Consistent Patterns Across Birth Parities? Psychological Measures and Birth Parity Transitions Among Swedish Men

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Abstract

Psychological factors have become increasingly important for fertility, particularly among men. Only a few studies have examined the association between psychological factors and birth parity transitions. Moreover, previous studies typically measured psychological factors at the end of fertility histories, i.e., when most individuals have completed their fertility trajectories. We study the prospective association between several psychological factors (leadership skills, social maturity, emotional stability) and birth parity transitions among Swedish males. We further analyze a) single-partner fertility (suggesting the relevance of multi-partner fertility) and b) age at first childbirth as potential mechanisms. This study makes use of high-quality Swedish register data. Information on psychological factors for males comes from military conscription data, and civil registers track the fertility histories of these men up to age 39 and older. We apply linear probability and linear regression models. Findings indicate positive associations between all psychological measures and first and second birth parities. However, lower scores on all psychological factors predict higher probabilities of transitioning to the third and the fourth childbirth, reversing the patterns for the lower birth parity transitions. Further analyses suggest that multi-partner fertility and age at entry into fatherhood may drive these patterns.

Keywords: Birth Parity Transitions, Psychological Factors, Personality, Family Formation

Introduction

Many European countries experienced significant changes in demographic trends in the latter half of the 20th century. Marriage and fertility rates fell, while cohabitation and divorce rates rose (Frejka et al., 2008; Sobotka, 2008; Sobotka & Toulemon, 2008). There are various reasons for the occurrence and timing of family events (marriage, fertility, union dissolution) in the current context that might not have played a significant role in earlier periods. For instance, the ability of individuals to control and regulate their fertility may have improved with the spread of better and more accessible contraceptives (Frejka, 2008). As a result, individuals are better able to plan whether to have children at all, and, if so, to decide how many children to have and when. This shift has led demographic research to place greater emphasis on individual and personal characteristics – such as family background, attitudes, intentions, and psychological factors – in understanding family-related decisions and events.

Previous studies have examined the effects of psychological traits on family-related processes, including marriage (Jokela et al., 2011; Lundberg, 2012), fertility (Allen, 2019; Jokela et al., 2009, 2011; Peters, 2023), and divorce (Boertien et al., 2017; Boertien & Mortelmans, 2018; Lundberg, 2012). The role of personality in fertility has become increasingly important over time, particularly among men in the Nordic context. For instance, recent findings indicate that emotional stability (the opposite of neuroticism) has increasingly affected fertility among males in Norway (Skirbekk et al., 2025). Furthermore, non-cognitive abilities (e.g., social skills, emotional stability, responsibility) have become more important factors in the likelihood of entering parenthood among males in Sweden (Aldén et al., 2022).

However, the results of previous studies on this topic are subject to several caveats. For instance, these studies often used survey data, which may suffer from selection

bias. Additionally, many of these studies analyzed psychological measures when fertility histories were already completed (Jokela et al., 2011; Skirbekk & Blekesaune, 2014; Tavares, 2016). However, previous research has shown that childbearing may change personality (Bleidorn et al., 2018; Jokela et al., 2009). Therefore, data sources measuring psychological characteristics early in the life course – i.e., before fertility-related decisions are made – are useful for examining the prospective association between psychological traits and fertility outcomes.

This study contributes to the field of fertility research in several ways. First, it analyzes the prospective association between a set of psychological factors – leadership skills (LS), social maturity (SM), and emotional stability (ES) – and birth parity transitions using a prospective design. This means that the psychological factors are measured at relatively young ages, while the fertility outcomes are measured in mid-adulthood. Second, this study considers the extent to which this association is based on single-partner fertility. This points to the relevance of multi-partner fertility for the studied link, which has, to the best of our knowledge, been previously overlooked. Third, the present study allows us to draw conclusions about these correlations for men at a population level, as the analyses are based on high-quality Swedish register data.

Theoretical background

Several theoretical frameworks relevant to fertility behavior address the meaning of psychological factors for family formation processes. The Second Demographic Transition (SDT), for instance, is an influential macro-level theory positing that individual and psychological factors have become more relevant for fertility and marital behavior in many high-income countries. Micro-level theories such as the Theory of

Planned Behavior (TPB) (Ajzen, 1991; Ajzen & Klobas, 2013) or the Traits-Desires-Intentions-Behavior (TDIB) framework (Miller, 1994, 2011) focus more on the role of psychological processes (e.g., via attitudes and intentions) in family formation, and specifically in fertility. Both micro- and macro-level theoretical frameworks are relevant for the present study, as we examine the association between psychological factors and fertility using micro-level data, and we are also interested in understanding how psychological factors are linked to fertility at the population level.

Second Demographic Transition

Changes in demographic patterns, e.g., declines in fertility and marriage or rising divorce rates, have been observed in many high-income countries starting in the latter half of the 20th century. These changes are collectively referred to as the Second Demographic Transition (SDT) (van de Kaa, 1987). One consistent idea within the SDT framework is that psychological factors have become increasingly important for explaining family formation. For example, the increased availability of contraceptives and abortion allows individuals to better plan their fertility (van de Kaa, 1987). This idea is also prominent in other theoretical frameworks (Caldwell, 2006a, 2006b; Miller, 1983). As a result of these shifts, unplanned pregnancies have become less likely, and couples who intend to remain childless are more likely to achieve this goal (Lesthaeghe, 2014; van de Kaa, 1987). This suggests that individualistic factors, such as personality, have come to play a more meaningful role in family formation processes, resulting in family formation patterns based on personality traits and levels. Thus, the SDT provides a useful framework for understanding the relevance of psychological factors for fertility.

The Traits-Desires-Intentions-Behavior framework

At the micro level, the role of personality traits in childbearing is stressed by developmental approaches of reproductive decision-making, such as the Traits-Desires-Intentions-Behavior (TDIB) model proposed by Miller (1994). The TDIB model assumes that motivational dispositions (traits) and conscious states guide individuals' behavior, and may or may not lead them to have children (Miller, 2011a). In this framework, fertility behavior is explained by childbearing motivations, desires, and intentions (Miller, 1995, 2011a), as shown in Fig. A1.

According to the TDIB model, individuals have positive or negative childbearing motivations (Miller, 2011b) that emerge from their biological dispositions and life course experiences (Miller, 1994). Childbearing motivations are reflected in how individuals feel about, think about, and interact with children (Miller, 2011a). These motivations determine whether a person feels comfortable raising a child (Miller, 1994) and, therefore, their childbearing desires and fertility intentions. Intentions arise from desires, but also acknowledge other people's wishes and what is actually realistic (Miller, 1994), e.g. considering the financial situation of the household and the social environment (Miller, 1994). Intentions turn into actual behaviors, e.g., very strong intentions to have or to avoid having children will most likely result in effective behavior (Miller, 2011a). Individuals may take actions that facilitate conception or contraception in order to realize their fertility intentions, e.g., they may aim to achieve conception (through the frequency and timing of sexual intercourse) or avoid conception (through the use of contraceptives), or they may do neither (if they do not care about getting pregnant) (Miller, 2011a, 2011b).

The TDIB motivational sequence builds on childbearing motivations, aligning them closely with personality, which provides a broader foundation for individual differences across all types of human interactions (Miller, 1992; Varas & Borsa, 2021). For instance, positive childbearing motivations may reflect a more general nurturant personality (Miller, 1992), while fears of potentially negative consequences of childbearing (indicative of negative childbearing motivations) may be associated with neuroticism (Avison & Furnham, 2015). Personality traits are also crucial for social skills development, social interactions, and intimate relations (Beauchamp & Anderson, 2010; Thielmann et al., 2020; Vater & Schröder-Abé, 2015), which are equally important factors in family formation processes and childbearing decisions.

Leadership skills and family formation

Among the personal characteristics that are important for social interactions, the impact of leadership skills (LS) on family formation has not been well explored. LS include decision-making quality, command skills (Floris et al., 2020), time management skills, and the ability to motivate others to act or to take the initiative (Boone & Peborde, 2008). Evidence suggests that partnership synergy (e.g., achieving partnership goals) may benefit from the strong LS (e.g., responsibility, fostering respect) of one or both partners (Weiss et al., 2002). However, different types of leadership may affect partnering processes differently. For instance, according to traditional definitions, a leader is expected to have characteristics such as charisma or dominance (Allred & Hancock, 2015), which may attract women who desire a dominant and protective partner (Buss, 1994; Regan & Berscheid, 1997). Traditional leaders may also be good at motivating others, which may be a beneficial trait on the partner market (Porter &

Baker, 2005). By contrast, servant leaders share their power with others, potentially strengthening the bond between two partners (Allred & Hancock, 2015). This type of leadership places greater value on supporting others and taking their interests into account (Greenleaf, 2002; Sullivan, 2009). Servant leaders may attract another group of women who aim for greater gender equality within the relationship, with an emphasis on communication.

Studies on the association between LS and fertility are rare, but the few existing ones suggest that there is a positive link between these factors. For instance, a study based on Swedish register data has shown that having strong LS increases the number of children men have and decreases the probability of remaining childless (Peters & Barclay, 2022). Similarly, LS have been positively associated with the probabilities of having a first, second, and third child among men in Finland, with decreasing effect sizes over birth parities (Jokela & Keltikangas-Järvinen, 2009). Based on these findings, we expect to observe a positive association between LS and fertility, i.e., higher LS scores are linked with higher probabilities of transitioning to any birth parity, higher single-partner fertility, and earlier entry into fatherhood (hypothesis 1).

Social skills and family formation

Another psychological characteristic related to social interactions is social maturity (SM). SM encompasses personality factors such as extraversion, responsibility, and independence (Bihagen et al., 2013). Extraversion is among the psychological factors that have shown strongest associations with family formation processes. For instance, extraversion has been positively associated with marriage, particularly among men (Jokela et al., 2011; Lundberg, 2012). However, the correlation between extraversion

and partnership stability is less clear. There is some evidence suggesting that dissolution risks are higher for individuals with higher extraversion levels (Boertien et al., 2017; Boertien & Mortelmans, 2018), while other studies have found no association between these factors (Le et al., 2010; Zare et al., 2013). Moreover, extraversion has been positively linked with partnership quality (Holland & Roisman, 2008; Vater & Schröder-Abé, 2015), implying greater relationship stability.

Sociability indicators have also been related to fertility outcomes. For instance, sociability is positively associated with having a first, second, and third child in Finland, with decreasing effect sizes across birth parities (Jokela et al., 2009). Additionally, extraversion is positively linked with parity progression (1-4, decreasing across parities), and is negatively correlated with the age at first childbirth in the U.S., particularly among men (Jokela et al., 2011). One recent study by Peters (2023) is of particular relevance for the present analyses, as its findings contradict those of other studies by showing differences in the effects of extraversion on the transitions to the first and the second childbirth among men in Germany. The study found that extraversion is positively associated with the chances of having a first child but is negatively linked with the chances of having a second child among males (Peters, 2023). The uniqueness of these findings may be explained by the study design. In the study by Peters (2023), personality is measured several times over an observation period of 12 years, and consistently before childbearing.

Similar patterns might also be observed in Sweden, i.e., the effects of psychological factors may vary between the transition to the first and the second childbirth. The entry into parenthood is a special transition, whereas the transition to the second childbirth may be somewhat smoother because individuals can benefit from their experiences around the first childbirth. Therefore, they may rely on certain routines before and after

the second childbirth that they adopted around the first childbirth. Consequently, we expect to find positive associations between SM and the transition to the first childbirth, but negative correlations between SM and higher parity transitions (two and above) (hypothesis 2). Additionally, we hypothesize that higher SM scores predict higher single-partner fertility and earlier entry into fatherhood.

Emotional stability and family formation

Another personality factor that is important for explaining family formation is emotional stability (ES), which relates to the ability to cope with nervousness, stress, or anxiety (Bihagen et al., 2013, Mood et al., 2012). Findings on the relationship between ES and marital behavior are mixed. Whereas ES does not appear to be associated with the probability of getting married in Germany (Lundberg, 2012), a positive correlation between these factors has been observed among males in the U.S. (Jokela et al., 2011). However, ES belongs the strongest personality predictors for divorce (Spikic & Mortelmans, 2021), although other studies have found no correlation between these factors (Boertien et al., 2017). Low ES scores have been associated with higher risks of experiencing divorce (Boertien & Mortelmans, 2018; Lundberg, 2012; Roberts et al., 2007) and partnership dissolution (Solomon & Jackson, 2014).

The association between ES and fertility has also been examined, with mixed results. For instance, evidence for the U.S. suggests that there are no correlations between ES and the age at first childbirth and the probability of having a first child (Jokela et al., 2011). By contrast, ES has been positively associated with becoming a parent (Jokela, 2012) and with the transition to a second and a third child (Jokela et al., 2009). Moreover, emotionality (in contrast to ES) has been found to be negatively related to

different birth parities in Finland, although the effects again weaken across birth parities (Jokela et al., 2009). Therefore, our final hypothesis states that ES is positively related to parity transitions, single-partner fertility, and an early transition to the first childbirth (hypothesis 3).

Psychological profiles as structural disadvantages?

A different perspective on psychological factors may lead to adjusted hypotheses, particularly regarding men with low scores on leadership, social, and emotional skills. Previous research has shown that men are less likely to get married if they score low on leadership skills (Peters & Barclay, 2022) and social and emotional skills (Peters, 2022). Furthermore, leadership indicators have been positively correlated with SES factors such as income (Hopp & Pruschak, 2023; Kuhn & Weinberger, 2005; Lund et al., 2007). Additionally, social and emotional skills appear to be positively associated with education (Damian et al., 2015) and income (Jonason et al., 2018). Consequently, it may be argued that males with low scores on this set of psychological measures face structural disadvantages on the partner market and the labor market.

Apart from psychological factors, disadvantages may emerge in other dimensions such as cognitive abilities. Previous research has shown that disadvantaged Swedish men (i.e., those with low cognitive abilities) are less likely to have a first and a second child than men with average IQ scores (Kolk & Barclay, 2019). However, once these men succeed in having children, they are more likely to transition to higher birth parities (three and higher) (Kolk & Barclay, 2019). These findings are in line with those of other studies showing that men with worse health indicators are less likely to transition to lower birth parities, but are more likely to transition to a fourth child, compared to men

with the best health indicators (Barclay & Kolk, 2020). Similarly, men with low psychological scores may show different patterns across birth parities.

Current study

In this study, we investigate the role of psychological characteristics in birth parity transitions among men in Sweden. Our theoretical considerations and literature review provide a strong rationale for considering psychological factors, and point to different potential mechanisms for their impact on human reproduction. In our analyses, we consider LS, SM, and ES – three factors that are central to social interactions and, consequently, to intimate relationship and family formation. Romantic relationships are highly connected with childbearing, and having more romantic partners represents more opportunities to start a (new) family. Thus, to better understand the role of romantic relationships in childbearing, we consider both single- and multi-partnered fertility. Similarly, given that early childbearing leaves more time to continue reproduction, we also examine the age at first childbirth as an important factor in birth parity transitions.

Family background information may shape both the psychological factors and the fertility of individuals, and might therefore confound the association between these factors. Previous research has shown that the fertility behavior is similar between siblings (Buyukkececi & Leopold, 2021; Dahlberg & Kolk, 2018; Lyngstad & Prskawetz, 2010). Moreover, fertility is positively associated with sibling group size in the family of origin (Cools & Hart, 2017) and birth order (Morosow & Kolk, 2020). Family background may also shape psychological factors. For example, sociability has been negatively linked with the number of siblings, and been positively associated with maternal

education (Jokela et al., 2017). Therefore, family background factors are taken into consideration in our analyses.

The study context is Sweden. The average age at first birth for women has risen over time, increasing from 26.7 years in 1975 to 31.6 years in 2022 (Human Fertility Database, 2023), with men typically entering parenthood at slightly older ages than women (Andersson et al., 2017). This tendency to postpone entry into parenthood may affect the probability of transitioning to higher birth parities as well, since the time window in which individuals usually have children becomes narrower. Although men do not face the same biological limits that women do, male fertility does not change much after age 40 in the Nordic context (Nisén et al., 2014). Fertility and marriage are not inextricably linked in contemporary Sweden. Indeed, in recent years, most children in Sweden have been born outside of marriage (Eurostat, 2018). Therefore, this study considers fertility regardless of marital status, and does not aim to explain the association between these two family events.

The total fertility rate (TFR) has fluctuated over the past decades, with a rapid decline occurring in the last decade. The TFR decreased from 1.99 in 2010 to 1.53 in 2022 (Human Fertility Database, 2023). However, cohort fertility has remained relatively stable for both women and men in Sweden, declining only slightly from almost 1.9 to 1.7 in more recent birth cohorts (Jalovaara et al., 2019). These figures are in line with those for the analytical sample of the current study, which show that a two-child family is the most common family size among Swedish males born between 1963 and 1979.

Data and variables

Data

The present analyses make use of Swedish register data. Each resident in Sweden has a unique identification number, enabling the linkage of information from various sources. The psychological factors (leadership skills, social maturity, emotional stability) come from military conscription data collected between 1983 and 1997 when military conscription was mandatory for all men, but not for women. The analyses are restricted to men aged 17-20 at the time of recruitment, encompassing the majority (98%) of males born between 1963 and 1979. Thus, the sample is fairly homogeneous, and includes 650,654 men who remained registered in Sweden from the time of recruitment until the latest available data were collected in 2018. Men who emigrated or died before age 39 are excluded from the analyses. All of the men were between 39 and 55 years of age at the most recent observation (2018), depending on the birth cohort. Age 39 is a reasonable age to evaluate male fertility, since previous research shows that fertility patterns remain stable beyond age 40 (Barclay & Kolk, 2020; Nisén et al., 2014).

We can track the fertility histories by age 39 and older, i.e. we can observe whether each male has transitioned up to a fourth childbirth. While the register data allow us to examine higher birth parities as well, only slightly more than 1% of the men in our sample have five or more children. The information on family background is based on the identification numbers of both parents from multigenerational registers. Only full siblings with the same registered mother and father are considered.

Using register data has a number of advantages. First, register data enable us to examine the relationship between psychological factors and fertility at the population

level, whereas previous studies have typically relied on survey data. Surveys often suffer from selection effects or non-response bias, while population registers include individuals who might not participate in surveys, such as disadvantaged men. Such males may also be more likely to remain childless, resulting in biased estimates, which might be overcome by using register data. The comprehensive inclusion of the Swedish male population also rules out biases regarding the association between psychological factors and fertility among men.

Second, the psychological factors we use stem from interviews with psychologists that were mandatory during military conscription. Therefore, our analyses do not rely on self-reports, which are typically used in fertility research (Jokela et al., 2011; Jokela & Keltikangas-Järvinen, 2009; Peters, 2023). Psychologists are well-trained experts (Lindqvist & Vestman, 2010; Ludvigsson et al., 2022), providing third-party evaluations on psychological factors that may differ from self-reports (Cuijpers et al., 2010). Previous research has shown that external rater-based evaluations on personality may predict job performance better than self-reports (Connelly et al., 2022), and the effects may be similar for fertility behavior. Although previous studies have suggested including both self-reports and assessments by trained raters (Cuijpers et al., 2010), we rely here on evaluations by psychologists, given that self-reports are not available in the register data.

Third, while previous studies often measure psychological factors at relatively late stages of fertility histories (Jokela, 2012; Jokela et al., 2011), or even after fertility completion (Jokela, 2012; Skirbekk & Blekesaune, 2014), this study benefits from the assessment of psychological factors at relatively young ages. Males were between 17 and 20 years of age at the time of military conscription. Therefore, the current analyses

examine the prospective association between psychological factors and fertility, thus avoiding the reverse causality that can occur when psychological factors change based on childbearing. Moreover, the longitudinal design of the Swedish register data allows us to follow men throughout almost their entire fertility history, from military recruitment (ages 17-20) until age 39 or older.

Outcomes

We study several different outcomes. Birth parity progression are studied separately, with binary-coded outcomes up to parity 4 (0 – no transition, 1 – transition). In order to explain parity patterns, we further conduct analyses on potential mechanisms. First, we examine single- and multi-partner fertility, e.g., whether the males transition to different birth parities with the same partner. Second, we study the effects of psychological factors on the age at first childbirth (in months) as a potential driver for having more time to transition to higher birth parities.

Psychological factors in the military conscription data

The main predictors in the present analyses are leadership skills (LS), social maturity (SM), and emotional stability (ES). Each of these psychological measurements stems from 20-30-minute semi-structured psychological interviews (Ludvigsson et al., 2022) that were mandatory during the military conscription procedure. Psychologists assigned the recruits LS scores from 1 (“low”) to 9 (“high”) and SM and ES scores from 1 (“low”) to 5 (“high”).

The Swedish military has long measured the psychological factors of recruits to identify suitable candidates both for the military service in general and for specific officer positions within the army (Lindqvist & Vestman, 2010; Ludvigsson et al., 2022). All conscripts undergo interviews with professional and trained psychologists who use guidelines to maintain neutrality and avoid suggesting potential military roles (Lindqvist & Vestman, 2010; Ludvigsson et al., 2022). The interview focuses on clarifying the enlistee's relationships across various social contexts, identifying leadership qualities and personality factors through the individual's social roles in different relationships (Ministry of Defense Sweden, 1984).

Strong leadership profiles are suggested by traits like dominance, agility, initiative, responsibility, independence, and an outgoing attitude (Ministry of Defense Sweden, 1984). Furthermore, psychologists consider the recruits' self-assessment by posing the question: "What do you think of your ability to lead a group of peers?" (Lindqvist & Vestman, 2010). However, LS are systematically measured for males with relatively high IQ scores (5 or higher on a scale from 1 to 9 on the IQ test taken during the conscription process) (Lindqvist & Vestman, 2010), with less than 1% of those scoring 1 to 4 receiving a LS score. LS scores are crucial for role assignments, with specific scores required for ranks such as sergeants (score of 6 or higher) and lieutenants (score of 7 or higher) (Ludvigsson et al., 2022). The LS measure further includes a "0" category that should be considered with caution due to a lack of clarity on its assignment. In the present analyses, this "0" category is combined with missing values since these groups show similar fertility behavior patterns (Peters & Barclay, 2022).

Moreover, social skills are essential for all army positions, but particularly for higher ranks such as military officers, who support and guide recruits during their service, and help to maintain group morale (Larsson & Kallenberg, 2006). Men who have strong

social skills, and thus are sociable, talkative, and easy-going, may find it easier to connect with their team members, and to fill these roles effectively (Larsson & Kallenberg, 2006). Building a trusting relationship with recruits is considered crucial for military officers, as it is believed that recruits in such relationships are more loyal and willing to take risks (Grönqvist & Lindqvist, 2015).

In addition to leadership and social skills, the military also values recruits' emotional stability. Maintaining composure and emotional control is crucial in various stressful military situations (Larsson & Kallenberg, 2006) for both soldiers and officers (Lindqvist & Vestman, 2010; Nyberg et al., 2020). High levels of emotional stability and stress resilience are particularly beneficial for officers, as they need to make wise decisions and provide clear instructions in stressful situations (Grönqvist & Lindqvist, 2015). These decisions and instructions should be guided by rationality and wisdom, rather than by negative emotions like fear, anger, or aggression (Larsson & Kallenberg, 2006). Overall, the concepts and measurements of emotional stability in the military align with those typically assessed in non-military research contexts (Larsson & Kallenberg, 2006).

Confounders and covariates

The analyses of the present study control for numerous factors. Family background confounders include birth order (1-8+) and sibling group size (1-8+). Both variables are based on full family information, i.e., on brothers and sisters with the same mothers and fathers. Furthermore, the analyses control for the year of birth of the men (1963-1979). Additionally, intelligence may confound the relationship between psychological factors and fertility. For instance, higher cognitive abilities are associated with higher

fertility among Swedish men (Kolk & Barclay, 2021). Moreover, intelligence is linked with personality (DeYoung, 2019), e.g., it is positively associated with emotional stability (Anglim et al., 2022). Therefore, IQ is included in the analyses as a categorical variable based on the scores from the conscription test (1 (low) – 9 (high)).

Birth parity transitions may depend on other fertility indicators as well. For instance, separated fathers who start a new relationship with another woman may wish to start a new family with their current partner, which increases their chances of transitioning to higher birth parities. Evidence suggests that multi-partner fertility is particularly important in the later stages of reproductive histories, e.g., at age 40 and older (Thomson et al., 2020). Furthermore, men who entered fatherhood at relatively young ages may have more time to transition to higher birth parities. Indeed, earlier entry into parenthood is positively linked with the number of children (Tomkinson, 2019) and with multi-partnering (Andersson, 2021). Therefore, our analyses also control for age at first and subsequent childbirths.

Statistical models

Several statistical methods are applied in this study. Transitions to birth parities 1-4 are analyzed via linear probability models:

$$Pr(Y_i = 1|X_i = x_i) = \beta_0 + \beta_1 psychological_i + \beta_2 cognitive_i + \beta_3 birth\_year_i + \beta_4 birth\_order_i + \beta_5 sibling\_group\_size_i \quad (1)$$

The outcome of equation (1) is whether or not males have ever experienced the corresponding transition of birth parity (0-1, 1-2, 2-3, 3-4) by age 39 and older. Only individuals who experienced the transition to birth parity 1 are included in the analyses

on transitioning to the subsequent birth parity. Psychological measures (LS, SM, ES) are captured by *psychological* and separate models are run for each. The variable *cognitive* refers to cognitive skills; *birth_year* refers to birth year; *birth_order* refers to birth order; and *sibling_group_size* refers to the number of full siblings within the family.

We further examine the potential effects of psychological factors on single-partner fertility, indicating the relevance of multi-partner fertility for this association. The models above are also run for men who have children with the same female partner only, and compare the associations to the patterns for the total sample. This may explain to what extent the observed fertility patterns are driven by single-partner fertility, rather than by multi-partner fertility.

Linear regression models are conducted regarding analyses on age at first childbirth:

$$Y_i = \beta_0 + \beta_1 psychological_i + \beta_2 cognitive_i + \beta_3 birth\_year_i + \beta_4 birth\_order_i + \beta_5 sibling\_group\_size_i \quad (2)$$

The outcome is age at first childbirth, measured in months. The model contains the same covariates as above, and the covariates are only applied for those males who have ever entered parenthood (non-parents are excluded).

Results

Descriptives

Table 1 contains descriptive information on all variables for the analyses on 650,654 men born between 1963 and 1979 in Sweden. Around 21% of these males remained childless at age 39 and older, but a large majority had one (15%), two (43%), or three

children (17%). Among all men with at least one child, the vast majority had all of their children with the same partner (89%), while much smaller shares had children with two (10%) or more partners (<1%). On average, the men in the analytical sample were age 30 at entry into parenthood, age 33 at the second childbirth, age 35 at the third childbirth, and age 37 at the fourth childbirth. The majority of the men had lower (31%) or upper secondary education (23%).

Psychological factors were normally distributed, with the largest frequencies observed around the middle of the scale, i.e., a score of 5 for LS (17%) and a score of 3 for SM (45%) and ES (49%). All psychological factors contain a relatively large category with missing values (LS: 38%; SM: 20%; ES: 20%), but only the missing values on LS can be explained, since the LS evaluation was mainly performed for men in the top half of the cognitive ability distribution (see Table A1 in the appendix).

[Table 1 about here]

Table 2 below shows the bivariate statistics between psychological measures and fertility indicators. In general, males with higher scores on all psychological measures are more likely than men with lower scores to have a first and a second child. For instance, around 62% of the men with the lowest leadership skills (LS) score (1) enter fatherhood, compared to 90% of the males with the highest LS scores (8, 9). A similar, though less pronounced, trend can be observed for the transition to the second childbirth. For the transitions to birth parities 3 and 4, the opposite patterns emerge. For instance, of the men who have two children, almost 40% of those with a LS score

of 1 transition to a third child. This share declines to 32% for those with a LS score of 5, but increases again to 38% for those with a LS score of 9.

Additionally, males with higher LS scores are more likely to have all of their children with only one partner: 81% of the men with a LS score of 1 have all their children with the same partner, compared to 92% of men with a LS score of 9. It thus appears that multi-partner fertility is more common among men with lower LS scores, e.g., 19% of the men with a LS score of 1 have their children with at least two different partners. This share is about half as large for the men with higher LS scores. The age at first childbirth increases with higher LS scores. For instance, men with a LS score of 1 have their first child at an average age of almost 30 years, while those with a LS score of 9 have their first child almost two years later. The descriptive statistics for social maturity and emotional stability show similar tendencies, although with varying magnitudes.

[Table 2 about here]

Birth parity transitions

Findings from linear probability models regarding birth parity transitions (1-4) are shown in Fig. 1 below and in Tables A2-A4 in the appendix. All psychological factors – leadership skills (LS), social maturity (SM), emotional stability (ES) – are positively correlated with transitioning to a first birth, and, conditioned on having a first child, transitioning to a second birth. The associations are generally stronger for the first childbirth. For instance, men with lower LS scores are up to 19% less likely to have a first child than men with a LS score of 5. By contrast, men with the highest LS scores

have a 12% higher probability of entering fatherhood compared to the reference group. The magnitudes are lower for the transition to the second childbirth (12% for lower scores and 7% for higher scores).

Different patterns emerge for the transitions to the third and the fourth birth. Among men who have two children, those with lower scores on all psychological measures have higher probabilities of having a third child compared to those with scores in the middle categories of each psychological indicator. Men with the lowest score on each psychological indicator are up to 5% more likely to have a third child than men with a LS score of 5 or a SM or ES score of 3. The highest scores are also positively associated with the transition to the third childbirth, resulting in a U-shaped pattern across scores. Moreover, men with the lowest scores have a 5-11% higher likelihood of having a fourth child, which suggests that the effects for the fourth childbirth are even stronger than those for the third childbirth. However, higher scores are not associated with higher or lower probabilities of having a fourth child.

[Figure 1 about here]

Single-partner fertility

The differences in the psychological effects across birth parities may be partly explained by single- or multi-partner fertility. For instance, the higher probabilities of having a third and a fourth child among men with lower scores on the various psychological measures may be related to having more than one childbearing partner. We run analyses on birth parity transitions among men who have children with one

partner only in order to address the question of which of the observed patterns are driven by single-partner fertility, rather than by multi-partner fertility. Figure 2 below shows the estimates from Fig. 1 above (solid lines) compared to the results from the models that include men who have all of their children with the same female partner (dashed lines).

Estimates for all psychological factors show that lower scores are negatively linked with the transition to a second child, are not (strongly) associated with the transition to a third child, and are positively correlated with the transition to a fourth child (Fig. 2). Therefore, compared to estimates for the total sample, the effects of lower psychological scores on the transition to the third childbirth vanish. For the fourth childbirth, the estimates are reduced in the single-partner models (except for ES). While the LS coefficients decrease from around 0.11 to 0.06, the SM coefficients decline from 0.07 to 0.05, and the ES coefficients do not change much. This indicates that a large share of the positive correlations between lower scores on all psychological measures and the transitions to the third and the fourth childbirth may be explained by multi-partner fertility.

Among men who have joint children with two or three partners, no distinct patterns emerge (Fig. A2-A5), which suggests that the underlying distribution of men with lower psychological scores and the number of partners with joint children plays an important role in the patterns shown in Fig. 2. Additional analyses support this conclusion since lower scores on all psychological factors are linked with a larger number of childbearing partners (Fig. A6), and with multiple partners among fathers of two, three, and four children (Fig. A7-A10).

[Figure 2 about here]

Timing of parenthood entry

Another aspect that may help to shed light on the differences in the psychological effects across birth parity transitions is the age at first childbirth. Transitioning to fatherhood early in the life course may leave men with more time to have more children. While men do not have the same underlying age-related biological childbearing limitations that women do, previous research has shown that fertility rates after age 40 are relatively low and stable among both men and women in the Nordic context (Nisén et al., 2014). The results suggest that men with lower psychological scores tend to enter fatherhood earlier than men with middle scores, whereas no large differences are found for men with higher scores (Fig. 3). For instance, men with a LS score of 1 have a first child almost 11 months earlier on average than men with a LS score of 5.

[Figure 3 about here]

Additional analyses

All analyses have also been conducted using a sample of full brothers (same mothers and fathers) with a sibling comparison design. These sibling comparisons may indicate to what extent unobserved heterogeneity such as genetics or family background factors drive the observed patterns. The descriptive statistics (Table A5) and the results from multivariate models are shown in the appendix (Fig. A11-A13). The sibling comparisons

reveal similar patterns when the statistical power is large enough, but in some cases the statistical uncertainty is too great to enable us draw meaningful conclusions.

Moreover, we have run logistic regression models for birth parity transitions, and find that the patterns are similar to those described above (Fig. A14). We reach similar conclusions when looking at higher age thresholds for fertility, e.g., age 45 and older (Fig. A15) and age 50 and older (Fig. A16). Additionally, we have run linear models with and without indicators of socioeconomic status (cumulated income and highest educational level by age 39) (Fig. A17-A19). Since the estimates are very similar across the models, the evidence suggests that the observed patterns are not mediated by own income and education.

Discussion

Conclusions

This study examines the prospective association between psychological factors such as leadership skills (LS), social maturity (SM), and emotional stability (ES) on the one hand, and fertility outcomes, including the likelihood of transitioning to different birth parities, single-partner fertility, and the timing of entry into fatherhood, on the other. The findings suggest that for men, there are positive associations between psychological measures and the transitions to the first and the second childbirth. These results are consistent with the hypotheses of the present study and findings from previous research.

One striking result is, however, that men with lower LS, SM, and ES scores are more likely to transition to a third and a fourth childbirth. This contradicts our hypotheses

(except for SM) based on previous research, which found weakening, but not opposite, effects of psychological factors across birth parities (Jokela et al., 2009, 2011; Jokela & Keltikangas-Järvinen, 2009). However, these studies may have been biased given that they did not consistently measure psychological factors before fertility events. Indeed, one recent study that adjusted for personality changes over time found personality effect differences between birth parities when applying a prospective design (Peters, 2023), which supports our findings. It therefore appears that the prospective design may help to explain fertility patterns. The current study demonstrates the relevance of measuring psychological factors before childbearing, and not at the end of fertility histories.

One possible explanation for the observed patterns across birth parities is that differences in family life trajectories are reflected in psychological scores. Recent studies have shown that Swedish men are less likely to get married if they have lower LS (Peters & Barclay, 2022), SM or ES (Peters, 2022), which suggests that such men may face challenges and disadvantages on the partner market. Once married, men with lower SM and ES scores have much higher divorce risks than their counterparts with higher psychological scores (Peters, 2022). This observation is supported by previous research showing that low scores on extraversion are associated with decreasing life satisfaction after entering marriage (Boyce et al., 2016), potentially resulting in higher divorce risks. However, there is also evidence of a positive correlation between extraversion and infidelity risks (Spikic & Mortelmans, 2021), which suggests that people with higher extraversion scores have higher dissolution risks. Previous research has also shown that the relationship between personality and divorce (positive for extraversion, negative for emotional stability) is fairly stable across marriage cohorts (Boertien & Mortelmans, 2018). Moreover, after men get married,

their extraversion may decrease and their emotional stability may increase, which might also determine their marriage satisfaction (Lavner et al., 2018).

One important contribution of the current study is the evidence on how psychological factors shape fertility through relationship patterns. In particular, the analyses on single-/multi-partner fertility suggest that the existence of multiple childbearing partners shapes the association between psychological characteristics and fertility. Higher union dissolution risks can increase men's opportunities to find a new partner with whom they may start a new family, resulting in higher probabilities of transitioning to higher birth parities. Indeed, men with lower scores on the psychological measures we examine are more likely to have multi-partner fertility.

Moreover, the findings from our analyses indicate that males with low LS, SM, and ES scores enter fatherhood significantly earlier than men with higher scores. Consequently, these men have more time to experience more family events (e.g., partnership dissolution, re-partnering, more children), which increases their probabilities of transitioning to a third and a fourth childbirth.

The patterns among men with lower psychological scores observed in this study are in line with findings from previous studies on the associations between different determinants and fertility. Previous research has shown that Swedish men with low cognitive skills are less likely to have a first and a second child, but are more likely to transition to higher birth parities (Kolk & Barclay, 2019). Similar associations have been found for Swedish males with lower scores on health indicators (Barclay & Kolk, 2020). It remains unclear whether low scores on different determinants are associated with reversing patterns across birth parity transitions beyond Swedish borders, or whether these associations are valid for Swedish men only.

Limitations and strengths

One significant limitation of this study is the data-related exclusion of women from the analyses, as information on psychological factors is only available for men who participated in the military recruitment process. This restriction affects our conclusions in various ways. First, the observed patterns are only valid for the male population who were born between 1963-1979 in Sweden. The effects of psychological measures on family formation behavior may differ by gender, as previous research has shown (e.g., Jokela et al., 2011; Peters, 2023). Second, selection in partnering processes by personality could not be examined. Previous research has shown that women with high extraversion prefer men with low scores on another indicator of social skills, agreeableness (Dupuy & Galichon, 2014).

Another open question relates to the missing values on the psychological factors, and how they may influence the results. The missing values on LS are largely based on relatively poor performance on the IQ test during the military recruitment process, as the LS of more than 99% of the males with IQ scores in the lower half of the distribution were not evaluated (Table A1). However, the reasons for the missing values on the personality factors (SM, ES) are less clear. Men who lack a SM score also tend to lack an ES score (Table A6). Otherwise, personality was measured for all IQ groups, and further descriptive analyses show no strong selection according to other factors, including leadership and cognitive skills (Table A7) or hearing abilities and technical skills (Table A8). Therefore, why the SM and the EM of almost 20% of the young men were not assessed remains unclear. However, missing values on all psychological factors are not excluded from analyses, but instead form a separate category with

estimates similar to those of the corresponding reference categories. This suggests that there are no strong biases in the family formation analyses.

Another limitation is related to the one-time measurement of the psychological factors during the military conscription process. This measurement approach may result in one-directional conclusions, as it cannot account for psychological development over time. Prior research suggests that personality traits change in response to significant life events in early adulthood, such as entering a first romantic relationship or transitioning to work or university (Bleidorn et al., 2018). Additionally, personality changes might be more evident over time, especially when assessed through interviews rather than through questionnaires (Hopwood & Bleidorn, 2018). However, previous evidence suggests that personality is rather stable throughout the life course (Allemand et al., 2015; Damian et al., 2015; Lucas & Donnellan, 2011). The analytical design of the present study, whereby psychological factors were measured in early adulthood, mitigates concerns about reverse causality affecting the observed relationship between psychological factors and family formation processes, though.

Despite these limitations, this study has several notable strengths. The unique identification number of each individual in Sweden allows us to link psychological measures from military service with the fertility histories of an entire male population. Thus, we may study the prospective association between LS at young ages (17-20) and fertility outcomes in mid-adulthood (age 39 or older). A previous study by Jokela and Keltikangas-Järvinen (2009) used a similar design for fertility analyses, but with a much smaller sample of approximately 1,300 participants who were 30-39 years of age, and thus in the middle of their reproductive period. By contrast, the analyses in

this study focus on males aged 39 or older, who are more likely to have completed their fertility.

Using register data offers additional advantages over relying on survey data, which often suffer from selection biases, as individuals may decline to participate in surveys for different reasons. For instance, disadvantaged men who refuse to participate in a survey may have lower fertility than their less disadvantaged peers. This selection bias is not present in the register data we use because all males were obliged to participate in the military conscription process.

Men with higher cognitive abilities play a significant role in the analyses of the present study, as LS are only measured for men in the top half of the IQ distribution. In this study, the models that control for cognitive abilities do not differ substantially from the models that do not include this information. However, the effect of lower LS on fertility may be underestimated, as both low IQ and low LS may negatively affect an individual's success on the partner market. One indicator is the positive linear association between LS and IQ scores in the upper half of the IQ distribution. Lower IQ scores are associated with lower LS scores, but the uncertainty is higher in this group due to the small number of individuals with extremely low IQ scores in the data (Fig. A25-A26).

Outlook

This study has revealed inequalities in fertility among men based on psychological factors. Low scores on leadership skills (LS), social maturity (SM), and emotional stability (ES) are linked with lower probabilities of having a first and a second child, but with higher probabilities of having a third and a fourth child. While our study shows that different relationship patterns are at least partially responsible for these associations,

future research should examine the role of other potential mediators. For instance, fertility intentions or family ideals may drive the observed patterns, which is not possible to explore using register data. Moreover, future studies may consider how both partners' characteristics are associated with fertility outcomes, as reproduction requires two people.

In addition, the role of SES indicators such as income or education should be further studied, given that psychological factors have become increasingly important for labor market outcomes (Izadi & Tuhkuri, 2024). For instance, we have not examined whether SES factors may mediate and/or moderate the link between psychological factors and fertility, as this question is beyond the scope of our study. However, this may be an important question for future research that seeks to improve our understanding of how psychological factors shape childbearing.

Tables

Variable		
# Children	**N**	**%**
0	134,355	20.65
1	95,813	14.73
2	278,652	42.83
3	108,706	16.71
4	24,727	3.80
5	5,868	0.90
6	1,651	0.25
7	485	0.07
8	204	0.03
9 or more	193	0.03
Social maturity		
1	8,274	1.27
2	77,334	11.89
3	291,053	44.73
4	135,443	20.82
5	11,166	1.72
Missing	127,384	19.58
Birth order		
1	339,218	52.13
2	218,130	33.52
3	67,690	10.40
4	17,187	2.64
5	5,056	0.78
6	1,930	0.30
7	788	0.12
8 or higher	655	0.10
Cognitive skills		
1	21,073	3.24
2	45,103	6.93
3	69,681	10.71
4	99,895	15.35
5	153,832	23.64
6	108,157	16.62
7	80,100	12.31
8	47,032	7.23
9	25,781	3.96
Civil status		
Never married	325,849	50.08
Ever married	324,805	49.92
Total	**650,654**	**100**

Variable		
Leadership skills	**N**	**%**
1	3,688	0.57
2	14,351	2.21
3	31,740	4.88
4	65,805	10.11
5	108,790	16.72
6	92,969	14.29
7	61,521	9.46
8	21,814	3.35
9	4,043	0.62
Missing	245,933	37.80
Emotional stability		
1	10,319	1.59
2	87,422	13.44
3	321,671	49.44
4	96,651	14.85
5	6,794	1.04
Missing	127,797	19.64
Sibling group size		
1	126,298	19.41
2	304,898	46.86
3	155,821	23.95
4	43,433	6.68
5	12,225	1.88
6	4,382	0.67
7	1,862	0.29
8 or more	1,735	0.27
Educational level		
No basic education	695	0.11
Primary	53,368	8.20
Lower secondary	202,950	31.19
Upper secondary	148,708	22.86
Post-secondary	98,382	15.12
Tertiary	137,665	21.16
Doctor	8,886	1.37
# Partners with joint children		
0	134,355	20.65
1	459,340	70.60
2	51,862	7.97
3	4,532	0.70
4	480	0.07
5 or more	85	0.01

	N	Mean	Std.dev.	Min	Max
Cumulated income	650,654	125.72	109.94	-2,409.68	46,637.86
Birth year	650,654	1971.24	4.11	1963	1979
Age 1st childbirth (years)	516,299	30.40	5.43	13.58	54.75
Age 2nd childbirth (years)	420,428	33.01	5.06	15.67	54.58
Age 3rd childbirth (years)	141,784	35.60	5.02	19.00	55.67
Age 4th childbirth (years)	33,108	37.57	5.17	19.58	54.58

Table 1: Descriptive Statistics

	First child	Second child	Third child	Fourth child	Number of partners with joint children		Age 1st birth (years)
Leadership skills	**Yes (%)**	**Yes (%)**	**Yes (%)**	**Yes (%)**	**1 (%)**	**2 or more (%)**	
1	61.80	72.27	39.34	34.26	80.61	19.39	29.86
2	64.70	74.13	35.84	27.52	85.51	14.49	30.51
3	68.83	77.64	34.74	26.46	87.77	12.23	30.57
4	75.11	80.14	32.04	23.53	90.21	9.79	30.75
5	81.08	82.50	31.82	20.47	91.35	8.65	30.91
6	84.89	84.77	31.94	19.14	92.06	7.94	31.20
7	87.95	86.35	33.05	18.40	92.52	7.48	31.46
8	89.88	87.76	35.50	17.76	92.45	7.55	31.69
9	90.85	89.63	37.91	18.27	92.46	7.54	31.71
Missing	76.82	78.59	35.57	27.83	85.20	14.80	29.25
Social maturity							
1	62.81	70.83	42.90	36.10	77.01	22.99	28.54
2	68.45	75.54	37.16	30.05	84.01	15.99	29.65
3	79.57	81.25	32.71	22.73	89.59	10.41	30.40
4	86.17	85.13	32.89	19.81	91.42	8.58	31.00
5	89.75	87.23	36.07	19.19	91.16	8.84	31.36
Missing	78.39	80.68	34.78	25.06	87.70	12.30	30.08
Emotional stability							
1	66.45	73.24	40.06	33.15	80.25	19.75	29.03
2	70.40	76.47	36.55	28.90	84.86	15.14	29.73
3	79.95	81.62	32.90	22.79	89.67	10.33	30.46
4	87.33	85.67	32.55	18.54	91.81	8.19	31.10
5	89.95	87.33	35.88	17.86	92.00	8.00	31.46
Missing	78.41	80.69	34.78	25.06	87.71	12.29	30.09
Total	79.35	81.44	33.73	23.36	88.97	11.03	30.40

Table 2: Descriptive statistics, personality and fertility
Note: Percentage represents the share of men with each psychological score who a) experienced the transition to the corresponding birth parity, and b) had one or multiple childbearing partners.

Figures

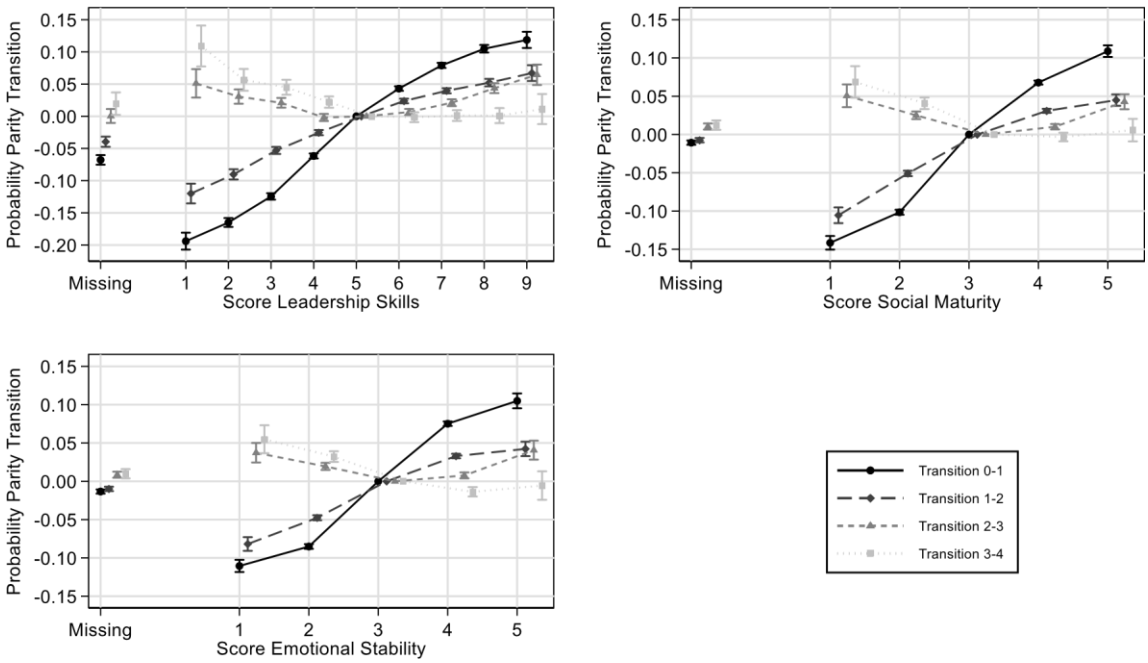

Figure 1: LPM coefficients for birth parity transitions
Note: All models control for IQ, birth order, birth year, sibling group size, age at previous childbirth(s)

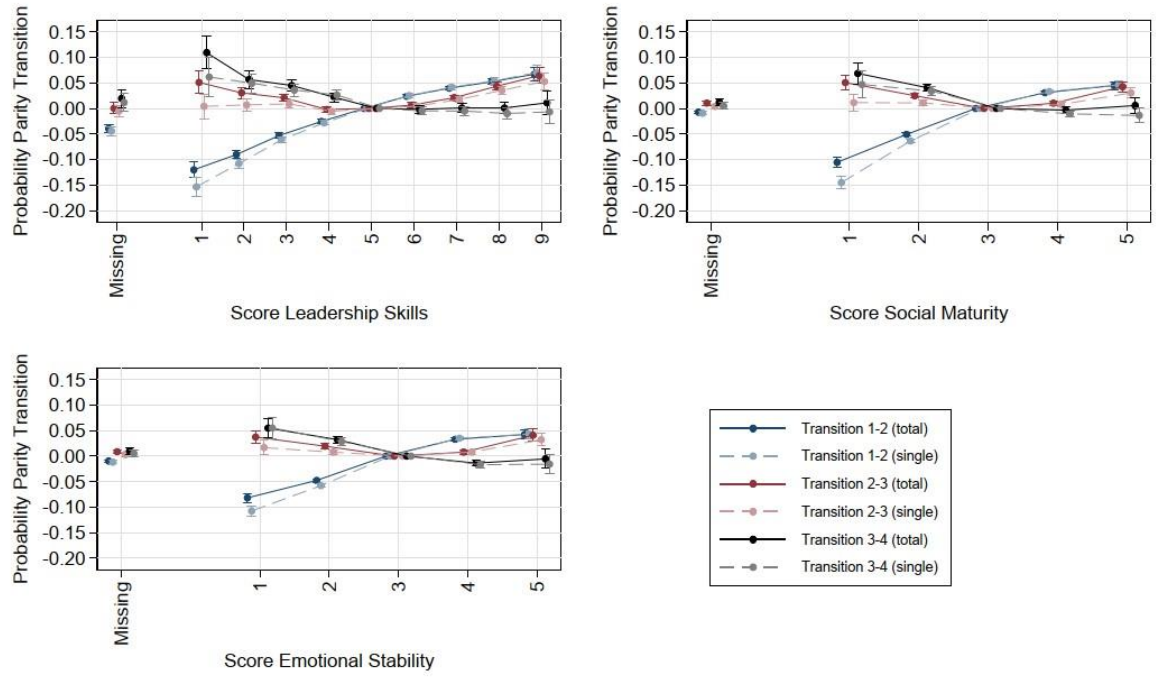

Figure 2: LPM coefficients for birth parity transitions among males with one partner with joint children
Note: Models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

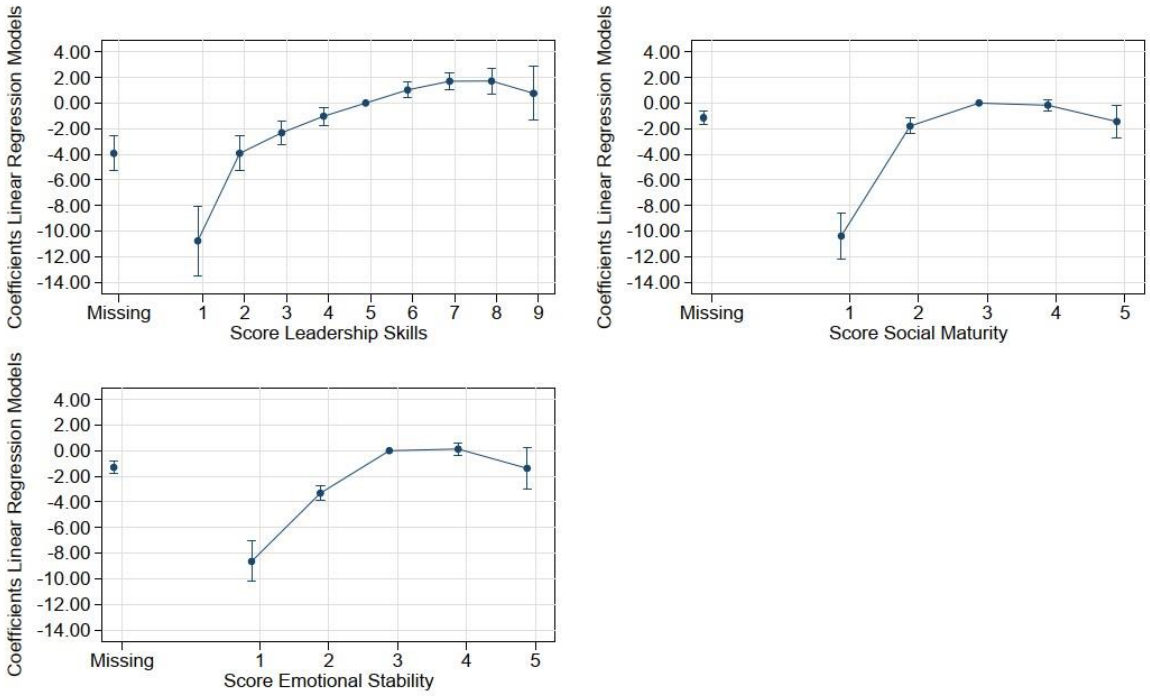

Figure 3: Linear regression coefficients for age at entry into fatherhood
Note: M1 controls for IQ, birth order, birth year, and sibling group size

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Appendix

		Cognitive ability										
		Missing (%)	*1 (%)*	*2 (%)*	*3 (%)*	*4 (%)*	*5 (%)*	*6 (%)*	*7 (%)*	*8 (%)*	*9 (%)*	**N (total)**
	Missing	97.38	99.00	99.79	99.68	99.34	3.29	2.69	2.34	2.08	2.13	**256,421**
	1	0.23	0.07	0.02	0.02	0.01	1.25	0.77	0.65	0.49	0.53	**3,737**
	2	0.31	0.08	0.04	0.03	0.05	4.65	3.19	2.55	2.21	2.21	**14,471**
	3	0.45	0.08	0.03	0.05	0.08	10.07	7.30	5.79	4.97	4.65	**31,919**
LS	*4*	0.29	0.14	0.04	0.08	0.12	19.82	15.74	12.95	10.92	9.63	**66,133**
	5	0.48	0.26	0.03	0.07	0.16	29.29	27.56	24.05	20.68	17.67	**109,384**
	6	0.41	0.17	0.04	0.04	0.13	19.45	23.50	24.72	24.60	23.55	**93,611**
	7	0.21	0.15	0.02	0.02	0.07	9.53	14.37	18.90	21.54	23.26	**62,036**
	8	0.20	0.04	0.00	0.01	0.03	2.33	4.22	6.82	10.43	12.99	**22,085**
	9	0.04	0.00	0.00	0.00	0.01	0.33	0.67	1.23	2.07	3.38	**4,111**
	N (total)	**9,595**	**21,237**	**45,297**	**69,975**	**100,321**	**154,534**	**108,761**	**80,72**	**47,409**	**26,059**	**663,908**

Table A1: Leadership skills scores by cognitive ability (column percentages)
Note: This table includes all observed males from the considered birth cohorts who attended the military recruitment (663,908 males). Findings from the present study, however, relate to the reduced sample (650,654 men) after missing values of cognitive abilities and other covariates were deleted.

	First Childbirth			Second Childbirth			Third Childbirth			Fourth Childbirth		
Variable												
	Beta	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*	
Leadership skills												
1	-0.194	-0.207	-0.181	-0.120	-0.135	-0.105	0.051	0.029	0.073	0.109	0.077	0.141
2	-0.165	-0.172	-0.158	-0.090	-0.098	-0.082	0.031	0.019	0.042	0.057	0.040	0.074
3	-0.124	-0.129	-0.119	-0.053	-0.059	-0.048	0.021	0.013	0.028	0.045	0.033	0.057
4	-0.062	-0.066	-0.058	-0.025	-0.029	-0.021	-0.002	-0.007	0.004	0.022	0.013	0.031
5	0			0			0			0		
6	0.043	0.040	0.047	0.024	0.020	0.027	0.007	0.002	0.011	-0.002	-0.009	0.006
7	0.079	0.075	0.083	0.040	0.036	0.044	0.021	0.016	0.026	0.001	-0.007	0.010
8	0.105	0.099	0.111	0.052	0.046	0.058	0.044	0.036	0.051	0.001	-0.011	0.013
9	0.119	0.106	0.131	0.067	0.055	0.079	0.064	0.049	0.080	0.011	-0.012	0.034
Missing	-0.068	-0.075	-0.060	-0.040	-0.047	-0.032	0.000	-0.010	0.011	0.020	0.002	0.037
Cognitive skills												
1	-0.115	-0.124	-0.106	-0.080	-0.090	-0.070	0.041	0.027	0.055	0.078	0.057	0.099
2	-0.019	-0.028	-0.011	-0.046	-0.055	-0.037	0.015	0.003	0.027	0.042	0.023	0.060
3	0.021	0.013	0.028	-0.019	-0.027	-0.011	0.006	-0.005	0.018	0.017	-0.001	0.036
4	0.036	0.029	0.044	0.002	-0.006	0.010	0.004	-0.007	0.015	-0.001	-0.019	0.017
5	0			0			0			0		
6	-0.017	-0.020	-0.014	0.022	0.019	0.025	0.017	0.013	0.022	-0.003	-0.010	0.003
7	-0.036	-0.040	-0.033	0.039	0.036	0.043	0.033	0.029	0.038	0.000	-0.008	0.008
8	-0.052	-0.056	-0.048	0.056	0.052	0.061	0.056	0.050	0.062	-0.002	-0.011	0.007
9	-0.078	-0.083	-0.072	0.066	0.061	0.072	0.085	0.077	0.092	0.006	-0.005	0.018
Birth year												
1963	0			0			0			0		
1964	0.046	0.002	0.090	0.047	-0.001	0.095	-0.097	-0.163	-0.030	0.016	-0.068	0.099
1965	0.057	0.014	0.099	0.046	-0.001	0.092	-0.100	-0.164	-0.035	-0.018	-0.098	0.062
1966	0.055	0.013	0.098	0.038	-0.008	0.085	-0.106	-0.170	-0.042	-0.028	-0.108	0.052
1967	0.053	0.010	0.095	0.043	-0.003	0.090	-0.107	-0.171	-0.042	-0.032	-0.112	0.048
1968	0.050	0.008	0.093	0.043	-0.003	0.090	-0.106	-0.170	-0.042	-0.032	-0.112	0.048
1969	0.054	0.012	0.097	0.048	0.001	0.094	-0.103	-0.167	-0.039	-0.027	-0.107	0.053
1970	0.056	0.013	0.098	0.057	0.011	0.104	-0.097	-0.161	-0.033	-0.042	-0.122	0.039
1971	0.059	0.017	0.102	0.068	0.021	0.114	-0.092	-0.157	-0.028	-0.041	-0.121	0.039
1972	0.059	0.016	0.102	0.070	0.023	0.116	-0.096	-0.160	-0.032	-0.037	-0.117	0.043
1973	0.063	0.021	0.106	0.068	0.021	0.114	-0.094	-0.158	-0.030	-0.044	-0.124	0.036
1974	0.061	0.018	0.103	0.075	0.028	0.121	-0.101	-0.165	-0.036	-0.053	-0.133	0.027
1975	0.057	0.015	0.100	0.074	0.028	0.121	-0.107	-0.171	-0.043	-0.063	-0.143	0.017
1976	0.051	0.008	0.094	0.069	0.022	0.115	-0.109	-0.174	-0.045	-0.072	-0.152	0.008
1977	0.049	0.006	0.092	0.065	0.019	0.112	-0.120	-0.185	-0.056	-0.072	-0.153	0.008
1978	0.042	0.000	0.085	0.060	0.013	0.106	-0.128	-0.192	-0.063	-0.094	-0.174	-0.014
1979	0.038	-0.005	0.082	0.046	-0.002	0.093	-0.151	-0.216	-0.085	-0.094	-0.176	-0.012

Table A2: Linear probability model coefficients, birth transitions 1-4 (leadership skills)

	First Childbirth			Second Childbirth			Third Childbirth			Fourth Childbirth		
Variable												
	Beta	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*	
Birth order												
1	0			0			0			0		
2	-0.004	-0.006	-0.002	0.003	0.001	0.006	-0.010	-0.013	-0.007	-0.008	-0.013	-0.003
3	-0.020	-0.024	-0.016	-0.002	-0.006	0.002	-0.017	-0.022	-0.011	-0.017	-0.026	-0.009
4	-0.026	-0.034	-0.019	-0.005	-0.013	0.002	-0.048	-0.058	-0.037	-0.025	-0.039	-0.010
5	-0.039	-0.053	-0.026	-0.030	-0.044	-0.016	-0.068	-0.087	-0.049	-0.067	-0.092	-0.041
6	-0.040	-0.062	-0.018	-0.030	-0.053	-0.008	-0.078	-0.108	-0.048	-0.048	-0.087	-0.010
7	-0.068	-0.102	-0.035	-0.032	-0.067	0.002	-0.088	-0.134	-0.042	-0.152	-0.209	-0.095
8	-0.074	-0.114	-0.034	-0.035	-0.076	0.007	-0.125	-0.181	-0.070	-0.060	-0.129	0.009
Sibling group size												
1	0			0			0			0		
2	0.022	0.019	0.025	0.027	0.024	0.030	-0.005	-0.009	-0.001	-0.021	-0.027	-0.014
3	0.042	0.039	0.046	0.039	0.036	0.043	0.032	0.027	0.036	-0.005	-0.012	0.003
4	0.054	0.049	0.059	0.042	0.037	0.047	0.094	0.087	0.101	0.021	0.011	0.032
5	0.062	0.053	0.071	0.052	0.043	0.061	0.131	0.119	0.143	0.064	0.047	0.080
6	0.070	0.055	0.085	0.071	0.056	0.086	0.158	0.138	0.178	0.080	0.055	0.106
7	0.105	0.084	0.127	0.077	0.054	0.099	0.226	0.197	0.256	0.151	0.116	0.187
8	0.101	0.075	0.127	0.094	0.068	0.121	0.238	0.203	0.273	0.190	0.148	0.232
Age at first childbirth				-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	0.000	-0.001	0.000
Age at second childbirth							-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Age at third childbirth										-0.001	-0.001	-0.001

Table A2: Linear probability model coefficients, birth transitions 1-4 (leadership skills, continued)

	First Childbirth			Second Childbirth			Third Childbirth			Fourth Childbirth		
Variable												
	Beta	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*	
Social maturity												
1	-0.141	-0.150	-0.133	-0.105	-0.116	-0.095	0.051	0.036	0.065	0.069	0.048	0.089
2	-0.102	-0.105	-0.098	-0.051	-0.054	-0.047	0.025	0.020	0.030	0.041	0.033	0.048
3	0			0			0			0		
4	0.068	0.065	0.070	0.031	0.028	0.034	0.010	0.007	0.014	-0.003	-0.009	0.002
5	0.109	0.101	0.117	0.045	0.037	0.052	0.043	0.033	0.053	0.006	-0.009	0.020
Missing	-0.011	-0.013	-0.008	-0.007	-0.010	-0.004	0.010	0.006	0.014	0.012	0.006	0.018
Cognitive skills												
1	-0.109	-0.115	-0.104	-0.086	-0.092	-0.079	0.025	0.016	0.035	0.067	0.054	0.081
2	-0.034	-0.038	-0.030	-0.063	-0.067	-0.058	0.003	-0.003	0.010	0.039	0.029	0.048
3	-0.007	-0.011	-0.004	-0.043	-0.047	-0.039	-0.003	-0.008	0.002	0.019	0.011	0.027
4	-0.002	-0.006	0.001	-0.027	-0.030	-0.024	-0.004	-0.009	0.000	0.004	-0.003	0.011
5	0			0			0			0		
6	-0.007	-0.010	-0.004	0.027	0.024	0.030	0.018	0.014	0.023	-0.006	-0.013	0.001
7	-0.020	-0.023	-0.017	0.048	0.044	0.051	0.036	0.031	0.041	-0.003	-0.011	0.004
8	-0.030	-0.034	-0.026	0.068	0.063	0.072	0.061	0.055	0.066	-0.006	-0.015	0.003
9	-0.053	-0.059	-0.048	0.080	0.074	0.085	0.091	0.083	0.098	0.002	-0.009	0.013
Birth year												
1963	0			0			0			0		
1964	0.038	-0.007	0.082	0.042	-0.007	0.090	-0.093	-0.160	-0.027	0.020	-0.063	0.104
1965	0.042	0.000	0.085	0.036	-0.010	0.083	-0.096	-0.160	-0.032	-0.012	-0.092	0.068
1966	0.052	0.009	0.094	0.036	-0.011	0.082	-0.105	-0.169	-0.041	-0.027	-0.107	0.053
1967	0.043	0.000	0.086	0.037	-0.010	0.084	-0.104	-0.168	-0.040	-0.028	-0.108	0.052
1968	0.039	-0.004	0.081	0.036	-0.011	0.082	-0.103	-0.167	-0.039	-0.027	-0.107	0.053
1969	0.042	-0.001	0.084	0.039	-0.007	0.086	-0.100	-0.165	-0.036	-0.022	-0.103	0.058
1970	0.042	0.000	0.085	0.049	0.002	0.095	-0.095	-0.159	-0.030	-0.037	-0.117	0.043
1971	0.047	0.004	0.090	0.060	0.013	0.106	-0.090	-0.154	-0.026	-0.037	-0.117	0.043
1972	0.047	0.004	0.090	0.062	0.016	0.109	-0.093	-0.158	-0.029	-0.032	-0.113	0.048
1973	0.051	0.009	0.094	0.060	0.013	0.106	-0.091	-0.155	-0.027	-0.039	-0.119	0.041
1974	0.047	0.004	0.090	0.067	0.020	0.113	-0.098	-0.163	-0.034	-0.048	-0.128	0.032
1975	0.043	0.001	0.086	0.066	0.019	0.112	-0.105	-0.169	-0.040	-0.059	-0.139	0.021
1976	0.039	-0.004	0.081	0.061	0.015	0.108	-0.108	-0.172	-0.043	-0.068	-0.148	0.012
1977	0.032	-0.011	0.075	0.055	0.008	0.102	-0.119	-0.183	-0.054	-0.068	-0.148	0.013
1978	0.025	-0.018	0.068	0.049	0.003	0.096	-0.126	-0.190	-0.062	-0.089	-0.169	-0.009
1979	0.021	-0.022	0.065	0.035	-0.012	0.082	-0.149	-0.214	-0.084	-0.088	-0.170	-0.006

Table A3: Linear probability model coefficients, birth transitions 1-4 (social maturity)

	First Childbirth			Second Childbirth			Third Childbirth			Fourth Childbirth		
Variable												
	Beta	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*	
Birth order												
1	0			0			0			0		
2	-0.005	-0.007	-0.002	0.003	0.000	0.005	-0.010	-0.013	-0.007	-0.008	-0.013	-0.003
3	-0.021	-0.025	-0.017	-0.003	-0.007	0.001	-0.017	-0.022	-0.011	-0.017	-0.025	-0.009
4	-0.028	-0.035	-0.020	-0.006	-0.014	0.002	-0.048	-0.058	-0.038	-0.025	-0.039	-0.010
5	-0.042	-0.055	-0.028	-0.032	-0.046	-0.018	-0.068	-0.087	-0.049	-0.066	-0.091	-0.040
6	-0.042	-0.064	-0.021	-0.031	-0.054	-0.009	-0.078	-0.108	-0.048	-0.048	-0.087	-0.009
7	-0.072	-0.106	-0.039	-0.034	-0.069	0.000	-0.089	-0.135	-0.042	-0.152	-0.209	-0.095
8	-0.079	-0.119	-0.039	-0.036	-0.078	0.005	-0.125	-0.180	-0.070	-0.058	-0.127	0.011
Sibling group size												
1	0			0			0			0		
2	0.023	0.021	0.026	0.027	0.024	0.030	-0.005	-0.009	-0.001	-0.021	-0.027	-0.014
3	0.044	0.041	0.047	0.040	0.036	0.043	0.032	0.027	0.037	-0.004	-0.012	0.003
4	0.055	0.050	0.061	0.043	0.037	0.048	0.094	0.087	0.101	0.021	0.011	0.032
5	0.062	0.053	0.071	0.052	0.043	0.061	0.130	0.118	0.142	0.064	0.047	0.080
6	0.071	0.056	0.085	0.071	0.056	0.087	0.157	0.137	0.177	0.080	0.054	0.106
7	0.108	0.086	0.129	0.078	0.055	0.100	0.225	0.196	0.255	0.151	0.115	0.187
8	0.104	0.079	0.130	0.096	0.069	0.123	0.236	0.202	0.271	0.189	0.147	0.231
Age at first childbirth				-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	0.000	-0.001	0.000
Age at second childbirth							-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Age at third childbirth										-0.001	-0.001	-0.001

Table A3: Linear probability model coefficients, birth transitions 1-4 (social maturity, continued)

	First Childbirth			Second Childbirth			Third Childbirth			Fourth Childbirth		
Variable												
	Beta	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*	
Emotional stability												
1	-0.110	-0.118	-0.103	-0.082	-0.091	-0.073	0.037	0.025	0.050	0.055	0.037	0.073
2	-0.085	-0.088	-0.082	-0.048	-0.051	-0.044	0.019	0.015	0.024	0.032	0.025	0.039
3	0			0			0			0		
4	0.075	0.072	0.078	0.033	0.030	0.036	0.008	0.004	0.012	-0.014	-0.020	-0.008
5	0.105	0.095	0.115	0.042	0.033	0.052	0.041	0.028	0.053	-0.006	-0.024	0.013
Missing	-0.013	-0.016	-0.011	-0.010	-0.013	-0.007	0.009	0.005	0.012	0.010	0.004	0.016
Cognitive skills												
1	-0.123	-0.129	-0.117	-0.091	-0.098	-0.085	0.027	0.018	0.037	0.070	0.057	0.084
2	-0.043	-0.048	-0.039	-0.067	-0.071	-0.062	0.004	-0.002	0.010	0.040	0.031	0.050
3	-0.013	-0.017	-0.009	-0.045	-0.049	-0.042	-0.003	-0.008	0.002	0.020	0.012	0.027
4	-0.006	-0.009	-0.003	-0.029	-0.032	-0.025	-0.004	-0.008	0.001	0.004	-0.003	0.011
5	0			0			0			0		
6	-0.006	-0.009	-0.003	0.027	0.024	0.030	0.019	0.014	0.023	-0.005	-0.012	0.002
7	-0.019	-0.022	-0.015	0.048	0.045	0.052	0.037	0.032	0.042	-0.002	-0.010	0.005
8	-0.029	-0.033	-0.025	0.068	0.064	0.072	0.061	0.056	0.067	-0.004	-0.013	0.005
9	-0.052	-0.057	-0.047	0.080	0.075	0.086	0.092	0.085	0.100	0.004	-0.007	0.016
Birth year												
1963	0			0			0			0		
1964	0.040	-0.005	0.084	0.041	-0.007	0.089	-0.094	-0.160	-0.027	0.023	-0.061	0.107
1965	0.043	0.001	0.086	0.035	-0.012	0.082	-0.097	-0.161	-0.033	-0.010	-0.090	0.070
1966	0.054	0.011	0.097	0.035	-0.011	0.082	-0.106	-0.170	-0.042	-0.025	-0.105	0.055
1967	0.046	0.003	0.089	0.037	-0.010	0.083	-0.105	-0.169	-0.040	-0.026	-0.106	0.054
1968	0.042	0.000	0.085	0.036	-0.011	0.082	-0.103	-0.168	-0.039	-0.025	-0.106	0.055
1969	0.046	0.003	0.089	0.040	-0.007	0.087	-0.101	-0.165	-0.037	-0.021	-0.101	0.059
1970	0.048	0.005	0.091	0.050	0.003	0.096	-0.095	-0.160	-0.031	-0.035	-0.115	0.045
1971	0.052	0.010	0.095	0.061	0.014	0.107	-0.091	-0.155	-0.027	-0.035	-0.115	0.045
1972	0.053	0.010	0.095	0.063	0.017	0.110	-0.094	-0.158	-0.030	-0.031	-0.111	0.049
1973	0.057	0.014	0.099	0.061	0.014	0.108	-0.092	-0.156	-0.028	-0.038	-0.118	0.042
1974	0.053	0.010	0.096	0.068	0.021	0.114	-0.100	-0.164	-0.035	-0.047	-0.127	0.033
1975	0.047	0.004	0.090	0.066	0.020	0.113	-0.105	-0.170	-0.041	-0.057	-0.137	0.023
1976	0.041	-0.002	0.084	0.061	0.014	0.108	-0.109	-0.173	-0.044	-0.066	-0.146	0.014
1977	0.036	-0.007	0.079	0.055	0.009	0.102	-0.120	-0.184	-0.056	-0.066	-0.146	0.014
1978	0.029	-0.014	0.072	0.050	0.003	0.096	-0.127	-0.192	-0.063	-0.087	-0.167	-0.007
1979	0.025	-0.018	0.068	0.036	-0.012	0.083	-0.150	-0.215	-0.085	-0.087	-0.169	-0.005

Table A4: Linear probability model coefficients, birth transitions 1-4 (emotional stability)

	First Childbirth			Second Childbirth			Third Childbirth			Fourth Childbirth		
Variable												
	Beta	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*		*Beta*	*95% CI*	
Birth order												
1	0			0			0			0		
2	-0.005	-0.008	-0.003	0.003	0.000	0.005	-0.010	-0.013	-0.007	-0.008	-0.013	-0.002
3	-0.022	-0.026	-0.018	-0.003	-0.007	0.001	-0.017	-0.023	-0.012	-0.017	-0.025	-0.009
4	-0.028	-0.036	-0.021	-0.006	-0.014	0.002	-0.048	-0.058	-0.038	-0.025	-0.039	-0.010
5	-0.043	-0.056	-0.029	-0.032	-0.046	-0.018	-0.069	-0.088	-0.050	-0.066	-0.092	-0.041
6	-0.044	-0.065	-0.022	-0.031	-0.054	-0.009	-0.079	-0.109	-0.049	-0.048	-0.087	-0.009
7	-0.072	-0.105	-0.038	-0.033	-0.068	0.002	-0.088	-0.134	-0.042	-0.151	-0.208	-0.094
8	-0.079	-0.119	-0.038	-0.035	-0.077	0.007	-0.126	-0.181	-0.071	-0.060	-0.130	0.009
Sibling group size												
1	0			0			0			0		
2	0.024	0.021	0.027	0.028	0.025	0.031	-0.005	-0.009	-0.001	-0.021	-0.027	-0.014
3	0.044	0.041	0.048	0.040	0.036	0.043	0.032	0.027	0.037	-0.005	-0.012	0.003
4	0.056	0.050	0.061	0.043	0.037	0.048	0.094	0.087	0.101	0.021	0.011	0.031
5	0.062	0.054	0.071	0.052	0.043	0.061	0.130	0.118	0.143	0.063	0.047	0.080
6	0.070	0.056	0.085	0.071	0.056	0.086	0.158	0.138	0.178	0.080	0.054	0.106
7	0.107	0.085	0.128	0.076	0.054	0.099	0.226	0.196	0.255	0.150	0.115	0.186
8	0.103	0.077	0.128	0.094	0.068	0.121	0.237	0.203	0.272	0.191	0.149	0.233
Age at first childbirth				-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	0.000	-0.001	0.000
Age at second childbirth							-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Age at third childbirth										-0.001	-0.001	-0.001

Table A4: Linear probability model coefficients, birth transitions 1-4 (emotional stability, continued)

Variable	Sibling comparison	
# Children	**N**	**%**
0	43,761	19.67
1	31,034	13.95
2	96,232	43.25
3	39,235	17.63
4	9,019	4.05
5	2,179	0.98
6	630	0.28
7	190	0.09
8	102	0.05
9 or more	105	0.02
# Partners with joint children		
0	43,761	19.67
1	159,752	71.8
2	17,369	7.81
3	1,432	0.64
4	141	0.06
5 or more	32	0.01
Leadership skills		
1	1,198	0.54
2	4,535	2.04
3	10,215	4.59
4	22,206	9.98
5	37,194	16.72
6	32,077	14.42
7	21,355	9.6
8	7,518	3.38
9	1,495	0.67
Missing	84,694	38.07
Social maturity		
1	2,708	1.22
2	26,607	11.96
3	100,874	45.34
4	46,674	20.98
5	3,953	1.78
Missing	41,671	18.73
Emotional stability		
1	3,402	1.53
2	29,656	13.33
3	111,895	50.29
4	33,234	14.94
5	2,451	1.1
Missing	41,849	18.81

Table A5: Descriptive statistics, sibling comparisons

Variable	Sibling comparison	
Cognitive skills		
1	7,578	3.41
2	16,065	7.22
3	23,995	10.78
4	33,906	15.24
5	52,247	23.48
6	36,746	16.52
7	27,176	12.21
8	16,023	7.2
9	8,751	3.93
Educational level		
No basic education	234	0.11
Primary	17,605	7.91
Lower secondary	70,977	31.9
Upper secondary	49,621	22.3
Post-secondary	33,505	15.06
Tertiary	47,443	21.32
Doctor	3,102	1.39
Birth order		
1	87,305	39.24
2	94,163	42.32
3	30,388	13.66
4	7,101	3.19
5	2,025	0.91
6	827	0.37
7	345	0.16
8 or higher	333	0.15
Sibling group size		
1		
2	107,334	48.24
3	79,653	35.8
4	23,660	10.63
5	6,917	3.11
6	2,562	1.15
7	1,158	0.52
8 or more	1,203	0.54
Civil status		
Never married	108,483	48.76
Ever married	114,004	51.24
Total	**222,487**	**100**

Table A5: Descriptive statistics, sibling comparisons (cont.)

Sibling comparison Variable	N	Mean	Std.dev.	Min	Max
Age 1st childbirth	178,726	364	65.06244	163	654
Age 2nd childbirth	147,680	395	60.71197	188	649
Age 3rd childbirth	51,444	426	60.09718	228	655
Age 4th childbirth	12,216	449	61.96735	252	649
Cumulated income	222,487	127	145.7684	-644.063	46,637.86
Birth year	222,487	1,971	3.80965	1963	1979

Table A5: Descriptive statistics, sibling comparisons (cont.)

SM / ES	1	2	3	4	5	Missing	Total
1	4,763	4,715	782	54	3	2	10,319
	57.57	*6.10*	*0.27*	*0.04*	*0.03*	*0.00*	*1.59*
2	3,310	43,921	36,814	3,290	47	40	87,422
	40.00	*56.79*	*12.65*	*2.43*	*0.42*	*0.03*	*13.44*
3	188	28,304	226,566	65,620	822	171	321,671
	2.27	*36.60*	*77.84*	*48.45*	*7.36*	*0.13*	*49.44*
4	2	290	26,342	63,548	6,412	57	96,651
	0.02	*0.37*	*9.05*	*46.92*	*57.42*	*0.04*	*14.85*
5	0	2	233	2,695	3,863	1	6,794
	0.00	*0.00*	*0.08*	*1.99*	*34.60*	*0.00*	*1.04*
Missing	11	102	316	236	19	127,113	127,797
	0.13	*0.13*	*0.11*	*0.17*	*0.17*	*99.79*	*19.64*
Total	8,274	77,334	291,053	135,443	11,166	127,384	650,654
	100	*100*	*100*	*100*	*100*	*100*	*100*

Table A6: Descriptive statistics, frequency table with social maturity (SM) and emotional stability (ES), column percentages

SM / LS	1	2	3	4	5	Missing	Total
1	1,254	1,611	132	5	0	686	3,688
	15.16	*2.08*	*0.05*	*0.00*	*0.00*	*0.54*	*0.57*
2	630	8,840	2,602	66	1	2,212	14,351
	7.61	*11.43*	*0.89*	*0.05*	*0.01*	*1.74*	*2.21*
3	63	11,434	14,860	600	19	4,764	31,740
	0.76	*14.79*	*5.11*	*0.44*	*0.17*	*3.74*	*4.88*
4	5	6,834	46,617	2,247	39	10,063	65,805
	0.06	*8.84*	*16.02*	*1.66*	*0.35*	*7.90*	*10.11*
5	1	1,316	78,272	12,499	63	16,639	108,790
	0.01	*1.70*	*26.89*	*9.23*	*0.56*	*13.06*	*16.72*
6	0	128	36,920	40,989	328	14,604	92,969
	0.00	*0.17*	*12.68*	*30.26*	*2.94*	*11.46*	*14.29*
7	0	4	7,441	41,988	2,012	10,076	61,521
	0.00	*0.01*	*2.56*	*31.00*	*18.02*	*7.91*	*9.46*
8	0	0	437	12,718	5,051	3,608	21,814
	0.00	*0.00*	*0.15*	*9.39*	*45.24*	*2.83*	*3.35*
9	0	1	12	781	2,585	664	4,043
	0.00	*0.00*	*0.00*	*0.58*	*23.15*	*0.52*	*0.62*
Missing	6,321	47,166	103,760	23,550	1,068	64,068	245,933
	76.40	*60.99*	*35.65*	*17.39*	*9.56*	*50.30*	*37.80*
Total	8,274	77,334	291,053	135,443	11,166	127,384	650,654
	100	*100*	*100*	*100*	*100*	*100*	*100*
Cognitive skills							
1	1,967	7,608	5,695	357	11	5,435	21,073
	23.77	*9.84*	*1.96*	*0.26*	*0.10*	*4.27*	*3.24*
2	1,674	12,277	18,146	2,273	65	10,668	45,103
	20.23	*15.88*	*6.23*	*1.68*	*0.58*	*8.37*	*6.93*
3	1,470	13,451	32,337	6,459	254	15,710	69,681
	17.77	*17.39*	*11.11*	*4.77*	*2.27*	*12.33*	*10.71*
4	1,220	13,888	48,009	14,685	762	21,331	99,895
	14.74	*17.96*	*16.49*	*10.84*	*6.82*	*16.75*	*15.35*
5	1,000	14,533	77,066	31,282	1,962	27,989	153,832
	12.09	*18.79*	*26.48*	*23.10*	*17.57*	*21.97*	*23.64*
6	448	7,475	50,366	28,556	2,099	19,213	108,157
	5.41	*9.67*	*17.30*	*21.08*	*18.80*	*15.08*	*16.62*
7	283	4,437	33,478	25,527	2,415	13,960	80,100
	3.42	*5.74*	*11.50*	*18.85*	*21.63*	*10.96*	*12.31*
8	130	2,388	17,429	16,737	1,991	8,357	47,032
	1.57	*3.09*	*5.99*	*12.36*	*17.83*	*6.56*	*7.23*
9	82	1,277	8,527	9,567	1,607	4,721	25,781
	0.99	*1.65*	*2.93*	*7.06*	*14.39*	*3.71*	*3.96*
Total	8,274	77,334	291,053	135,443	11,166	127,384	650,654
	100	*100*	*100*	*100*	*100*	*100*	*100*

Table A7: Descriptive statistics, frequency table with social maturity (SM) and leadership skills (LS)/cognitive skills, column percentages

SM / Hearing	1	2	3	4	5	Missing	Total
1	29	154	204	75	5	592	1,059
	0.35	*0.20*	*0.07*	*0.06*	*0.04*	*0.46*	*0.16*
2	50	196	338	115	3	762	1,464
	0.60	*0.25*	*0.12*	*0.08*	*0.03*	*0.60*	*0.23*
3	36	211	497	184	16	849	1,793
	0.44	*0.27*	*0.17*	*0.14*	*0.14*	*0.67*	*0.28*
4	56	256	515	156	11	648	1,642
	0.68	*0.33*	*0.18*	*0.12*	*0.10*	*0.51*	*0.25*
5	89	527	1,008	350	25	691	2,690
	1.08	*0.68*	*0.35*	*0.26*	*0.22*	*0.54*	*0.41*
6	215	1,116	2,203	788	66	1,116	5,504
	2.60	*1.44*	*0.76*	*0.58*	*0.59*	*0.88*	*0.85*
7	418	2,416	5,391	2,228	197	2,477	13,127
	5.05	*3.12*	*1.85*	*1.64*	*1.76*	*1.94*	*2.02*
8	424	2,769	6,811	2,674	239	2,721	15,638
	5.12	*3.58*	*2.34*	*1.97*	*2.14*	*2.14*	*2.40*
9	4,335	40,181	138,665	67,868	6,499	42,927	300,475
	52.39	*51.96*	*47.64*	*50.11*	*58.20*	*33.70*	*46.18*
Missing	2,622	29,508	135,421	61,005	4,105	74,601	307,262
	31.69	*38.16*	*46.53*	*45.04*	*36.76*	*58.56*	*47.22*
Total	8,274	77,334	291,053	135,443	11,166	127,384	650,654
	100	*100*	*100*	*100*	*100*	*100*	*100*
Technical skills							
1	1,092	4,719	5,124	663	18	2,952	14,568
	13.20	*6.10*	*1.76*	*0.49*	*0.16*	*2.32*	*2.24*
2	1,006	7,402	13,761	2,743	116	6,069	31,097
	12.16	*9.57*	*4.73*	*2.03*	*1.04*	*4.76*	*4.78*
3	1,006	9,857	26,922	7,177	344	10,485	55,791
	12.16	*12.75*	*9.25*	*5.30*	*3.08*	*8.23*	*8.57*
4	991	11,895	43,529	14,747	840	15,314	87,316
	11.98	*15.38*	*14.96*	*10.89*	*7.52*	*12.02*	*13.42*
5	821	10,680	52,010	22,631	1,493	17,193	104,828
	9.92	*13.81*	*17.87*	*16.71*	*13.37*	*13.50*	*16.11*
6	455	7,343	45,182	25,016	1,939	14,497	94,432
	5.50	*9.50*	*15.52*	*18.47*	*17.37*	*11.38*	*14.51*
7	239	3,971	29,150	20,606	1,949	10,010	65,925
	2.89	*5.13*	*10.02*	*15.21*	*17.45*	*7.86*	*10.13*
8	69	1,391	10,236	8,884	1,066	3,812	25,458
	0.83	*1.80*	*3.52*	*6.56*	*9.55*	*2.99*	*3.91*
9	41	872	6,596	6,547	864	2,592	17,512
	0.50	*1.13*	*2.27*	*4.83*	*7.74*	*2.03*	*2.69*
Missing	2,554	19,204	58,543	26,429	2,537	44,460	153,727
	30.87	*24.83*	*20.11*	*19.51*	*22.72*	*34.90*	*23.63*
Total	8,274	77,334	291,053	135,443	11,166	127,384	650,654
	100	*100*	*100*	*100*	*100*	*100*	*100*

Table A8: Descriptive statistics, frequency table with social maturity (SM) and hearing test scores/technical skills test scores, column percentages

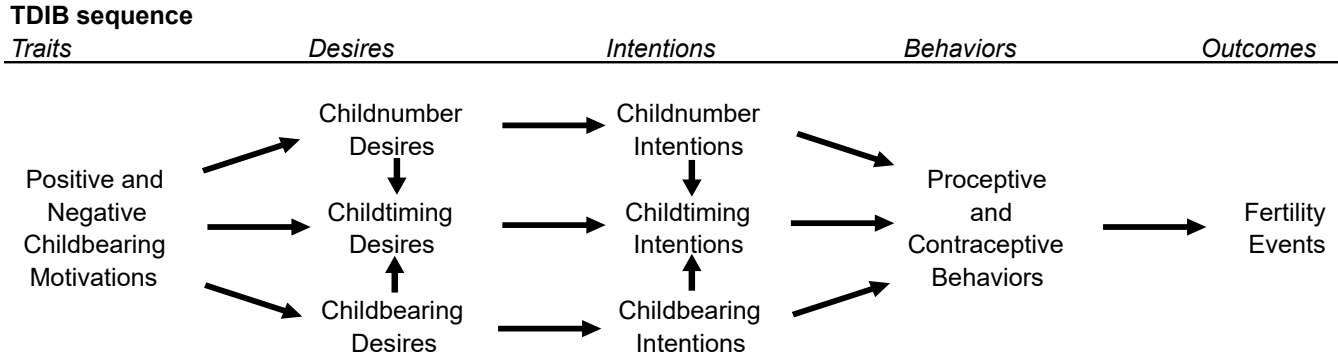

Figure A1: TDIB model used to explain fertility outcomes based on different types of motivations, desires, and intentions, adapted from Miller 2011b

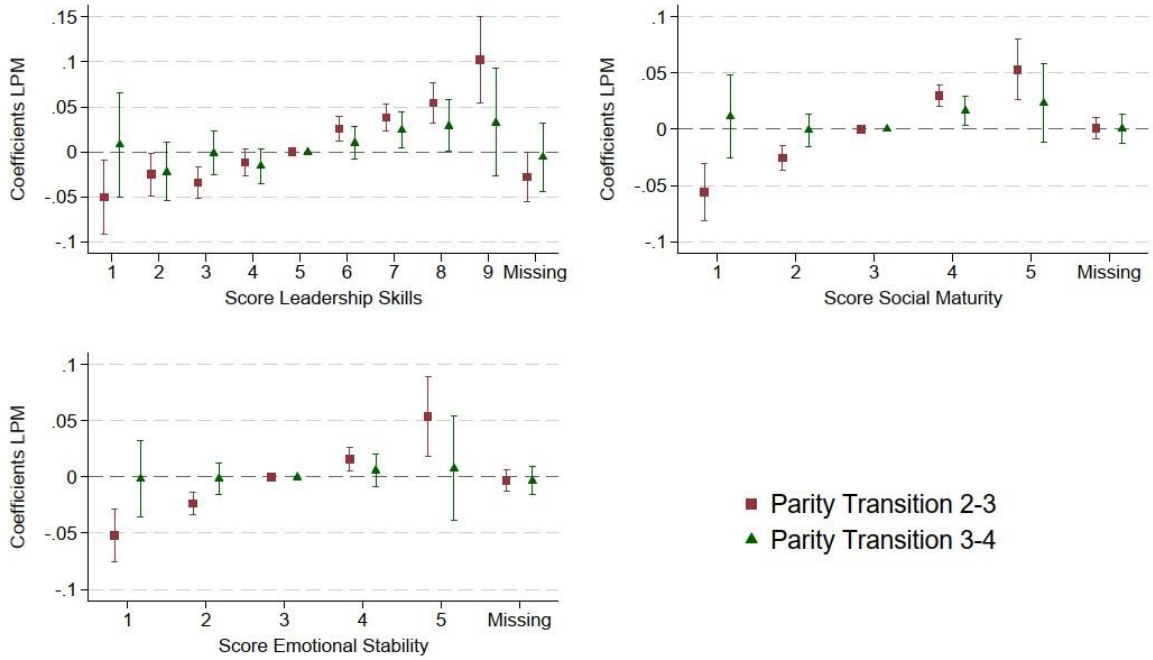

Figure A2: LPM coefficients for birth parity transitions among males with two partners with joint children Note: Models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

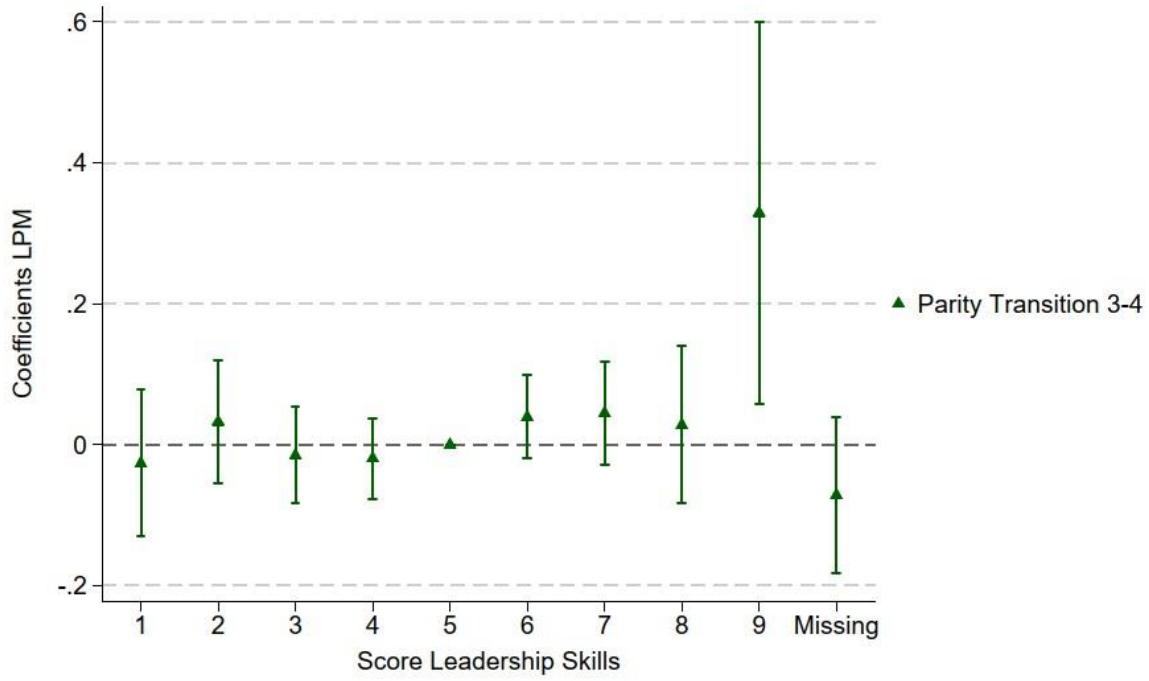

Figure A3: LPM coefficients for birth parity transitions among males with three partners with joint children (leadership skills)
Note: Models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

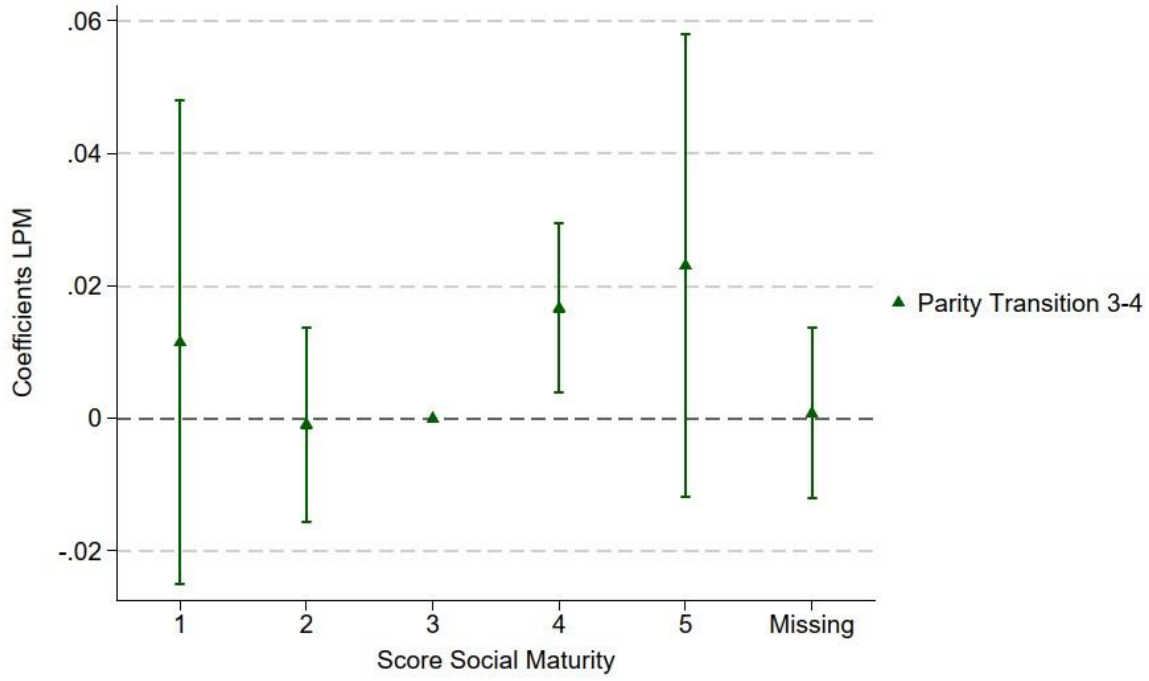

Figure A4: LPM coefficients for birth parity transitions among males with three partners with joint children (social maturity)
Note: Models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

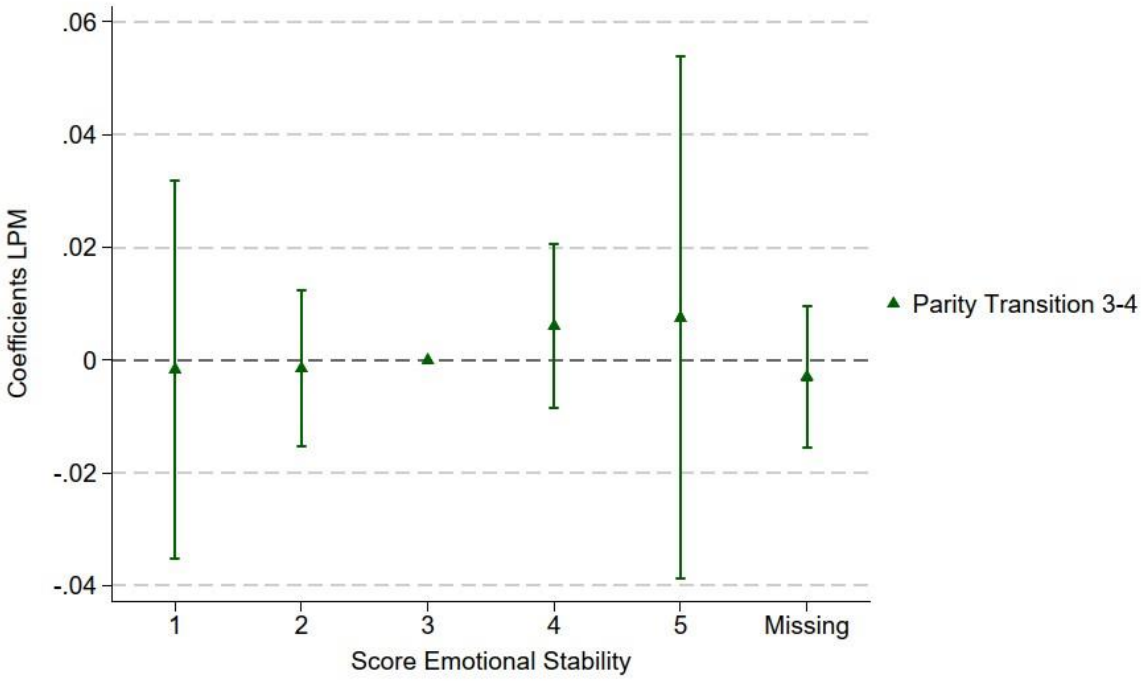

Figure A5: LPM coefficients for birth parity transitions among males with three partners with joint children (emotional stability)
Note: Models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

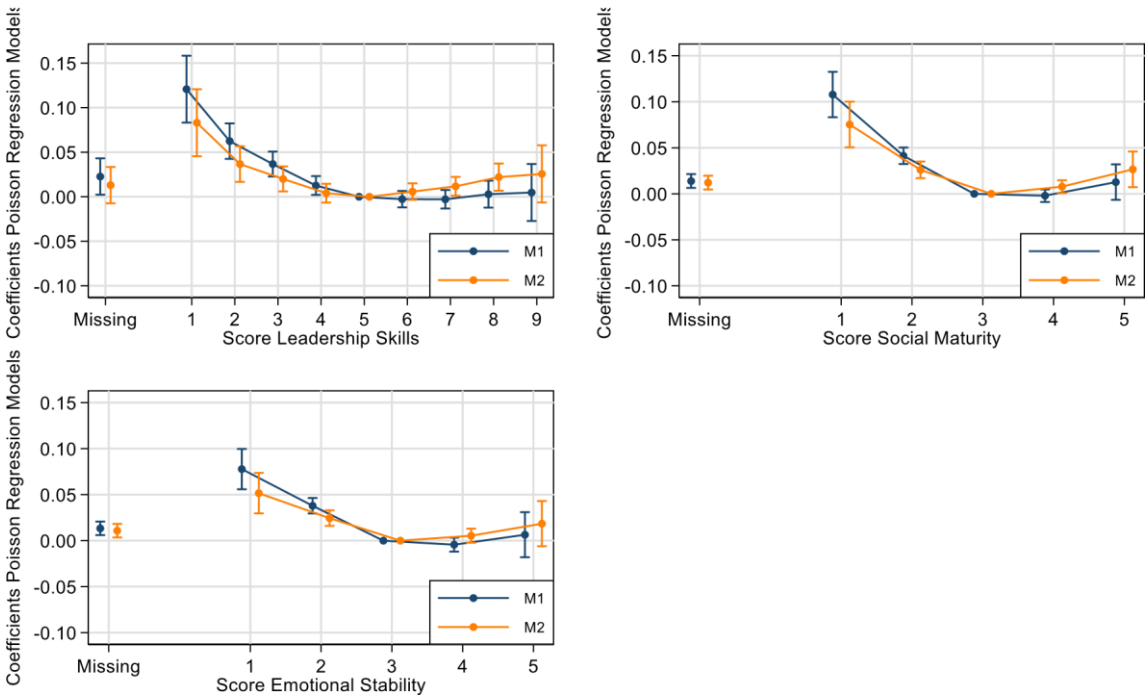

Figure A6: Poisson regression coefficients for number of partners with joint children
Note: M1 controls for IQ, birth order, birth year, and sibling group size; M2 additionally controls for education and income.

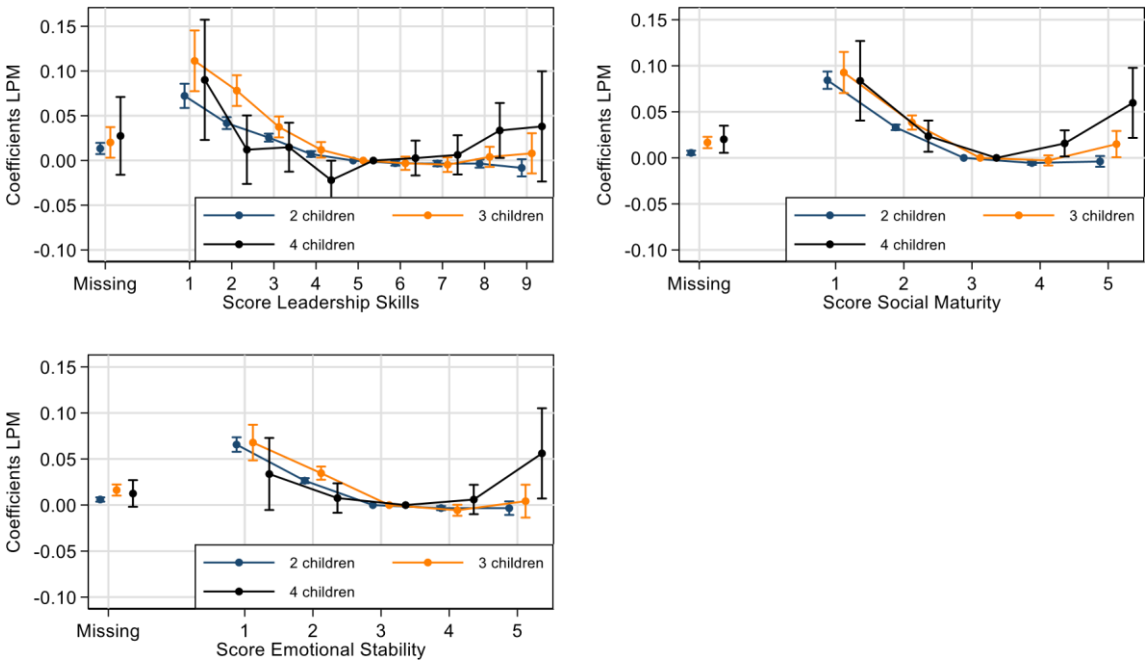

Figure A7: Linear probability model coefficients for having children with at least two different partners (0 – no, 1 – yes)
Note: Models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

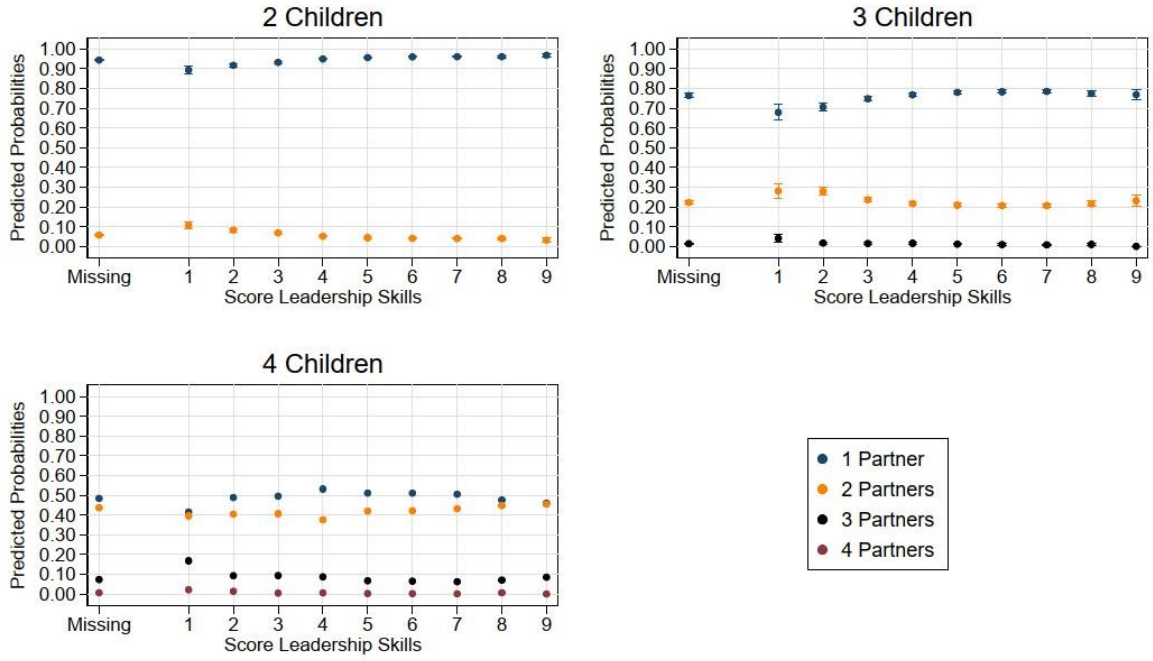

Figure A8: Predicted probabilities from multinomial models for having children with 1-4 partners (leadership skills)
Note: Models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

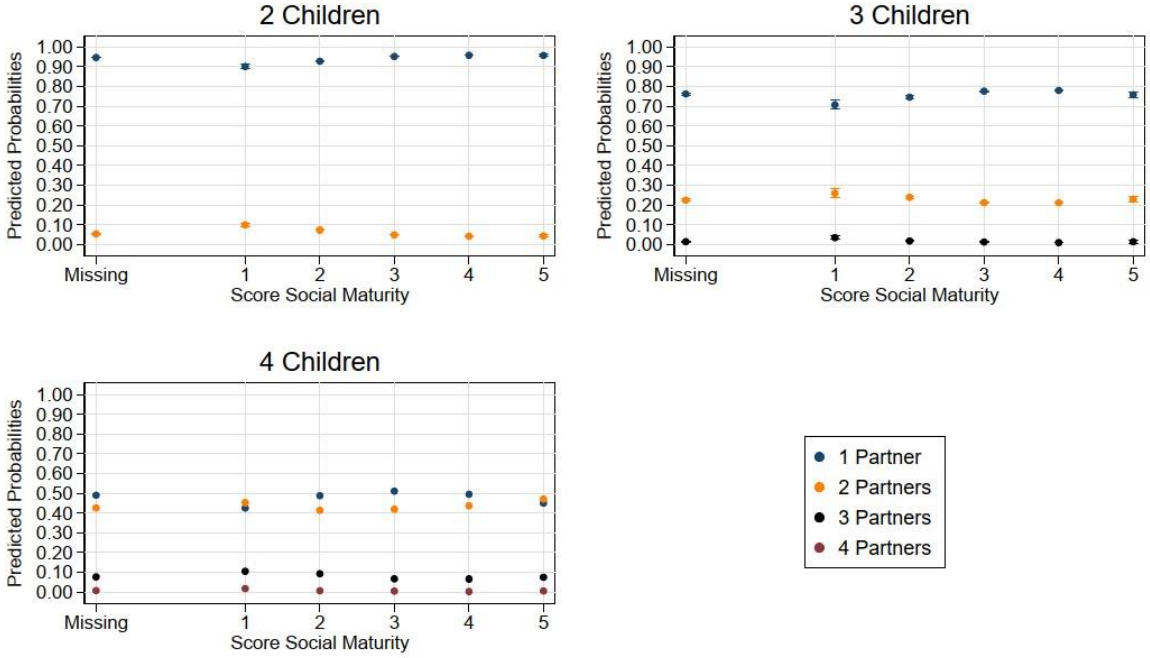

Figure A9: Predicted probabilities from multinomial models for having children with 1-4 partners (social maturity)
Note: Models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

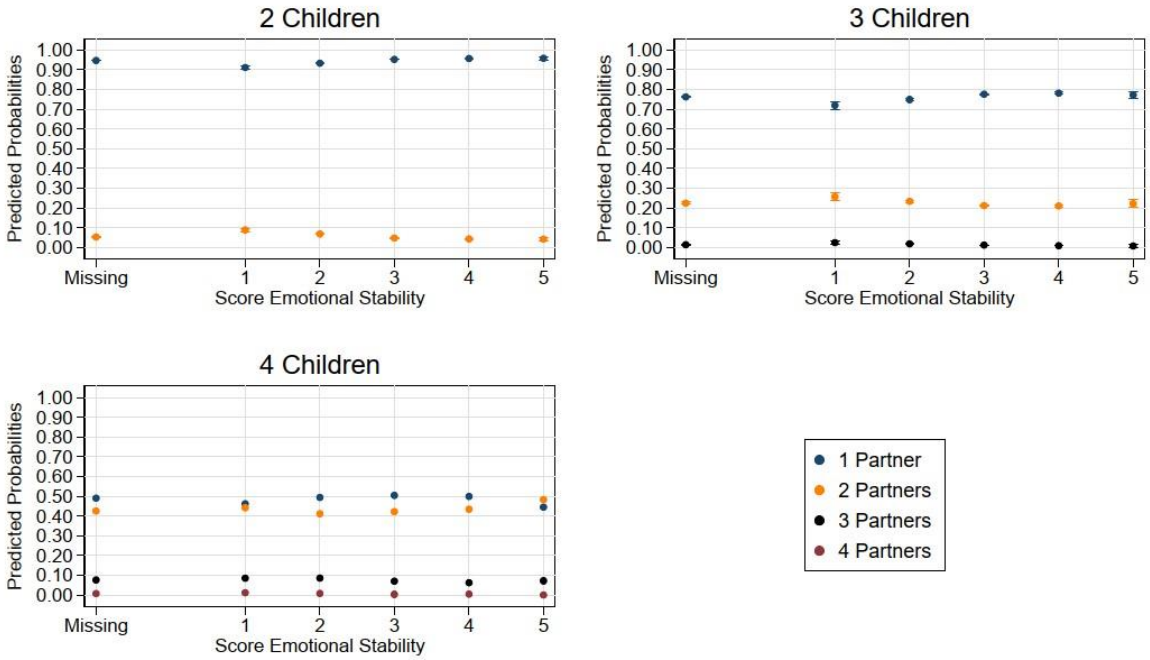

Figure A10: Predicted probabilities from multinomial models for having children with 1-4 partners (emotional stability)
Note: Models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

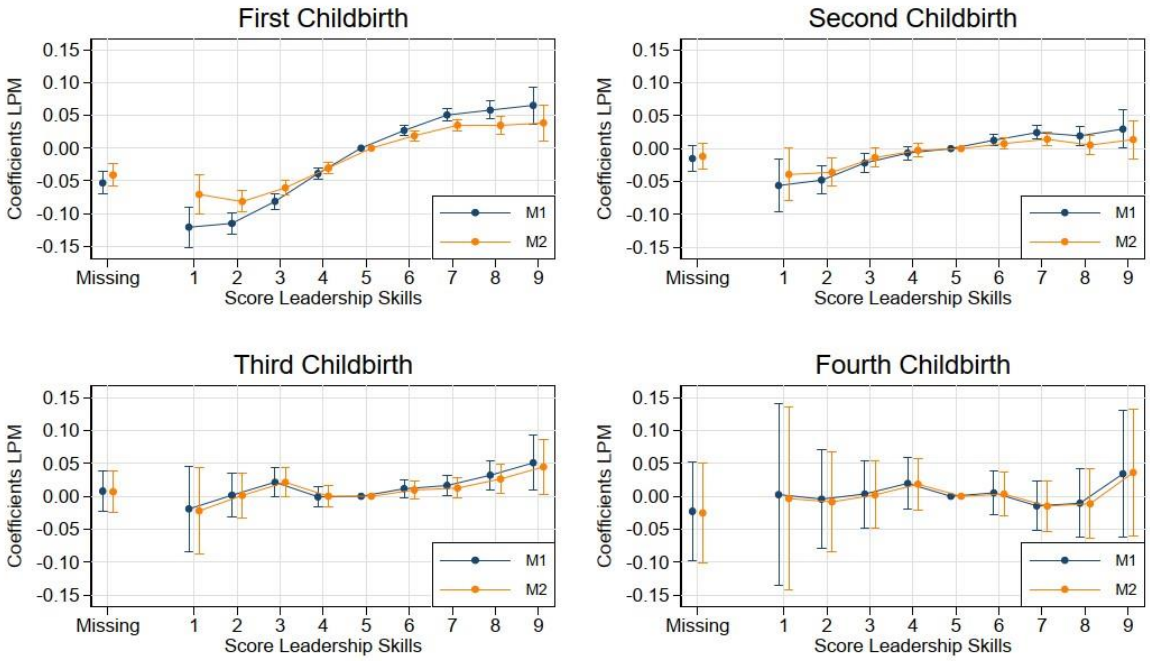

Figure A11: LPM coefficients for birth parity transitions (leadership skills, sibling comparison)
Note: M1 controls for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s); M2 additionally controls for education and income.

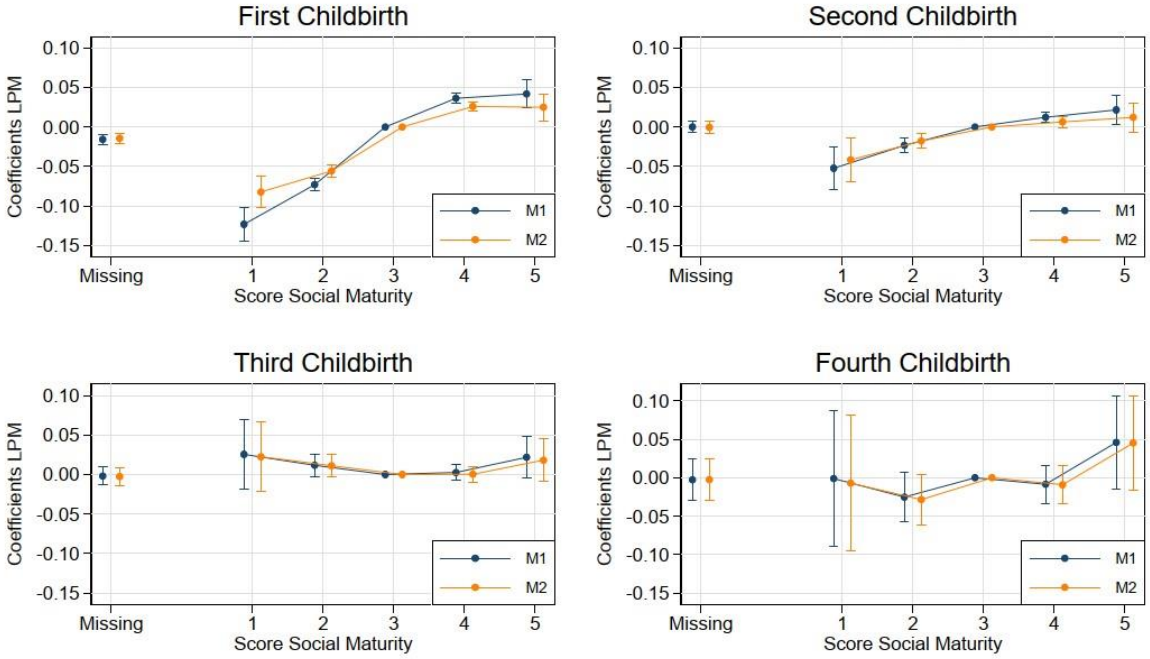

Figure A12: LPM coefficients for birth parity transitions (social maturity, sibling comparison)
Note: M1 controls for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s); M2 additionally controls for education and income.

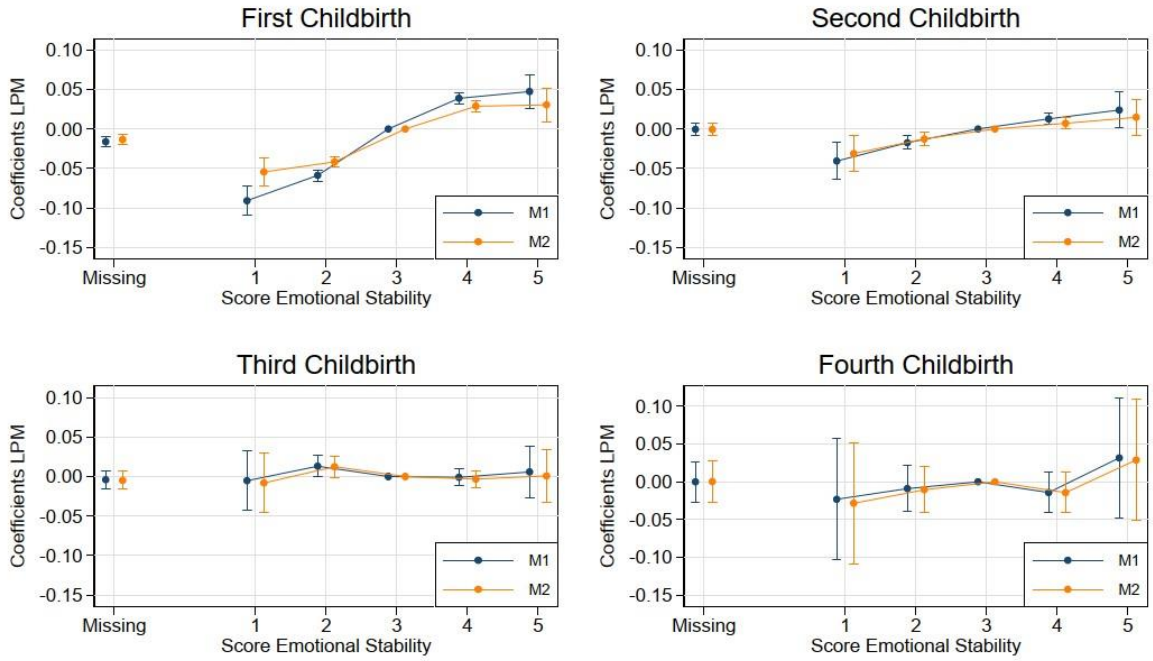

Figure A13: LPM coefficients for birth parity transitions (emotional stability, sibling comparison)
Note: M1 controls for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s); M2 additionally controls for education and income.

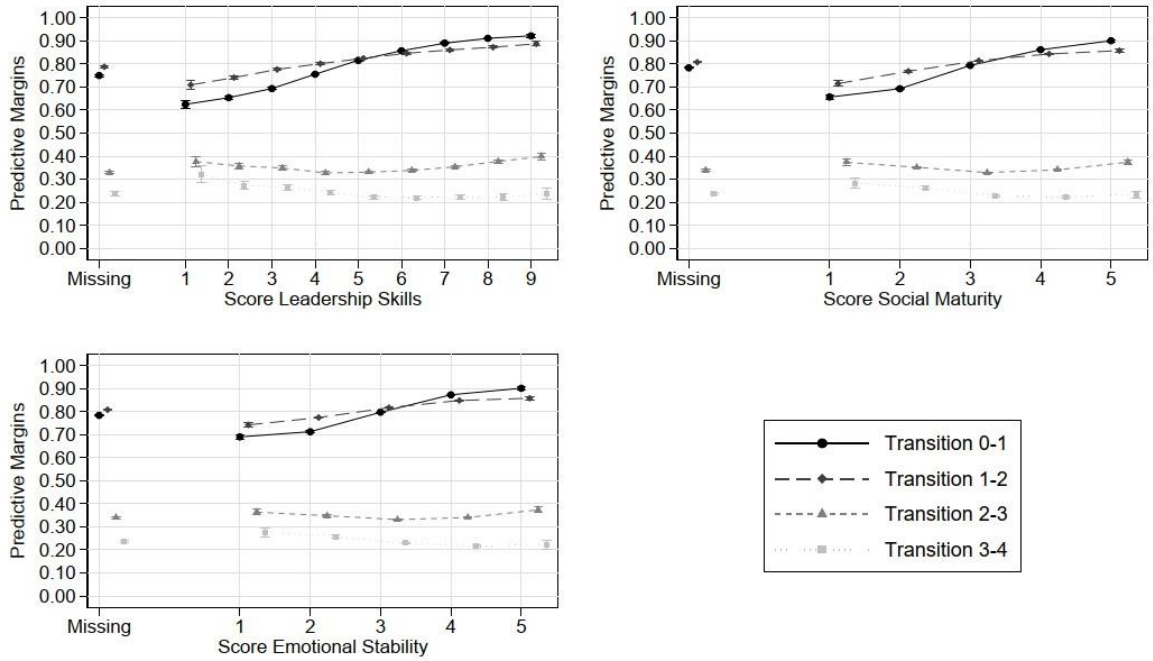

Figure A14: Predictive margins from logistic regression models for birth parity transitions
Note: All models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

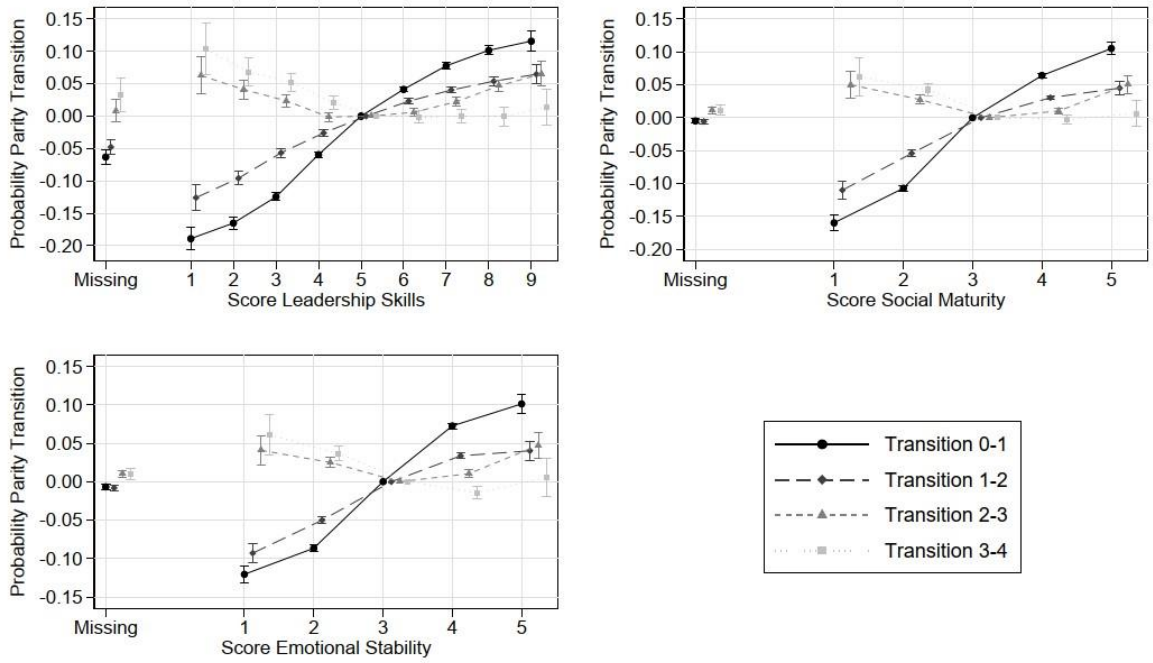

Figure A15: LPM coefficients for birth parity transitions (age 45 and older)
Note: All models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

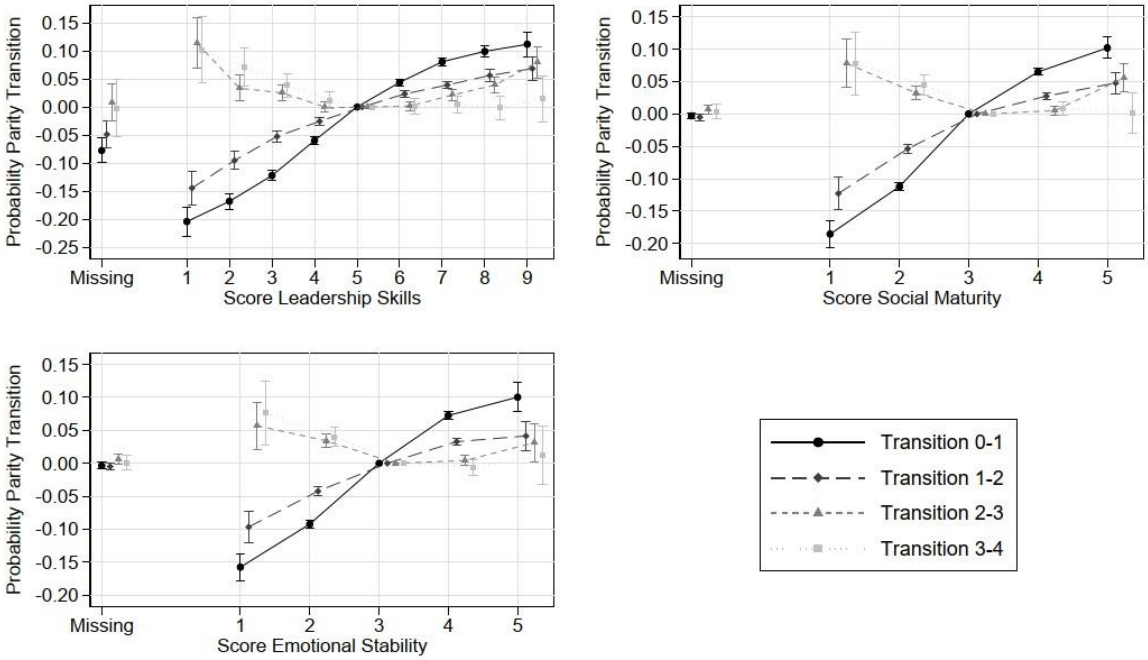

Figure A16: LPM coefficients for birth parity transitions (age 50 and older)
Note: All models control for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s).

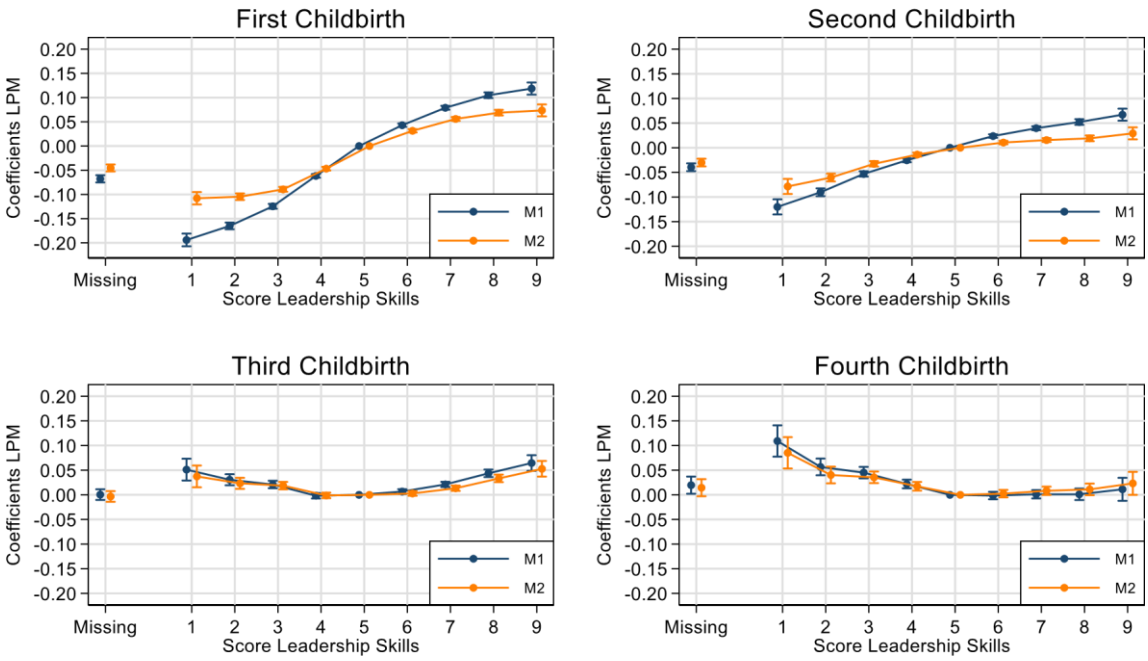

Figure A17: LPM coefficients for birth parity transitions (leadership skills)
Note: M1 controls for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s); M2 additionally controls for education and income.

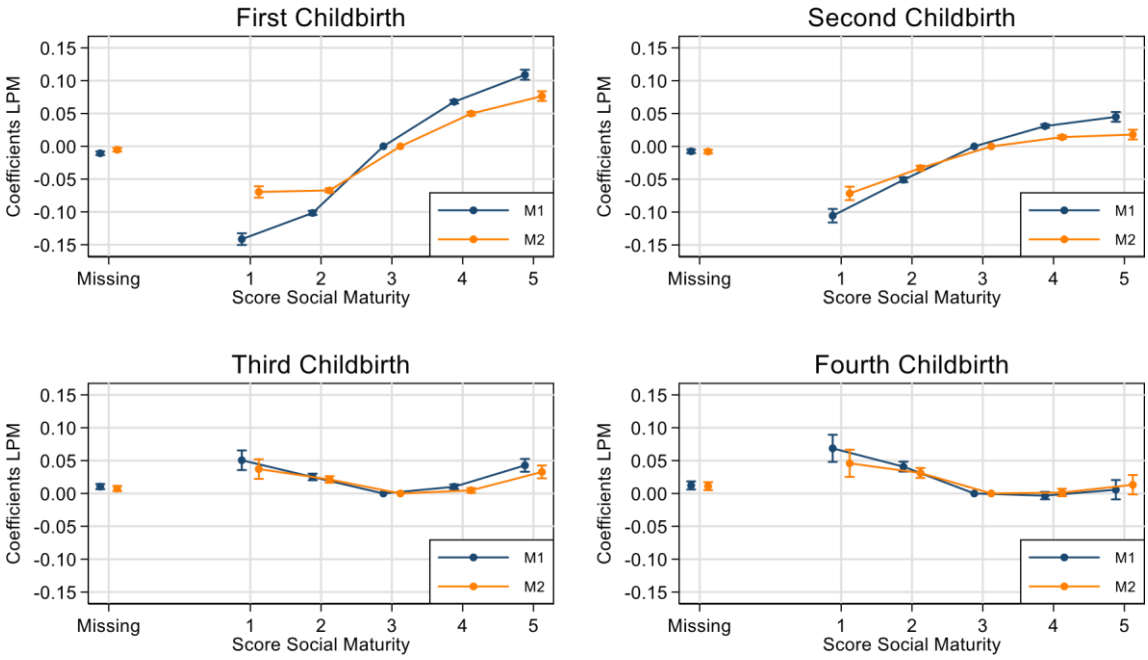

Figure A18: LPM coefficients for birth parity transitions (social maturity)
Note: M1 controls for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s); M2 additionally controls for education and income.

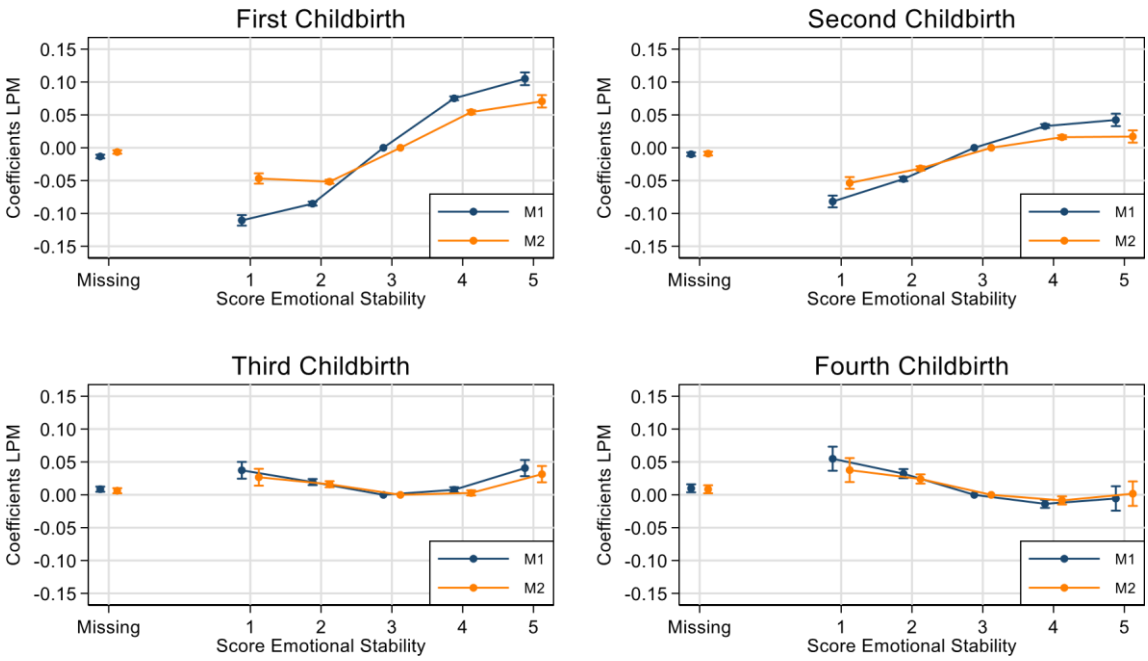

Figure A19: LPM coefficients for birth parity transitions (emotional stability)
Note: M1 controls for IQ, birth order, birth year, sibling group size, and age at previous childbirth(s); M2 additionally controls for education and income.

Figure A20: Average LS scores according to IQ scores, measured at younger ages (17-20) for the 1963-1979 cohorts at the time of military conscription in Sweden. ANOVA calculations, error bars are standard errors. Note: Models without any covariates, pure bivariate statistics.

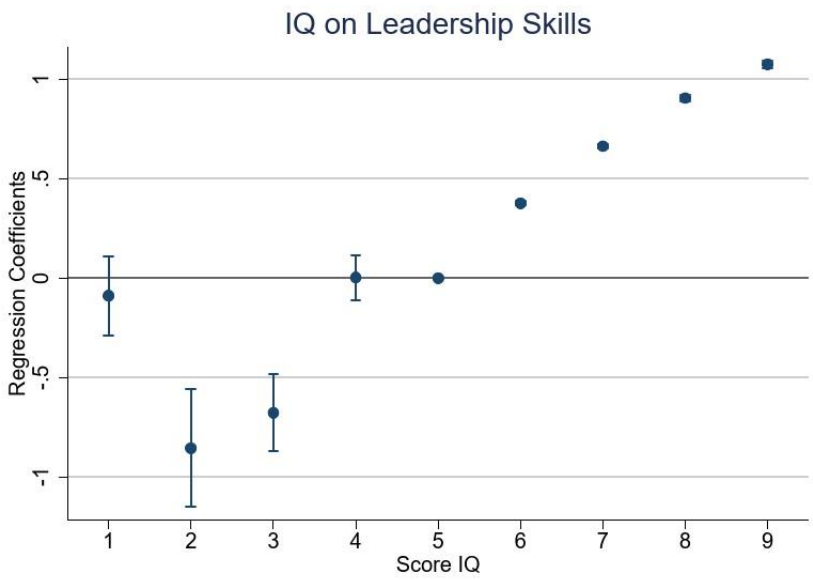

Figure A21: The relationship between IQ scores and LS scores, both measured at ages 17-20 among Swedish men born in 1963-1979. Linear regression models for between-family analyses, error bars are 95% confidence intervals. Note: Models control for birth year, birth order, and sibling group size.