically relate to specific status changes (e.g., from being childless to being a parent) that might modify, interrupt, or redirect an individual's life trajectory (Bleidorn et al., 2018; Denissen et al., 2019; Luhmann, Hofmann, Eid, & Lucas, 2012; Orth & Robins, 2014). In line with the Social Investment Principle (Roberts & Wood, 2006), age-graded major life events should induce changes in social roles, role demands, and behavioral expectations to behave in a more mature way. Personality should develop due to psychological and behavioral investments in these roles (i.e., accumulated experiences in and higher commitment to these roles). Therefore, becoming a

parent might lead to an increase in conscientiousness, agreeableness, and emotional stability over time.

Associations between childbirth and personality

A series of previous longitudinal studies focused on changes of the Big Five personality traits before and after the transition to parenthood (Denissen et al., 2019; Galdiolo & Roskam, 2012, 2014; Neyer & Asendorpf, 2001; Pusch, Mund, Hagemeyer, & Finn, 2019; Schwaba, Robins, Grijalva, & Bleidorn, 2019; Specht et al., 2011; van Scheppingen et al., 2016). For instance, Specht and colleagues (2011) used data from the Socio-Economic Panel Study (SOEP) to examine Big Five personality changes over two waves, spaced four years apart. They did not find that personality differed between individuals who did or did not have a baby in the following years (selection effects). However, individuals who did versus did not experience the birth of a child between both waves more strongly decreased in conscientiousness in the surrounding years (socialization effect).

In a recent study, Denissen and colleagues (2019) used data from the Longitudinal Internet Studies for the Social Sciences (LISS) Panel to investigate associations between childbirth and the Big Five personality traits over a period of nine years. They found that parents were less open and less conscientious than non-parents (selection effects). Individuals who experienced the birth of a child during versus before the study were more conscientious and more emotionally stable. They increased in emotional stability before (anticipation effect), but decreased in emotional stability after this experience (socialization effect). In addition, they were less conscientious after their child was born.

Based on data from the Household, Income, and Labour Dynamics in Australia (HILDA) Survey, van Scheppingen and colleagues (2016) examined personality changes in young and initially childless adults over two waves, spaced four years apart. They found that less open and more extraverted women and men as well as more conscientious women were more likely to become parents at a later point of time (selection effects). Men who remained childless decreased, whereas men who became fathers after both waves increased in openness in the preceding years (anticipation effect). Men who remained childless did not change, but men who became fathers between both waves decreased in extraversion in the surrounding years (socialization effect). In addition, women who remained childless increased, but women who became mothers between both waves did not change in conscientiousness in the surrounding years (socialization effect). However, these socialization effects no longer remained statistically significant after using propensity score matching and accounting for pre-existing differences between parents and non-parents.

Pusch and colleagues (2019) used data from the German Family Panel (pairfarm) to assess whether childbirth in emerging or young adulthood was associated with Big Five personality changes over a period of four years. In their study, more conscientious and more emotionally stable individuals were more likely to become parents in the following years (selection effects). Individuals who experienced the birth of their first child less strongly increased (emerging adults) or more strongly decreased (young adults) in conscientiousness in the surrounding years (socialization effects). In both age groups, becoming a parent was related to a higher decrease in openness (socialization effects).

Another study in a community sample from the Cardiovascular Risk in Young Finns Study examined how becoming a parent was associated with changes in sociability, activity, and

emotionality over nine years (Jokela et al., 2009). Findings revealed that more sociable individuals and more active men (but not women) were more likely to experience the birth of a child (selection effects). Emotionality did not change in initially childless individuals who remained childless, but increased in those who had children at follow-up (socialization effect). Additional research found that individuals who increased in openness were less likely to have children (Schwaba et al., 2019), that parents were less open, more extraverted, more agreeable, or more emotionally stable before or after having a baby as compared to non-parents (Galdiolo & Roskam, 2012; Jokela, Alvergne, Pollet, & Lummaa, 2011), that primiparous parents or fathers became less extraverted in the years surrounding the birth of their child (Galdiolo & Roskam, 2012, 2014), or that childbirth was unrelated to personality development (Neyer & Asendorpf, 2001).

In summary, previous findings were mixed. In terms of selection effects, previous research found that personality did not differ between parents-to-be and non-parents (Specht et al., 2011) or that parents scored either higher or lower on specific Big Five personality traits as compared to non-parents (Denissen et al., 2019; Galdiolo & Roskam, 2012; Jokela et al., 2011; Jokela et al., 2009; Pusch et al., 2019; van Scheppingen et al., 2016). With respect to personality changes, there was little support for the Social Investment Principle (Roberts & Wood, 2006). That is, becoming a parent was either unrelated to Big Five personality changes or associated with a decrease in openness, conscientiousness, extraversion, or emotional stability in the surrounding years (Denissen et al., 2019; Galdiolo & Roskam, 2012, 2014; Jokela et al., 2009; Neyer & Asendorpf, 2001; Specht et al., 2011; van Scheppingen et al., 2016; Wiklund, Edman, Larsson, & Andolf, 2009).

Some of these inconsistencies might be explained by methodological differences with respect to study samples and designs, assessment instruments, and statistical approaches. For

example, the number and timing of assessment waves varied, and some studies only focused on primiparous parents, whereas other studies also considered multiparous parents. Besides, effect sizes were often small in size, which suggests that personality changes before and after becoming a parent might follow complex and discontinuous trajectories, differ between individuals, and vary as a function of additional individual (e.g., gender and age) and environmental (e.g., living status) factors.

The transition to parenthood relates to many challenges and changes (Doss & Rhoades, 2017; Doss et al., 2009; Hutteman, Bleidorn, et al., 2014). Being a parent might initially cause distress and therefore lead to a short-term de-maturation, but long-term maturation with respect to the Big Five personality traits (Denissen, Aken, Penke, & Wood, 2013; Soto & Tackett, 2015). For instance, new parents might tend to feel insecure, overwhelmed, and exhausted in the first months of having a baby (Bleidorn et al., 2016; Hutteman, Bleidorn, et al., 2014; van Scheppingen et al., 2018), but adapt to their novel role as a parent over time (and with increasing age of their offspring). Therefore, they might be less conscientious, agreeable, and emotionally stable in the first year of parenthood, but increase in conscientiousness, agreeableness, and emotional stability later on. Study designs with multiple personality assessments before and after the transition to parenthood are necessary to test this idea, which is rarely the case.

The role of gender

Due to pregnancy- and birth-related physiological changes as well as gender-specific role expectations, mothers might experience the transition to parenthood differently than fathers (Galdiolo & Roskam, 2014; Jokela et al., 2011; Jokela et al., 2009; van Scheppingen et al., 2016). For example, mothers might suffer from higher emotional disturbances in the early postpartum

period (Asselmann, Kunas, Wittchen, & Martini, 2020; Pawluski, Lonstein, & Fleming, 2017; Putnam et al., 2017; Sanchez & Thomson, 1997). Previous research found that especially mothers declined in self-esteem (Bleidorn et al., 2016), self-control (van Scheppingen et al., 2018), and relationship satisfaction (van Scheppingen et al., 2017), or reported serious conflicts with their partner (Doss et al., 2009) shortly after their child was born. Based on these findings, one might speculate whether particularly mothers (but not fathers) tend to be less conscientious, agreeable, and emotionally stable in the first year of parenthood.

The role of age

Moreover, age at childbirth needs to be taken into account. Compared to older individuals, younger individuals might be less experienced, but more energetic to cope with novel challenges and changes in their life. Younger individuals are more likely to belong to the first parents in their social network and possibly still have to master a range of other developmental tasks (Bleidorn et al., 2013; Hutteman, Hennecke, Orth, Reitz, & Specht, 2014). In a recent study, Pusch and colleagues (2019) did not find that the associations between childbirth and personality development varied by age. However, the age range they examined was limited, given that they only focused on the developmental period of emerging and young adulthood. In contrast, van Scheppingen and colleagues (2016) evidenced that older fathers experienced less positive changes in conscientiousness and agreeableness than younger fathers. Based hereon, one might speculate whether Big Five personality differences before and after the transition to parenthood tend to be more pronounced in younger as compared to older parents.

The role of living status

Because non-traditional family models (including patchwork and single parent families) have gained in importance, not only cohabiting parents, but also parents who are living alone need to be considered. In previous studies, associations between childbirth and personality differed for individuals living with and without a partner (Jokela et al., 2011) as well as for planned and non-planned pregnancies (Berg, Rotkirch, Väisänen, & Jokela, 2013). Moreover, former research found that parents with lower (versus higher) co-parenting support experienced higher distress after the birth of their child (Solmeyer & Feinberg, 2011) and that mothers living without (versus with) a partner more strongly declined in self-esteem around childbirth (van Scheppingen et al., 2017). It is plausible to assume that parents who are living without (versus with) a partner are more likely to be in an unstable relationship or to be single, to not have planned their child, and to receive lower support from their (ex-)partner (Berg et al., 2013; Cairney, Boyle, Offord, & Racine, 2003; Carlson & VanOrman, 2017). However, whether Big Five personality differences across the transition to parenthood vary by living status has not been tested so far.

Methodological challenges

Several methodological challenges need to be taken into account when studying associations between childbirth and personality. First, personality might differ between childless individuals who will or will not become parents at a later point of time. Therefore, selection effects (personality differences between parents-to-be and non-parents) need to be modeled (Jokela et al., 2009; van Scheppingen et al., 2016).

Second, the way parents feel, think, and behave might already change before childbirth, namely in preparation to this event that rarely happens unexpectedly, but usually becomes apparent

several months before actually taking place. Therefore, not only socialization, but also anticipation effects need to be considered. Because personality changes before and after the transition to parenthood might go in opposite directions, doing so is particularly important. For example, expectant parents might start to prepare for the birth of their child as they approach the event, participate in childbirth classes, furnish the children's room, shop the baby equipment, and so on. After the birth of their child, they might initially feel overwhelmed by the novel situation and neglect other responsibilities beyond their baby. However, whether conscientiousness tends to increase before, but is lower shortly after the transition to parenthood can only be tested when personality trait levels before and after the event are clearly distinguished.

Third, parents might experience a cascade of complex developmental changes not necessarily following a linear trajectory. For example, parents might be less conscientious in the first year, bot more conscientious in the following years of parenthood. Therefore, not only continuous anticipation and socialization effects, but also discontinuous short- and long-term effects after becoming a parent need to be taken into account.

The present study

In this study, we aimed to examine associations between the birth of the first child and the Big Five personality traits and to take into account the role of gender, age, and living status. We used data from the SOEP (N = 19,875), a nationally representative household panel study from Germany with ongoing yearly assessments since 1984. In the SOEP, whether a child was born was assessed yearly and personality was measured repeatedly in 2005, 2009, 2013, and 2017 (Figure 1).

In order to be able to model selection effects and nuanced personality differences across the transition to parenthood, we distinguished between (a) parents who experienced the birth of their first child at different time points across the study and (b) non-parents who remained childless throughout the study. In parents, we coded how the birth of their first child was temporarily related to the respective personality assessment in 2005, 2009, 2013, and 2017, respectively (in years and months). We then applied multilevel analyses and combined within- and between-person information, which provided us with fine-grained information on personality in non-parents as well as parents in individual years and months before and after their first child was born.

In our analyses, we modeled selection effects to examine whether personality differs between parents before the birth of their first child and non-parents. We analyzed anticipation and socialization effects to investigate whether individual personality traits tend to increase or decrease in the three years before and three years after the transition to parenthood, respectively. We modeled short-term post-event effects to test for transient short-term personality differences in the first year of having a baby and long-term post-event effects to test for enduring long-term personality differences in the subsequent years of being a parent. We investigated these effects in the total sample as well as separately in women and men, different age groups, and individuals living with or without a partner.

Hypotheses

In line with the Social Investment Principle (Roberts & Wood, 2006), we hypothesized that parents should become more conscientious, agreeable, and emotionally stable in the three years before (anticipation effects) and three years after (socialization effects) the transition to parenthood. However, parents should be less conscientious, agreeable, and emotionally stable in the first year of having a baby as compared to all other years (short-term post-event effects; Denissen et al., 2013; Soto & Tackett, 2015). In addition, we studied selection and long-term post-event effects and tested whether any effects (selection, anticipation, socialization, as well as short- and long-term post-event effects) varied by gender, age, and living status (with versus without a partner) at childbirth (exploratory analyses). Our hypotheses are not pre-registered, but are directly inspired by the Social Investment Principle (Roberts & Wood, 2006) and additional theories in the field (Denissen et al., 2013; Soto & Tackett, 2015).

Materials and methods

Study sample

We used data from the German Socio-Economic Panel Study (SOEP), a nationally representative household panel study from Germany with multistage probability sampling. The SOEP started in 1984 and is still ongoing. Here, we consider information until 2017, the most recent wave so far. Data are collected yearly and mostly stem from face-to-face interviews with all adult members of the target households.

The initial sample from 1984 was regularly replenished with new participants. This was done to counteract attrition, to increase the overall sample size, and to allow for detailed analyses of specific sub-samples. Therefore, panel members entered the study in different years and not all participants provided information on personality in 2005, 2009, 2013, and 2017, respectively. Our statistical approach based on multilevel analyses is able to deal with this missingness. Supplementary Table 1 (Supplement A) specifies how the current sample of analysis (N = 19,875, see below) is composed and how many participants of the initial cohort and individual refreshment cohorts provided information on personality at each wave.

More detailed information on the SOEP (including the sample structure, individual subsamples, and panel attrition) has been previously presented (Goebel et al., 2019; Kroh, Kühne, Siegers, & Belcheva, 2018) and is provided here: https://www.diw.de/en/soep. A detailed description of all procedures and measures collected in the SOEP can be found here: https://data.soep.de/soep-core. The SOEP data are available from the DIW Berlin after signing a contract on data distribution (https://www.diw.de/en/diw_02.c.222829.en/access.html). A summary of previous publications based on the SOEP data can be found at https://www.diw.de/sixcms/detail.php?id=diw_02.c.298578.en.

Assessment of childbirth

All participants who entered the panel were initially asked how many children they had and when these children were born (year and month). Moreover, participants were yearly asked whether and when (year and month) a child was born in the current or previous year. We combined these data to obtain lifetime information on whether and when participants had experienced the birth of their first child and to distinguish between parents and non-parents in our sample (see below).

Assessment of personality

The Big Five personality traits openness, conscientiousness, extraversion, agreeableness, and emotional stability were assessed in 2005, 2009, 2013, and 2017 with the BFI-S, a short version of the Big Five Inventory (John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008; Lang, John, Lüdtke, Schupp, & Wagner, 2011). The BFI-S contains 15 items (three items per trait), labeled from 1 (strongly disagree) to 7 (strongly agree). To maximize the validity of this short scale, heterogeneous items were selected per trait, which explains moderate internal consistencies (Lang et al., 2011). Averaged across all four waves, the Cronbach's alphas in our sample were $\alpha = .60$ for openness, $\alpha = .63$ for conscientiousness, $\alpha = .71$ for extraversion, $\alpha = .49$ for agreeableness, and $\alpha = .62$ for emotional stability. The test-retest reliability, convergent validity (compared to the full BFI and NEO-PI-R), and discriminant validity (compared to other validity criteria) were acceptable (Donnellan & Lucas, 2008; Gerlitz & Schupp, 2005; Hahn, Gottschling, & Spinath, 2012; Lang, 2005). The five-factor structure of the BFI-S in the SOEP has been shown to be robust across three different modes of assessment (face-to-face interview, telephone

interview, and self-administered questionnaire; Lang et al., 2011). Our study design with information on when the birth of a child and personality were assessed is visualized in Figure 1.

Insert Figure 1

Statistical analysis

Sample set-up

Stata 14 (StataCorp, 2015) was used for the analyses. Openly accessible data analysis scripts are attached in Supplement B.

We considered individuals who provided data on at least one BFI-S item in 2005, 2009, 2013, or 2017 (N = 49,933). Because the SOEP started in 1984, but the Big Five personality traits were assessed in 2005 for the first time, we restricted our study period to reach from 2002 (three years before the first personality assessment in 2005) to 2017 (the year of the last personality assessment so far). That is, we only modeled selection effects and personality differences across the transition to parenthood among parents whose first child was born between 2002 and 2017. We built two groups of individuals (see also Figure 1): (1) Individuals who experienced the birth of their first child between 2002 and 2017 (parent sample, N = 6,891) and (2) individuals who remained childless until 2017 (non-parent sample, N = 16,181). Individuals whose first child was born before 2002 were excluded from the analyses (N = 26,861).

Because a few participants reported the birth of their first child at an implausibly high age, we excluded parents who were older than 50 years when their first child was born (N = 12). The remaining parent sample (N = 6,879) was aged between 17 and 49 years during the first personality assessment in 2005, aged between 18 and 53 years during the second personality assessment in 2009, aged between 18 and 57 years during the third personality assessment in 2013, and aged

between 18 and 62 years during the fourth personality assessment in 2017 [1]. To ensure a similar age range in parents and non-parents, we excluded non-parents who were older than parents during the first, second, third, and forth personality assessment (N = 3,185), respectively, which resulted in 12,996 remaining non-parents. Therefore, the final sample (N = 19,875) comprised 6,879 (34.61 %) parents and 12,996 (65.39 %) non-parents.

Sample characteristics

The grand-mean age was M = 32.21 (SD = 10.32) years in the total sample, M = 35.24 (SD = 7.57) years in parents, and M = 30.47 (SD = 11.25) years in non-parents. Averaged across all four waves, parents were slightly older than non-parents, $t(31{,}603) = -40.56$, $p < .001$.

There were 9,597 (48.29 %) women and 10,278 (51,78 %) men in the total sample, including 3,824 (55.59 %) mothers and 3,055 (44.41 %) fathers as well as 5,773 (44.42 %) non-mothers and 7,223 (55.58 %) non-fathers. As evidenced by Fisher's exact tests, a higher percentage of parents versus non-parents was female ($p < .01$).

Frequencies and percentages of individuals who participated in the respective personality assessment in 2005, 2009, 2013, and 2017 as well as means and standard deviations for the overall number of personality assessments in the total sample, parents, and non-parents are presented in Table 1. As evidenced by Fisher's exact tests, a higher proportion of non-parents versus parents provided information on personality in 2005 and 2009, but a higher proportion of parents versus

[1] Please note that the SOEP was regularly replenished with new participants, who may have entered the panel after 2005. Therefore, the age range among parents did not increase continuously over time.

non-parents provided information on personality in 2013 and 2017 ($p < .01$). Parents took part in a slightly higher number of personality assessments than non-parents ($p < .01$).

Overall, 13,127 (66.05 %) individuals participated in one, 3,546 (17.84 %) in two, 1,421 (7.15 %) in three, and 1,781 (8.96 %) in all four personality assessments. More specifically, 4,418 (64.22 %) parents took part in one, 1,091 (15.86 %) in two, 563 (8.18 %) in three, and 805 (11.73 %) in all four personality assessments, and 8,709 (67.01 %) non-parents participated in one, 2,455 (18.89 %) in two, 858 (6.60 %) in three, and 974 (7.49 %) in all four personality assessments.

Means and standard deviations for the Big Five personality traits in the total sample, parents, and non-parents are presented in Table 2. Correlations between these traits averaged across all four waves are shown in Table 3. Correlations between these traits in 2005, 2009, 2013, and 2017 are presented in Supplementary Table 2 (Supplement A).

Insert Table 1, 2, and 3

Analytical approach

Similar to Denissen and colleagues (2019) as well as Asselmann and Specht (2019 and in press), we used multilevel analyses with measurement occasions (Level 1) nested within persons (Level 2) nested within households (Level 3) to model associations between the birth of the first child and the Big Five personality traits. We built separate models per trait and modeled the effects as fixed effects. Specifically, we simultaneously regressed the standardized score of the respective Big Five personality trait on gender (to account for gender effects), linear, quadratic, and cubic age (to account for age effects), a testing variable (to account for effects due to repeated personality assessments), and different event-related predictors. These event-related predictors coded whether individuals were parents or non-parents and how the time point of the birth of the first child (in

parents) was temporarily related to the time point of the respective personality assessment in 2005, 2009, 2013, and 2017 (in years and months). We used these event-related predictors to model selection effects and personality differences across the transition to parenthood (anticipation and socialization effects as well as short- and long-term post-event effects). Table 4 summarizes how each predictor was defined and coded. Examples hereon are presented in Table 5. Because each analysis refers to an individual hypothesis, we did not adjust for multiple testing (Savitz & Olshan, 1995). However, we set the alpha level at .01.

Insert Table 4 and 5

Gender differences

To examine the role of gender, we built separate models in women (N = 9,597, including 3,824 (39.85 %) mothers and 5,773 (60.15 %) non-mothers) and men (N = 10,278, including 3,055 (29.72 %) fathers and 7,223 (70.28 %) non-fathers).

Age differences

To account for potential age differences, we split the parent sample into three different groups: Younger parents, who were aged between 17 and 23 years (15.79 %), middle-aged parents, who were aged between 24 and 35 years (67.74 %), and older parents, who were aged between 36 and 50 years (16.47 %) when their first child was born. We built these groups based on percentiles. That is, younger parents were within the first and second percentile and older parents were within the ninth and tenth percentile of the parents' age range during the birth of their first child.

Afterwards, we split the non-parent sample into equivalent age groups (aged between 17 and 23 years, 48.95 %; aged between 24 and 35 years, 30.06 %; and aged 36 years or older,

20.99 %, respectively). Because non-parents did not have children, we referred to their age at their first personality assessment. Afterwards, we built separate models in younger individuals (N = 7,447, including 1,086 (14.58 %) parents and 6,361 (85.42 %) non-parents), middle-aged individuals (N = 8,567, including 4,660 (54.39 %) parents and 3,907 (45.61 %) non-parents), and older individuals (N = 3,861, including 1,133 (29.34 %) parents and 2,728 (70.66 %) non-parents).

Differences between individuals living with and without a partner

We also distinguished between individuals who were living with and without a partner. In the SOEP, participants were yearly asked whether they were married or cohabiting with a partner. In parents, we referred to this information in the year of childbirth. In non-parents, we referred to this information in the year of their first personality assessment. Of the parent-sample, 87.17 % were living with and 12.83 % were living without a partner at childbirth. Of the non-parent sample, 27.66 % were living with and 72.34 % were living without a partner during their first personality assessment. We then conducted separate analyses in individuals living with a partner (N = 5,610, including 2,316 (41.28 %) parents and 3,294 (58.72 %) non-parents) and without a partner (N = 8,956, including 341 (3.81 %) parents and 8,615 (96.19 %) non-parents). Because information on participant's living status was missing in a few cases, the sample sizes for these groups are slightly smaller.

Results

Control variables

All models were adjusted for gender, linear, quadratic, and cubic age, as well as repeated testing. Most of these variables were associated with the Big Five personality traits, so we included them (Table 6). In terms of gender, we found that men were less open (β = -0.164), less conscientious (β = -0.183), less extraverted (β = -0.143), less agreeable (β = -0.193), and especially more emotionally stable (β = 0.472) than women. With respect to age, our findings revealed that older individuals were more conscientious (β = 0.175 per ten years older), less extraverted (β = -0.064), less agreeable (β = -0.040), and more emotionally stable (β = 0.060). In terms of testing effects, we found that openness (β = -0.037 per additional assessment), conscientiousness (β = -0.071), and agreeableness (β = -0.059) decreased with repeated testing. Because these effects are beyond the primary scope of this paper, we do not discuss them further.

Insert Table 6

Associations between childbirth and personality in the total sample

In the total sample (Table 6), significant selection effects on openness (β = -0.112) and extraversion (β = 0.072) indicated that parents were less open and more extraverted than non-parents before their first child was born. Moreover, openness and extraversion differed across the transition to parenthood. In terms of openness, a significant short-term (β = -0.131) and long-term (β = -0.104) post-event effect indicated that parents were less open in the first year and subsequent years of parenthood (Figure 2a). In terms of extraversion, a significant socialization (β = -0.032 per year) and long-term post-event (β = 0.096) effect indicated that extraversion linearly decreased

in the first three years of parenthood, but was higher after the first year of being a parent (Figure 2b).

Insert Figure 2

Associations between childbirth and personality by gender

Examining the role of gender revealed the following results (Supplementary Table 3 in Supplement A): In women, no selection effects were found (all *p*-values > .01), indicating that mothers did not differ in their personality from non-mothers before their first child was born. However, openness, extraversion, and agreeableness differed across the transition to motherhood. Specifically, a significant short-term (β = -0.135) and long-term (β = -0.092) post-event effect on openness indicated that mothers were less open in the first year and subsequent years of having a child (Figure 3a). In addition, significant long-term post-event effects on extraversion (β = 0.069) and agreeableness (β = 0.079) indicated that mothers were more extraverted (Figure 3b) and more agreeable (Figure 3c) after the first year of being a mother.

Insert Figure 3

In men, a significant selection effect on openness (β = -0.172) indicated that fathers were less open than non-fathers before their first child was born. In addition, openness, conscientiousness, and extraversion differed across the transition to fatherhood. Specifically, significant long-term post-event effects on openness (β = -0.099) and conscientiousness (β = 0.075) indicated that fathers were less open (Figure 4a), but more conscientious (Figure 4b) after the first year of being a father. Extraversion linearly decreased in the first three years of fatherhood

(socialization effect: β = -0.041 per year), but was higher after the first year of being a father (long-term post-event effect: β = 0.124; Figure 4c).

Insert Figure 4

Associations between childbirth and personality by age

Studying the role of age revealed the following results (Supplementary Table 4 in Supplement A): In younger individuals, a significant selection effect on openness (β = -0.411) indicated that younger parents (aged between 17 and 23 years at childbirth) were less open than non-parents of their age before their first child was born. Moreover, younger parents were less open after the first year of being a parent (long-term post-event effect: β = -0.238; Figure 5a). Most notably, younger parents were considerably more conscientious in the first year of having a baby (short-term post-event effect: β = 0.450; Figure 5b).

Insert Figure 5

In middle-aged individuals, a significant selection effect on openness (β = -0.199) indicated that middle-aged parents (aged between 24 and 35 years at childbirth) were less open than non-parents of their age before their first child was born. In addition, middle-aged parents were less open in the first year (short-term post-event effect: β = -0.220) and subsequent years (long-term post-event effect: β = -0.223) of having a child (Figure 6a). Middle-aged parents were also more conscientious (long-term post-event effect: β = 0.076; Figure 6b) and more extraverted (long-term post-event effect: β = 0.095; Figure 6c) after the first year of being a parent.

Insert Figure 6

In older individuals, no selection effects were found (all *p*-values > .01), indicating that older parents (aged between 36 and 50 years at childbirth) did not differ in their personality from non-parents of their age before their first child was born. Furthermore, older parents were less conscientious after the first year of having a child (long-term post-event effect: β = -0.099; Figure 7a) and more emotionally stable in the first year of having a baby (short-term post-event effect: β = 0.193; Figure 7b).

Insert Figure 7

Associations between childbirth and personality by living status

Associations between childbirth and the Big Five personality traits in individuals living with and without a partner are presented in Supplementary Table 5 (Supplement A). In individuals living without a partner, no associations between childbirth and personality were found (all *p*-values > .01).

In individuals living with a partner, significant selection effects on openness (β = -0.101) and emotional stability (β = 0.108) indicated that parents as compared to non-parents living with a partner were less open and more emotionally stable before their first child was born. In addition, parents living with a partner at childbirth were less open in the first year (short-term post-event effect: β = -0.138) and subsequent years (long-term post-event effect: β = -0.155) of having a child (Figure 8a). Finally, they were more agreeable in the first year of having a baby (short-term post-event effect: β = 0.110; Figure 8b).

Insert Figure 8

Discussion

We used data from a nationally representative sample of adults from Germany to examine whether personality differs between individuals who will or will not become parents, whether personality differs in the years before and after becoming a parent, and whether these effects vary by gender, age, and living status. Our main finding was that becoming a parent was primarily associated with differences in openness and extraversion. Specifically, less open and more extraverted individuals were more likely to start a family, and parents were less open in the first year and subsequent years of having a child than before. Besides, extraversion tended to decrease after becoming a parent.

Our findings on openness are consistent with previous evidence that parents-to-be and parents were less open than non-parents (Denissen et al., 2019; Galdiolo & Roskam, 2012; Jokela et al., 2011; van Scheppingen et al., 2016), that individuals who increased in openness were less likely to have children (Schwaba et al., 2019), and that parents decreased in openness in the years surrounding the birth of their first child (Pusch et al., 2019). Possibly, individuals who rather follow a traditional way of life and settle down are more likely to decide for a family and become even less open to unconventional ideas and experiences thereafter (Schwaba et al., 2019). This idea is in line with the Corresponsive Principle (Roberts, Caspi, & Moffitt, 2003), which assumes that (a) people may select into specific environments due to specific personality traits and that (b) accumulated experiences in these environments may in turn accentuate these traits.

Similarly, our findings on extraversion are in line with previous evidence that more extraverted individuals were more likely to start a family (van Scheppingen et al., 2016) and that parents decreased in extraversion in the years surrounding the birth of their first child (Galdiolo & Roskam, 2012, 2014; van Scheppingen et al., 2016). In this context, it is plausible to assume that

more sociable and outgoing individuals are more likely to start a family, but that parents have fewer energy and time to socialize with others and thus decrease in extraversion in the first years of parenthood. However, this result is not in line with predictions put forward by the Social Investment Principle (Roberts & Wood, 2006) or Corresponsive Principle (Roberts et al., 2003).

The role of gender

With respect to gender, we found that mothers were slightly more agreeable, whereas fathers were slightly more conscientious in the years after their first child was born. Inconsistent with our hypotheses, but in line with traditional gender role stereotypes (Rajadhyaksha, Korabik, & Aycan, 2015), especially mothers might (on average) spend much time with their baby at home, respond to it in a sensitive and warm-hearted manner, and therefore behave in a more agreeable way. In contrast, especially fathers might feel responsible to cover their family's living expenses, work harder, and act more reliably in order to manage their family and career at the same time.

The role of age

Examining the role of age revealed that conscientiousness differed across the transition to parenthood, but that these differences considerably varied by age at childbirth. Younger parents experienced a transient short-term increase in conscientiousness in the first year of having a baby that diminished in large parts thereafter. In middle-aged individuals, becoming a parent was followed by a slight, but enduring long-term increase in conscientiousness in the subsequent years. Older parents were slightly less contentious after their first child was born, but more emotionally stable in the first year of parenthood.

Surprisingly, previous research often found that childbirth was associated with a decrease in conscientiousness (Pusch et al., 2019; Specht et al., 2011). Our study considerably adds to this existing evidence and demonstrates that age is an important factor to consider. In line with previous evidence (van Scheppingen et al., 2016), our findings suggest that especially younger parents are more conscientious after the birth of their first child, but that this maturation effect only lasts for a short period of time. In contrast, older parents seem to be less conscientious after the transition to parenthood.

How can these findings be explained? One might speculate whether younger parents (on average) have fewer responsibilities before the birth of their first child than older parents (e.g. when not having started to work full-time yet). Therefore, being responsible for a newborn around the clock might lead to a boost in conscientiousness in the first year of parenthood (Bleidorn et al., 2013). In contrast, middle-aged parents might rather balance their existing and novel duties with respect to work and family, leading to a slight, but enduring increase in conscientiousness after the transition to parenthood. Finally, especially older parents might often work hard and focus on their career before starting a family (Jokela et al., 2011), which might also explain their unusually high age at childbirth. After starting a family, they might become more relaxed and less ambitious with respect to their job, leading to a slight decrease in conscientiousness, but higher emotional stability especially in the first year of parenthood (e.g., when being at home).

The role of living status

Investigating the role of living status revealed that our findings primarily applied to parents who were living with, but not without a partner at childbirth. In individuals living without a partner, none of the examined associations between childbirth and personality reached statistical significance. Possibly, parents living without a partner at childbirth were in complex and diverse living situations and the role of childbirth for personality development might have varied by these conditions. (However, please also note that the group of parents living without (versus with) a partner at childbirth was smaller, which impedes to evidence significant effects.)

Summary

In summary, our hypotheses inspired by the Social Investment Principle (Roberts & Wood, 2006) that having a child should relate to an increase especially in conscientiousness, agreeableness, and emotional stability were largely not confirmed. In our models, becoming a parent was primarily associated with differences in openness and extraversion, whereas findings with respect to other traits (e.g., conscientiousness) partially varied by gender and age.

Our findings considerably extend previous research, since we considered nuanced personality differences before and after the transition to parenthood and demonstrated that additional factors, including gender, age, and living status, are important to consider. Interestingly, we did not find any anticipation effects, possibly because personality changes in first-time parents were primarily driven by novel role demands and behavioral expectations on how to behave as a parent.

Strengths and limitations

We used data from the SOEP, a socio-demographically diverse household panel study from Germany with ongoing yearly assessments since 1984. Due to the large sample and repeated assessments of life events and personality, we were able to simultaneously model selection effects as well as continuous and discontinuous short- and long-term effects on individual personality traits before and after becoming a parent in the total sample as well as separately by gender, age, and living status.

Nonetheless, our study is not without limitations: First, because the SOEP primarily focuses on socio-economic changes, personality was measured with a short scale (BFI-S). Although the BFI-S has been shown to have acceptable psychometric properties (Gerlitz & Schupp, 2005; Hahn et al., 2012; Lang, 2005), it is less reliable than other, more comprehensive measures, which limits a distinction between true differences and measurement errors over time.

Second, because the SOEP was regularly replenished with refreshment cohorts (which entered the panel in different years), not all panel members participated in all four personality assessments conducted so far. In order to deal with this missingness and to be able to model nuanced personality differences before and after becoming a parent based on our data, we distinguished between parents and non-parents. In parents, we coded how the birth of their first child was temporarily related to the respective personality assessment in 2005, 2009, 2013, and 2017.. We then applied multilevel analyses and combined within- and between-person information, which provided us with fine-grained information on personality in non-parents and parents in individual years and months before and after childbirth. Though, future research would benefit from a greater number of personality assessments that are more closely spaced before and after the transition to parenthood to allow modeling pure within-person trajectories.

Third, parents and non-parents might have differed with respect to a broad range of sociodemographic, individual, familial, social, and environmental characteristics. We did not match both groups with respect to such factors (e.g., by using propensity scores), since we strived to compare a representative group of parents to a representative group of non-parents. However, we simultaneously modeled (a) personality differences between parents-to-be and non-parents as well as (b) personality differences before and after becoming a parent, taking into account potential selection effects.

Fourth, our findings come from a nationally representative sample from Germany and might not be generalizable to other populations outside of Germany.

Conclusions

Our findings suggest that becoming a parent primarily relates to differences in openness and extraversion: Less open and more extraverted individuals were more likely to start a family, and openness and extraversion decreased after the transition to parenthood. Other effects partially varied by gender, age, and living status. Mothers tended to be more agreeable, whereas father tended to be more conscientious after the birth of their first child, and especially younger, but not older parents were more conscientious in the first year of having a baby. Finally, our findings were primarily driven by parents living with, but not without a partner.

There are several ways to explain our results. In this regard, longitudinal observational studies promise to be particularly useful. Such studies may embed a range of ambulatory assessments to not only measure changes in personality traits, but also momentary states across different situations and social roles in parents' everyday life over time (Rauthmann, Sherman, & Funder, 2015; Sherman, Rauthmann, Brown, Serfass, & Jones, 2015).

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/ or publication of this article.

Acknowledgments

The data used in this publication were made available by the German Socio-Economic Panel Study (SOEP) at the German Institute for Economic Research (DIW Berlin), Berlin.

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Table 1

Frequencies and percentages of individuals who participated in the respective personality assessment in 2005, 2009, 2013, and 2017 as well as means and standard deviations for the number of personality assessments in the total sample, parents, and non-parents

	Personality assessment in 2005		Personality assessment in 2009		Personality assessment in 2013		Personality assessment in 2017		Number of personality assessments	
Sample	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*M*	*SD*
Total sample (*N* = 19,875)	6,041	30.39	6,344	31.92	6,276	31.58	12,945	65.13	1.59	0.96
Non-parents (*N* = 12,996)	4,239	32.62	4,245	32.66	4,004	30.81	7,601	58.49	1.55	0.91
Parents (*N* = 6,879)	1,802	26.20	2,099	30.51	2,272	33.03	5,344	77.69	1.67	1.04
Childbirth in 2002 (*N* = 535)	217	40.56	201	37.57	182	34.02	362	67.66	1.80	1.14
Childbirth in 2003 (*N* = 538)	214	39.78	174	32.34	173	32.16	388	72.12	1.76	1.12
Childbirth in 2004 (*N* = 603)	211	34.99	208	34.49	192	31.84	425	70.48	1.72	1.08
Childbirth in 2005 (*N* = 639)	212	33.18	208	32.55	189	29.58	479	74.96	1.70	1.06
Childbirth in 2006 (*N* = 524)	177	33.78	188	35.88	173	33.02	370	70.61	1.73	1.06
Childbirth in 2007 (*N* = 712)	146	20.51	175	24.58	148	20.79	573	80.48	1.46	0.90
Childbirth in 2008 (*N* = 565)	115	20.35	183	32.39	151	26.73	426	75.40	1.55	0.95
Childbirth in 2009 (*N* = 515)	95	18.45	160	31.07	116	22.52	399	77.48	1.50	0.91
Childbirth in 2010 (*N* = 510)	86	16.86	132	25.88	140	27.45	404	79.22	1.49	0.90

Childbirth in 2011 (*N* = 379)	78	20.58	109	28.76	170	44.85	317	83.64	1.78	1.06
Childbirth in 2012 (*N* = 231)	69	29.87	102	44.16	171	74.03	170	73.59	2.22	1.12
Childbirth in 2013 (*N* = 225)	60	26.67	80	35.56	137	60.89	186	82.67	2.06	1.18
Childbirth in 2014 (*N* = 301)	50	16.61	67	22.26	132	43.85	269	89.37	1.72	1.07
Childbirth in 2015 (*N* = 223)	37	16.59	60	26.91	111	49.78	199	89.24	1.83	1.09
Childbirth in 2016 (*N* = 285)	31	10.88	46	16.14	76	26.67	283	99.30	1.53	0.99
Childbirth in 2017 (*N* = 94)	4	4.26	6	6.38	11	11.70	94	100.00	1.22	0.69

Note. M = Mean. SD = Standard Deviation.

Table 2

Means and standard deviations for the Big Five personality traits in 2005, 2009, 2013, and 2017 as well as across all four waves in the total sample, parents, and non-parents

	2005		2009		2013		2017		Grand-mean	
Big Five personality trait	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Openness										
Total sample	4.64	1.17	4.52	1.18	4.64	1.14	4.79	1.19	4.68	1.18
Non-parents	4.67	1.17	4.57	1.18	4.68	1.15	4.85	1.19	4.72	1.18
Parents	4.56	1.17	4.40	1.17	4.56	1.13	4.71	1.19	4.60	1.18
Conscientiousness										
Total sample	5.64	1.00	5.61	1.01	5.63	0.96	5.66	0.99	5.64	0.99
Non-parents	5.59	1.03	5.55	1.03	5.54	0.99	5.53	1.03	5.55	1.02
Parents	5.76	0.93	5.72	0.95	5.79	0.87	5.85	0.89	5.80	0.91
Extraversion										
Total sample	4.93	1.16	4.86	1.18	4.94	1.15	5.00	1.19	4.95	1.18
Non-parents	4.91	1.17	4.85	1.20	4.91	1.16	4.95	1.21	4.91	1.19
Parents	4.97	1.14	4.89	1.14	4.98	1.13	5.07	1.15	5.00	1.14
Agreeableness										
Total sample	5.36	0.96	5.25	0.97	5.31	0.93	5.44	1.00	5.36	0.97

Non-parents	5.33	0.97	5.24	0.97	5.29	0.92	5.44	1.00	5.34	0.98
Parents	5.42	0.93	5.28	0.97	5.36	0.94	5.43	0.99	5.39	0.97
Emotional stability										
Total sample	4.20	1.21	4.26	1.22	4.29	1.22	4.22	1.24	4.24	1.23
Non-parents	4.22	1.20	4.28	1.23	4.31	1.22	4.21	1.25	4.25	1.23
Parents	4.14	1.23	4.22	1.20	4.27	1.22	4.23	1.23	4.22	1.23

Note. M = Mean. SD = Standard Deviation.

Table 3

Correlations between the Big Five personality traits across all four waves

	Openness	Conscientiousness	Extraversion	Agreeableness
Big Five personality trait	*r*	*r*	*r*	*r*
Openness				
Conscientiousness	0.13			
Extraversion	0.32	0.17		
Agreeableness	0.16	0.28	0.09	
Emotional stability	0.02	0.13	0.18	0.11

Table 4

Description and coding of the considered predictors

Predictor	Description	Coding
Gender (Level 2)	• Gender effects	• Coded with 0 for women • Coded with 1 for men • Grand-mean centered
Linear age (Level 1)	• Linear age effects	• Age at the respective personality assessment (divided by 10 [a]) • Grand-mean centered
Quadratic age (Level 1)	• Quadratic age effects	• Linear age variable [2]
Cubic age (Level 1)	• Cubic age effects	• Linear age variable [3]
Testing (Level 1)	• Effects due to repeated personality assessments	• Coded with 0 for the first personality assessment • Coded with 1 for the second personality assessment • Coded with 2 for the third personality assessment • Coded with 3 for the fourth personality assessment • Grand-mean centered

Selection (Level 1)	• Personality differences between parents before the birth of their first child and non-parents	• Coded with 1 for personality assessments in parents before their first child was born • Coded with 0 for personality assessments in non-parents and personality assessments in parents in the month(s) of and after their first child was born
Anticipation (Level 1)	• Linear personality changes in parents in the three years before the birth of their first child	• Coded with the time span (in years and months) between the respective personality assessment and the date of birth in parents in the three years before their first child was born • Coded with 0 for personality assessments in non-parents and all other personality assessments in parents
Socialization (Level 1)	• Linear personality changes in parents in the three years after the birth of their first child	• Coded with the time span (in years and months) between the respective personality assessment and the date of birth in parents in the three years after their first child was born • Coded with 0 for personality assessments in non-parents and all other personality assessments in parents
Short-term post-event (Level 1)	• Abrupt short-term personality changes in parents in the first year after the birth of their first child	• Coded with 1 for personality assessments in parents in the first year of parenthood • Coded with 0 for personality assessments in non-parents and all other personality assessments in parents

Long-term post-event (Level 1)	• Abrupt long-term personality changes in parents more than one year after the birth of their first child	• Coded with 1 for personality assessments in parents after the first year of parenthood Coded with 0 for personality assessments in non-parents and all other personality assessments in parents

Note: [a] The linear age variable was divided by 10 to ensure that the effects of linear, quadratic, and cubic age would not become too small to be displayed rounded at three decimals.

Table 5

Examples how the event-related predictors were coded

Sample	Personality assessment in 2005 (*N* = 6,041)					Personality assessment in 2009 (*N* = 6,344)					Personality assessment in 2013 (*N* = 6,276)					Personality assessment in 2017 (*N* = 12,945)				
	Select	Ant	Soc	Short-term	Long-term	Select	Ant	Soc	Short-term	Long-term	Select	Ant	Soc	Short-term	Long-term	Select	Ant	Soc	Short-term	Long-term
Non-parents (*N* = 12,996)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parents (*N* = 6,879)																				
Childbirth in 2002 (*N* = 535)	0	0	3	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Childbirth in 2003 (*N* = 538)	0	0	2	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Childbirth in 2004 (*N* = 603)	0	0	1	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Childbirth in 2005 (*N* = 639)	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Childbirth in 2006 (*N* = 524)	1	-1	0	0	0	0	0	3	0	1	0	0	0	0	1	0	0	0	0	1
Childbirth in 2007 (*N* = 712)	1	-2	0	0	0	0	0	2	0	1	0	0	0	0	1	0	0	0	0	1
Childbirth in 2008 (*N* = 565)	1	-3	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	1
Childbirth in 2009 (*N* = 515)	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1
Childbirth in 2010 (*N* = 510)	1	0	0	0	0	1	-1	0	0	0	0	0	3	0	1	0	0	0	0	1
Childbirth in 2011 (*N* = 379)	1	0	0	0	0	1	-2	0	0	0	0	0	2	0	1	0	0	0	0	1
Childbirth in 2012 (*N* = 231)	1	0	0	0	0	1	-3	0	0	0	0	0	1	0	1	0	0	0	0	1
Childbirth in 2013 (*N* = 225)	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Childbirth in 2014 (*N* = 301)	1	0	0	0	0	1	0	0	0	0	1	-1	0	0	0	0	0	3	0	1
Childbirth in 2015 (*N* = 223)	1	0	0	0	0	1	0	0	0	0	1	-2	0	0	0	0	0	2	0	1
Childbirth in 2016 (*N* = 285)	1	0	0	0	0	1	0	0	0	0	1	-3	0	0	0	0	0	1	0	1
Childbirth in 2017 (*N* = 94)	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0

Note. Select = Selection. Ant = Anticipation. Soc = Socialization. Short-term = Short-term post-event. Long-term = Long-term post-event. Examples are given for full years only. More fine-grained information on years and months was used in the analyses.

Table 6

Associations between the birth of the first child and personality in the total sample (N = 19,875) [1]

	Openness	Conscientiousness	Extraversion	Agreeableness	Emotional stability
Coefficient	*β* *(SE)*	*β* *(SE)*	*β* *(SE)*	*β* *(SE)*	*β* *(SE)*
Intercept	0.072*	0.156*	0.016	0.034*	-0.004
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Gender	-0.164*	-0.183*	-0.143*	-0.193*	0.472*
	(0.013)	(0.012)	(0.013)	(0.013)	(0.013)
Linear age	-0.009	0.175*	-0.064*	-0.040*	0.060*
	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)
Quadratic age	-0.002	-0.181*	-0.026*	-0.027*	0.007
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Cubic age	0.007	0.048*	0.011*	0.016*	-0.012*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Testing	-0.037*	-0.071*	-0.013	-0.059*	0.010
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Selection	-0.112*	0.050	0.072*	-0.031	0.014
	(0.028)	(0.028)	(0.027)	(0.029)	(0.028)
Anticipation	0.016	0.010	0.016	-0.013	0.011
	(0.017)	(0.017)	(0.016)	(0.018)	(0.017)
Socialization	-0.016	-0.010	-0.032*	-0.020	0.000
	(0.011)	(0.011)	(0.010)	(0.011)	(0.011)
Short-term post-event	-0.131*	0.067	0.034	0.062	0.037
	(0.033)	(0.033)	(0.032)	(0.034)	(0.033)
Long-term post-event	-0.104*	0.044	0.096*	0.032	0.008

	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)

Note. β = standardized β-coefficient from multilevel mixed-effect models. Standard errors are in parenthesis. * $p < 0.01$. [1] Including 6,879 (34.61 %) parents and 12,996 (65.39 %) non-parents.

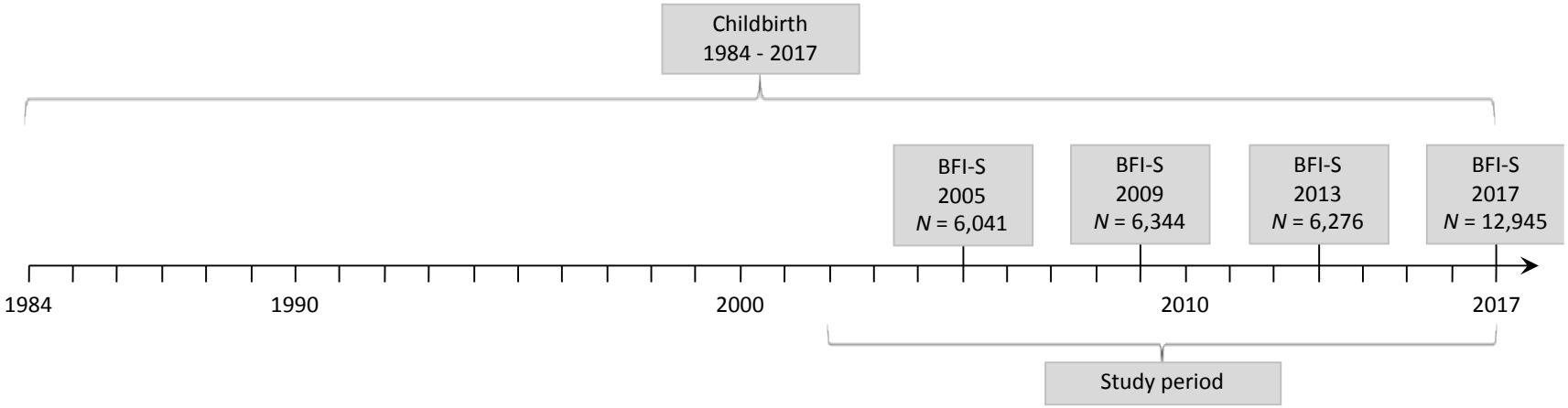
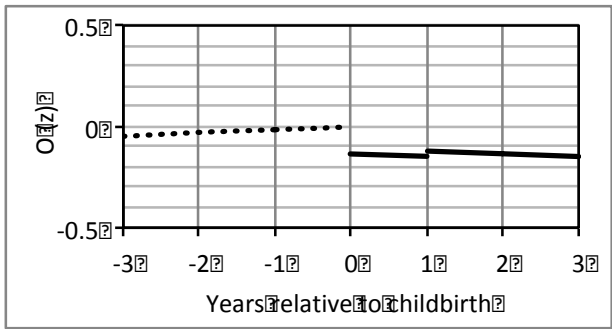


Figure 1: Study design with information on when the birth of a child and personality were assessed.

Note. Numbers refer to the final sample, which was considered in the analyses.

(a)



(b)

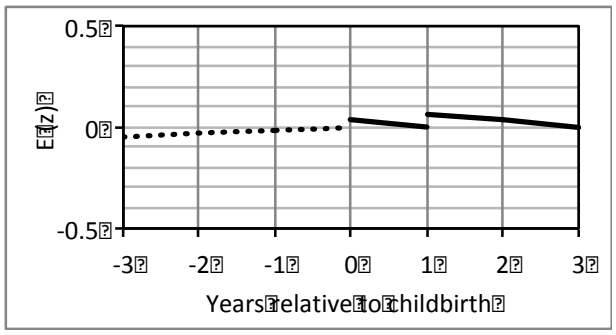
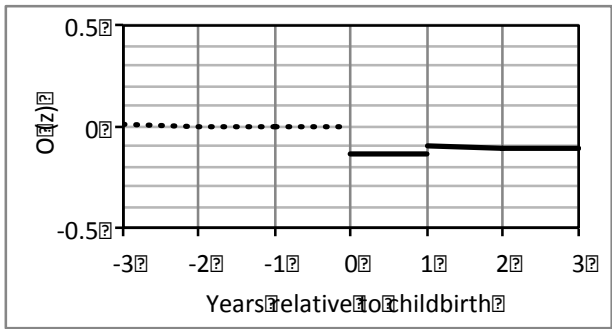


Figure 2: Levels of (a) openness and (b) extraversion from three years before until three years after the birth of the first child in all parents.

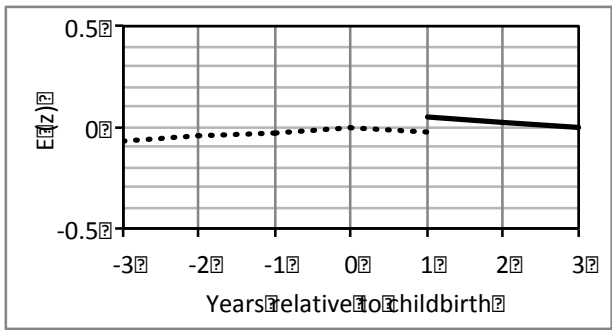
Note. O = Openness. E = Extraversion. The first line indicates levels of openness in the three years before childbirth. It is based on the coefficient of the anticipation effect multiplied by the time (in years) until childbirth. The second line displays levels of openness in the first year of parenthood. It is based on the coefficient of the short-term post-event effect and the coefficient of the socialization effect, multiplied by the time (in years) since being a parent. The third line indicates levels of openness in the second and third year of parenthood. It is based on the coefficient of the long-term post-event effect and the coefficient of the socialization effect, multiplied by the time (in years) since being a parent.

A continuous line is drawn when any of the effects during the respective time frame reached statistical significance.

(a)



(b)



(c)

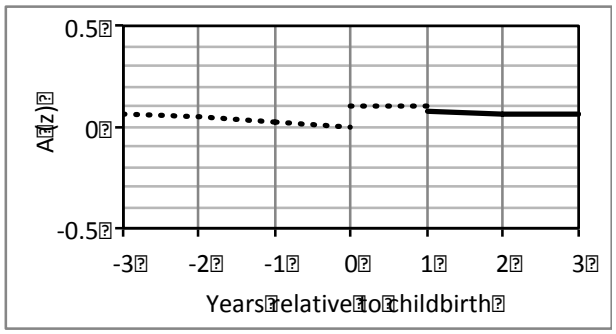
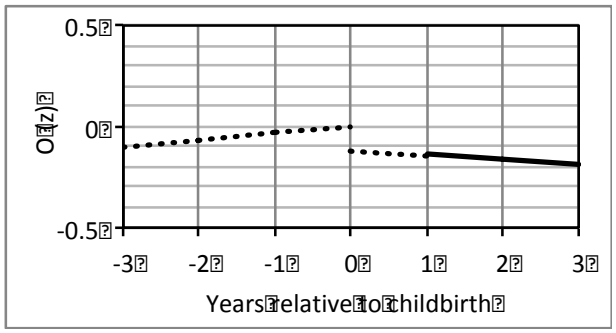


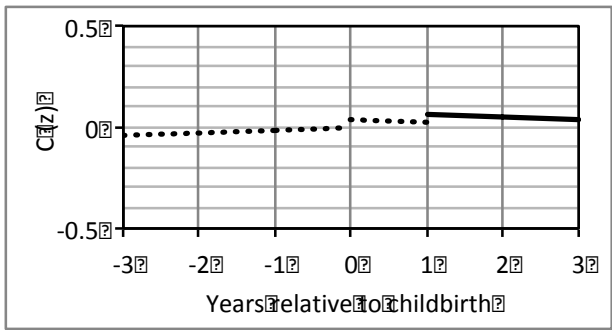
Figure 3: Levels of (a) openness, (b) extraversion, and (c) agreeableness from three years before until three years after the birth of the first child in mothers.

Note. O = Openness. E = Extraversion. A= Agreeableness. A detailed description of the figure is provided in Figure 2.

(a)



(b)



(c)

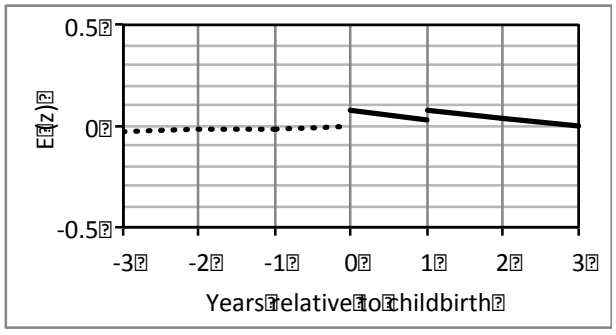
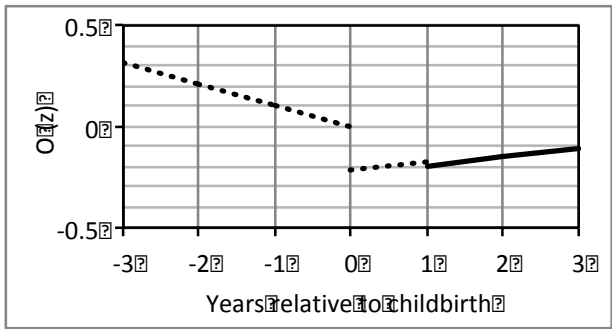


Figure 4: Levels of (a) openness, (b) conscientiousness, and (c) extraversion from three years before until three years after the birth of the first child in fathers.

Note. O = Openness. C = Conscientiousness. E= Extraversion. A detailed description of the figure is provided in Figure 2.

(a)



(b)

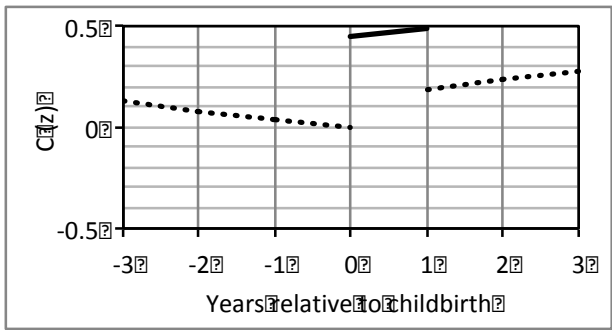
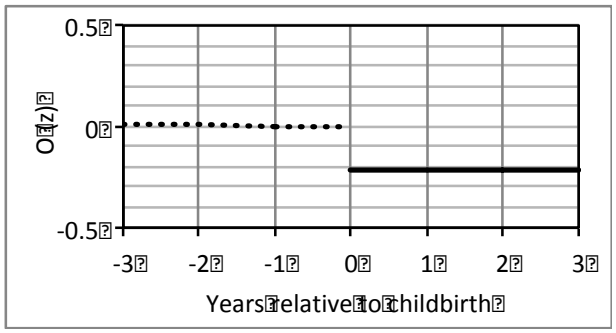


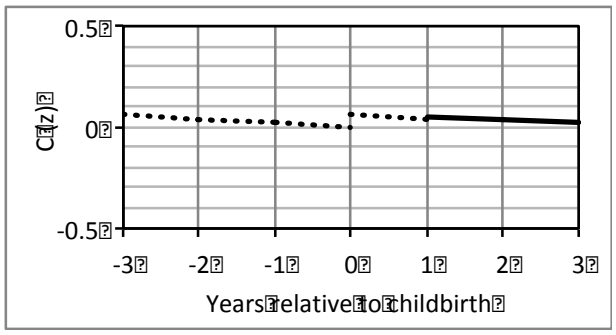
Figure 5: Levels of (a) openness and (b) conscientiousness from three years before until three years after the birth of the first child in younger parents.

Note. O = Openness. C = Conscientiousness. A detailed description of the figure is provided in Figure 2.

(a)



(b)



(c)

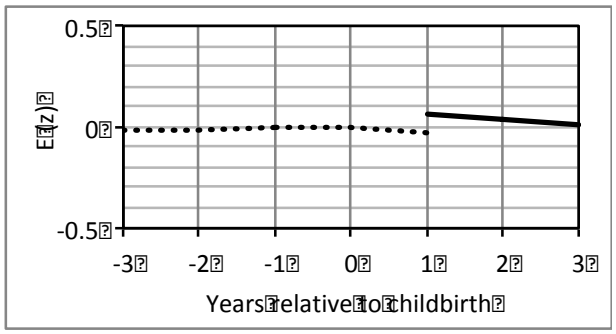
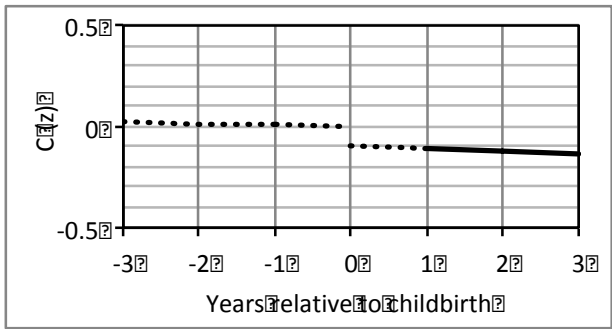


Figure 6: Levels of (a) openness, (b) conscientiousness, and (c) extraversion from three years before until three years after the birth of the first child in middle-aged parents.

Note. O = Openness. C = Conscientiousness. E= Extraversion. A detailed description of the figure is provided in Figure 2.

(a)



(b)

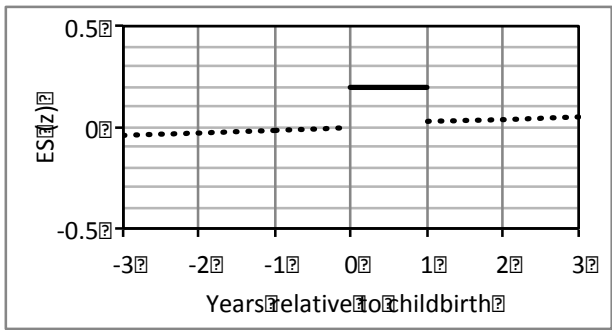
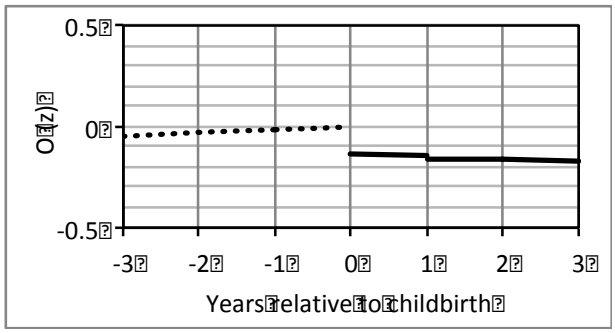


Figure 7: Levels of (a) conscientiousness and (b) emotional stability from three years before until three years after the birth of the first child in older parents.

Note. C = Conscientiousness. ES = Emotional stability. A detailed description of the figure is provided in Figure 2.

(a)



(b)

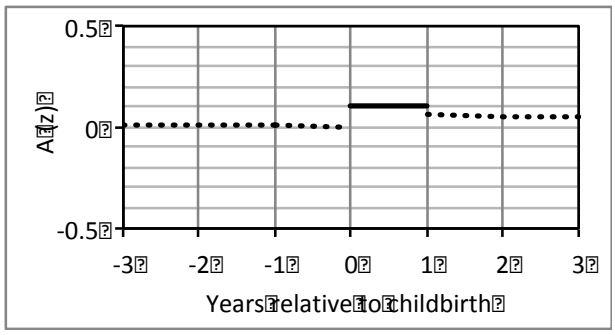


Figure 8: Levels of (a) openness and (b) agreeableness from three years before until three years after the birth of the first child in parents living with a partner at childbirth.

Note. O = Openness. A = Agreeableness. A detailed description of the figure is provided in Figure 2.

Supplement A: Supplementary Table 1 - 5

Supplementary Table 1

Sample composition of the total sample and those who provided information on the Big Five personality traits in 2005, 2009, 2013, and 2017, respectively (N = 19,875)

	Total sample (*N* = 19,875)		Personality assessment in 2005 (*N* = 6,041)		Personality assessment in 2009 (*N* = 6,344)		Personality assessment in 2013 (*N* = 6,276)		Personality assessment in 2017 (*N* = 12,945)	
Subsample of the SOEP	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*
A, original sample (west)	2,238	11.26	1,517	25.11	1,381	21.77	1,195	19.04	967	7.47
B, 1984 migration	602	3.03	420	6.95	333	5.25	216	3.44	158	1.22
C, 1990 original sample (east)	1,373	6.91	1,010	16.72	878	13.84	693	11.04	555	4.29
D, 1994/5 migration	319	1.61	237	3.92	198	3.12	138	2.20	104	0.80
E, 1998 refreshment	440	2.21	347	5.74	323	5.09	53	0.84	46	0.36
F, 2000 refreshment	2,935	14.77	2,015	33.36	1,758	27.71	1,402	22.34	1,175	9.08
G, 2002 high-income	774	3.89	495	8.19	418	6.59	385	6.13	292	2.26
H, 2006 refreshment	594	2.99	0	0.00	444	7.00	359	5.72	290	2.24
I, 2009 innovation sample	611	3.07	0	0.00	611	9.63	0	0.00	0	0.00
J, 2011 refreshment	1,415	7.12	0	0.00	0	0.00	1,161	18.50	1,017	7.86
K, 2012 refreshment	818	4.12	0	0.00	0	0.00	674	10.74	585	4.52
L1, 2010 birth cohorts	1,614	8.12	0	0.00	0	0.00	0	0.00	1,614	12.47
L2, 2010 family types	1,192	6.00	0	0.00	0	0.00	0	0.00	1,192	9.21
L3, 2011 family types	459	2.31	0	0.00	0	0.00	0	0.00	459	3.55
M1, 2013 migration	1,453	7.31	0	0.00	0	0.00	0	0.00	1,453	11.22
M2, 2015 migration	596	3.00	0	0.00	0	0.00	0	0.00	596	4.60
M3, 2016 refugees	717	3.61	0	0.00	0	0.00	0	0.00	717	5.54
M4, 2016 refugees/ family	532	2.68	0	0.00	0	0.00	0	0.00	532	4.11
N, 2017 refreshment	1,193	6.00	0	0.00	0	0.00	0	0.00	1,193	9.22

Supplementary Table 2

Correlations between the Big Five personality traits in 2005, 2009, 2013, and 2017, respectively

Big Five personality trait	2005					2009					2013					2017				
	O	C	E	A	ES	O	C	E	A	ES	O	C	E	A	ES	O	C	E	A	ES
	r	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*
2005																				
O	1.00																			
C	0.12	1.00																		
E	0.35	0.15	1.00																	
A	0.13	0.30	0.07	1.00																
ES	0.02	0.13	0.19	0.10	1.00															
2009																				
O	0.58	0.05	0.25	0.07	0.02	1.00														
C	0.09	0.53	0.11	0.17	0.06	0.09	1.00													
E	0.26	0.08	0.61	0.04	0.11	0.33	0.11	1.00												
A	0.11	0.14	0.05	0.50	0.07	0.12	0.24	0.06	1.00											
ES	0.02	0.08	0.13	0.05	0.55	0.02	0.11	0.19	0.09	1.00										
2013																				
O	0.55	0.04	0.23	0.09	-0.00	0.61	0.05	0.25	0.11	0.00	1.00									
C	0.04	0.50	0.09	0.15	0.02	0.02	0.57	0.09	0.14	0.06	0.11	1.00								
E	0.23	0.09	0.61	0.05	0.09	0.25	0.07	0.67	0.03	0.11	0.31	0.15	1.00							
A	0.11	0.17	0.05	0.47	0.02	0.07	0.15	0.05	0.52	0.03	0.15	0.24	0.08	1.00						
ES	-0.02	0.08	0.11	0.07	0.51	0.01	0.08	0.12	0.05	0.60	0.01	0.11	0.16	0.10	1.00					
2017																				
O	0.55	0.06	0.23	0.06	0.01	0.59	0.08	0.22	0.06	0.01	0.63	0.08	0.23	0.10	0.03	1.00				
C	0.06	0.46	0.11	0.13	0.02	0.05	0.53	0.12	0.13	0.03	0.04	0.61	0.12	0.13	0.06	0.17	1.00			
E	0.23	0.09	0.59	0.00	0.06	0.25	0.09	0.66	0.01	0.09	0.25	0.12	0.71	0.05	0.11	0.29	0.21	1.00		
A	0.07	0.11	0.05	0.45	0.02	0.05	0.13	0.07	0.50	0.05	0.09	0.15	0.05	0.55	0.08	0.19	0.30	0.10	1.00	
ES	0.01	0.06	0.13	0.07	0.48	0.05	0.09	0.14	0.05	0.55	0.03	0.08	0.14	0.07	0.63	0.04	0.15	0.18	0.14	1.00

Note. O = Openness. C = Conscientiousness. E = Extraversion. A = Agreeableness. ES = Emotional stability.

Supplementary Table 3

Associations between the birth of the first child and personality in women (N = 9,597) [1] *and men* (N = 10,278) [2]

	Women				
	Openness	Conscien-tiousness	Extraversion	Agreeableness	Emotional stability
Coefficient	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*
Intercept	0.106*	0.232*	0.098*	0.087*	-0.238*
	(0.018)	(0.017)	(0.017)	(0.017)	(0.018)
Linear age	0.018	0.144*	-0.030	-0.038	0.133*
	(0.016)	(0.016)	(0.016)	(0.016)	(0.017)
Quadratic age	0.039*	-0.159*	-0.019	-0.005	0.020
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Cubic age	-0.009	0.045*	0.003	0.012	-0.023*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Testing	-0.044*	-0.053*	-0.010	-0.055*	0.001
	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)
Selection	-0.074	0.062	0.066	-0.010	-0.022
	(0.037)	(0.036)	(0.036)	(0.038)	(0.038)
Anticipation	-0.002	0.007	0.023	-0.023	0.012
	(0.023)	(0.023)	(0.021)	(0.024)	(0.024)
Socialization	-0.005	-0.008	-0.023	-0.005	0.019
	(0.014)	(0.014)	(0.013)	(0.015)	(0.015)
Short-term post-event	-0.135*	0.086	-0.000	0.107	0.054
	(0.044)	(0.043)	(0.042)	(0.045)	(0.045)
Long-term post-event	-0.092*	0.026	0.069*	0.079*	-0.035
	(0.024)	(0.023)	(0.024)	(0.023)	(0.024)

	Men				
	Openness	Conscien-tiousness	Extraversion	Agreeableness	Emotional stability
Coefficient	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*
Intercept	0.030	0.087*	-0.059*	-0.030	0.217*
	(0.016)	(0.016)	(0.015)	(0.016)	(0.015)
Linear age	-0.033	0.193*	-0.096*	-0.045*	-0.000
	(0.015)	(0.015)	(0.015)	(0.016)	(0.015)
Quadratic age	-0.045*	-0.209*	-0.033*	-0.045*	-0.001
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Cubic age	0.025*	0.055*	0.019*	0.021*	-0.003
	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)
Testing	-0.038*	-0.089*	-0.019	-0.065*	0.015
	(0.008)	(0.009)	(0.008)	(0.009)	(0.008)
Selection	-0.172*	0.019	0.075	-0.046	0.070
	(0.040)	(0.041)	(0.039)	(0.043)	(0.039)
Anticipation	0.034	0.013	0.009	-0.000	0.009
	(0.025)	(0.026)	(0.024)	(0.027)	(0.025)
Socialization	-0.029	-0.012	-0.041*	-0.037	-0.015
	(0.016)	(0.016)	(0.015)	(0.017)	(0.016)
Short-term post-event	-0.116	0.035	0.072	0.022	0.026

	(0.047)	(0.048)	(0.046)	(0.051)	(0.047)
Long-term post-event	-0.099*	0.075*	0.124*	-0.003	0.056
	(0.025)	(0.025)	(0.025)	(0.026)	(0.024)

Note. β = standardized β-coefficient from multilevel mixed-effect models. Standard errors are in parenthesis. * $p < 0.01$. [1] Including 3,824 (39.85 %) mothers and 5,773 (60.15 %) childless women. [2] Including 3,055 (29.72 %) fathers and 7,223 (70.28 %) childless men.

Supplementary Table 4

Associations between the birth of the first child and personality in younger (N = 7,447) [1], middle-aged (N = 8,567) [2], and older (N = 3,861) [3] individuals

	Younger individuals				
	Openness	Conscien-tiousness	Extraversion	Agreeableness	Emotional stability
Coefficient	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*
Intercept	0.218*	0.070	0.065	0.089	-0.026
	(0.054)	(0.057)	(0.054)	(0.055)	(0.053)
Gender	-0.193*	-0.260*	-0.122*	-0.202*	0.524*
	(0.022)	(0.023)	(0.023)	(0.022)	(0.021)
Linear age	0.128	0.167	0.069	0.103	0.140
	(0.078)	(0.084)	(0.079)	(0.081)	(0.079)
Quadratic age	-0.168	0.029	0.050	0.022	0.149
	(0.137)	(0.147)	(0.135)	(0.144)	(0.140)
Cubic age	-0.108	0.186	0.019	0.007	0.031
	(0.067)	(0.072)	(0.066)	(0.071)	(0.069)
Testing	-0.095*	-0.062*	-0.018	-0.081*	0.026
	(0.021)	(0.022)	(0.021)	(0.021)	(0.020)
Selection	-0.411*	0.012	-0.109	-0.085	-0.200
	(0.105)	(0.112)	(0.104)	(0.109)	(0.106)
Anticipation	-0.104	-0.042	-0.068	-0.096	-0.005
	(0.068)	(0.074)	(0.068)	(0.072)	(0.070)
Socialization	0.042	0.044	0.002	0.056	0.010
	(0.032)	(0.034)	(0.031)	(0.033)	(0.032)
Short-term post-event	-0.218	0.450*	-0.097	0.077	-0.014
	(0.104)	(0.111)	(0.104)	(0.107)	(0.103)
Long-term post-event	-0.238*	0.143	0.023	-0.042	-0.030
	(0.053)	(0.057)	(0.054)	(0.054)	(0.052)

	Middle-aged individuals				
	Openness	Conscien-tiousness	Extraversion	Agreeableness	Emotional stability
Coefficient	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*
Intercept	0.120*	0.132*	0.020	0.038	0.021
	(0.018)	(0.016)	(0.017)	(0.018)	(0.017)
Gender	-0.140*	-0.127*	-0.127*	-0.186*	0.501*
	(0.020)	(0.018)	(0.020)	(0.019)	(0.020)
Linear age	0.077*	0.122*	-0.071	-0.089*	0.092*
	(0.030)	(0.028)	(0.028)	(0.030)	(0.029)
Quadratic age	0.088*	-0.092*	0.043	0.008	-0.017
	(0.021)	(0.020)	(0.020)	(0.022)	(0.021)
Cubic age	-0.040	0.013	0.006	0.024	0.006
	(0.020)	(0.019)	(0.019)	(0.021)	(0.020)
Testing	-0.062*	-0.069*	-0.031*	-0.058*	-0.008
	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)
Selection	-0.199*	0.005	0.032	-0.073	0.036
	(0.036)	(0.034)	(0.035)	(0.037)	(0.036)
Anticipation	-0.005	-0.021	0.005	-0.018	0.019

	(0.020)	(0.020)	(0.019)	(0.022)	(0.021)
Socialization	0.003	-0.019	-0.028	-0.031	0.001
	(0.013)	(0.013)	(0.013)	(0.014)	(0.013)
Short-term post-event	-0.220*	0.059	-0.001	0.045	-0.001
	(0.040)	(0.038)	(0.038)	(0.042)	(0.040)
Long-term post-event	-0.223*	0.076*	0.095*	0.049	-0.005
	(0.029)	(0.026)	(0.028)	(0.029)	(0.028)

	Older individuals				
	Openness	Conscien-tiousness	Extraversion	Agreeableness	Emotional stability
Coefficient	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*
Intercept	0.231*	0.328*	0.040	0.047	-0.082
	(0.064)	(0.061)	(0.061)	(0.066)	(0.064)
Gender	-0.187*	-0.142*	-0.213*	-0.188*	0.296*
	(0.030)	(0.027)	(0.031)	(0.029)	(0.031)
Linear age	-0.362*	-0.243	-0.225	-0.043	0.139
	(0.119)	(0.116)	(0.110)	(0.127)	(0.119)
Quadratic age	0.176	0.182	0.115	-0.035	-0.027
	(0.084)	(0.083)	(0.078)	(0.091)	(0.085)
Cubic age	-0.022	-0.044	-0.021	0.018	-0.004
	(0.019)	(0.019)	(0.018)	(0.021)	(0.019)
Testing	-0.004	-0.042*	-0.004	-0.044*	0.011
	(0.013)	(0.012)	(0.012)	(0.013)	(0.013)
Selection	-0.171	-0.145	0.005	-0.062	0.106
	(0.070)	(0.067)	(0.065)	(0.073)	(0.069)
Anticipation	0.013	-0.008	-0.002	-0.005	0.013
	(0.037)	(0.037)	(0.034)	(0.040)	(0.037)
Socialization	-0.027	-0.012	-0.024	-0.032	0.009
	(0.025)	(0.024)	(0.023)	(0.027)	(0.025)
Short-term post-event	-0.017	-0.100	0.153	0.061	0.193*
	(0.073)	(0.070)	(0.068)	(0.076)	(0.072)
Long-term post-event	-0.016	-0.099*	0.029	-0.016	0.021
	(0.039)	(0.035)	(0.036)	(0.038)	(0.037)

Note. β = standardized β-coefficient from multilevel mixed-effect models. Standard errors are in parenthesis. * $p < 0.01$. [1] Including 1,086 (14.58 %) younger parents and 6,361 (85.42 %) non-parents of the same age. [2] Including 4,660 (54.39 %) middle-aged parents and 3,907 (45.61 %) non-parents of the same age. [3] Including 1,133 (29.34 %) older parents and 2,728 (70.66 %) non-parents of the same age.

Supplementary Table 5

Associations between the birth of the first child and personality among individuals living with (N = 5,610) [1] and without (N = 8,956) [2] a partner

	Individuals living without a partner				
	Openness	Conscien-tiousness	Extraversion	Agreeableness	Emotional stability
Coefficient	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*
Intercept	0.035	0.076*	-0.052*	-0.054*	-0.017
	(0.016)	(0.017)	(0.016)	(0.016)	(0.016)
Gender	-0.245*	-0.281*	-0.186*	-0.220*	0.432*
	(0.019)	(0.020)	(0.020)	(0.019)	(0.019)
Linear age	-0.034	0.207*	-0.125*	-0.033	0.051*
	(0.018)	(0.019)	(0.018)	(0.018)	(0.018)
Quadratic age	-0.015	-0.175*	-0.030*	-0.012	0.015
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Cubic age	0.016*	0.036*	0.022*	0.010	-0.012
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Testing	-0.034*	-0.065*	-0.008	-0.048*	0.016
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Selection	0.033	0.089	0.168	-0.069	-0.057
	(0.075)	(0.078)	(0.076)	(0.077)	(0.076)
Anticipation	0.087	0.015	0.030	-0.066	-0.013
	(0.049)	(0.052)	(0.049)	(0.053)	(0.051)
Socialization	0.010	0.053	0.034	0.012	-0.005
	(0.038)	(0.040)	(0.037)	(0.040)	(0.039)
Short-term post-event	-0.050	0.142	0.046	-0.134	-0.093
	(0.096)	(0.100)	(0.097)	(0.099)	(0.098)
Long-term post-event	-0.153	0.103	0.086	-0.037	-0.003
	(0.063)	(0.066)	(0.065)	(0.063)	(0.063)

	Individuals living with a partner				
	Openness	Conscien-tiousness	Extraversion	Agreeableness	Emotional stability
Coefficient	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*
Intercept	-0.023	0.136*	0.033	-0.089*	-0.040
	(0.022)	(0.020)	(0.021)	(0.022)	(0.021)
Gender	-0.163*	-0.181*	-0.144*	-0.253*	0.498*
	(0.023)	(0.020)	(0.024)	(0.022)	(0.024)
Linear age	0.008	0.147*	-0.079*	-0.037	0.092*
	(0.020)	(0.018)	(0.019)	(0.019)	(0.019)
Quadratic age	0.050*	-0.095*	-0.012	0.039	-0.049*
	(0.016)	(0.016)	(0.015)	(0.017)	(0.017)
Cubic age	-0.014	0.023*	0.005	-0.008	0.005
	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)
Testing	-0.008	-0.056*	0.026	-0.029*	0.018
	(0.011)	(0.010)	(0.010)	(0.011)	(0.011)
Selection	-0.101*	-0.005	0.026	0.047	0.108*
	(0.036)	(0.033)	(0.034)	(0.036)	(0.035)
Anticipation	0.016	-0.001	0.024	-0.006	0.030

	(0.018)	(0.018)	(0.017)	(0.020)	(0.019)
Socialization	-0.005	-0.022	-0.015	-0.004	0.009
	(0.014)	(0.013)	(0.013)	(0.015)	(0.014)
Short-term post-event	-0.138*	0.006	-0.031	0.110*	0.088
	(0.042)	(0.039)	(0.039)	(0.042)	(0.041)
Long-term post-event	-0.155*	0.002	-0.032	0.065	0.022
	(0.034)	(0.031)	(0.032)	(0.033)	(0.032)

Note. β = standardized β-coefficient from multilevel mixed-effect models. Standard errors are in parenthesis. * $p < 0.01$. [1] Including 2,316 (41.28 %) parents and 3,294 (58.72 %) non-parents living with their partner. [2] Including 341 (3.81 %) parents and 8,615 (96.19 %) non-parents living without a partner.

Supplement B: Stata Syntax

```
clear
clear matrix
clear mata
set maxvar 32000
version 14.2
set more off

cd "XXXX"

*include individuals from the meta file ppfad
use persnr sex gebjahr ?hhnr ??hhnr psample using ppfad
label variable persnr `"person ID"'
label variable sex `"gender"'
label variable gebjahr `"year of birth"'
mvdecode persnr sex gebjahr ?hhnr ??hhnr, mv(-1 -2 -3 -4 -5 -6 -7 -8 -9)

*recode gender (0=female, 1=male)
rename sex sex12
recode sex12 (1=1 male) (2=0 female), gen(sex)
drop sex12
label variable sex `"gender (0=f, 1=m)"'

*merge information on personality in 2005, 2009, 2013, and 2017 as well as life events from
1984 to 2017
*1985
merge persnr using bp, sort keep(bp80??) nokeep
drop _merge
*1986
merge persnr using cp, sort keep(cp91??) nokeep
drop _merge
*1987
merge persnr using dp, sort keep(dp93??) nokeep
drop _merge
*1988
merge persnr using ep, sort keep(ep84??) nokeep
drop _merge
*1989
merge persnr using fp, sort keep(fp103??) nokeep
drop _merge
*1990
merge persnr using gp, sort keep(gp103??) nokeep
drop _merge
*1991
merge persnr using hp, sort keep(hp103??) nokeep
drop _merge
*1992
merge persnr using ip, sort keep(ip103??) nokeep
drop _merge
*1993
```

```
merge persnr using jp, sort keep(jp103??) nokeep
drop _merge
*1994
merge persnr using kp, sort keep(kp103??) nokeep
drop _merge
*1995
merge persnr using lp, sort keep(lp103??) nokeep
drop _merge
*1996
merge persnr using mp, sort keep(mp108??) nokeep
drop _merge
*1997
merge persnr using np, sort keep(np115??) nokeep
drop _merge
*1998
merge persnr using op, sort keep(op121??) nokeep
drop _merge
*1999
merge persnr using pp, sort keep(pp133??) nokeep
drop _merge
*2000
merge persnr using qp, sort
drop _merge
*2001
merge persnr using rp, sort
drop _merge
*2002
merge persnr using sp, sort
drop _merge
*2003
merge persnr using tp, sort
drop _merge
*2004
merge persnr using up, sort
drop _merge
*2005
merge persnr using vp, sort
drop _merge
*2006
merge persnr using wp, sort
drop _merge
*2007
merge persnr using xp, sort
drop _merge
*2008
merge persnr using yp, sort
drop _merge
*2009
merge persnr using zp, sort
drop _merge
*2010
```

```
merge persnr using bap, sort
drop _merge
*2011
merge persnr using bbp, sort
drop _merge
*2012
merge persnr using bcp, sort
drop _merge
*2013
merge persnr using bdp, sort
drop _merge
*2014
merge persnr using bep, sort
drop _merge
*2015
merge persnr using bfp, sort
drop _merge
*2016
merge persnr using bgp, sort
drop _merge
*2017
merge persnr using bhp, sort
drop _merge

*mvdecode life events
mvdecode bp80?? cp91?? dp93?? ep84?? fp103?? gp103?? hp103?? ip103?? jp103?? kp103??
lp103?? mp108?? np115?? op121?? pp133?? qp142?? rp133?? sp133?? tp141?? up144??
vp153?? wp141?? xp148?? yp154?? zp156?? bap159?? bbp151?? bcp150?? bdp157??
bep150?? bfp173?? bgp170?? bhp_204_??, mv(-1 -2 -3 -4 -5 -6 -7 -8 -9)

*mvdecode month of interview
mvdecode ?pmonin ??pmonin, mv(-1 -2 -3 -4 -5 -6 -7 -8 -9)

*mvdecode personality
mvdecode vp125?? zp120?? bdp151?? bhp_08_??, mv(-1 -2 -3 -4 -5 -6 -7 -8 -9)

*merge with additional information on childbirth (biobirth file)
merge persnr using biobirth, sort keep(biovalid bioyear kidgeb01 kidmon01 sumkids) nokeep
drop _merge
mvdecode persnr biovalid bioyear kidgeb01 kidmon01 sumkids, mv(-1 -2 -3 -4 -5 -6 -7 -8 -9)

*generate a score for each Big Five trait
*rename variables
renpfix vp125 b505
renpfix zp120 b509
renpfix bdp151 b513
renpfix bhp_08_ b517

*reverses negative items
foreach X in 03 05 07 10 12 {
        replace b505`X'=8 - b505`X'
```

```
	replace b509`X'=8 - b509`X'
	replace b513`X'=8 - b513`X'
	replace b517`X'=8 - b517`X'
}

*calculate means for each personality trait in 2005, 2009, 2013, and 2017, respectively
foreach X in b505 b509 b513 b517 {
	egen `X'c= rowmean(`X'01 `X'07 `X'11)
	egen `X'e= rowmean(`X'02 `X'08 `X'12)
	egen `X'a= rowmean(`X'03 `X'06 `X'13)
	egen `X'o= rowmean(`X'04 `X'09 `X'14)
	egen `X'n= rowmean(`X'05 `X'10 `X'15)
}

*drop individuals without any information on personality (no BFI-S item at all) in 2005, 2009, 2013, and 2017, respectively
capture drop help
gen help=.
for any o c e a n: replace help=1 if b505X<.
for any o c e a n: replace help=1 if b509X<.
for any o c e a n: replace help=1 if b513X<.
for any o c e a n: replace help=1 if b517X<.
tab help
drop if help==.
capture drop help

*generate a variable that indicates the month of interview in 2005, 2009, 2013, and 2017, respectively
gen int05=2005+vpmonin/12-1/12
gen int09=2009+zpmonin/12-1/12
gen int13=2013+bdpmonin/12-1/12
gen int17=2017+bhpmonin/12-1/12

*drop individuals without any information on month of interview
drop if int05==. & int09==. & int13==. & int17==.

cd "XXXX"
save birth, replace

//

use birth, clear

*generate a variable that indicates whether a child was born in a specific year from 1984 to 2017 (one variable was generated per year)
gen event17=.
replace event17=1 if (bhp_204_10==1 & bhp_204_11<.)
replace event17=1 if kidgeb01==2017

gen event16=.
replace event16=1 if (bgp17010==1 & bgp17011<.) | (bhp_204_10==1 & bhp_204_12<.)
```

```
replace event16=1 if kidgeb01==2016

gen event15=.
replace event15=1 if (bfp17310==1 & bfp17311<.) | (bgp17010==1 & bgp17012<.)
replace event15=1 if kidgeb01==2015

gen event14=.
replace event14=1 if (bep15010==1 & bep15011<.) | (bfp17310==1 & bfp17312<.)
replace event14=1 if kidgeb01==2014

gen event13=.
replace event13=1 if (bdp15710==1 & bdp15711<.) | (bep15010==1 & bep15012<.)
replace event13=1 if kidgeb01==2013

gen event12=.
replace event12=1 if (bcp15010==1 & bcp15011<.) | (bdp15710==1 & bdp15712<.)
replace event12=1 if kidgeb01==2012

gen event11=.
replace event11=1 if (bbp15110==1 & bbp15111<.) | (bcp15010==1 & bcp15012<.)
replace event11=1 if kidgeb01==2011

gen event10=.
replace event10=1 if (bap15907==1 & bap15908<.) | (bbp15110==1 & bbp15112<.)
replace event10=1 if kidgeb01==2010

gen event09=.
replace event09=1 if (zp15607==1 & zp15609<.) | (bap15907==1 & bap15909<.)
replace event09=1 if kidgeb01==2009

gen event08=.
replace event08=1 if (yp15407==1 & yp15409<.) | (zp15607==1 & zp15608<.)
replace event08=1 if kidgeb01==2008

gen event07=.
replace event07=1 if (xp14807==1 & xp14809<.) | (yp15407==1 & yp15408<.)
replace event07=1 if kidgeb01==2007

gen event06=.
replace event06=1 if (wp14107==1 & wp14109<.) | (xp14807==1 & xp14808<.)
replace event06=1 if kidgeb01==2006

gen event05=.
replace event05=1 if (vp15307==1 & vp15309<.) | (wp14107==1 & wp14108<.)
replace event05=1 if kidgeb01==2005

gen event04=.
replace event04=1 if (up14407==1 & up14409<.) | (vp15307==1 & vp15308<.)
replace event04=1 if kidgeb01==2004

gen event03=.
```

```
replace event03=1 if (tp14107==1 & tp14109<.) | (up14407==1 & up14408<.)
replace event03=1 if kidgeb01==2003

gen event02=.
replace event02=1 if (sp13319==1 & sp13321<.) | (tp14107==1 & tp14108<.)
replace event02=1 if kidgeb01==2002

gen event01=.
replace event01=1 if (rp13319==1 & rp13321<.) | (sp13319==1 & sp13320<.)
replace event01=1 if kidgeb01==2001

gen event00=.
replace event00=1 if (qp14219==1 & qp14221<.) | (rp13319==1 & rp13320<.)
replace event00=1 if kidgeb01==2000

gen event99=.
replace event99=1 if (pp13319==1 & pp13321<.) | (qp14219==1 & qp14220<.)
replace event99=1 if kidgeb01==1999

gen event98=.
replace event98=1 if op12114<. | (pp13319==1 & pp13320<.)
replace event98=1 if kidgeb01==1998

gen event97=.
replace event97=1 if np11514<. | op12113<.
replace event97=1 if kidgeb01==1997

gen event96=.
replace event96=1 if mp10814<. | np11513<.
replace event96=1 if kidgeb01==1996

gen event95=.
replace event95=1 if lp10314<. | mp10813<.
replace event95=1 if kidgeb01==1995

gen event94=.
replace event94=1 if kp10314<. | lp10313<.
replace event94=1 if kidgeb01==1994

gen event93=.
replace event93=1 if jp10314<. | kp10313<.
replace event93=1 if kidgeb01==1993

gen event92=.
replace event92=1 if ip10314<. | jp10313<.
replace event92=1 if kidgeb01==1992

gen event91=.
replace event91=1 if hp10314<. | ip10313<.
replace event91=1 if kidgeb01==1991
```

```
gen event90=.
replace event90=1 if gp10314<. | hp10313<.
replace event90=1 if kidgeb01==1990

gen event89=.
replace event89=1 if fp10314<. | gp10313<.
replace event89=1 if kidgeb01==1989

gen event88=.
replace event88=1 if ep8414<. | fp10313<.
replace event88=1 if kidgeb01==1988

gen event87=.
replace event87=1 if dp9314<. | ep8413<.
replace event87=1 if kidgeb01==1987

gen event86=.
replace event86=1 if cp9114<. | dp9313<.
replace event86=1 if kidgeb01==1986

gen event85=.
replace event85=1 if bp8014<. | cp9113<.
replace event85=1 if kidgeb01==1985

gen event84=.
replace event84=1 if bp8013<.
replace event84=1 if kidgeb01==1984

*generate a variable that indicates whether a child was born in a specific year and month from 1984 to 2017 (one variable was generated per year)
gen eventm17=bhp_204_11
replace eventm17=kidmon01 if kidgeb01==2017 & kidmon01<. & kidgeb01<.

gen eventm16=bgp17011
replace eventm16=bhp_204_12 if bgp17011==.
replace eventm16=kidmon01 if kidgeb01==2016 & kidmon01<. & kidgeb01<.

gen eventm15=bfp17311
replace eventm15=bgp17012 if bfp17311==.
replace eventm15=kidmon01 if kidgeb01==2015 & kidmon01<. & kidgeb01<.

gen eventm14=bep15011
replace eventm14=bfp17312 if bep15011==.
replace eventm14=kidmon01 if kidgeb01==2014 & kidmon01<. & kidgeb01<.

gen eventm13=bdp15711
replace eventm13=bep15012 if bdp15711==.
replace eventm13=kidmon01 if kidgeb01==2013 & kidmon01<. & kidgeb01<.

gen eventm12=bcp15011
replace eventm12=bdp15712 if bcp15011==.
```

```
replace eventm12=kidmon01 if kidgeb01==2012 & kidmon01<. & kidgeb01<.

gen eventm11=bbp15111
replace eventm11=bcp15012 if bbp15111==.
replace eventm11=kidmon01 if kidgeb01==2011 & kidmon01<. & kidgeb01<.

gen eventm10=bap15908
replace eventm10=bbp15112 if bap15908==.
replace eventm10=kidmon01 if kidgeb01==2010 & kidmon01<. & kidgeb01<.

gen eventm09=zp15609
replace eventm09=bap15909 if zp15609==.
replace eventm09=kidmon01 if kidgeb01==2009 & kidmon01<. & kidgeb01<.

gen eventm08=yp15409
replace eventm08=zp15608 if yp15409==.
replace eventm08=kidmon01 if kidgeb01==2008 & kidmon01<. & kidgeb01<.

gen eventm07=xp14809
replace eventm07=yp15408 if xp14809==.
replace eventm07=kidmon01 if kidgeb01==2007 & kidmon01<. & kidgeb01<.

gen eventm06=wp14109
replace eventm06=xp14808 if wp14109==.
replace eventm06=kidmon01 if kidgeb01==2006 & kidmon01<. & kidgeb01<.

gen eventm05=vp15309
replace eventm05=wp14108 if vp15309==.
replace eventm05=kidmon01 if kidgeb01==2005 & kidmon01<. & kidgeb01<.

gen eventm04=up14409
replace eventm04=vp15308 if up14409==.
replace eventm04=kidmon01 if kidgeb01==2004 & kidmon01<. & kidgeb01<.

gen eventm03=tp14109
replace eventm03=up14408 if tp14109==.
replace eventm03=kidmon01 if kidgeb01==2003 & kidmon01<. & kidgeb01<.

gen eventm02=sp13321
replace eventm02=tp14108 if sp13321==.
replace eventm02=kidmon01 if kidgeb01==2002 & kidmon01<. & kidgeb01<.

*add the respective year to the respective variable
#delimit;
for any 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17
, nostop :
replace eventmX=eventmX/12-1/12 \
replace eventmX=20X+eventmX;
# delimit cr
```

```
*generate a variable that indicates whether a child was born in a specific year and month until 2017 (biobirth file)
gen event=kidgeb01+kidmon01/12-1/12

save birth01, replace

//

use birth01, clear

*generate a variable that indicates whether a child was born before 2002
gen eventprior=.
for any 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01: replace eventprior=1 if eventX==1
replace eventprior=1 if kidgeb01<1984 & kidgeb01<.
tab eventprior
capture drop help

*exclude individuals who had children before 2002 --> p file
drop if eventprior==1

*exclude individuals who had children before 2002 --> biobirth file
drop if event<2002

*exclude individuals who had children, but did not provide any information when their children were born (biobirth file)
drop if sumkids>0 & event==.

save birth02, replace

//

use birth02, clear

*generate a variable that indicates the time point (year and month) of the birth of the first child from 2002 to 2017
*p file
gen event1=.
for any 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02: replace event1=eventmX if eventX==1

*biobirth file
gen eventm=event1
replace eventm=event if event1==.
tab eventm

*generate a variable that indicates the time span (in years and months) between the event and the respective personality assessment in 2005, 2009, 2013, and 2017
for any 05 09 13 17: gen timeX=.
for any 05 09 13 17: replace timeX=intX-eventm
```

```
*generate a variable that indicates the age at the event
gen ageevent=.
for any 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17: replace ageevent=20X-gebjahr if eventm>=20X & eventm<20X+1

*exclude individuals who were older than 50 years during the birth of their first child
drop if ageevent>50 & eventm<.

*generate a variable coded with 1 for individuals with any information on personality in 2005
gen b505yes=0
for any o c e a n: replace b505yes=1 if b505X<.

*generate a variable coded with 1 for individuals with any information on personality in 2009
gen b509yes=0
for any o c e a n: replace b509yes=1 if b509X<.

*generate a variable coded with 1 for individuals with any information on personality in 2013
gen b513yes=0
for any o c e a n: replace b513yes=1 if b513X<.

*generate a variable coded with 1 for individuals with any information on personality in 2017
gen b517yes=0
for any o c e a n: replace b517yes=1 if b517X<.

*generate a variable that indicates the total number of personality assessments from 2005 to 2017
gen b5number=0
for any 05 09 13 17: replace b5number=b5number+1 if b5Xyes==1

*mvdecode family status
mvdecode sp131 tp138 up140 vp148 wp125 xp132 yp149 zp130 bap151 bbp133 bcp129 bdp135 bep127 bfp147 bgp15401 bhp_187, mv(-1 -2 -3 -4 -5 -6 -7 -8 -9)

*mvdecode partnership
mvdecode sp13201 tp13901 up14101 vp14901 wp12601 xp13301 yp15001 zp13101 bap15201 bbp13401 bcp13001 bdp13601 bep12801 bfp148 bgp15402 bhp_188, mv(-1 -2 -3 -4 -5 -6 -7 -8 -9)

*mvdecode partner lives in the same household
mvdecode sp13202 tp13902 up14102 vp14902 wp12602 xp13302 yp15002 zp13102 bap15202 bbp13402 bcp13002 bdp13602 bep12802 bfp149 bgp155 bhp_189, mv(-1 -2 -3 -4 -5 -6 -7 -8 -9)

*generate a variable that indicates whether individuals were living with or without a partner in a specific year from 2002 to 2017 (one variable was generated per year)
gen lp17=.
replace lp17=0 if bhp_188==2 | bhp_189==2
replace lp17=1 if bhp_187==1 | bhp_187==6 | bhp_189==1

gen lp16=.
replace lp16=0 if bgp15402==2 | bgp155==2
```

replace lp16=1 if bgp15401==1 | bgp15401==6 | bgp155==1

gen lp15=.
replace lp15=0 if bfp148==2 | bfp149==2
replace lp15=1 if bfp147==1 | bfp147==6 | bfp149==1

gen lp14=.
replace lp14=0 if bep12801==2 | bep12802==2
replace lp14=1 if bep127==1 | bep127==6 | bep12802==1

gen lp13=.
replace lp13=0 if bdp13601==2 | bdp13602==2
replace lp13=1 if bdp135==1 | bdp135==6 | bdp13602==1

gen lp12=.
replace lp12=0 if bcp13001==2 | bcp13002==2
replace lp12=1 if bcp129==1 | bcp129==6 | bcp13002==1

gen lp11=.
replace lp11=0 if bbp13401==2 | bbp13402==2
replace lp11=1 if bbp133==1 | bbp133==6 | bbp13402==1

gen lp10=.
replace lp10=0 if bap15201==2 | bap15202==2
replace lp10=1 if bap151==1 | bap151==6 | bap15202==1

gen lp09=.
replace lp09=0 if zp13101==2 | zp13102==2
replace lp09=1 if zp130==1 | zp130==6 | zp13102==1

gen lp08=.
replace lp08=0 if yp15001==2 | yp15002==2
replace lp08=1 if yp149==1 | yp149==6 | yp15002==1

gen lp07=.
replace lp07=0 if xp13301==2 | xp13302==2
replace lp07=1 if xp132==1 | xp132==6 | xp13302==1

gen lp06=.
replace lp06=0 if wp12601==2 | wp12602==2
replace lp06=1 if wp125==1 | wp125==6 | wp12602==1

gen lp05=.
replace lp05=0 if vp14901==2 | vp14902==2
replace lp05=1 if vp148==1 | vp148==6 | vp14902==1

gen lp04=.
replace lp04=0 if up14101==2 | up14102==2
replace lp04=1 if up140==1 | up140==6 | up14102==1

gen lp03=.

```
replace lp03=0 if tp13901==2 | tp13902==2
replace lp03=1 if tp138==1 | tp138==6 | tp13902==1

gen lp02=.
replace lp02=0 if sp13201==2 | sp13202==2
replace lp02=1 if sp131==1 | sp131==6 | sp13202==1

*generate a variable that indicates whether individuals were living with or without a partner at childbirth (parents) or during the first personality assessment (non-parents)
gen partner_hh=.
for any 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17: replace partner_hh=lpX if eventm>=20X & eventm<20X+1
replace partner_hh=lp05 if eventm==.
replace partner_hh=lp09 if eventm==. & b505yes==0
replace partner_hh=lp13 if eventm==. & b505yes==0 & b509yes==0
replace partner_hh=lp17 if eventm==. & b505yes==0 & b509yes==0 & b513yes==0
tab partner_hh

*generate a variable that indicates the household number in the year of the earliest personality assessment
mvdecode vhhnr zhhnr bdhhnr bhhhnr, mv(-1 -2 -3 -4 -5 -6 -7 -8 -9)
gen household=vhhnr
replace household=zhhnr if b505yes==0
replace household=bdhhnr if b505yes==0 & b509yes==0
replace household=bhhhnr if b505yes==0 & b509yes==0 & b513yes==0

*reduce the data file to all relevant variables
keep b5* int* household persnr partner_hh eventm ageevent time* sex gebjahr psample

*generate a linear age variable for 2005, 2009, 2013, and 2017, respectively
for any 05 09 13 17: gen ageX=.
for any 05 09 13 17: replace ageX=20X-gebjahr if b5Xyes==1

*exclude non-parents who were older than parents in 2005, 2009, 2013, and 2017, respectively
for any 05 09 13 17: sum ageX if ageevent<. & b5Xyes==1

keep if age05<50 | b505yes==0 | eventm<.
keep if age09<54 | b509yes==0 | eventm<.
keep if age13<58 | b513yes==0 | eventm<.
keep if age17<63 | b517yes==0 | eventm<.

keep if age05>=17 | b505yes==0 | eventm<.
keep if age09>=18 | b509yes==0 | eventm<.
keep if age13>=18 | b513yes==0 | eventm<.
keep if age17>=18 | b517yes==0 | eventm<.

*generate a variable that distinguishes between younger, middle-aged, and older individuals
gen help=.
replace help=ageevent if eventm<.
replace help=2005-gebjahr if eventm==.
```

```
replace help=2009-gebjahr if eventm==. & b505yes==0
replace help=2013-gebjahr if eventm==. & b505yes==0 & b509yes==0
replace help=2017-gebjahr if eventm==. & b505yes==0 & b509yes==0 & b513yes==0

gen agetri=.
replace agetri=0 if help<24
replace agetri=1 if help>=24 & help<=35
replace agetri=2 if help>35
replace agetri=. if help==.

*generate a variable that distinguishes between parents and non-parents
gen eventdi=0
replace eventdi=1 if eventm<.

*generate a variable that indicates the number of previous personality assessments in 2005, 2009, 2013, and 2017, respectively
gen testing5=0

gen testing9=0
replace testing9=1 if b505yes==1

gen testing13=0
replace testing13=1 if b505yes==1 | b509yes==1
replace testing13=2 if b505yes==1 & b509yes==1

gen testing17=0
replace testing17=1 if b505yes==1 | b509yes==1 | b513yes==1
replace testing17=2 if b505yes==1 & b509yes==1 | b509yes==1 & b513yes==1 | b505yes==1 & b513yes==1
replace testing17=3 if b505yes==1 & b509yes==1 & b513yes==1

save birth03, replace

//

use birth03, clear

*rename variables
for any o c e a n: rename b505X b5X_05
for any o c e a n: rename b509X b5X_09
for any o c e a n: rename b513X b5X_13
for any o c e a n: rename b517X b5X_17

rename *_05 *5
rename *_09 *9
rename *_13 *13
rename *_17 *17

rename *05* *5*
rename *09* *9*
```

```
*reshape the data from wide to long format
reshape long time age testing b5a b5c b5e b5n b5o, i(persnr) j(wave)

*keep only observations with information on personality
keep if b5o<. | b5c<. | b5e<. | b5a<. | b5n<.

*drop individuals without timing information
drop if time==. & eventm<.

*generate a variable "selection"
*coded with 1 for personality assessments in parents before the birth of their first child
*coded with 0 for personality assessments in non-parents and personality assessments in parents in the month(s) of and after their first child was born
gen select=0
replace select=1 if time<0 & time<.

*generate a variable "anticipation"
*coded with the time span (in years) between the time point of the respective personality assessment and the time point of birth in parents in the three years before their first child was born
*coded with 0 for personality assessments in non-parents and all other personality assessments in parents
gen ant=0
replace ant=time if time>=-3 & time<=0

*generate a variable "socialization"
*coded with the time span (in years) between the time point of the respective personality assessment and the time point of birth in parents in the three years after their first child was born
*coded with 0 for personality assessments in non-parents and all other personality assessments in parents
gen soc=0
replace soc=time if time>=0 & time<=3

*generate a variable "post-event year"
*coded with 1 for personality assessments in the first year of being a parent in parents
*coded with 0 for personality assessments in non-parents and all other personality assessments in parents
gen postyear=0
replace postyear=1 if time>=0 & time<1

*generate a variable "post-event"
*coded with 1 for personality assessments after the first year of being a parent in parents
*coded with 0 for personality assessments in non-parents and all other personality assessments in parents
gen postevent=0
replace postevent=1 if time>=0 & time<.
replace postevent=0 if postyear==1

*center gender
mcenter sex
```

```
*center age
mcenter age

*divide centered age by 10
replace C_age=C_age/10

*generate quadratic age
gen C_age2=C_age*C_age

*generate cubic age
gen C_age3=C_age*C_age*C_age

*center testing
mcenter testing

*standardize the Big Five
for any o c e a n: zscore b5X

save birth04, replace

//

*calculate internal consistencies for each Big Five trait in 2005, 2009, 2013, and 2017, respectively
use birth03, clear
*o
for any b505 b509 b513 b517: alpha X04 X09 X14
*c
for any b505 b509 b513 b517: alpha X01 X07 X11
*e
for any b505 b509 b513 b517: alpha X02 X08 X12
*a
for any b505 b509 b513 b517: alpha X03 X06 X13
*n
for any b505 b509 b513 b517: alpha X05 X10 X15

*calculate average internal consistencies across all four waves
gen cronbach_o=(0.6203+0.5962+0.5797+0.5874)/4
tab cronbach_o

gen cronbach_c=(0.6658+0.6383+0.6006+0.6208)/4
tab cronbach_c

gen cronbach_e=(0.7089+0.7151+0.7202+0.7004)/4
tab cronbach_e

gen cronbach_a=(0.4979+0.4993+0.4708+0.5075)/4
tab cronbach_a

gen cronbach_n=(0.6053+0.6326+0.6410+0.5861)/4
```

```
tab cronbach_n

//

*Table 1
*frequencies and percentages of individuals who participated in the respective personality assessment in 2005, 2009, 2013, and 2017 as well as means and standard deviations for the number of personality assessments in the total sample, parents, and non-parents
use birth03, clear

*parents and non-parents
tab eventdi

*gender
tab sex eventdi
tab sex eventdi, row col

gen eventm1=eventm
replace eventm1=2002 if eventm>=2002 & eventm<2003
replace eventm1=2003 if eventm>=2003 & eventm<2004
replace eventm1=2004 if eventm>=2004 & eventm<2005
replace eventm1=2005 if eventm>=2005 & eventm<2006
replace eventm1=2006 if eventm>=2006 & eventm<2007
replace eventm1=2007 if eventm>=2007 & eventm<2008
replace eventm1=2008 if eventm>=2008 & eventm<2009
replace eventm1=2009 if eventm>=2009 & eventm<2010
replace eventm1=2010 if eventm>=2010 & eventm<2011
replace eventm1=2011 if eventm>=2011 & eventm<2012
replace eventm1=2012 if eventm>=2012 & eventm<2013
replace eventm1=2013 if eventm>=2013 & eventm<2014
replace eventm1=2014 if eventm>=2014 & eventm<2015
replace eventm1=2015 if eventm>=2015 & eventm<2016
replace eventm1=2016 if eventm>=2016 & eventm<2017
replace eventm1=2017 if eventm>=2017 & eventm<2018
replace eventm1=. if eventm==.

tab sex
tab sex if eventm1==.
tab eventm1

tab eventm1
for any 05 09 13 17: tab b5Xyes

add "", string pos(1,1) file("XXXX.xlsx") repfile

gen line=1
capture program drop calc
program define calc
local line=line

*total sample
```

```
nn b505yes 1 if `1'==. | `1'<., pos(`line',1)
pp b505yes 1 if `1'==. | `1'<., pos(`line',2)

nn b509yes 1 if `1'==. | `1'<., pos(`line',3)
pp b509yes 1 if `1'==. | `1'<., pos(`line',4)

nn b513yes 1 if `1'==. | `1'<., pos(`line',5)
pp b513yes 1 if `1'==. | `1'<., pos(`line',6)

nn b517yes 1 if `1'==. | `1'<., pos(`line',7)
pp b517yes 1 if `1'==. | `1'<., pos(`line',8)

meansd b5number if `1'==. | `1'<., pos(`line',9)

replace line=line +1
local line=line

*non-parents
nn b505yes 1 if `1'==., pos(`line',1)
pp b505yes 1 if `1'==., pos(`line',2)

nn b509yes 1 if `1'==., pos(`line',3)
pp b509yes 1 if `1'==., pos(`line',4)

nn b513yes 1 if `1'==., pos(`line',5)
pp b513yes 1 if `1'==., pos(`line',6)

nn b517yes 1 if `1'==., pos(`line',7)
pp b517yes 1 if `1'==., pos(`line',8)

meansd b5number if `1'==., pos(`line',9)

replace line=line +1
local line=line

*parents
nn b505yes 1 if `1'<., pos(`line',1)
pp b505yes 1 if `1'<., pos(`line',2)

nn b509yes 1 if `1'<., pos(`line',3)
pp b509yes 1 if `1'<., pos(`line',4)

nn b513yes 1 if `1'<., pos(`line',5)
pp b513yes 1 if `1'<., pos(`line',6)

nn b517yes 1 if `1'<., pos(`line',7)
pp b517yes 1 if `1'<., pos(`line',8)

meansd b5number if `1'<., pos(`line',9)

replace line=line +1
```

```
local line=line

nn b505yes 1 if `1'==2002, pos(`line',1)
pp b505yes 1 if `1'==2002, pos(`line',2)

nn b509yes 1 if `1'==2002, pos(`line',3)
pp b509yes 1 if `1'==2002, pos(`line',4)

nn b513yes 1 if `1'==2002, pos(`line',5)
pp b513yes 1 if `1'==2002, pos(`line',6)

nn b517yes 1 if `1'==2002, pos(`line',7)
pp b517yes 1 if `1'==2002, pos(`line',8)

meansd b5number if `1'==2002, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2003, pos(`line',1)
pp b505yes 1 if `1'==2003, pos(`line',2)

nn b509yes 1 if `1'==2003, pos(`line',3)
pp b509yes 1 if `1'==2003, pos(`line',4)

nn b513yes 1 if `1'==2003, pos(`line',5)
pp b513yes 1 if `1'==2003, pos(`line',6)

nn b517yes 1 if `1'==2003, pos(`line',7)
pp b517yes 1 if `1'==2003, pos(`line',8)

meansd b5number if `1'==2003, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2004, pos(`line',1)
pp b505yes 1 if `1'==2004, pos(`line',2)

nn b509yes 1 if `1'==2004, pos(`line',3)
pp b509yes 1 if `1'==2004, pos(`line',4)

nn b513yes 1 if `1'==2004, pos(`line',5)
pp b513yes 1 if `1'==2004, pos(`line',6)

nn b517yes 1 if `1'==2004, pos(`line',7)
pp b517yes 1 if `1'==2004, pos(`line',8)

meansd b5number if `1'==2004, pos(`line',9)

replace line=line +1
```

```
local line=line

nn b505yes 1 if `1'==2005, pos(`line',1)
pp b505yes 1 if `1'==2005, pos(`line',2)

nn b509yes 1 if `1'==2005, pos(`line',3)
pp b509yes 1 if `1'==2005, pos(`line',4)

nn b513yes 1 if `1'==2005, pos(`line',5)
pp b513yes 1 if `1'==2005, pos(`line',6)

nn b517yes 1 if `1'==2005, pos(`line',7)
pp b517yes 1 if `1'==2005, pos(`line',8)

meansd b5number if `1'==2005, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2006, pos(`line',1)
pp b505yes 1 if `1'==2006, pos(`line',2)

nn b509yes 1 if `1'==2006, pos(`line',3)
pp b509yes 1 if `1'==2006, pos(`line',4)

nn b513yes 1 if `1'==2006, pos(`line',5)
pp b513yes 1 if `1'==2006, pos(`line',6)

nn b517yes 1 if `1'==2006, pos(`line',7)
pp b517yes 1 if `1'==2006, pos(`line',8)

meansd b5number if `1'==2006, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2007, pos(`line',1)
pp b505yes 1 if `1'==2007, pos(`line',2)

nn b509yes 1 if `1'==2007, pos(`line',3)
pp b509yes 1 if `1'==2007, pos(`line',4)

nn b513yes 1 if `1'==2007, pos(`line',5)
pp b513yes 1 if `1'==2007, pos(`line',6)

nn b517yes 1 if `1'==2007, pos(`line',7)
pp b517yes 1 if `1'==2007, pos(`line',8)

meansd b5number if `1'==2007, pos(`line',9)

replace line=line +1
```

```
local line=line

nn b505yes 1 if `1'==2008, pos(`line',1)
pp b505yes 1 if `1'==2008, pos(`line',2)

nn b509yes 1 if `1'==2008, pos(`line',3)
pp b509yes 1 if `1'==2008, pos(`line',4)

nn b513yes 1 if `1'==2008, pos(`line',5)
pp b513yes 1 if `1'==2008, pos(`line',6)

nn b517yes 1 if `1'==2008, pos(`line',7)
pp b517yes 1 if `1'==2008, pos(`line',8)

meansd b5number if `1'==2008, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2009, pos(`line',1)
pp b505yes 1 if `1'==2009, pos(`line',2)

nn b509yes 1 if `1'==2009, pos(`line',3)
pp b509yes 1 if `1'==2009, pos(`line',4)

nn b513yes 1 if `1'==2009, pos(`line',5)
pp b513yes 1 if `1'==2009, pos(`line',6)

nn b517yes 1 if `1'==2009, pos(`line',7)
pp b517yes 1 if `1'==2009, pos(`line',8)

meansd b5number if `1'==2009, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2010, pos(`line',1)
pp b505yes 1 if `1'==2010, pos(`line',2)

nn b509yes 1 if `1'==2010, pos(`line',3)
pp b509yes 1 if `1'==2010, pos(`line',4)

nn b513yes 1 if `1'==2010, pos(`line',5)
pp b513yes 1 if `1'==2010, pos(`line',6)

nn b517yes 1 if `1'==2010, pos(`line',7)
pp b517yes 1 if `1'==2010, pos(`line',8)

meansd b5number if `1'==2010, pos(`line',9)

replace line=line +1
```

```
local line=line

nn b505yes 1 if `1'==2011, pos(`line',1)
pp b505yes 1 if `1'==2011, pos(`line',2)

nn b509yes 1 if `1'==2011, pos(`line',3)
pp b509yes 1 if `1'==2011, pos(`line',4)

nn b513yes 1 if `1'==2011, pos(`line',5)
pp b513yes 1 if `1'==2011, pos(`line',6)

nn b517yes 1 if `1'==2011, pos(`line',7)
pp b517yes 1 if `1'==2011, pos(`line',8)

meansd b5number if `1'==2011, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2012, pos(`line',1)
pp b505yes 1 if `1'==2012, pos(`line',2)

nn b509yes 1 if `1'==2012, pos(`line',3)
pp b509yes 1 if `1'==2012, pos(`line',4)

nn b513yes 1 if `1'==2012, pos(`line',5)
pp b513yes 1 if `1'==2012, pos(`line',6)

nn b517yes 1 if `1'==2012, pos(`line',7)
pp b517yes 1 if `1'==2012, pos(`line',8)

meansd b5number if `1'==2012, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2013, pos(`line',1)
pp b505yes 1 if `1'==2013, pos(`line',2)

nn b509yes 1 if `1'==2013, pos(`line',3)
pp b509yes 1 if `1'==2013, pos(`line',4)

nn b513yes 1 if `1'==2013, pos(`line',5)
pp b513yes 1 if `1'==2013, pos(`line',6)

nn b517yes 1 if `1'==2013, pos(`line',7)
pp b517yes 1 if `1'==2013, pos(`line',8)

meansd b5number if `1'==2013, pos(`line',9)

replace line=line +1
```

```
local line=line

nn b505yes 1 if `1'==2014, pos(`line',1)
pp b505yes 1 if `1'==2014, pos(`line',2)

nn b509yes 1 if `1'==2014, pos(`line',3)
pp b509yes 1 if `1'==2014, pos(`line',4)

nn b513yes 1 if `1'==2014, pos(`line',5)
pp b513yes 1 if `1'==2014, pos(`line',6)

nn b517yes 1 if `1'==2014, pos(`line',7)
pp b517yes 1 if `1'==2014, pos(`line',8)

meansd b5number if `1'==2014, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2015, pos(`line',1)
pp b505yes 1 if `1'==2015, pos(`line',2)

nn b509yes 1 if `1'==2015, pos(`line',3)
pp b509yes 1 if `1'==2015, pos(`line',4)

nn b513yes 1 if `1'==2015, pos(`line',5)
pp b513yes 1 if `1'==2015, pos(`line',6)

nn b517yes 1 if `1'==2015, pos(`line',7)
pp b517yes 1 if `1'==2015, pos(`line',8)

meansd b5number if `1'==2015, pos(`line',9)

replace line=line +1
local line=line

nn b505yes 1 if `1'==2016, pos(`line',1)
pp b505yes 1 if `1'==2016, pos(`line',2)

nn b509yes 1 if `1'==2016, pos(`line',3)
pp b509yes 1 if `1'==2016, pos(`line',4)

nn b513yes 1 if `1'==2016, pos(`line',5)
pp b513yes 1 if `1'==2016, pos(`line',6)

nn b517yes 1 if `1'==2016, pos(`line',7)
pp b517yes 1 if `1'==2016, pos(`line',8)

meansd b5number if `1'==2016, pos(`line',9)

replace line=line +1
```

```
local line=line

nn b505yes 1 if `1'==2017, pos(`line',1)
pp b505yes 1 if `1'==2017, pos(`line',2)

nn b509yes 1 if `1'==2017, pos(`line',3)
pp b509yes 1 if `1'==2017, pos(`line',4)

nn b513yes 1 if `1'==2017, pos(`line',5)
pp b513yes 1 if `1'==2017, pos(`line',6)

nn b517yes 1 if `1'==2017, pos(`line',7)
pp b517yes 1 if `1'==2017, pos(`line',8)

meansd b5number if `1'==2017, pos(`line',9)

replace line=line +1

end

calc eventm1

//

*Table 2
*means and standard deviations for the Big Five personality traits in 2005, 2009, 2013, and 2017 as well as across all four waves in the total sample, parents, and non-parents
use birth03, clear
add "", string pos(1,1) file("XXXX.xlsx") repfile

gen line=1
capture program drop calc
program define calc
local line=line

meansd b505`1' , pos(`line',1)
meansd b509`1' , pos(`line',3)
meansd b513`1' , pos(`line',5)
meansd b517`1' , pos(`line',7)
replace line=line +1
local line=line

meansd b505`1' if eventdi==0, pos(`line',1)
meansd b509`1' if eventdi==0, pos(`line',3)
meansd b513`1' if eventdi==0, pos(`line',5)
meansd b517`1' if eventdi==0, pos(`line',7)
replace line=line +1
local line=line

meansd b505`1' if eventdi==1, pos(`line',1)
meansd b509`1' if eventdi==1, pos(`line',3)
```

```
meansd b513`1' if eventdi==1, pos(`line',5)
meansd b517`1' if eventdi==1, pos(`line',7)
replace line=line +2

end

calc o
calc c
calc e
calc a
calc n

use birth04, clear
add "", string pos(1,1) file("XXXX.xlsx") repfile

gen line=1
capture program drop calc
program define calc
local line=line

meansd b5`1' , pos(`line',1)
replace line=line +1
local line=line

meansd b5`1' if eventdi==0, pos(`line',1)
replace line=line +1
local line=line

meansd b5`1' if eventdi==1, pos(`line',1)
replace line=line +2

end

calc o
calc c
calc e
calc a
calc n

//

*Table 3
*correlations between the Big Five personality traits across all four waves
use birth04, clear
corr b5o b5c b5e b5a b5n

//

*Supplemental Table 1
*sample composition of the total sample and those who provided information on personality
in 2005, 2009, 2013, and 2017, respectively
```

```
use birth03, clear
tab psample
for any 05 09 13 17: tab psample if b5Xyes==1

//

*Supplemental Table 2
*correlations between the Big Five personality traits in 2005, 2009, 2013, and 2017, respectively
use birth03, clear
for any 05 09 13 17: corr b505o b505c b505e b505a b505n b5Xo b5Xc b5Xe b5Xa b5Xn
for any 09 13 17: corr b509o b509c b509e b509a b509n b5Xo b5Xc b5Xe b5Xa b5Xn
for any 13 17: corr b513o b513c b513e b513a b513n b5Xo b5Xc b5Xe b5Xa b5Xn
for any 17: corr b517o b517c b517e b517a b517n b5Xo b5Xc b5Xe b5Xa b5Xn

//

*Table 6
*associations between the birth of the first child and personality in the total sample
use birth04, clear
mixed z_b5o C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5c C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5e C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5a C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5n C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,

//

*Supplemental Table 3
*associations between the birth of the first child and personality in women and men
*women
use birth04, clear
keep if sex==0
mixed z_b5o C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,
mixed z_b5c C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,
mixed z_b5e C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,
mixed z_b5a C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,
mixed z_b5n C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,

*men
use birth04, clear
```

```
keep if sex==1
mixed z_b5o C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,
mixed z_b5c C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,
mixed z_b5e C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,
mixed z_b5a C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,
mixed z_b5n C_age C_age2 C_age3 C_testing select ant soc postyear postevent || household:
|| persnr:,

//

*Supplemental Table 4
*associations between the birth of the first child and personality in younger, middle-aged, and
older individuals
*younger individuals
use birth04, clear
keep if agetri==0
mixed z_b5o C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5c C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5e C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5a C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5n C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,

*middle-aged individuals
use birth04, clear
keep if agetri==1
mixed z_b5o C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5c C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5e C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5a C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5n C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,

*older individuals
use birth04, clear
keep if agetri==2
mixed z_b5o C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
```

```
mixed z_b5c C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5e C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5a C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5n C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,

//

*Supplemental Table 5
*associations between the birth of the first child and personality among individuals living
with and without a partner
*living without partner
use birth04, clear
keep if partner_hh==0
mixed z_b5o C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5c C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5e C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5a C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5n C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,

*living with partner
use birth04, clear
keep if partner_hh==1
mixed z_b5o C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5c C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5e C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5a C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,
mixed z_b5n C_sex C_age C_age2 C_age3 C_testing select ant soc postyear postevent ||
household: || persnr:,

//

*means and standard deviations for age (grand-mean) in the total sample, parents, and non-
parents
use birth04, clear
sum age
sum age if eventdi==0
sum age if eventdi==1
```

```
*t-test to indicate age differences between parents and non-parents
ttest age, by (eventdi)

*numbers and percentages of women and men in the total sample, parents, and non-parents
use birth03, clear
tab sex eventdi, row col
tab sex eventdi, exact

*Fisher's exact to indicate differences in the Big Five and gender between parents and non-parents
for any sex b505yes b509yes b513yes b517yes: tab X eventdi, row col
for any sex b505yes b509yes b513yes b517yes: tab X eventdi, exact

*number of personality assessments in the total sample, parents, and non-parents
tab b5number
tab b5number if eventdi==0
tab b5number if eventdi==1

sum b5number
sum b5number if eventdi==0
sum b5number if eventdi==1
ttest b5number, by (eventdi)

*numbers and percentages of younger, middle-aged and older indiviudals (total sample, parents, and non-parents)
tab agetri eventdi, row col

*numbers and percentages of individuals living with and without a partner (total sample, parents, and non-parents)
tab partner_hh eventdi, row col
```