DISCUSSION PAPER SERIES

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ABSTRACT

No Evidence That Siblings' Gender Affects Personality across Nine Countries

Does growing up with a sister rather than a brother affect personality? In this paper, we provide a comprehensive analysis of the effects of siblings' gender on adults' personality, using data from 85,887 people from 12 large representative surveys covering 9 countries (the United States, the United Kingdom, the Netherlands, Germany, Switzerland, Australia, Mexico, China, and Indonesia). We investigated the personality traits risk tolerance, trust, patience, locus of control, and the Big Five. We found no meaningful causal effects of the gender of the next younger sibling, and no associations with the gender of the next older sibling. Based on high statistical power and consistent results in the overall sample and relevant subsamples, our results suggest that siblings' gender does not systematically affect personality.

JEL Classification:	J12, J16, J24
Keywords:	personality, economic preferences, sibling gender, sibling sex

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Introduction

Personality is an important predictor of economic, social, and physical well-being (e.g., Almlund et al., 2011; Heckman et al., 2006; Soto, 2019). While there is consensus that both genes and the environment shape personality (Vukasović & Bratko, 2015), comparatively little is known about whether and to which extent specific environmental factors matter, such as the childhood family environment. In this paper, we focus on one part of this environment: the gender of one's siblings. Growing up with a sister rather than a brother may affect the interactions between siblings as well as those between parents and their children. These interactions take place at a crucial time—when children are young and their personality is most malleable (Roberts & DelVecchio, 2000; Sutter et al., 2019).

Two theories make opposing predictions about the causal effects of siblings' gender on personality. The theory of social learning states that siblings learn from each other and assimilate to each other through social interactions (e.g., Brim, 1958). Thus, having a sister would lead to more feminine characteristics; having a brother would lead to more masculine characteristics. From this, it follows that children with an opposite-gender sibling will have fewer gender-stereotypical characteristics compared to those with a same-gender sibling. In contrast, the theory of sibling differentiation states that, due to sibling rivalry, siblings will differentiate themselves in the process of developing their identities (Bossard & Boll, 1956). The differentiation process may also be driven by parental behavior; for example, fathers might spend more time with their sons and mothers more time with their daughters in households with children of both genders (Brenøe, 2021). According to the sibling differentiation theory, having a sister reduces feminine characteristics, while having a brother reduces masculine characteristics. Consequently, children with an opposite-gender sibling should have more gender-stereotypical characteristics compared to those with a same-gender sibling.

Both theories have received some empirical support since the 1950s. Studies have found results supporting the social learning theory, in particular in children, (e.g., Brim, 1958; Okudaira et al., 2015; Stoneman et al., 1986; Sutton-Smith et al., 1964), but also of the sibling differentiation theory in both children (e.g., Grotevant, 1978; Leventhal, 1970; Rodgers et al., 1998) and, more recently, in adults (Brenøe, 2021). In addition, multiple studies resulted in either mixed findings, or not much support for either theory (e.g., Detlefsen, Friedl, Lima de Miranda, Schmidt, & Sutter, 2018; Endendijk et al., 2013; Lamke, Bell, & Murphy, 1980; McHale, Crouter, & Tucker, 1999). The literature thus remains inconclusive.

Why do previous studies fail to paint a clear picture about the effects of siblings' gender on personality? A closer look at the studies reveals a number of potential problems, such as

highly selective samples, a multitude of different outcome variables, and statistical evidence of unknown or weak strength. The seminal study on the effects of sibling gender investigated 384 school children from Chicago (Brim, 1958). All children came from White, urban, two-child families. Teachers rated children on 58 items divided into instrumental masculine traits (e.g., aggressiveness, curiosity) and expressive feminine traits (e.g., anger, affectionateness), and each item was tested for statistical differences. Findings suggested that children with an opposite-gender sibling had more traits of the opposite gender, although it is impossible to evaluate the strength of the evidence given incomplete reporting.

A later study by Leventhal (1970) investigated a sample of male psychology students at North Carolina State University. Among the assessed outcomes were 30 extracurricular interests, an unspecified number of additional questions (e.g., interest in joining a social fraternity), and records of athletic performance. Results revealed that men with a sister showed greater interest in outdoor activities, and that men with an older sister had higher motor fitness scores and showed more interest in social fraternities. This was interpreted as evidence for sibling differentiation, but again the strength of the statistical evidence seems questionable.

McHale et al. (2001) investigated 198 pairs of first- and second-born children from almost exclusively White, "intact", working and middle-class families. The researchers assessed gender role attitudes, expressivity and instrumentality, and "sex-typed leisure activities" (e.g., handicrafts as a feminine activity; hunting and fishing as masculine activities). The findings support the social learning theory: girls with younger brothers had less traditional gender role attitudes. But once again, given the number of hypotheses conducted, the statistical evidence was not quite compelling.

The problems that make it hard to interpret these findings are not idiosyncrasies of the literature on the effects of siblings' gender, but rather reflect both common research practices and the limited data availability at the time. Researchers now have the possibility to draw on large and nationally representative panel studies. For example, Golsteyn and Magnée (2020) made use of data from the British Cohort Study, which provides a representative picture of the British population born around 1970. Mothers rated their children's personality at both age 10 and age 16 on a number of adjectives which could be mapped onto the Big Five personality traits conscientiousness, extraversion, agreeableness, and emotional stability. Based on a sample of 2,868 children, their findings support the social learning theory, showing that boys with younger sisters scored higher on agreeableness (assessed with negatively coded items, such as "destroys belongings", "fights with others", "disobedient"); this pattern held at both ages but was more pronounced at age 16.

Apart from effects of siblings' gender on attitudes and personality, studies in economics have mainly investigated siblings' gender effects on educational achievement, career choices, and wages. Butcher and Case (1994) investigated the effects on education in three national US surveys. They found that women with one or more sisters receive less education than women who only have brothers, holding the number of siblings constant. However, the authors also raised potential issues with the interpretation of these differences if parents have preferences over the gender composition of their children. For example, parents who prefer daughters may be more likely to stop having children after they had a girl, meaning that these daughters are less likely to have a sister. These families may also be more likely to invest more resources into their daughter's education. Such behavior could induce spurious associations between siblings' gender and educational outcomes when analyses condition on the number of siblings—an issue that questions whether the estimates reported in the literature on sibling gender can be interpreted as causal effects.

More recently, researchers in economics have established a way to identify causal effects of sibling gender—by focusing on the gender of the next younger sibling. Parents' decision to have another child likely depends on the gender, but also on the personality of their current children (Jokela, 2010). Thus, the ultimate sibling composition is not random. As a result, differences between people with a brother and people with a sister may exist even in the absence of causal effects of siblings' gender. But once parents decided to have another child, the gender of that next younger sibling is essentially random (Brenøe, 2021; Cools & Patacchini, 2019; Peter, Lundborg, Mikkelsen, & Webbink, 2018). This results in a natural experiment that allows for the estimation of causal effects of the next younger sibling's gender: differences between people with a next younger sister and people with a next younger brother can be attributed to the next younger sibling's gender.

Using this approach, Cools and Patacchini (2019) reported a "brother earnings penalty" in data from the US. Women with a younger brother earned about 7% less than women with a younger sister. Brenøe (2021) used Danish administrative data to uncover a potential mechanism underlying this earnings penalty: traditional gender roles. Women with a younger brother were more likely to choose traditionally female occupations, and their wages dropped more drastically when entering motherhood than women with a younger sister. These studies provide convincing, albeit indirect evidence for one form of sibling differentiation: women with brothers seem to take more "traditional" paths through life.

In this study, we combine the focus on causal identification from economics with the rich data sources available to modern researchers to settle the question whether siblings' gender

has lasting effects on personality. We analyze a broad range of common personality measures across 12 representative surveys covering 9 countries (Australia, China, Germany, Indonesia, Mexico, the Netherlands, Switzerland, the United Kingdom, and the United States). The resulting sample size of 85,887 people allows us to detect even very small effects of siblings' gender on adult personality.

Among both men and women, social learning predicts that sisters (as opposed to brothers) lead to more typically female characteristics, while sibling differentiation predicts that sisters lead to more typically male characteristics. But the dynamics the theories imply may play out differently for men and women (e.g., one theory may apply to women and the other one to men), which is why we conducted analyses separately for men and women.

Following the model of studies from economics, our central analyses focused on the effects of the gender of the next younger sibling, which results in estimates that can be interpreted as causal effects. Because these estimates only address a narrow research question, we additionally investigated associations between personality and the gender of the next older sibling. Furthermore, going beyond consecutive siblings, we also probed for potential dose-response relationships—testing whether the total number of sisters (vs. brothers) within the sibship is associated with personality. The estimates from these additional analyses may not correspond to the causal effect of interest, but they help us provide a more comprehensive picture of the relationships between siblings' gender and personality.

Method

Data

To estimate the effect of siblings' gender on personality, we searched for representative surveys that (1) would allow us to identify the respondents' sibling gender composition, (2) included at least two of the personality measures we considered, and (3) had large sample sizes. Based on these criteria, we compiled a dataset including data from 12 surveys (Table 1). Our final sample consists of 85,887 people; 55,203 of them have a younger sibling, 50,909 have an older sibling, and 20,225 have both. The survey respondents are on average 33 years old and 52% are female. Detailed acknowledgments for each of the surveys, including the data versions and waves included in our analyses, can be found in the Supplemental Material.

Table 1

Surveys Included in Our Analyses

Country	Name	Abbreviation	Reference
United States	National Longitudinal Study of Adolescent to Adult Health	AddHealth	Harris & Udry (2014)
	National Longitudinal Survey of Youth 1979	NLSY79	Bureau of Labor Statistics (n.d.-a)
	National Longitudinal Survey of Youth Children and Young Adults 1979	NLSY79CHYA	Bureau of Labor Statistics (n.d.-b)
United Kingdom	United Kingdom Household Longitudinal Study	UKHLS	University of Essex (2019)
	Millenium Cohort Study	MCS	University of London (2017)
Netherlands	Longitudinal Internet Studies for the Social Sciences	LISS	CentERdata (2007)
Germany	Socioeconomic Panel	SOEP	Wagner et al. (2007)
Switzerland	Swiss Household Panel	SHP	SHP Group (2020)
Australia	Household, Income and Labour Dynamics in Australia	HILDA	Department of Social Services (2017)
Mexico	Mexican Family Life Survey	MxFLS	Rubalcava & Teruel (2006, 2008, 2013)
China	China Family Panel Studies	CFPS	Institute of Social Science Survey (2015)
Indonesia	Indonesian Family Life Survey	IFLS	Frankenberg & Karoly (1995), Frankenberg & Thomas (2000), Strauss et al (2004), Strauss et al. (2009), Strauss et al. (2016)

Personality Measures

We considered ten personality dimensions: risk tolerance, trust, patience, the Big Five personality traits (openness to experience, conscientiousness, extraversion, agreeableness, neuroticism), locus of control, as well as a "typical female personality index" (TFP index). We

generated the TFP index using five personality traits for which we observe systematic gender differences. Table S1 shows the number of unique people for whom we observe each personality measure across surveys. We standardized the outcomes within each survey/year combination ($M = 0$, $SD = 1$).

      Individual Measures. Risk tolerance was assessed with a variety of measures ranging from single self-report items (e.g., "I like to take risks", AddHealth) to hypothetical decisions (e.g., "Suppose that you are the only income earner in the family, and that you have to choose between two new jobs…", NLSY79) to simple decision tasks (e.g., selecting a chip color for a bag of possible payments representing risky gambles of varying payments, MXFLS). Risk tolerance was measured in all 12 surveys (see Table S2 for more details).

Trust was assessed with between one (e.g., "Generally speaking, how often can you trust other people?", NLSY79CHYA) to four self-report items (multiple questions about their trust in their village and other people, IFLS). It was measured in ten surveys (see Table S3 for details).

Patience was assessed through either self-reporting (e.g., "On a scale of 0-10, where 0 is never and 10 is always, how patient would you say you are?", MCS) or through the selection of different payment options (e.g., $1,000 now versus $1,500 in a month, MXFLS). It was measured in four surveys (Table S4).

      The Big Five personality traits were assessed with self-report questionnaires including between two and ten items per dimension. It was measured in nine surveys (Table S5).

Locus of control was assessed with self-report questionnaires including between two and ten items (e.g., "I have little control over the things that happen to me/in my life"). It was measured in six surveys (Table S6).

      Typical Female Personality. Both social learning and sibling differentiation suggest effects on the gender-typicality of one's personality. However, when considering personality traits in isolation, gender differences are often small (Del Giudice, Booth, & Irwing, 2012; Hyde, 2005)—as a consequence, chances to detect effects of siblings' gender on gender typicality when considering any particular trait in isolation may be small as well. To provide a fairer test of the idea that siblings' gender affects gender typicality, we constructed a summary index that maximizes personality differences between men and women.

      This *typical female personality* (TFP) index is based on the five traits (risk tolerance, conscientiousness, extraversion, agreeableness, and neuroticism) where we found significant and consistent gender differences across the different surveys. To identify significant gender differences, we regressed each of the five standardized traits separately on a female dummy and a cubic polynomial of the respondents' age (i.e., age, age-squared, age-cubed). We

included only traits for which the gender difference in a given survey is statistically significant at the 5% level (and points in the expected direction) in the calculation of the TFP index. As there were no reliable differences in neuroticism in NLSY79CHYA and HILDA, we excluded neuroticism from the TFP index for these two surveys, and we additionally found no significant gender differences in MXFLS which is why this survey does not have a TFP index. Finally, we weighted the gender differences for these traits in each survey. The index is thus calculated as the gender-difference-weighted average of the observed traits per respondent within a year.

Importantly, this index is not meant to be interpreted as an underlying personality trait ("femininity"). Instead, it is simply an index with the highest weight on traits for which the largest gender differences were observed within the particular surveys. Thus, if siblings' gender indeed leads to more or less gender-typical personalities, this index maximizes the chances of detecting these effects, taking into account that what counts as gender typical may vary by context. The gender difference on the resulting index was 0.39 SD, but it varied between studies from a low of 0.16 (MCS) to a high of 0.79 (LISS) (Figures S5.1 and S5.2).

Data Validation. Due to the large number of heterogeneous and largely brief measures, concerns about their validity naturally arise. Wolfram Ritter, a master's student supervised by Anne Brenøe with assistance from Thomas Dudek, investigated the validity of the nine primary personality dimensions (excluding the TFP index) in 11 of the 12 surveys included in our study; his thesis can be downloaded from http://www.merlin.uzh.ch/publication/show/19495 (Ritter, 2020). NLSY79CHA was added to our investigation after Ritter had finished his thesis. Ritter reviewed the literature on (1) the intercorrelations between different personality dimensions and (2) the correlations between personality and relevant socio-economic and demographic variables, and then assessed which of these correlations could be replicated across the 11 surveys. Any measure employed in a study was deemed "validated" if it replicated at least 70% of the correlations found in the literature. Using this criterion, 63 out of 69 measures were validated. Only risk tolerance in AddHealth and NLSY79; patience in IFLS; and trust in IFLS, SOEP and UKHLS failed to replicate at least 70% of the correlations found in the literature. This criterion is rather conservative, as it is of course possible that the associations between personality and other variables systematically vary between countries.

Sample Restrictions

We limited the sample to respondents aged 10-60 years. The surveys generally excluded younger respondents; given the age requirements for survey participation, it is probable that

they were miscoded. We excluded older respondents, as their inclusion could bias estimates if siblings' gender has effects on longevity (which may be mediated through effects on personality but also through other channels). We also excluded observations with age gaps to the relevant sibling of less than 9 months, as these could result from multiple births (e.g., twins) which would result in different family dynamics. For a similar reason, we also excluded people whose age gaps to their younger or older sibling exceeded six years—those siblings are potentially less likely to spend time with each other and might thus dilute any existing effects of siblings' gender. Our exclusion criteria remove 3,659 people over the age of 60 and 17,976 people who have sibling age gaps exceeding six years from our analyses. We additionally ran analyses without these two restrictions and results were virtually unchanged (see Tables S7.1-S7.3, S8.1-S8.3). In short, sample restrictions did not qualitatively affect our estimates.

We applied additional survey specific sample restrictions during data cleaning (e.g., excluding respondents reporting contradictory birth years, omitting respondents with unclear gender, excluding "siblings" who identify as being in a different relation to the sibling, such as cousins). In general, we did not identify whether siblings were biological as opposed to adopted or step-siblings, thus applying an inclusive definition of the term.

Statistical Analysis

We estimated the effect of having a younger sister (as opposed to a younger brother) for those who have a younger sibling (between 9,205 and 23,548 people depending on the trait and the respondents' gender, see Table S7) with the following empirical model:

$$Personality_{it} = \beta \, younger \, sister_i + \gamma' X_{it} + u_{it} , \qquad (1)$$

where $Personality_{it}$ is the personality trait of person i at time t; $younger \, sister_i$ is a dummy variable equaling 1 if the next younger sibling is female and 0 if the next younger sibling is male; X_{it} is a vector of control variables. These controls were added to account for the nested nature of the data (i.e., multiple surveys and multiple survey waves), and to increase the precision of the estimation. Importantly, we did not include any controls that could be influenced by personality or the sibling's gender, meaning that these controls cannot induce any bias. We additionally report a robustness check without controls (Table S11). Controls included dummy variables for each combination of survey and wave (i.e., survey-wave fixed effects), as well as person i's family composition (*prior* to the birth of the next younger sibling). Family composition represents all possible unique combinations of birth order (1st born, 2nd

born, 3rd+ born), birth spacing to the next younger sibling (spacing <=2 years, spacing >2 years), and older siblings' gender (no older brothers or sisters, 1+ older sister & no older brother, 1+ older brother & no older sister, 1+ older sister & 1+ older brother). This model specification allows us to compare, for example, the risk tolerance of people with a next younger sister with those with a next younger brother, among those who took the same survey in the same wave, who have the same birth order, the same age spacing to their next younger sibling, and the same constellation of older siblings.

Additionally, X_{it} includes cubic polynomials of person i's own age, cubic polynomials of the mother's and father's age at birth of person i, as well as dummy variables indicating whether the mother's or father's age was missing. We imputed mother's and father's age if values were missing or implausible (less than 10 years for mothers, less than 12 years for fathers) by taking the average age of those mothers and fathers whose ages we observed in a given survey and a given year. u_{it} is the error term.

Because we include personality measures of the same person in multiple years, we cluster our standard errors at the individual level (see Huang, 2016, for more on this alternative to multilevel modeling). Our parameter of interest is β, which represents the causal effect of the next younger sibling being female (instead of male) on the next older sibling's traits.

Our empirical model for estimating the relationship between older siblings' gender and one's personality for those who have an older sibling (between 8,544 and 22,065 people depending on the trait and the respondents' gender, see Table S8) is analogous to the one estimating causal effects of siblings' gender shown above:

$$Personality_{it} = \alpha\ older\ sister_i\ +\ \mu'\boldsymbol{Z}_{it}\ +\ \varepsilon_{it}\ , \tag{2}$$

where $Personality_{it}$ is the personality trait of person i at time t, $older\ sister_i$ is a dummy variable equaling 1 if the next older sibling is female and 0 if the next older sibling is male; $\boldsymbol{Z}_{it}$ is a vector of control variables. These controls again include survey-wave fixed effects, as well as family composition. Family composition represents all combinations of birth order and birth spacing to the next older sibling (see above); however, this specification does not include controls for older siblings' gender, which would be collinear with $older\ sister_i$. As above, $\boldsymbol{Z}_{it}$ includes cubic polynomials of person i's own age, as well as mother's and father's (imputed) age at birth, and dummy variables indicating whether mother's and father's age was missing.

Analyses of the effects of the gender of the next younger or next older sibling rely on certain identifying assumptions. For the effects of the gender of the next younger sibling, we have to assume that people with a younger brother and those with a younger sister do not differ

systematically in variables that are determined prior to sibling gender and that may affect personality (i.e., no confounders between sibling gender and personality). Likewise, for the effects of the gender of the next older sibling, we have to assume that people with an older brother do not systematically differ from people with an older sister. These assumptions could be violated, for example, if there are differential survival rates or sex-selective abortions. To check the plausibility of our assumptions, we ran a number of balance checks, which confirmed that the compared groups (e.g., women with younger sisters vs. women with younger brothers) had similar pre-determined characteristics. Detailed results are reported in the Supplemental Material.

Robustness Checks and Analysis of Heterogeneity

For our central analyses of the effect of the gender of the next younger sibling, we ran a number of robustness checks and furthermore analyzed heterogeneity along a number of dimensions. Specifically, we tested whether the results changed if we did not control for any variables (Table S11); we tested whether limiting analyses to firstborns changed the results (Table S12); we limited the sample to firstborns with exactly one younger sibling (Table S13); we included controls for the total number of siblings, which is questionable from a causal inference perspective (Table S14); we reran analyses excluding data from three surveys in which we saw small gender imbalances (UKHLS, HILDA, MXFLS) or have concerns about sex-selective abortion (CFPS) (Table S15). We also investigated whether the effects of siblings' gender varied by year of birth, age of personality assessment, birth order position, or birth spacing. Detailed reports can be found in the Supplemental Material.

Investigating Dose-Response Relationships

The effects of sibling gender may "add up" across the whole sibship, in which case it may be instructive to look at the total number of sisters for people with the same total number of siblings, regardless of age. These comparisons do not necessarily identify the causal effect of having sisters (as opposed to brothers), but they help to fully describe any correlation between sibling gender and personality. For this purpose, we plotted mean personality scores against the total number of sisters separately for people with one, two, three or four siblings in total (Figure S16).

Results

Across all surveys, we found that the gender of the next younger sibling has no meaningful effects on women's or men's personality (risk tolerance, trust, patience, openness to experience, conscientiousness, extraversion, agreeableness, neuroticism, locus of control, and our index of typical female personality, see Figure 1). All point estimates were statistically insignificant and lay within a narrow range between -0.03 and 0.02 *SD*. Furthermore, 95% confidence intervals allowed us to rule out effect sizes larger than 0.08 *SD* in absolute terms. The use of our combined measure of typical female personality allowed us to test the two competing theoretical predictions (social learning and sibling differentiation), and we were able to rule out effects larger than 0.04 *SD*. For comparison, studies on birth order effects on cognitive ability in Western countries have reported declines more than twice as large in magnitude from firstborns to laterborns (e.g., Rohrer et al., 2015), and these effects are conventionally interpreted as small.

Some simple back of the envelope calculations considering potential downstream consequences may also help put the magnitude of these findings into perspective. Almlund et al. (2011) report that a one *SD* increase in locus of control is associated with an up to 6.8 percentage point increase in the probability of graduating from high school. If we assume that this estimate represents a causal effect and naively combine it with an effect of sibling gender on locus of control of 0.03 *SD* for women (the upper, more extreme boundary of the 95% confidence interval in our analyses, Table S7), we conclude that, for women, having a younger sister (as opposed to a younger brother) leads to a 0.20 percentage point increase in the probability of graduation mediated via locus of control. To take another example in which we assume an extreme effect of personality on an outcome, Soto (2019) reports a correlation of .45 between extraversion and leadership. If we assume that this correlation can be fully attributed to a causal effect of 0.45 *SD* in leadership per *SD* of extraversion, and combine it with an effect of sibling gender on extraversion of -0.04 SD for either men or women (the lower, more extreme boundary of both corresponding 95% confidence intervals, Table S7), we would conclude that having a younger sister (as opposed to a younger brother) leads to a change of -0.02 *SD* in leadership mediated via extraversion. Thus, even assuming that personality is highly consequential, the possible effects of sibling gender on personality that our estimates suggest would have fairly small consequences.

Figure 1

Effect of Having a Next Younger Sister (as Opposed to a Next Younger Brother) on the Older Sibling's Personality
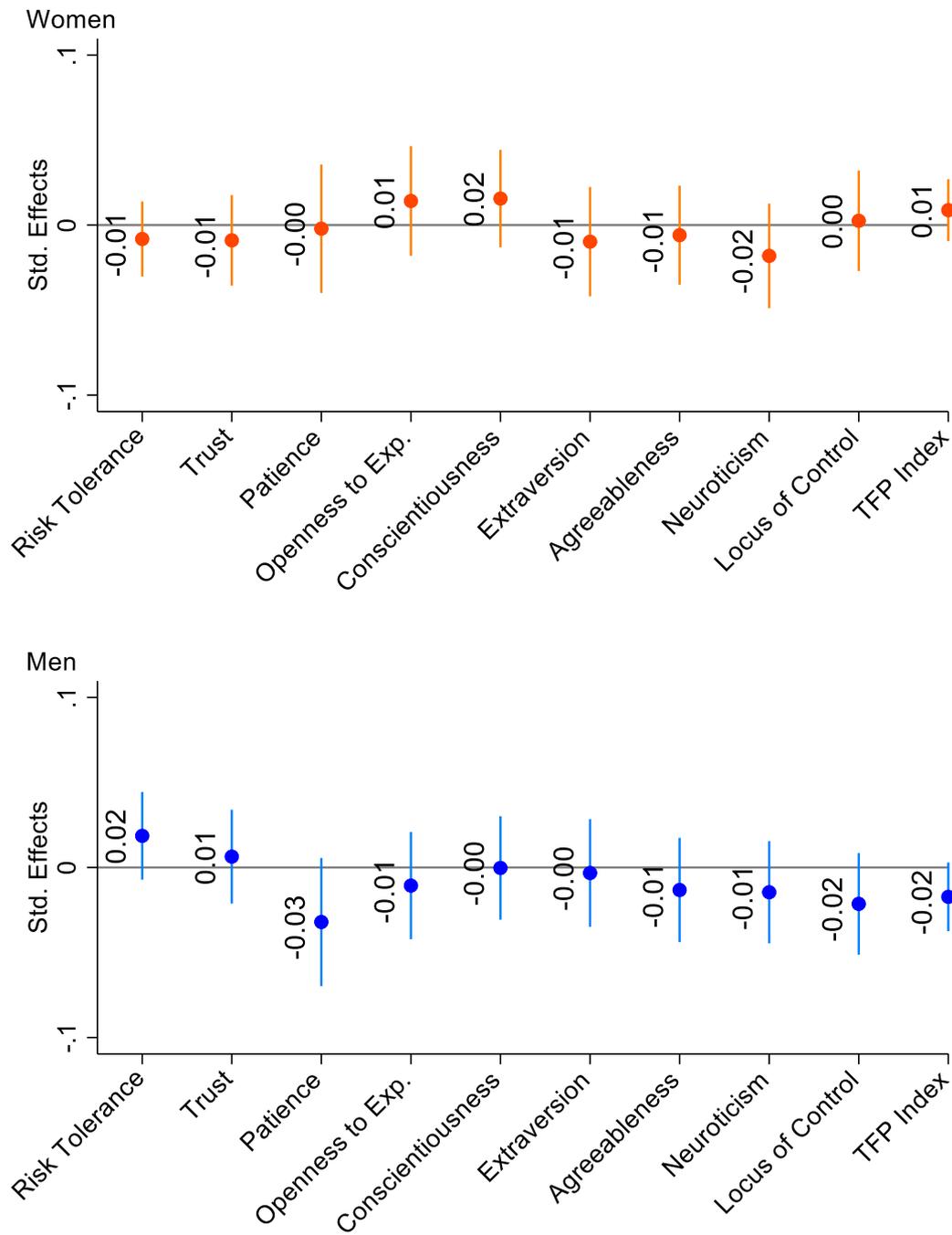
Note. Error bars indicate 95% confidence intervals based on standard errors clustered at the individual level. For underlying regression estimates, see Table S7.

The overall pattern survived all robustness checks and all differences in point estimates were small. We found no meaningful heterogeneity by year of birth (Figures S8-S9), age (Figures S10-S11), birth order position (Figures S12-S13), or birth spacing (Fig. S14-S15).

Combining all 12 surveys may hide important differences between different cultural settings. We thus re-ran analyses for each survey separately. Figure 2 and Figure 3 show no systematic heterogeneity across surveys. As expected by chance alone when estimating 174 separate regressions, some estimates were statistically significant when considered in isolation. However, none of these estimates reached a more stringent cut-off of $p < .005$, which has been recommended as a safeguard against high rates of false positive findings in the literature (Benjamin et al., 2018). We additionally checked whether any single study was statistically significant for any particular construct when accepting a false discovery rate of .05 (Benjamini & Hochberg, 1995). This was not the case (see OSF for implementation of the procedure).

Figure 2

Effect of Having a Next Younger Sister on Women's Personality by Survey.
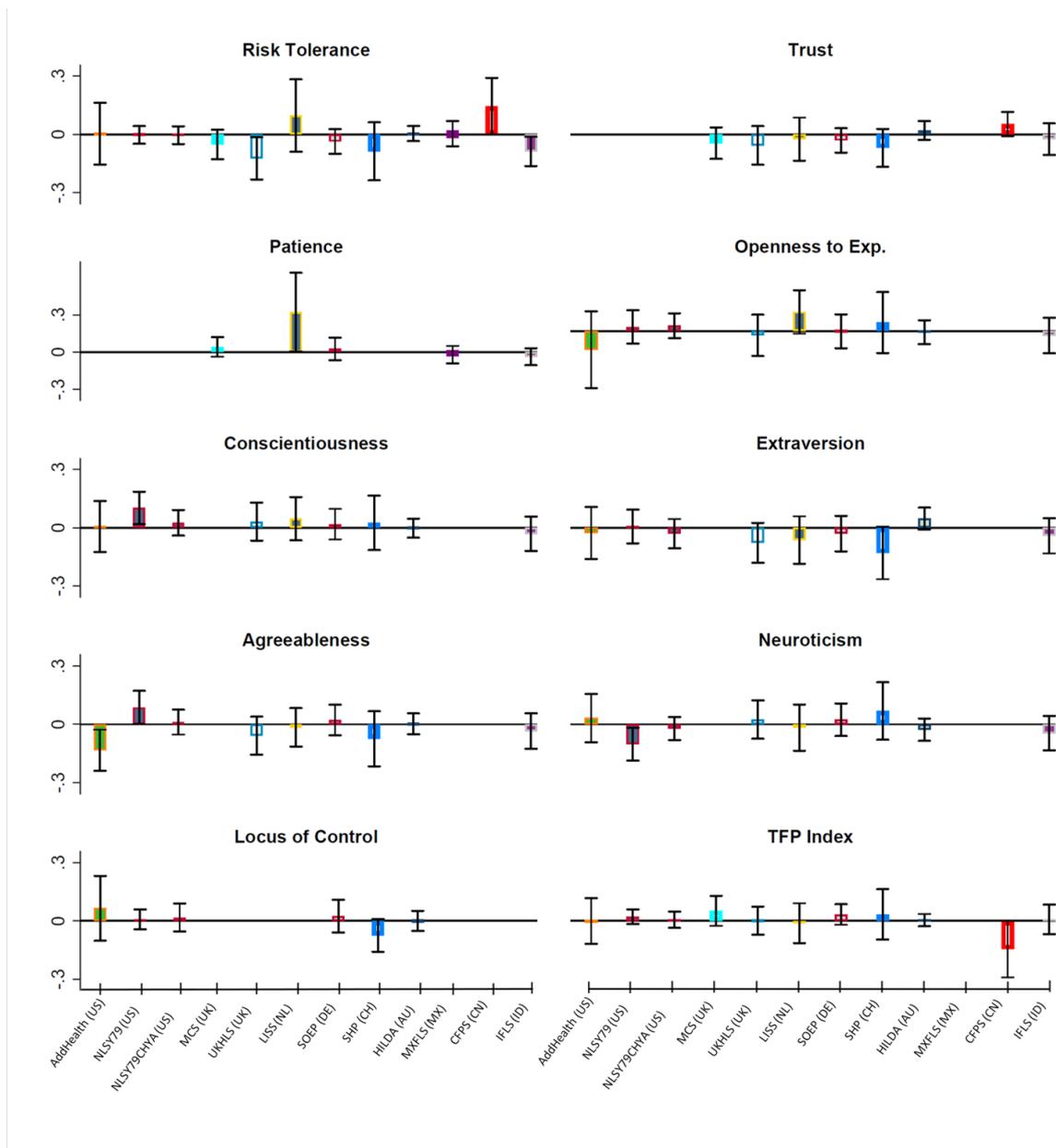
Note. Error bars indicate 95% confidence intervals based on standard errors clustered at the individual level. For underlying regression estimates, see Tables S9.01-S9.10.

Figure 3

Effect of Having a Next Younger Sister on Men's Personality by Survey.
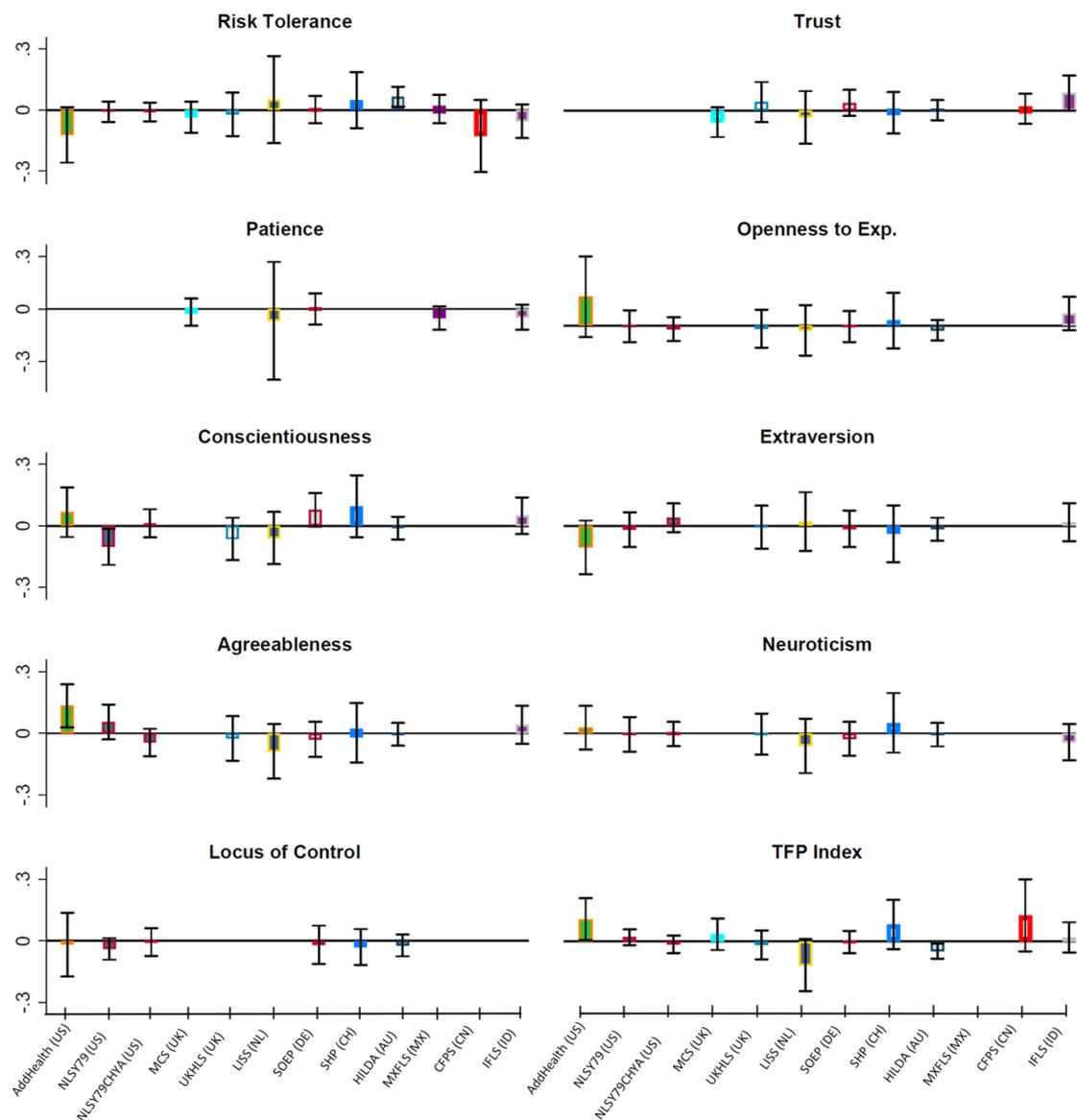
Note. Error bars indicate 95% confidence intervals based on standard errors clustered at the individual level. For underlying regression estimates, see Tables S10.01-S10.10.

Considering the gender of the next older sibling, we found no meaningful correlations with personality (Figure 4). Point estimates ranged from -0.05 *SD* to +0.04 *SD*, and none of them were statistically significant; 95% confidence intervals allowed us to rule out effect sizes larger than 0.12 *SD* in absolute terms. Considering the combined measure of typical female personality, we were able to rule out effects larger than 0.05 *SD* in absolute terms. The absence of a meaningful correlation was not driven by offsetting correlations in different surveys (see

Figures S6-S7). While it is in principle possible that these correlations might be biased in a manner that hides meaningful causal effects, it is implausible that such a bias would lead to offsetting effects which lead to the null-effects for all ten outcomes across both genders. As we saw little evidence for selection bias, we interpret these results as evidence that the gender of one's older sibling does not have broad and meaningful effects on personality.

Lastly, what if we compare people based on the number of sisters in total (i.e., combining younger and older siblings)? Visual inspection of mean personality scores by the number of sisters, split by total number of siblings, also did not reveal any systematic pattern (see Figure S16).

Figure 4

Correlation Between the Next Older Sibling Being a Sister and the Younger Sibling's Personality
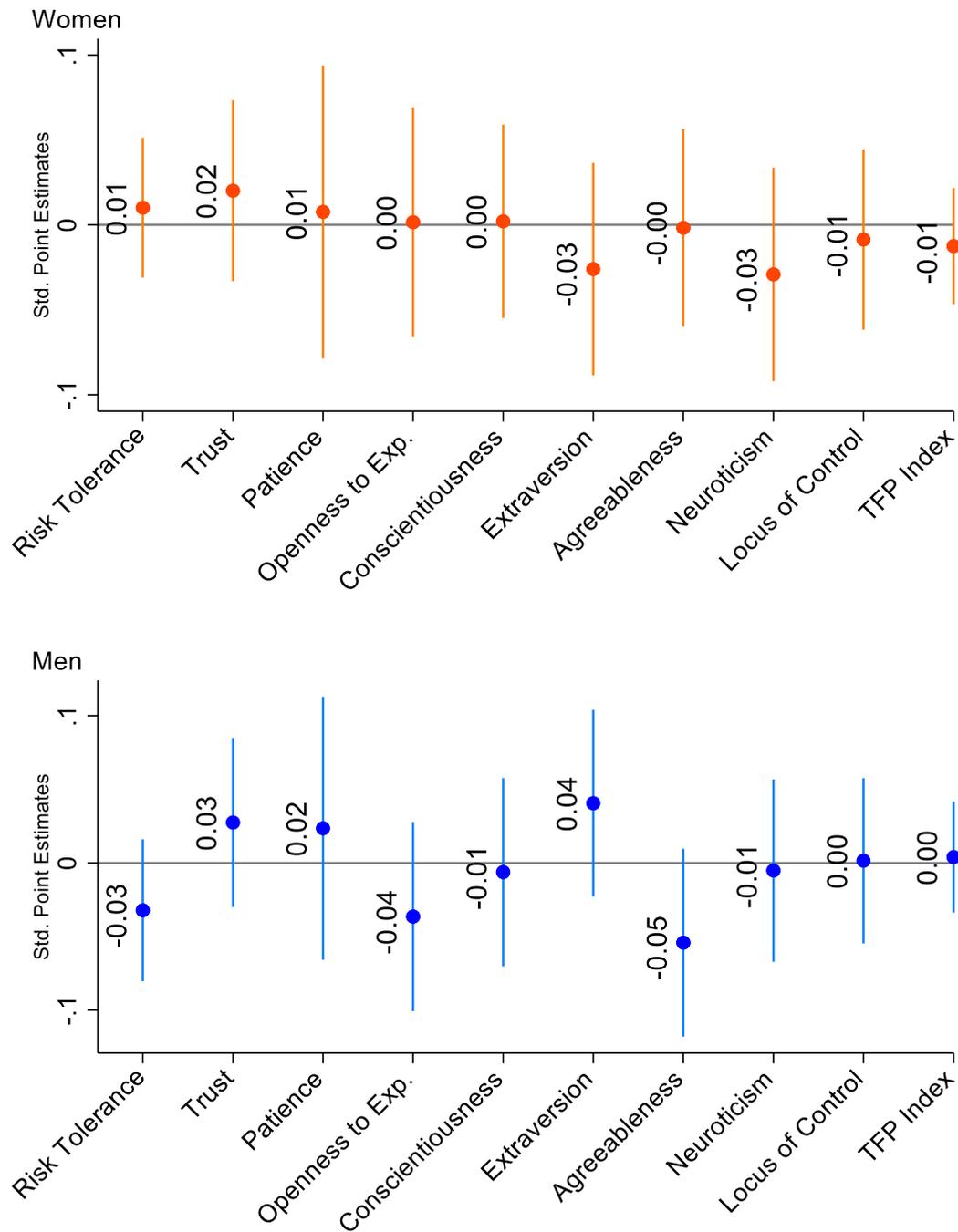

Note. Error bars indicate 95% confidence intervals based on standard errors clustered at the individual level. For underlying regression estimates, see Table S8.

Discussion

Overall, we conclude that siblings' gender does not meaningfully affect personality. While data came from only nine countries (with a predominance on Western countries), the consistently small associations challenge the notion that any type of universal, gendered sibship dynamics affect personality. This conclusion also aligns with recent findings suggesting that one's ordinal position among siblings does not meaningfully affect personality (Botzet et al., 2020; Damian & Roberts, 2015a; Lejarraga et al., 2019; Rohrer et al., 2015; Rohrer et al., 2017). Of course, it is possible that the effects of siblings' gender and birth-order position are even more subtle and thus not detectable even when investigating very large samples. This interpretation would align with recent suggestions that environmental influences, just like genetic influences, may be driven by thousands of factors, each with *very* small effect sizes (von Stumm & d'Apice, 2021). However, taking findings from behavioral genetics into account, it seems like these environmental causes are more likely to be found outside of the family environment (Vukasović & Bratko, 2015; Briley & Tucker-Drob, 2014).

It is also possible that the proposed mechanisms of both social learning and sibling differentiation theory apply in varying degrees in different families, resulting in average effects that net out at zero, but which may occasionally "show up" in individual studies as significant effects. However, this account does not provide the most parsimonious explanation for discrepancies between our study and the past literature on the topic. Given inconsistent methodologies and small sample sizes, it seems reasonable that at least some of the incoherence can be attributed to publication bias (Ioannidis, 2005), which can result in a "continuous stream of conflicting results" (Damian & Roberts, 2015b). Furthermore, both social learning and sibling differentiation suggest that the effects of siblings' gender are mediated through siblings' personality—but the link between gender and personality is only of medium strength in the first place, even when using an index designed to maximize differences. Thus, large effects of sibling gender may be implausible to begin with.

Lastly, sibling gender may not affect the widely used broad personality measures we investigated, but recent economic research suggests that it *does* affect important life outcomes. Findings suggest that brothers decrease women's labor earnings, and that this may be partly driven by increased traditional family attitudes (Brenøe, 2021; Cools & Patacchini, 2019; Rao & Chatterjee, 2018). Investigating the specific mechanisms behind this brother earnings' penalty—whether they are psychological, sociological, or economic in nature—seems a worthwhile research endeavor. Our findings suggest that personality differences do *not* play a major part in this story.

Open Practice Statement

We analyzed survey data that are not under our direct control; requests to access the data should be directed to the respective data-holding institutions. Analysis scripts are provided at https://osf.io/yznq6/?view_only=da71621bb2524dba9a830556e93b22d8.

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Supplemental Material

Acknowledgment of Included Surveys

AddHealth: National Longitudinal Study of Adolescent to Adult Health (Harris & Udry, 2014). This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu). No direct support was received from grant P01-HD31921 for this analysis. In our analyses, we included waves 1 to 4 of AddHealth V21.

     NLSY79: National Longitudinal Survey of Youth 79 (Bureau of Labor Statistics, 2012). The NLSY79 survey is sponsored and directed by the U.S. Bureau of Labor Statistics and conducted by the Center for Human Resource Research at The Ohio State University. Interviews are conducted by the National Opinion Research Center at the University of Chicago. In our analyses, we included data from the waves 1979 to 2016.

     NLSY79 CH/YA: National Longitudinal Survey of Youth 79 Children and Young Adults (Bureau of Labor Statistics, 2016). The Children of the NLSY79 survey is sponsored and directed by the U.S. Bureau of Labor Statistics and the National Institute for Child Health and Human Development. The survey is managed by the Center for Human Resource Research (CHRR) at The Ohio State University and interviews are conducted by the National Opinion Research Center (NORC) at the University of Chicago. In out analyses, we included data from the waves 2006 to 2016.

     MCS: Millennium Cohort Study (University of London). We are grateful to the Centre for Longitudinal Studies (CLS), UCL Institute of Education, for the use of these data and to the UK Data Service for making them available. However, neither CLS nor the UK Data Service bear any responsibility for the analysis or interpretation of these data. In our analyses, we included data from waves 1 to 6.

     UKHLS: British Household Panel Study/UK Household Longitudinal Study (University of Essex). Understanding Society and BHPS are funded by the Economic and Social Research Council and various Government Departments, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by NatCen Social Research and Kantar Public. The research data are distributed by the UK Data Service. In our analyses, we included data from waves 1 to 7.

     LISS (CentERdata): Longitudinal Internet Studies for the Social sciences. This paper consists of data of the LISS (Longitudinal Internet Studies for the Social sciences) panel administered by CentERdata (Tilburg University, The Netherlands). In our analyses, we included data from the single wave study "Background Variables" from November 2007 to August 2019, data from single wave study "Measuring Higher Order Risk Attitudes of the General Population" from December 2009, and data from the single wave study "Testing Mechanisms for Identifying True Risk Preferences" from February 2012 and November/December 2012.

     SOEP: German Socio-Economic Panel (Wagner et al., 2007). The Socio-Economic Panel (SOEP) data were made available by the German Institute for Economic Research (DIW). In our analyses, we included data from version 35, waves 20 to 35.

     SHP: Swiss Household Panel (SHP Group, 2020). This study was realized using the data collected by the Swiss Household Panel (SHP), which is based at the Swiss Centre of

Expertise in the Social Sciences FORS. The project is financed by the Swiss National Science Foundation. In our analyses, we included data from waves 1 to 18.

HILDA: Household, Income and Labour Dynamics in Australia (Department of Social Services, 2017). This paper uses unit record data from the Household, Income and Labour Dynamics (HILDA), conducted by the Australian Government Department of Social Services (DSS). The findings and views reported in this paper, however, are those of the author[s] and should not be attributed to the Australian Government, DSS, or any of DSS' contractors or partners. In our analyses, we included data from waves 1 to 18.

MXFLS: Mexican Family Life Survey (Rubalcava & Teruel, 2006; 2008; 2013). The MxFLS data were made available by the Iberoamerican University (UIA) and the Center for Economic Research and Teaching (CIDE). In our analyses, we included data from waves 1 to 3.

CFPS: China Family Panel Studies (Institute of Social Science Survey, 2015). The data are from China Family Panel Studies (CFPS), funded by 985 Program of Peking University and carried out by the Institute of Social Science Survey of Peking University. In our analyses, we included data from waves 2010 to 2016.

IFLS: Indonesian Family Life Survey (Frankenberg & Karoly, 1995; Frankenberg & Thomas, 2000; Strauss et al, 2004; Strauss et al., 2009; Strauss et al., 2016). IFLS1 was a collaborative effort of RAND and Lembaga Demografi of the University of Indonesia. IFLS2 was a collaborative effort of RAND, UCLA, and Lembaga Demografi of the University of Indonesia. IFLS3 was a collaborative effort of RAND and the Center for Population and Policy Studies (CPPS) of the University of Gadjah Mada. IFLS4 was conducted by RAND, the center for Population and Policy Studies (CPPS) of the University of Gadjah Mada and Survey Meter. IFLS5 is a collaboration between RAND and Survey Meter. IFLS1 is copyrighted by RAND and Lembaga Demografi. IFLS2 is copyrighted by RAND. In our analyses, we included data from waves 1 to 5.

Detailed Description of Balance Checks

Analyses of the effects of the sex of the next younger or next older sibling rely on certain identifying assumptions. To check the plausibility of these assumptions, we ran a number of balance checks. We will start with balance checks for the sex of the next younger sibling, followed by separate balance checks for the sex of the next older sibling.

To estimate the effect of having a younger sister compared to a younger brother, we rely on the assumption that the next younger sibling's sex is as good as random, which is biologically plausible by design. We tested the plausibility of this assumption in three different ways: by testing balance on pre-determined characteristics (which should be good if younger sibling's sex was random); by looking for evidence of skewed gender ratios (which could, for example, result from differential survival or sex-selective abortions, and which could render younger sibling's sex non-random); and by testing whether we can predict the sex of the next younger sibling (which would be impossible if younger sibling's sex was random). We performed all three balance tests separately for women and men.

First, we investigated how people with a next younger sister differed from those with a next younger brother on seven pre-determined characteristics (i.e., characteristics that were determined before the next younger sibling was born): age, age difference to younger sibling, birth order, number of older sisters, number of older brothers, mother's age and father's age at birth. We estimated average differences on a given pre-determined characteristic between people with a next younger sister compared to a next younger brother with seven bivariate regressions of a *younger sister* dummy variable (1 if the next younger sibling is female, 0 otherwise) on that pre-determined characteristic. All regressions were estimated with observations at the individual level and with heteroscedasticity robust standard errors (which take into account the non-normal residuals resulting from linear regression with a dichotomous outcome). For people whom we observe in multiple years, we used their average age in all survey waves they participated in. We standardized all variables by survey to have means of zero and standard deviations of one over all people in our estimation sample. As can be seen in Figs. S1 and S2 (upper seven estimates), only two coefficients reached statistical significance. Women who had a younger sister were marginally younger (by 0.013 SD) and men who had a younger sister had a marginally lower age difference to their younger sibling (on average by 0.018 SD). All coefficients were tiny, supporting the assumption that the sex of the next younger sibling is as good as random.

Second, we looked for evidence of skewed gender ratios by testing whether people in each survey were significantly more or less likely to have a younger sister. We run 12 bivariate regressions in which we regressed a younger sister dummy variable on indicators for each survey, which allowed us to see whether the gender ratio in any survey is skewed, relative to the other surveys. Any such difference could result from sex selective abortions, but also from different survival rates (and other factors that influence the sex ratio of a population or of a survey). As can be seen in Fig. S1, for the lower twelve estimates, we can find some weak evidence for skewed gender ratios. Women from Mexico (MXFLS) were 2.7 percentage points more likely to have a younger sister. For men, there was potential evidence for skewed gender ratios in two countries, Fig. S2, lower twelve estimates. Men from the UK (UKHLS) were 4.1 percentage points less likely to have a younger sister and men from Australia (HILDA) were 2 percentage points more likely to have a younger sister. Consequently, we excluded these samples in a robustness check described below.

Third, we tested if all our pre-determined characteristics and survey dummies jointly predicted whether the next younger sibling was female or male. For women, these variables were jointly insignificant ($F = 1.391$, $p = .114$). For men, these variables barely reached statistical significance ($F = 1.618$, $p = .040$). In both cases, the variance explained by the

predictors (R^2) was a miniscule, 0.1 percent for women and 0.2 percent for men, indicating that it was essentially impossible to predict the sex of the next younger sibling. Taken together, these three checks support the assumption that the sex of the next younger sibling is as good as random.

As explained in the main text, the sex of the next older sibling is not as plausibly random as the sex of the next younger sibling. Nonetheless, we performed analogous balance checks to assess whether a causal interpretation of the respective correlational findings could be justified. Again, we tested balance on pre-determined characteristics (age, years to next older sibling, birth order, mother's and father's age at birth); whether people were more or less likely to have an older sister; and whether pre-determined characteristics and survey dummies jointly predict the sex of the next older sibling.

Figure S3 and S4 show the results of the first two balance tests. Three tests of pre-determined characteristics were statistically significant: Women who had an older sister were 0.011 SD older and of a 0.014 SD higher birth order; men who had an older sister had a 0.014 SD smaller age gap to their next older sibling and were of a 0.012 SD higher birth order. Furthermore, some of the samples varied with respects to the probability of having an older sister (as opposed to an older brother): women in Germany (SOEP) were 3.2 percentage points less likely to have an older sister and women in China (CFPS) were 3.5 percentage points more likely to have an older sister; men in the U.S. (NLSY79) were 2.8 percentage points more likely to have an older sister; men in the UK (UKHLS) were 8.2 percentage points less likely to have an older sister; and men in IFLS (Indonesia) were 3 percentage points less likely to have an older sister. The F-test for joint significance shows that all pre-determined characteristics and survey dummies in combination predicted the sex of the next older sibling for both women ($F = 2.820$, $p < 0.000$) and men ($F = 3.192$, $p < 0.000$). Nonetheless, the actual variance explained was miniscule ($R^2 = 0.004$ and 0.002, resp.). From this, we conclude that while the randomness of the sex of the next older sibling is not as plausible an assumption as the randomness of the sex of the next younger sibling, any differences we can detect are fairly small and might thus only introduce small biases in our results.

Detailed Descriptions of Robustness Checks and Analysis of Heterogeneity

Apart from the central results reported in Table S7 (effect of younger sibling's sex, across all surveys) and Table S8 (correlation with older sibling's sex, across all surveys), and the survey-wise results reported in Tables S9-S12 as well as Fig. 2-3 and Fig. S5-S6, we also report results for a number of robustness checks. These focus on the effect of the sex of the next younger sibling for two reasons. First, unconditional randomness is not plausible for the sex of the older sibling, so we did not re-run analyses without controls. Second, the causal interpretation of the coefficients of the sex of the next older sibling is more questionable; this would tend to convolute the substantive interpretation of heterogeneity along any dimension.

First, we tested whether results changed if no control variables were included. As can be seen in Table S13, all estimates remained non-significant (p-values>0.05). Second, we tested whether limiting analyses to firstborns changed the picture. Here, see Table S14, out of 20 tests, a single statistically significant finding arose: men with a younger sister scored 0.028 *SD* lower on the TFP index, 95% CI: [-0.054, -0.002]. Third, we limited the sample to firstborns with only exactly one younger sibling. Note that this restriction could induce bias, as the sex of the second child may influence whether a third child is born or not; hence, restricting the sample to families with only two children potentially induces bias (sample restriction based on an endogenous variable, also called collider bias). Results can be found in Table S15; this time, two findings were nominally significant: women with a younger sister scored 0.050 SD lower on risk tolerance (95% CI: [-0.095, 0.005]) and men with a younger sister scored 0.096 SD lower on patience (95% CI: [-0.179, -0.014]). Fourth, we included controls for the total number of siblings. Again, it should be noted that this restriction could induce bias. As can be seen in Table S16, none of the estimates were statistically significant.

As described in the main text, we also ran analyses excluding China, Indonesia, and Australia, out of the suspicion that these samples may be affected by issues skewing the sex ratio. As can be seen in Table S17, a single coefficient was statistically significant: women with a younger sister scored 0.044 SD lower on extraversion (95% CI: [-0.086, -0.002]). Furthermore, we examined the possibility that the effects of younger sibling's sex were masked by heterogeneity. For example, as family dynamics may have changed, it is possible that sibling's sex plays a different role in different cohorts. However, when we split the sample by year of birth into three different cohorts, we found no evidence of systematic changes in the effects, see Fig. S8-S9. Alternatively, the effects might only show in young age and decay over time. However, when we reran analyses for different age groups, no such decay, nor any other systematic age pattern was evident, see Fig. S10-S11. Yet other alternative explanations may hold that the effects depend on birth order position, or on birth spacing. As can be seen in Fig. S12-S15, our data did not support these hypotheses.

In short, our central results are robust to various changes in the model specification. Some single analyses barely reach the nominal level of statistical significance, which is to be expected by chance alone when such many analyses are conducted; none of these indicate a clear pattern of results. Furthermore, our analyses suggest that there is no systematic heterogeneity of the effects of younger sibling's sex. Indeed, most estimates closely clustered around zero.

Supplementary Figures

Figure S1

Balance tests for women, comparing individuals with a younger sister (vs. younger brother). The vertical lines show the 95 percent confidence intervals based on heteroscedasticity robust standard errors.
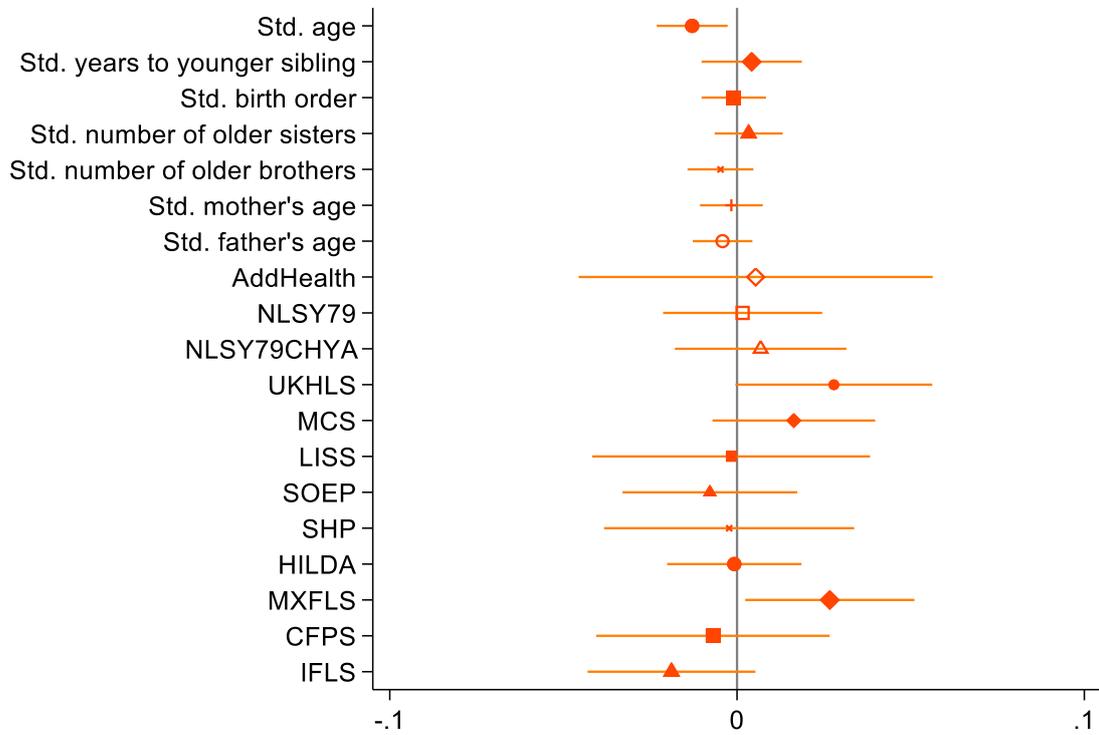
Figure S2

Balance tests for men, comparing individuals with a younger sister (vs. younger brother). The vertical lines show the 95 percent confidence intervals based on heteroscedasticity robust standard errors.
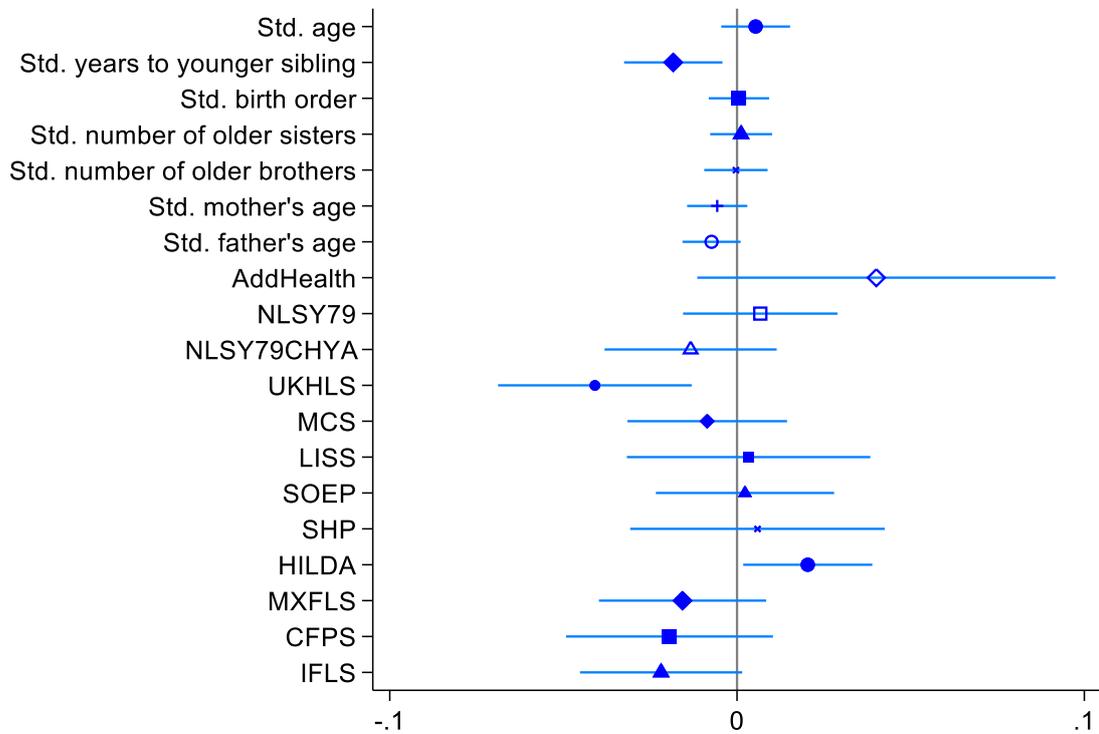
Figure S3

Balance tests for women, comparing individuals with an older sister (vs. older brother). The vertical lines show the 95 percent confidence intervals based on heteroscedasticity robust standard errors.
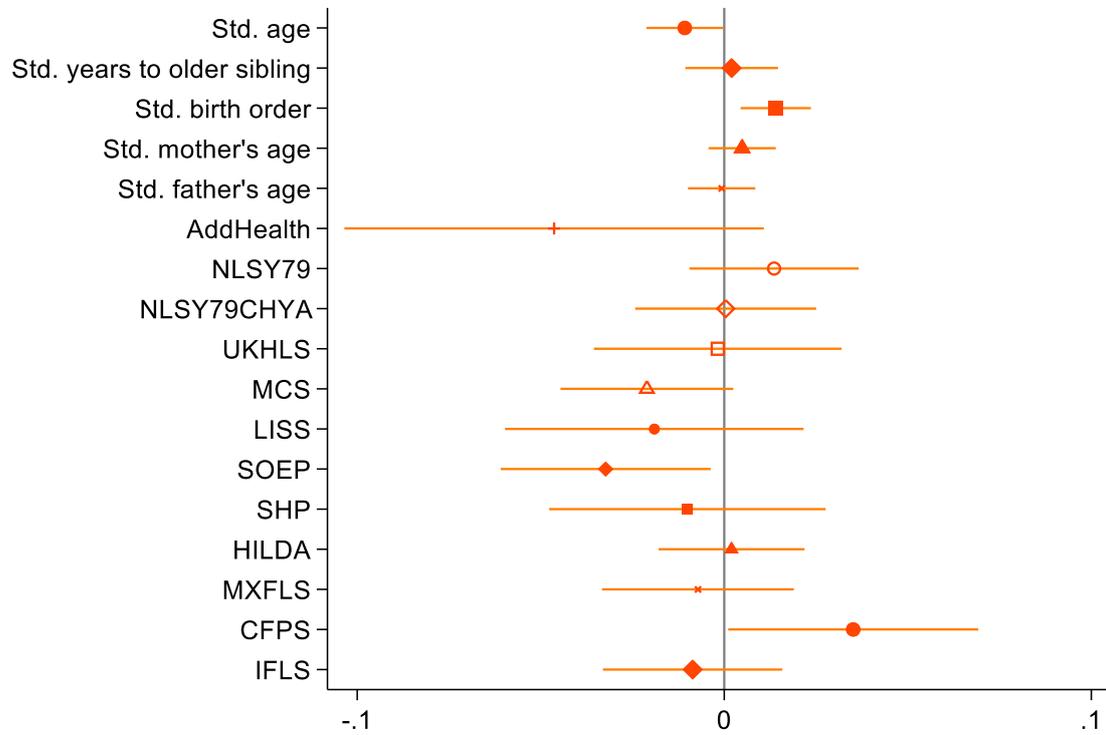
Figure S4

Balance tests for men, comparing individuals with an older sister (vs. older brother). The vertical lines show the 95 percent confidence intervals based on heteroscedasticity robust standard errors.
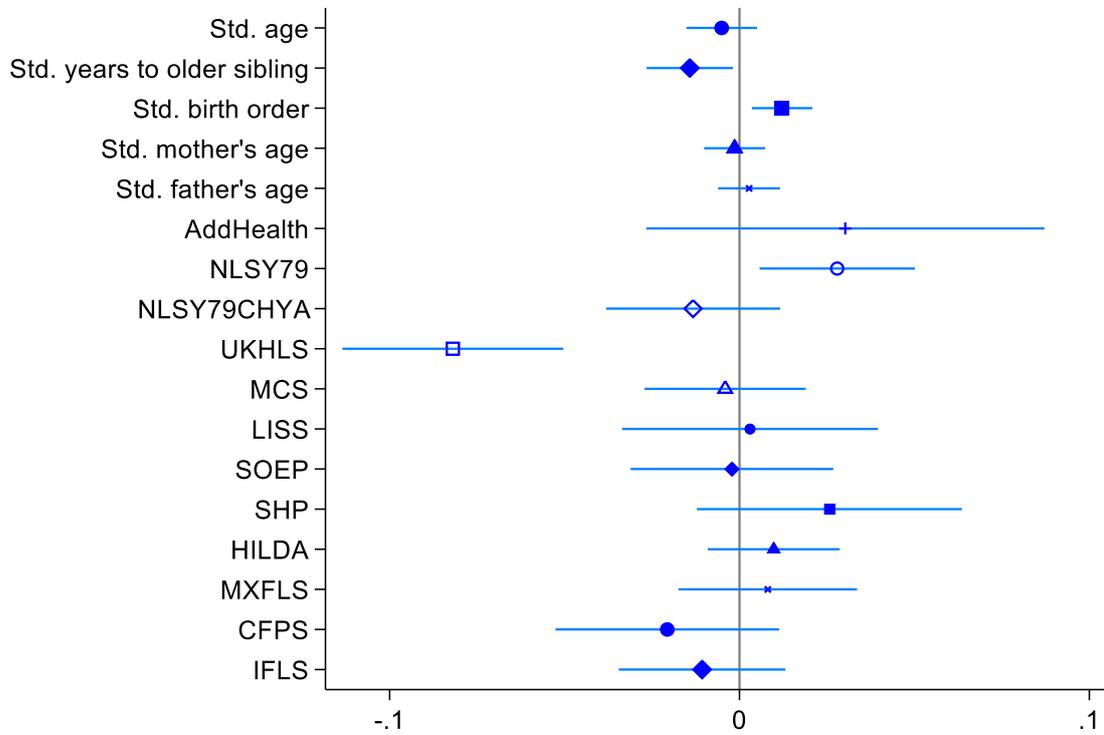
Figure S5.1

Gender differences in personality traits (whole sample)
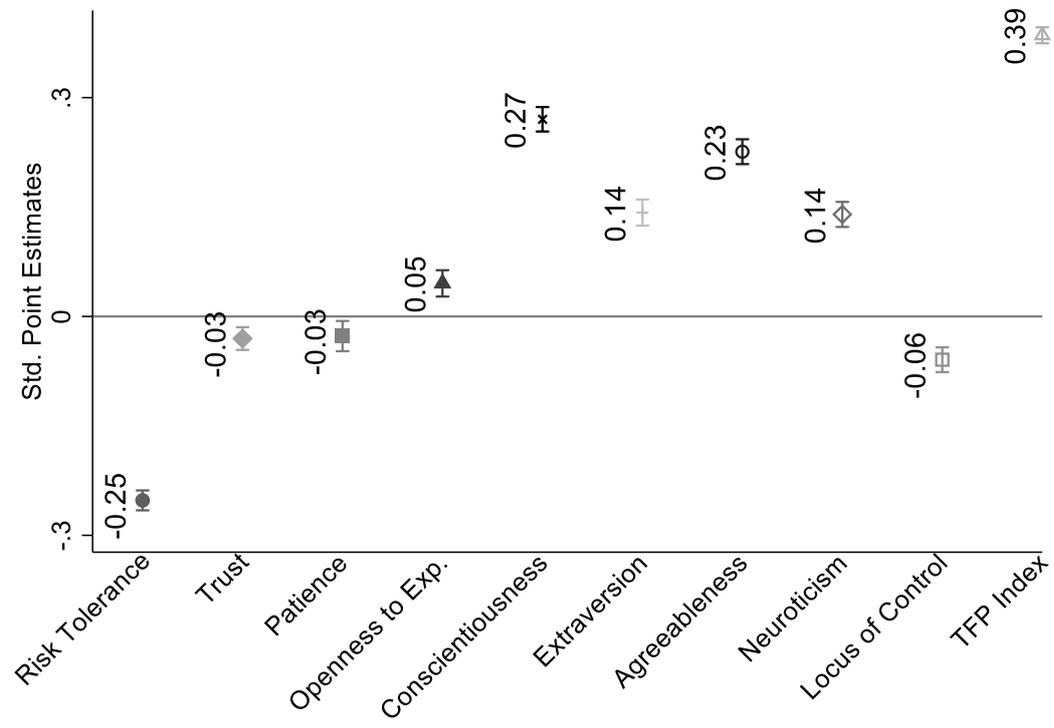
Figure S5.2

TFP index gender differences by survey

Figure S6

Correlation between having a next older sister and women's personality by survey. Error bars indicate 95 percent confidence intervals.
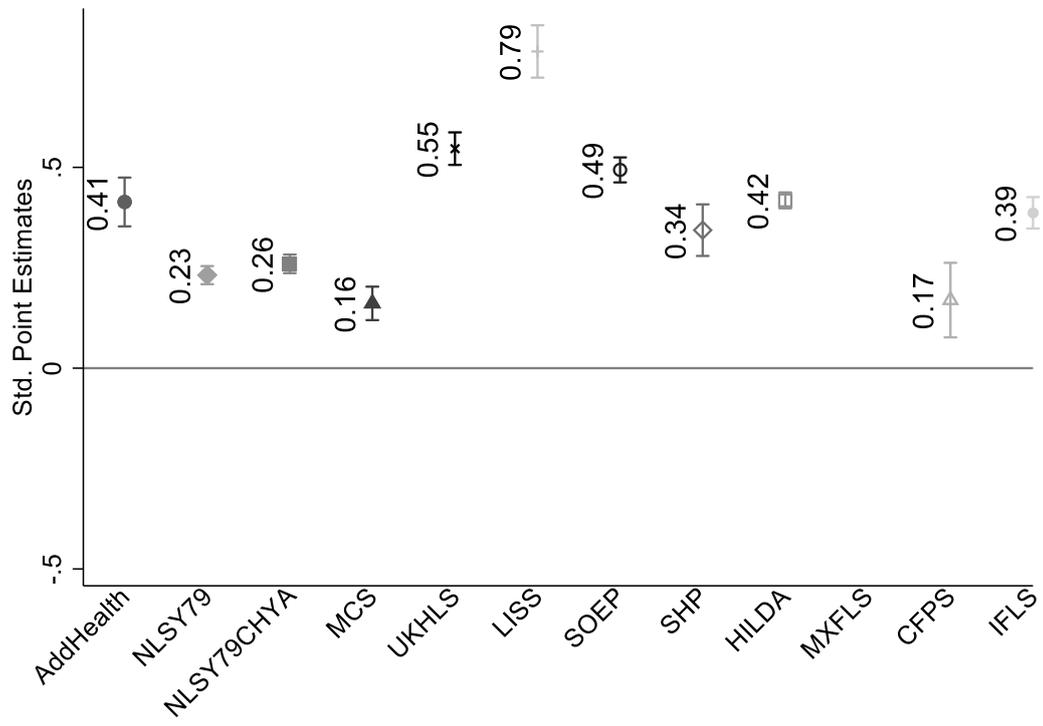
Figure S7

Correlation between having a next older sister and men's personality by survey. Error bars indicate 95 percent confidence intervals.
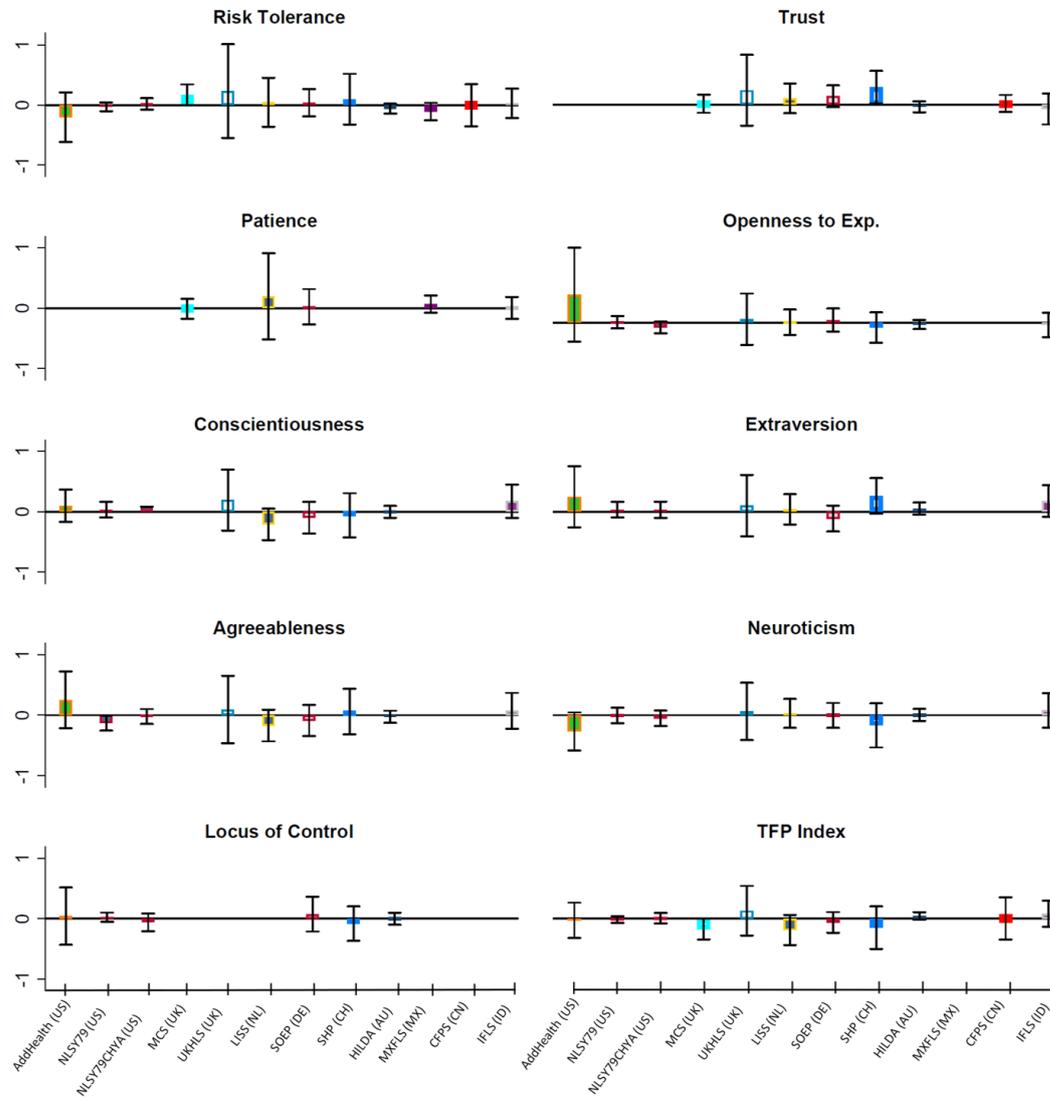
Figure S8

Effect of having a younger sister on women's personality for different birth cohorts. Error bars indicate 95 percent confidence intervals based on standard errors clustered at the individual level.
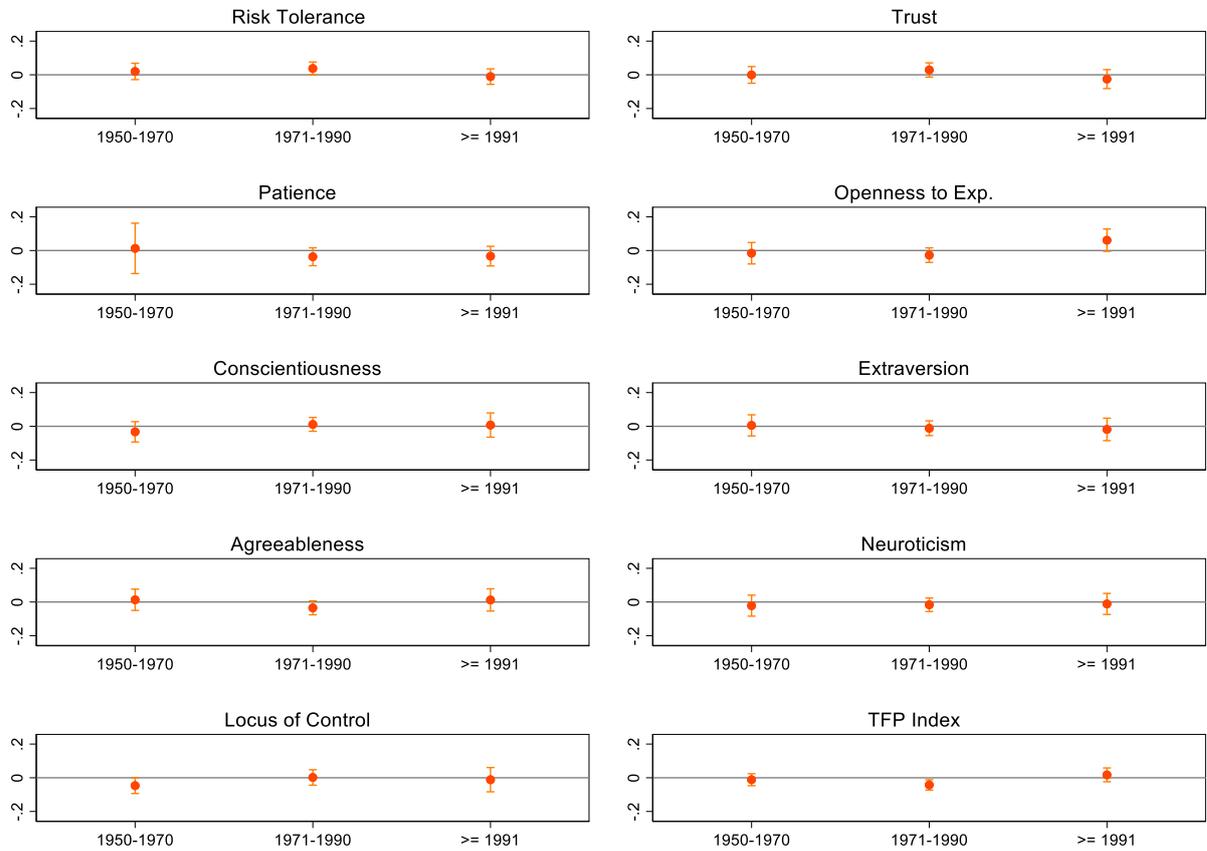
Figure S9

Effect of having a younger sister on men's personality for different birth cohorts. Error bars indicate 95 percent confidence intervals based on standard errors clustered at the individual level.
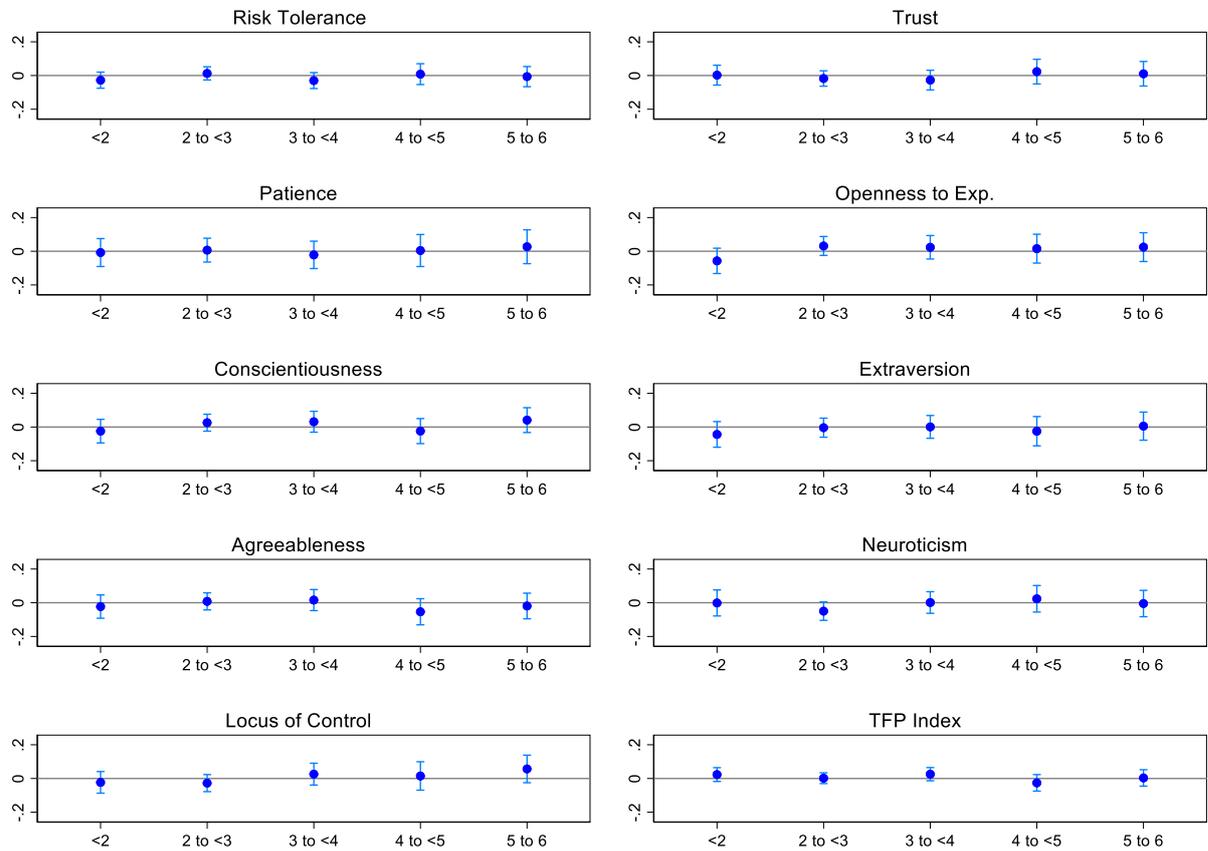
Figure S10

Effect of having a younger sister on women's personality for different age groups. Error bars indicate 95 percent confidence intervals based on standard errors clustered at the individual level.
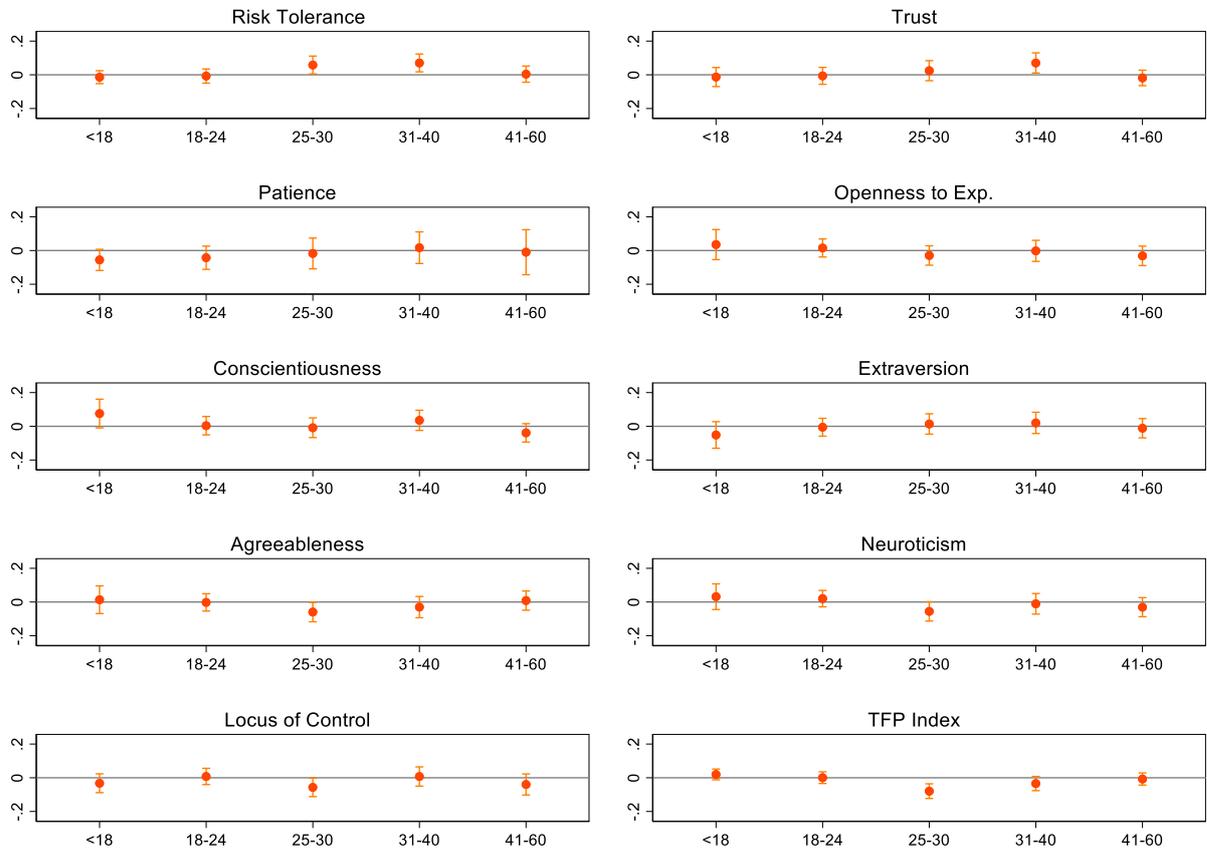
Figure S11

Effect of having a younger sister on men's personality for different age groups. Error bars indicate 95 percent confidence intervals based on standard errors clustered at the individual level.
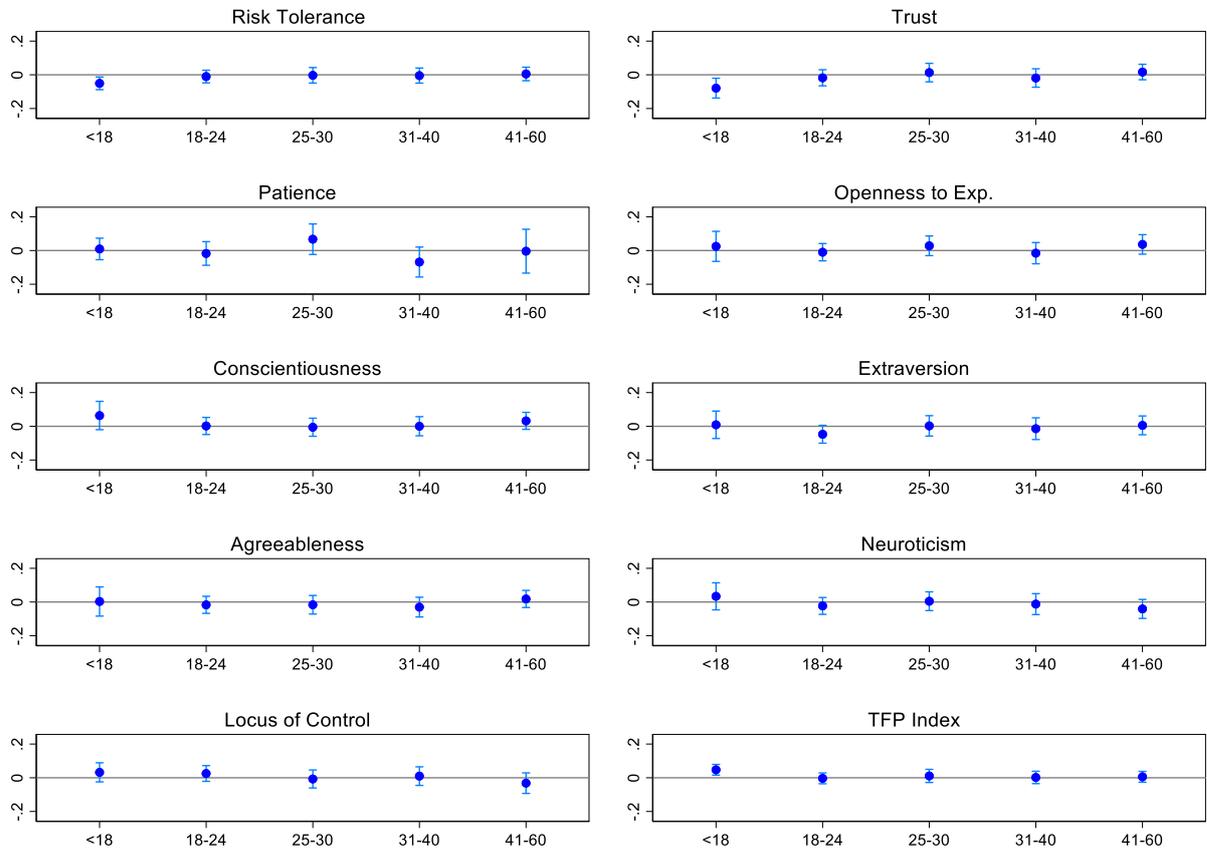
Figure S12

Effect of having a younger sister on women's personality for different birth order positions. Error bars indicate 95 percent confidence intervals based on standard errors clustered at the individual level.
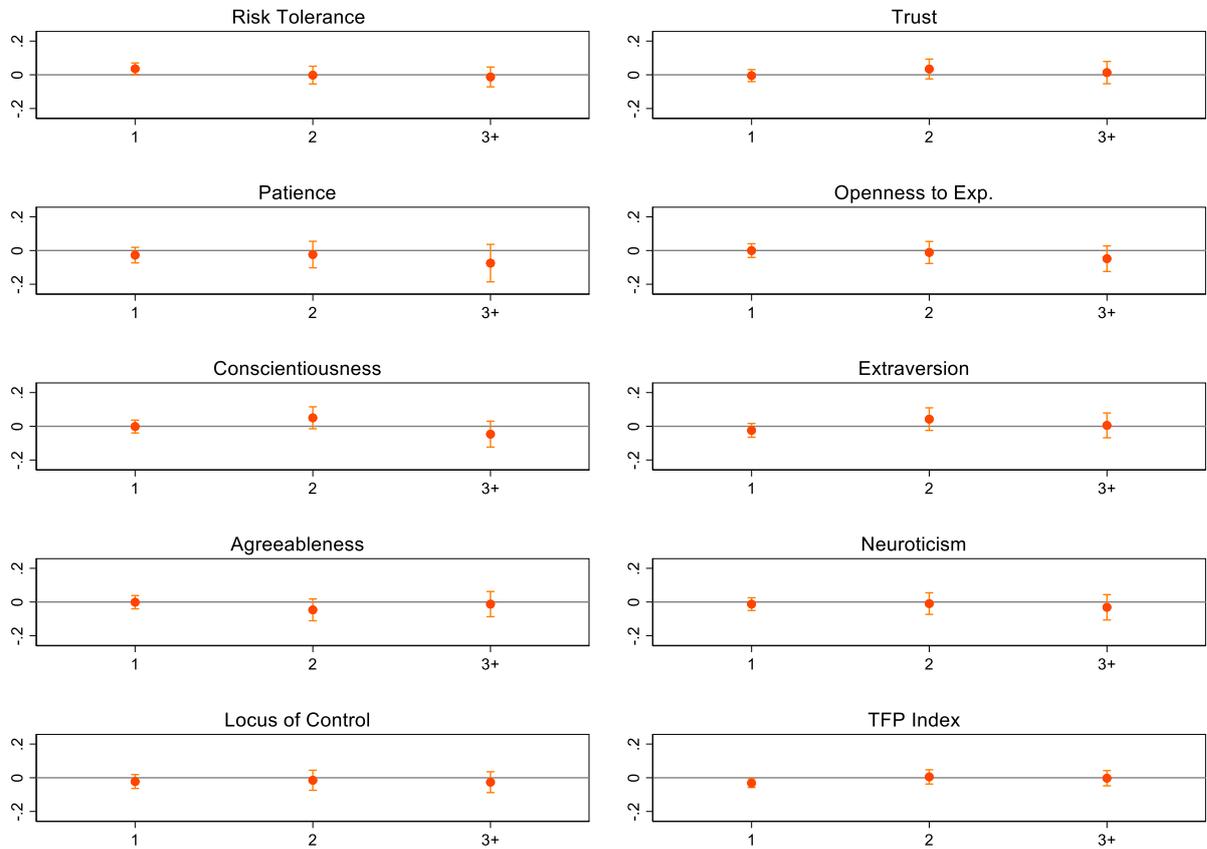
Figure S13

Effect of having a younger sister on men's personality for different birth order positions. Error bars indicate 95 percent confidence intervals based on standard errors clustered at the individual level.
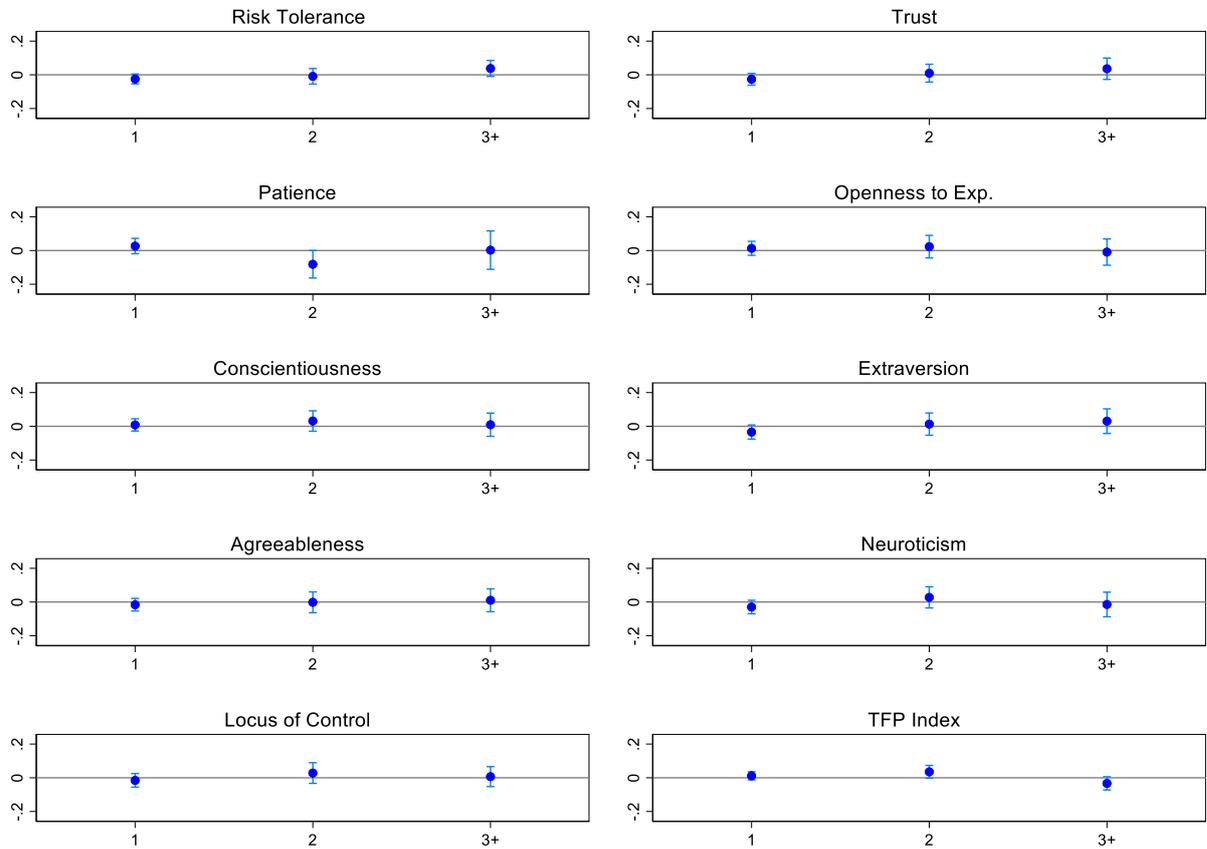
Figure S14

Effect of having a younger sister on women's personality, depending on the birth spacing to the next younger sibling. Error bars indicate 95 percent confidence intervals based on standard errors clustered at the individual level.
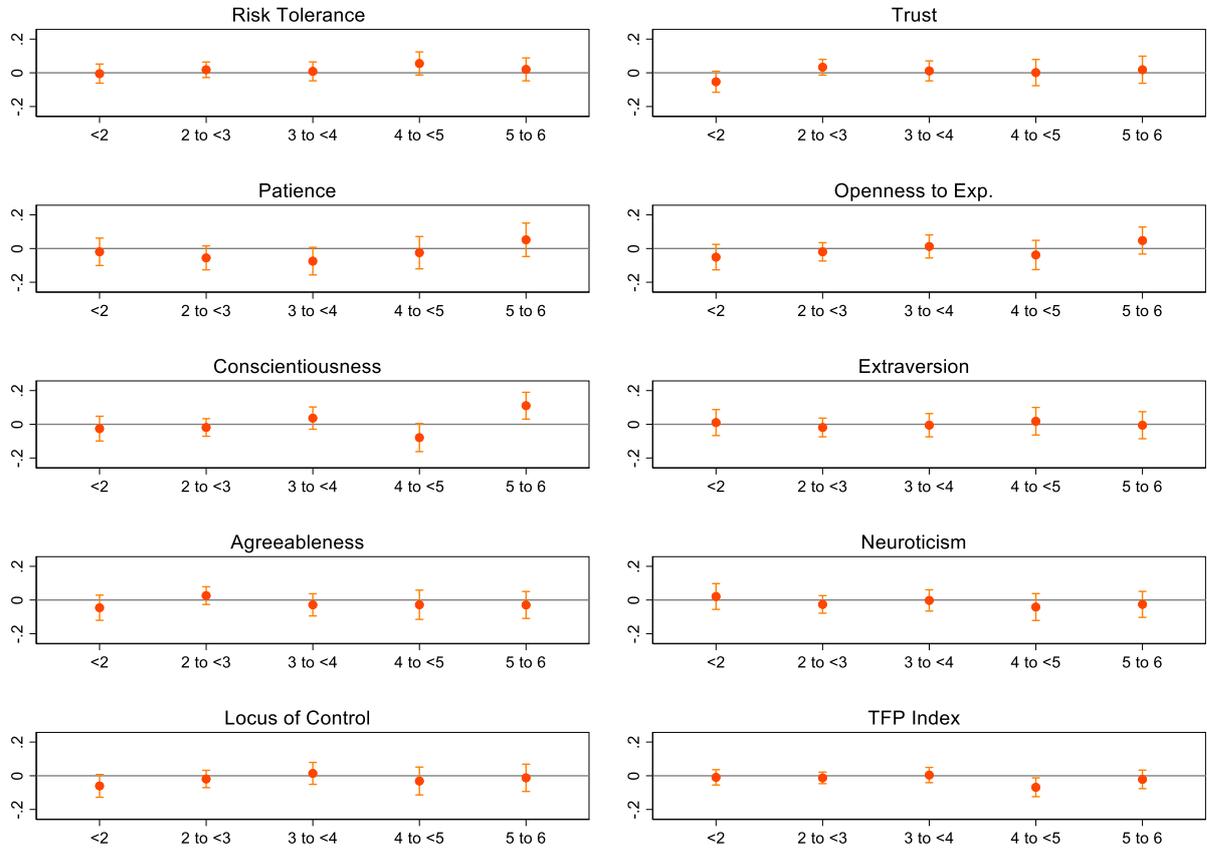
Figure S15

Effect of having a younger sister on men's personality, depending on the birth spacing to the next younger sibling. Error bars indicate 95 percent confidence intervals based on standard errors clustered at the individual level.
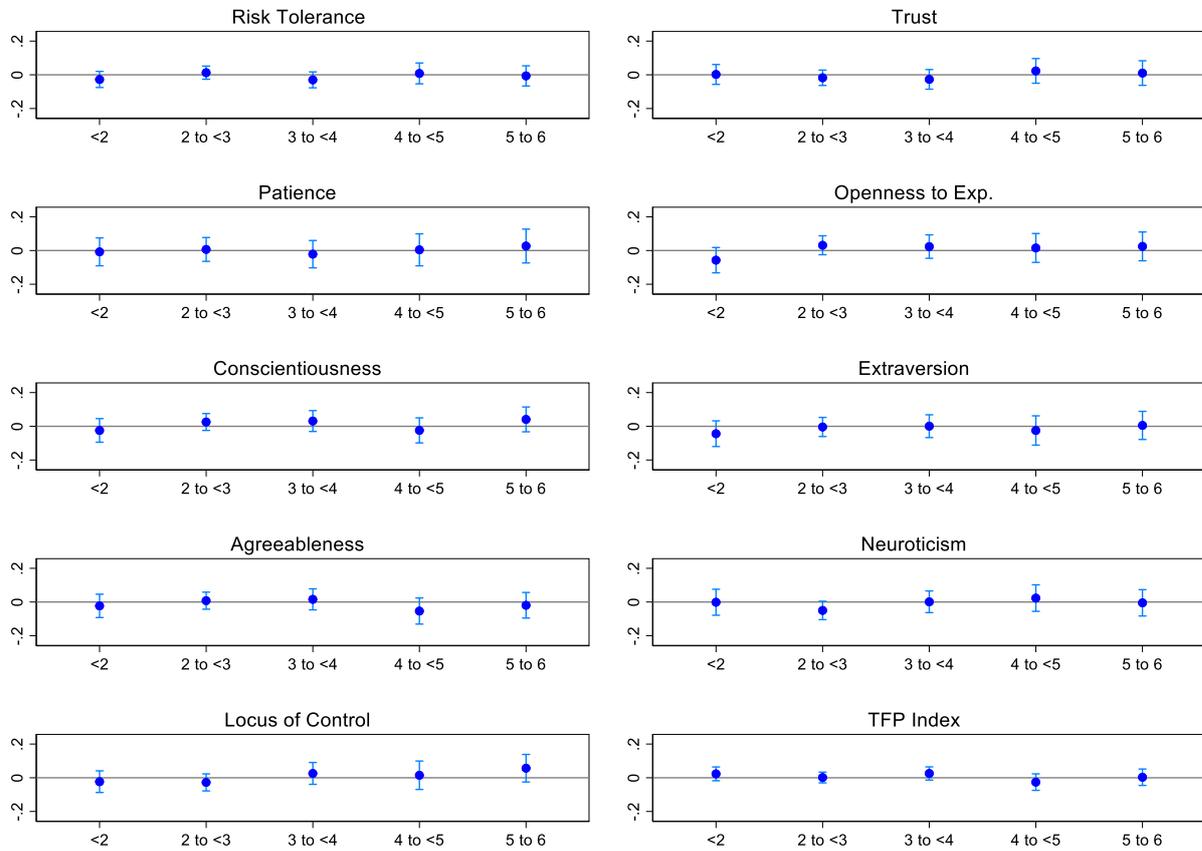
Figure S16

Estimated mean scores and 95% confidence intervals by number of siblings and number of sisters, from regressions with standard errors clustered at the individual level, controlling for survey-year indicators.
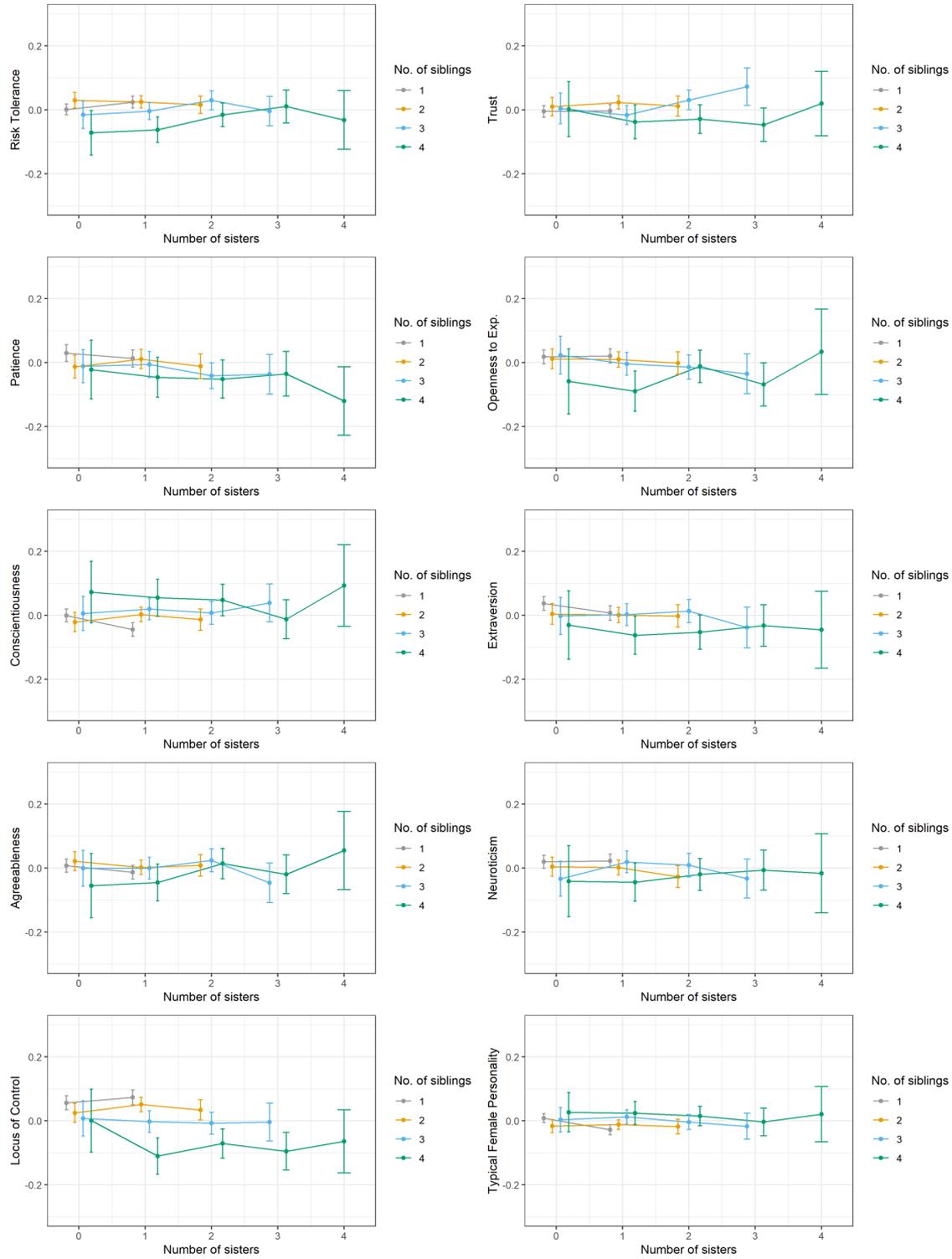
Supplementary Tables

Table S1

Surveys and personality measures included in estimation sample, as well as resulting sample sizes. Distinct people refers to the total number of people per survey who were included in at least one analysis.

(1) Dataset	(2) Risk	(3) Trust	(4) Patience	(5) Opens.	(6) Consc.	(7) Extrav.	(8) Agreeab.	(9) Neurot.	(10) Locus of Control	(11) Typical Female Person.	(12) Distinct people
AddHealth	1,353			1,086	1,420	1,421	1,422	1,422	1,318	1,422	1,422
NLSY79	7,547	6,337		5,911	5,946	5,865	5,842	5,958	7,557	7,547	7,557
NLSY79CHYA	6,872	4,430		6,603	6,606	6,600	6,596	6,606	6,744	6,892	6,895
MCS	8,762	8,817	8,802							8,762	8,839
UKHLS	4,048	4,980		4,571	4,572	4,570	4,572	4,571		6,070	6,663
LISS	1,246	2,934	513	2,936	2,936	2,936	2,936	2,936		2,937	3,335
SOEP	8,675	7,704	5,365	6,264	6,295	6,298	6,299	6,305	5,614	8,802	9,073
SHP	2,975	4,137		1,993	1,993	1,989	1,993	1,993	2,911	3,097	4,137
HILDA	14,919	13,478		13,451	13,447	13,443	13,447	13,441	13,503	15,025	15,089
MXFLS	7,119		7,176							0	7,177
CFPS	1,703	6,935								1,703	7,308
IFLS	7,552	5,686	8,226	6,908	6,908	6,908	6,908	6,908		7,782	8,392
Total	72,771	65,438	30,082	49,723	50,123	50,030	50,015	50,140	37,647	70,039	85,887

Table S2

Measurement of risk tolerance by survey and wave.

Survey	Wave	Question text	Scale
AddHealth	2 – 3	Do you agree or disagree that you like to take risks?	1 – 5
AddHealth	4	I like to take risks	1 – 5
NLSY79	15 – 18	Suppose that you are the only income earner in the family, and you have a good job guaranteed to give you your current (family) income every year for life. You are given the opportunity to take a new and equally good job, with a 50-50 chance that it will double your (family) income and a 50-50 chance that it would cut it by • 20 percent. / a third. / half. Would you take the new job? Yes/No.	1 – 4
NLSY79	24 – 26	Suppose that you are the only income earner in the family, and that you have to choose between two new jobs. The first job would guarantee your current total family income for life. The second job is possibly better paying, but the income is also less certain. There is a 50-50 chance the second job would increase your total lifetime income by 20 percent and a 50-50 chance that is would cut it by • five percent. / 10 percent. / 15 percent. Would you take the first job or the second job?	1 – 4
NLSY79,	24 – 26	How would you rate your willingness to take risks in the following areas? For each situation, rate your willingness from 0 to 10, where 0 means "unwilling to take any risks" and 10 means "fully prepared to take risks." • In financial matters? • In making major life changes?	0 – 10
NLSY79CHYA	5 – 16	I enjoy taking risks.	1 – 4
MCS	6	On a scale of 0-10, where 0 is never and 10 is always, how willing to take risks would you say you are?	0 – 10
UKHLS	18 – 19	Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?	0 – 10
LISS	2009	The computer throws a die virtually and draws a random number from 1 to 6. You get two options from which you can choose (left or right). Please always choose the one you would prefer to be paid. The participant then sees a riskier and less risky option and can choose according to his or her preference. We add up the risky choices to create a discrete scale from 1 to 5.	1 – 5
LISS	2012	How do you see yourself? Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please give a value between 0 and 10, with 0 for 'not at all willing to take risks' and 10 for 'very willing to take risks'.	0 – 10
LISS	2012	How would you rate your willingness to take risks concerning financial matters?	0 – 10
SOEP	21 25 – 35	Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please tick a box on the scale, where the value 0 means: "risk averse" and the value 10 means: "fully prepared to take risks".	0 – 10
SHP	11 – 19	Are you generally a person who is fully prepared to take risk or do you try to avoid taking risks, if 0 means "avoid taking risks" and 10 means "fully prepared to take risk" ?	0 – 10

HILDA		This survey measures risk tolerance in multiple waves. We always take the average of all answers to multiple questions in any single year if multiple measures in a year are available.	
	1 – 17	Which of the following statements comes closest to describing the amount of financial risk that you are willing to take with your spare cash? That is, cash used for savings or investment. The answer choices are: • I take substantial financial risks expecting to earn substantial returns • I take above-average financial risks expecting to earn above-average returns • I take average financial risks expecting to earn average returns • I am not willing to take any financial risks • I never have any spare cash	1 – 4
HILDA	6 – 17	From wave 6 on, the question above had an additional question if someone answered "I never have any spare cash", asking: Assume you had some spare cash that could be used for savings or investment. Which of the following statements comes closest to describing the amount of financial risk that you would be willing to take with this money? With possible answers: • I would take substantial financial risks expecting to earn substantial returns • I would take above-average financial risks expecting to earn above-average returns • I would take average financial risks expecting to earn average returns • I would not be willing to take any financial risks	1 – 4
HILDA	14	Additionally, there is a self-reported willingness to take risks, as follows: Are you generally a person who is willing to take risks or are you unwilling to take risks? Please indicate by crossing one box below. The more willing you are to take risks the higher the number of the box you should cross. The less willing you are to take risks, the lower the number of the box you should cross. The scale goes from 0 "Unwilling to take risks" to 10 "Very willing to take risks"	0 – 10
MXFLS	2 – 3	Respondents are instructed to select either a yellow or blue chip for a given bag of possible payments, which represent risky gambles of varying payments with two outcomes of which each has a 50% chance to occur. For example, a participant may choose between a bag with 50% yellow chips that pays $500 if the participant draws a yellow chip and pays $2,000 if he or she draws a blue chip. We create a discrete scale from 1 to 7 with the possible choices.	1 – 7
CFPS	6	Participants are asked "If your family invests/In investment, what kind of risk are you willing to take?", with answer scales ranging from 1 "Unwilling to take any investment risk"; 2 "Low risk, low return"; 3 "Moderate risk, steady return"; and 4 "High risk, high return".	1 – 4
IFLS	4 – 5	In IFLS, risk tolerance is elicited similar to the questions in NLSY79 using binary choices, as follows: "Suppose you are offered two ways to earn income. […] With option 2, you	1 – 4

have an equal chance [*for either outcome*]. Which option will you choose?". Participants always choose between a certain income and a risky income. For example, "With option 1, you are guaranteed an income of Rp 4 million per month. [I]n option 2 you have an equal chance of receiving either Rp 8 million per month or Rp 2 million per month, depending on how lucky you are. We derive a discrete scale from 1 to 4 to construct our measure of risk tolerance.

Table S3

Measurement of trust by survey and wave.

Survey	Wave	Question text	Scale
NLSY79	24 – 26	How would you rate your willingness to take risks in the following areas? For each situation, rate your willingness from 0 to 10, where 0 means "unwilling to take any risks" and 10 means "fully prepared to take risks." • In your faith in other people?	0 – 10
NLSY79CHYA	11 – 12	Generally speaking, how often can you trust other people? Always, most of the time, about half the time, once in a while, or never?	1 – 5
MCS	6	On a scale from 0-10, where 0 means not at all and 10 means completely, how much would you say you trust other people?	0 – 10
UKHLS	8, 10, 13, 15, 17 – 19	Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?	1 – 3
	18 – 19	Are you generally a person who is fully prepared to take risks in trusting strangers or do you try to avoid taking such risks?	0 – 10
LISS		Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Please indicate a score of 0 ("you can't be too careful") to 10 ("most people can be trusted").	0 – 10
SOEP	20, 25, 30, 35	Participants are asked 3 trust questions. We average all the answers to create a measure of trust from 1 to 4, where 1 means "not trusting" and 4 means "very trusting". The questions below are answered on a scale from 1 "agree" to 4 "disagree": • On the whole one can trust people. • Nowadays one can't trust anyone. • It is better to be careful before one can trust strangers.	1 – 4
SOEP	21, 26, 31	Additionally, participants are asked the "willingness to take risks in faith in other people" question (similar to NLSY79) on a scale from 0 "risk averse" to 10 "fully prepared to take risks".	0 – 10
SHP	11 – 13	Please tell me how well do the following statements describe your personality, if 0 means "I completely disagree" and 10 "I completely agree". I see myself as someone who... • is generally trusting.	0 – 10
SHP	4 – 19	Would you say that most people can be trusted or that you can't be too careful in dealing with people, if 0 means "Can't be too careful" and 10 means "Most people can be trusted" ?	0 – 10
HILDA	5 – 6, 8, 10 – 11, 14	We use one question "To what extent do you agree or disagree with the following statements? Generally speaking, most people can be trusted" with an answer scale from 1 "strongly disagree" to 7 "strongly agree" to derive our measure of trust.	1 – 7
CFPS	5 – 7	Participants answer two questions asking "Are most people/strangers trustworthy?" with an answer scale from 0 "Must be careful" to 10 "Most people/strangers are trustworthy". Where both questions were answered, we take the average of both to construct our trust measure. If only one of the questions was answered, we take that single answer.	0 – 10
IFLS	4 – 5	Respondents are asked a few questions about their trust in their village and other people, with answers ranging on a 4-point scale from 1 "Strongly agree" to 4 "Strongly disagree". We construct our trust scale based on the following questions. • In this village I have to be alert or someone is likely to take advantage of me. • I trust people withe same ethnicity as mine more.	1 – 4

- I would be willing to leave my children with my neighbors for a few hours if I cannot bring my children along.
- I would be willing to ask my neighbors to look after my house if I leave for a few days.

Table S4

Measurement of patience by survey and wave.

Survey	Wave	Question text	Scale
LISS	2016	Overall, are you an impatient person or someone who always has a lot of patience? 1 means always patient, 7 means always *im*patient.	1 – 7
MCS	6	On a scale of 0-10, where 0 is never and 10 is always, how patient would you say you are?	0 – 10
SOEP	25	Are you generally an impatient person, or someone who always shows great patience?	0 – 10
	30, 35	Would you describe yourself as an impatient or a patient person in general? Please tick a box on the scale, where the value 0 means: "very impatient" and the value 10 means: "very patient".	
MXFLS	2 – 3	Respondents are asked to choose between different payments now versus later. For example, a participant can choose between $1,000 now or $1,500 in a month, $1,000 now or $2,000 in one year, and $10,000 now or $15,000 in three years. Based on the answers, we created a discrete short-term and long-term patience scale ranging scale from 1 to 5. For our analysis, we use the average of short-term and long-term patience.	1 – 5
IFLS	4 – 5	In IFLS, patience is elicited similar to the questions in MXFLS using binary choices, as follows: "You can choose between being paid" and then gives payment options to choose from being paid either today or later. For example, Rp 1 million today or Rp 500,000 in 5 years, Rp 1 million today or Rp 10 million in 5 years. The outcomes have an equal chance of 50%. We derive a discrete scale from 1 to 4 to construct our measure of patience.	1 – 4

Table S5

Measurement of the Big Five personality traits by survey and wave.

Survey	Wave	Openness to Exp. Question text	Scale
AddHealth	4	• I have a vivid imagination; • I am not interested in abstract ideas; • I have difficulty understanding abstract ideas; • I do not have a good imagination.	1 – 5
NLSY79	25 – 26	Here are some personality traits that may or may not apply to you. You will hear several pairs of personality traits that are related but not exactly the same. Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Open to new experiences, complex • Conventional, uncreative	1 – 7
NLSY79CHYA	11 – 16	Here are some personality traits that may or may not apply to you. You will hear several pairs of personality traits that are related but not exactly the same. Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Open to new experiences, complex • Conventional, uncreative	1 – 7
UKHLS	15, 21	The following questions are about how you see yourself as a person. Please choose the number which best describes how you see yourself, using a scale from 1 to 7 where 1 means 'does not apply to me at all' and 7 means 'applies to me perfectly'. I see myself as someone who… • is original, comes up with new ideas. • values artistic, aesthetic experiences. • has an active imagination.	1 – 7
LISS	1 – 10	Please use the rating scale below to describe how accurately each statement describes you. • Am quick to understand things. • Am full of ideas. • Do not have a good imagination. • Have a vivid imagination. • Have a rich vocabulary. • Spend time reflecting on things. • Use difficult words. • Am not interested in abstract ideas. • Have excellent ideas. • Have difficulty understanding abstract ideas.	1 – 5
SOEP	22, 26, 30, 34	Below are different qualities that a person can have. You will probably find that some apply to you perfectly and that some do not apply to you at all. With others, you may be somewhere in between. With values between 1 "does not apply to me at all" and 7 "applies to me perfectly", you can express where you lie between these two extremes. I see myself as someone who… • is original, comes up with new ideas.	1 – 7

		• values artistic experiences.	
		• has an active imagination.	
SHP	11 – 13	Please tell me how well do the following statements describe your personality, if 0 means "I completely disagree" and 10 "I completely agree". I see myself as someone who... • has an active imagination. • has artistic interests.	0 – 10
SHP	17	We are now going to make some statements. Please tell me how well do the following statements describe your personality? 0 means "not at all" and 10 "completely". I am someone who... • is original, comes up with new ideas. • values artistic, aesthetic experiences. • has an active imagination.	0 – 10
HILDA	5, 9, 13, 17	How well do the following words describe you? For each word, cross one box to indicate how well that word describes you. There are no right or wrong answers. The scale goes from 1 "does not describe me at all" to 7 "describes me very well". In HILDA each of the big five personality scales is pre-derived so we can directly use the scale as constructed by the data providers. For more details about the adjectives used to measure openness to experiences refer to the specific questionnaires for each wave.	1 – 7
IFLS	5	IFLS uses the same 15-item questionnaire that is used in SOEP. Respondents range their personality on a scale from 1 "disagree strongly" to 5 "agree strongly" answering to the following questions. I see myself as someone who… • Is original, comes up with new ideas. • Has an active imagination. • Values artistic, aesthetic experiences.	1 – 5
Survey	**Wave**	**Conscientiousness Question text**	**Scale**
AddHealth	1 – 2	• When making decisions, you usually go with your "gut feeling" without thinking too much about the consequences of each alternative; • When you have a problem to solve, one of the first things you do is get as many facts about the problem as possible; • When making decisions, you generally use a systematic method for judging and comparing alternatives; • After carrying out a solution to a problem, you usually try to analyse what went right and what went wrong.	1 – 5
	4	• When making a decision, I go with my 'gut feeling' and don't think much about the consequences of each alternative; • I live my life without much thought for the future; • I get chores done right away; • I often forget to put things back in their proper place; • I like order; • I make a mess of things.	1 – 5
NLSY79	25 – 26	Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Dependable, self-disciplined • Disorganized, careless	1 – 7

NLSY79CHYA	11 – 16	Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Dependable, self-disciplined • Disorganized, careless	1 – 7
UKHLS	15, 21	The following questions are about how you see yourself as a person. Please choose the number which best describes how you see yourself, using a scale from 1 to 7 where 1 means 'does not apply to me at all' and 7 means 'applies to me perfectly'. I see myself as someone who… • does a thorough job. • tends to be lazy. • does things efficiently.	1 – 7
LISS	1 – 10	Please use the rating scale below to describe how accurately each statement describes you. • Pay attention to details. • Am always prepared. • Get chores done right away. • Like order. • Follow a schedule. • Am exacting in my work. • Leave my belongings around. • Make a mess of things. • Often forget to put things back in their proper place. • Shirk my duties.	1 – 5
SOEP	22, 26, 30, 34	With values between 1 "does not apply to me at all" and 7 "applies to me perfectly", you can express where you lie between these two extremes. I see myself as someone who… • does a thorough job. • tends to be lazy. • does things effectively and efficiently.	1 – 7
SHP	11 – 13	Please tell me how well do the following statements describe your personality, if 0 means "I completely disagree" and 10 "I completely agree". I see myself as someone who... • tends to be lazy. • does a thorough job .	0 – 10
SHP	17	We are now going to make some statements. Please tell me how well do the following statements describe your personality? 0 means "not at all" and 10 "completely". I am someone who... • does things efficiently. • tends to be lazy. • does a thorough job.	0 – 10
HILDA	5, 9, 13, 17	How well do the following words describe you? For each word, cross one box to indicate how well that word describes you. There are no right or wrong answers. The scale goes from 1 "does not describe me at all" to 7 "describes me very well". In HILDA each of the big five personality scales is pre-derived so we can directly use the scale as constructed by the data providers. For more details about the adjectives used to measure conscientiousness refer to the specific questionnaires for each wave.	1 – 7
IFLS	5	IFLS uses the same 15-item questionnaire that is used in SOEP. Respondents range their personality on a scale from 1 "disagree strongly" to 5 "agree strongly" answering to the following questions. I see myself as someone who… • Does a thorough job. • Tends to be lazy.	1 – 5

		• Does things efficiently.	
Survey	**Wave**	**Extraversion Question text**	**Scale**
AddHealth	4	• I am the life of the party.	1 – 5
		• I don't talk a lot.	
		• I talk to a lot of different people at parties.	
		• I keep in the background.	
NLSY79	25 – 26	Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Reserved, quiet. • Extraverted, enthusiastic.	1 – 7
NLSY79CHYA	11 – 16	Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Reserved, quiet. • Extraverted, enthusiastic.	1 – 7
UKHLS	15, 21	The following questions are about how you see yourself as a person. Please choose the number which best describes how you see yourself, using a scale from 1 to 7 where 1 means 'does not apply to me at all' and 7 means 'applies to me perfectly'. I see myself as someone who… • is talkative. • is outgoing, sociable. • is reserved.	1 – 7
LISS	1 – 10	Please use the rating scale below to describe how accurately each statement describes you. • Am quiet around strangers. • Don't mind being the center of attention. • Don't like to draw attention to myself. • Talk to a lot of different people at parties. • Have little to say. • Start conversations. • Keep in the background. • Feel comfortable around people. • Don't talk a lot. • Am the life of the party.	1 – 5
SOEP	22, 26, 30, 34	With values between 1 "does not apply to me at all" and 7 "applies to me perfectly", you can express where you lie between these two extremes. I see myself as someone who… • is communicative, talkative. • is outgoing, sociable. • is reserved.	1 – 7
SHP	11 – 13	Please tell me how well do the following statements describe your personality, if 0 means "I completely disagree" and 10 "I completely agree". I see myself as someone who... • is reserved. • is outgoing, sociable.	0 – 10
SHP	17	We are now going to make some statements. Please tell me how well do the following statements describe your personality? 0 means "not at all" and 10 "completely". I am someone who... • is talkative. • is outgoing, sociable. • is reserved.	0 – 10
Survey	**Wave**	**Extraversion Question text**	**Scale**

HILDA	5, 9, 13, 17	How well do the following words describe you? For each word, cross one box to indicate how well that word describes you. There are no right or wrong answers. The scale goes from 1 "does not describe me at all" to 7 "describes me very well". In HILDA each of the big five personality scales is pre-derived so we can directly use the scale as constructed by the data providers. For more details about the adjectives used to measure extraversion refer to the specific questionnaires for each wave.	1 – 7
IFLS	5	IFLS uses the same 15-item questionnaire that is used in SOEP. Respondents range their personality on a scale from 1 "disagree strongly" to 5 "agree strongly" answering to the following questions. I see myself as someone who… • Outgoing, sociable. • Is reserved. • Is talkative.	1 – 5
Survey	**Wave**	**Agreeableness Question text**	**Scale**
AddHealth	4	• I sympathize with others' feelings; • I am not interested in other people's problems; • I feel others' emotions; • I am not really interested in others	1 – 5
NLSY79	25 – 26	Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Critical, quarrelsome • Sympathetic, warm	1 – 7
NLSY79CHYA	11 – 16	Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Critical, quarrelsome • Sympathetic, warm	1 – 7
UKHLS	15, 21	The following questions are about how you see yourself as a person. Please choose the number which best describes how you see yourself, using a scale from 1 to 7 where 1 means 'does not apply to me at all' and 7 means 'applies to me perfectly'. I see myself as someone who… • is sometimes rude to others. • has a forgiving nature. • is considerate and kind to almost everyone.	1 – 7
LISS	1 – 10	Please use the rating scale below to describe how accurately each statement describes you. • Feel little concern for others. • Insult people. • Am interested in people. • Sympathize with others' feelings. • Am not interested in other people's problems. • Have a soft heart. • Take time out for others. • Am not really interested in others. • Feel others' emotions. • Make people feel at ease.	1 – 5
SOEP	22, 26, 30, 34	With values between 1 "does not apply to me at all" and 7 "applies to me perfectly", you can express where you lie between these two extremes. I see myself as someone who… • is sometimes somewhat rude to others. • has a forgiving nature.	1 – 7

Survey	Wave		Scale
		• is considerate and kind to others.	
SHP	11 – 13	Please tell me how well do the following statements describe your personality, if 0 means "I completely disagree" and 10 "I completely agree". I see myself as someone who... • is generally trusting. • tends to find fault with others.	0 – 10
SHP	17	We are now going to make some statements. Please tell me how well do the following statements describe your personality? 0 means "not at all" and 10 "completely". I am someone who... • is considerate and kind to almost everyone. • has a forgiving nature. • is sometimes rude to others.	0 – 10
HILDA	5, 9, 13, 17	How well do the following words describe you? For each word, cross one box to indicate how well that word describes you. There are no right or wrong answers. The scale goes from 1 "does not describe me at all" to 7 "describes me very well". In HILDA each of the big five personality scales is pre-derived so we can directly use the scale as constructed by the data providers. For more details about the adjectives used to measure agreeableness refer to the specific questionnaires for each wave.	1 – 7
IFLS	5	IFLS uses the same 15-item questionnaire that is used in SOEP. Respondents range their personality on a scale from 1 "disagree strongly" to 5 "agree strongly" answering to the following questions. I see myself as someone who… • Has a forgiving nature. • Is considerate and kind to almost everyone • Is sometimes rude to others.	1 – 5

Survey	Wave	Neuroticism Question text	Scale
AddHealth	1	• I have a lot of good qualities; • I have a lot to be proud of; • I like myself just the way I am; • I feel like I am doing everything just right; • I feel loved and wanted.	1 – 5
AddHealth	1 – 2	• You Never Get Sad; • Difficult problems make you very upset; • You have a lot of good qualities; • You have a lot to be proud of; • You like yourself just the way you are; • You feel like you are doing everything just about right; • You feel loved and wanted; • You are emotional.	1 – 5
AddHealth	3	• Do you agree or disagree that you have many good qualities? • Do you agree or disagree that you have a lot to be proud of? • Do you agree or disagree that you like yourself just the way you are? • Do you agree or disagree that you feel you are doing things just about right?	1 – 5
AddHealth	4	• I have frequent mood swings; • I worry about things; • I get angry easily;	1 – 5

- I am relaxed most of the time;
- I am not easily bothered by things;
- I rarely get irritated;
- I get upset easily;
- I get stressed out easily;
- I lose my temper;
- I don't worry about things that have already happened;
- I keep my cool.

NLSY79	25 – 26	Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Calm, emotionally stable • Anxious, easily upset	1 – 7
NLSY79CHYA	11 – 16	Using a scale of 1 to 7, where 1 means "disagree strongly" and 7 means "agree strongly" rate how well each pair of traits applies to you, even if one characteristic applies more strongly than the other. • Calm, emotionally stable • Anxious, easily upset	1 – 7
UKHLS	15, 21	The following questions are about how you see yourself as a person. Please choose the number which best describes how you see yourself, using a scale from 1 to 7 where 1 means 'does not apply to me at all' and 7 means 'applies to me perfectly'. I see myself as someone who… • worries a lot. • gets nervous easily. • is relaxed, handles stress well.	1 – 7
LISS	1 – 10	Please use the rating scale below to describe how accurately each statement describes you. • Often feel blue. • Am easily disturbed. • Get irritated easily. • Seldom feel blue. • Have frequent mood swings. • Worry about things. • Change my mood a lot. • Am relaxed most of the time. • Get upset easily. • Get stressed out easily.	1 – 5
SOEP	22, 26, 30, 34	With values between 1 "does not apply to me at all" and 7 "applies to me perfectly", you can express where you lie between these two extremes. I see myself as someone who… • worries a lot. • gets nervous easily. • is relaxed, handles stress well.	1 – 7
SHP	11 – 13	Please tell me how well do the following statements describe your personality, if 0 means "I completely disagree" and 10 "I completely agree". I see myself as someone who... • is relaxed, handles stress well. • gets nervous easily.	0 – 10
SHP	17	We are now going to make some statements. Please tell me how well do the following statements describe your personality? 0 means "not at all" and 10 "completely". I am someone who... • worries a lot. • gets nervous easily. • remains calm in tense situations.	0 – 10

HILDA	5, 9, 13, 17	How well do the following words describe you? For each word, cross one box to indicate how well that word describes you. There are no right or wrong answers. The scale goes from 1 "does not describe me at all" to 7 "describes me very well". Respondents tick boxes for a total of 36 adjectives. In HILDA each of the big five personality scales is pre-derived so we can directly use the scale as constructed by the data providers. For more details about the adjectives used to measure neuroticism refer to the specific questionnaires for each wave.	1 – 7
IFLS	5	IFLS uses the same 15-item questionnaire that is used in SOEP. Respondents range their personality on a scale from 1 "disagree strongly" to 5 "agree strongly" answering to the following questions. • worries a lot. • gets nervous easily. • is relaxed, handles stress well.	1 – 5

Table S6

Measurement of locus of control by survey and wave.

Survey	Wave	Question text	Scale
AddHealth	2	• When you get what you want, it's usually because you worked hard for it • You can pretty much determine what will happen in your life	1 – 5
AddHealth	4	• I hardly ever expect things to go my way • There is little I can do to change the important things in my life. • Other people determine most of what I can and cannot do. • There are many things that interfere with what I want to do. • I have little control over the things that happen to me • There is really no way I can solve the problems I have.	1 – 5
NLSY79	1	• What happens to me is my own doing. • When I make plans, I am almost certain that I can make them work. • In my case, getting what I want has little or nothing to do with luck. • Many times I feel that I have little influence over the things that happen to me.	4 – 16
NLSY79	13	• There is no way I can solve the problems I have. • Sometimes I feel that I'm being pushed around. • I have little influence over the things that happen to me. • I can do just about anything I really set my mind to. • I often feel helpless dealing with the problems of life. • What happens to me in the future mostly depends on me. • There is little I can do to change many of the important things in my life.	7 – 28
NLSY79	25 – 26	I am going to read you four pairs of statements about outlooks on life. For each pair, please select one statement which is closer to your opinion. In addition, tell me whether the statement you select is much closer to your opinion or slightly closer. Try to consider each pair of statements separately when making your choice; do not be influenced by your previous choices. • What happens to me is my own doing./ Sometimes I feel that I don't have enough control over the direction my life is taking. • When I make plans, I am almost certain that I can make them work./ It is not always wise to plan too far ahead, because many things turn out to be a matter of good or bad fortune anyhow. • In my case, getting what I want has little or nothing to do with luck./ Many times we might just as well decide what to do by flipping a coin. • Many times I feel that I have little influence over the things that happen to me./ It is impossible for me to believe that chance or luck plays an important role in my life.	4 – 16
NLSY79CHYA	5 – 16	Respondent self-rates on a scale from 1 (strongly disagree) to 4 (strongly agree) on the following statements: • I can do just about anything I really set my mind to.	1 – 4

		• I have little control over the things that happen to me. • I often feel helpless in dealing with the problems of life. • Sometimes I feel that I'm being pushed around in life. • There is little I can do to change many of the important things in my life. • There is really no way I can solve some of the problems I have. • What happens to me in the future mostly depends on me.	
SOEP	22, 27, 32, 33	The following statements apply to different attitudes towards life and the future. To what degree to you personally agree with the following statements? 1 means disagree completely, and 7 means agree completely. • How my life goes depends on me. • Compared to other people, I have not achieved what I deserve. • What a person achieves in life is above all a question of fate or luck • If a person is socially or politically active, he/she can have an effect on social conditions. • I frequently have the experience that other people have a controlling influence over my life. • One has to work hard in order to succeed. • If I run up against difficulties in life, I often doubt my own abilities. • The opportunities that I have in life are determined by the social conditions. • Inborn abilities are more important than any efforts one can make. • I have little control over the things that happen in my life.	1 – 7
SHP	11, 14, 17, 20	Respondents rate themselves on a scale from 0 0 "I completely disagree" to 10 "I completely agree" with regards to the statements below, considering how they either see themselves or their lives. • Incapacity to make plans because of unpredictability. • Little influence on life events. • Capacity to overcome unexpected problems. • Capacity to choose between two possibilities.	0 – 10
SHP	14, 17, 20	Respondents *additionally* rate themselves on a scale from 0 0 "I completely disagree" to 10 "I completely agree" with regards to the statements below, considering how they either see themselves or their lives. • Can do everything set in my mind. • Find a way to succeed. • What I want is in my hands. • What will happen depends on me. • Others determine what I can do. • Feeling of being pushed in my life.	0 – 10
HILDA	3 – 4, 7, 11, 15	Please indicate, by crossing one box on each line, how much you agree or disagree with each of the following statements. The more you agree, the higher the number of the box you should cross (max:	1 – 7

7). The more you disagree, the lower the number of the box you should cross (min. 1). The statements are:

- I have little control over the things that happen to me.
- There is really no way I can solve some of the problems I have.
- There is little I can do to change many of the important things in my life.
- I often feel helpless in dealing with the problems of life.
- Sometimes I feel that I'm being pushed around in life.
- What happens to me in the future mostly depends on me.
- I can do just about anything I really set my mind to do.

Table S7

Regression results from the central analyses reported in Fig. 1, effect of having a younger sister (as opposed to a younger brother). Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next younger sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by ** p <0.05, * p <0.1.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien- tiousness	(6) Extra- version	(7) Agree- ableness	(8) Neuro- ticism	(9) Locus of Control	(10) TFP Index
Women										
Younger sister	-0.008	-0.009	-0.002	0.014	0.016	-0.010	-0.006	-0.018	0.003	0.009
SE	(0.011)	(0.014)	(0.019)	(0.016)	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.009)
95% CI	[-0.030 - 0.014]	[-0.036 - 0.018]	[-0.040 - 0.036]	[-0.018 - 0.046]	[-0.013 - 0.044]	[-0.042 - 0.022]	[-0.035 - 0.023]	[-0.049 - 0.013]	[-0.027 - 0.032]	[-0.009 - 0.027]
Adj. R-squared	0.044	0.029	0.018	0.011	0.042	0.020	0.034	0.033	0.065	0.055
Observations	80,447	53,477	12,402	31,931	32,704	32,643	32,604	33,040	33,227	96,015
Distinct people	23548	21780	9302	16206	16308	16288	16286	16319	12457	22548
Men										
Younger sister	0.019	0.006	-0.032*	-0.011	-0.000	-0.003	-0.013	-0.015	-0.021	-0.017*
SE	(0.013)	(0.014)	(0.019)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)	(0.010)
95% CI	[-0.007 - 0.044]	[-0.021 - 0.034]	[-0.070 - 0.006]	[-0.042 - 0.021]	[-0.031 - 0.030]	[-0.035 - 0.028]	[-0.044 - 0.017]	[-0.045 - 0.015]	[-0.051 - 0.008]	[-0.038 - 0.003]
Adj. R-squared	0.037	0.027	0.014	0.018	0.049	0.020	0.021	0.036	0.063	0.040
Observations	76,115	47,844	11,927	28,892	29,762	29,687	29,591	30,074	31,475	89,578
Distinct people	23156	20292	9205	15261	15419	15374	15362	15421	12178	21905

Table S7.1

Effect of having a younger sister (as opposed to a younger brother), *including people over age 60*. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next younger sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by ** p <0.05, * p <0.1.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscientiousness	(6) Extraversion	(7) Agreeableness	(8) Neuroticism	(9) Locus of Control	(10) TFP Index
Women										
Younger sister	-0.008	-0.009	-0.002	0.014	0.016	-0.010	-0.006	-0.018	0.003	0.009
SE	(0.011)	(0.014)	(0.019)	(0.016)	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.009)
95% CI	[-0.030 - 0.014]	[-0.036 - 0.018]	[-0.040 - 0.036]	[-0.018 - 0.046]	[-0.013 - 0.044]	[-0.042 - 0.022]	[-0.035 - 0.023]	[-0.049 - 0.013]	[-0.027 - 0.032]	[-0.009 - 0.027]
Adj. R-squared	0.044	0.029	0.017	0.011	0.042	0.020	0.034	0.033	0.065	0.055
Observations	80,450	53,571	12,411	31,931	32,704	32,643	32,604	33,040	33,227	96,020
Distinct people	23550	21781	9311	16206	16308	16288	16286	16319	12457	22548
Men										
Younger sister	0.019	0.007	-0.032*	-0.011	-0.000	-0.003	-0.013	-0.015	-0.021	-0.017*
SE	(0.013)	(0.014)	(0.019)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)	(0.010)
95% CI	[-0.007 - 0.044]	[-0.021 - 0.034]	[-0.070 - 0.006]	[-0.042 - 0.021]	[-0.031 - 0.030]	[-0.035 - 0.028]	[-0.044 - 0.017]	[-0.045 - 0.015]	[-0.051 - 0.008]	[-0.038 - 0.003]
Adj. R-squared	0.037	0.027	0.014	0.018	0.049	0.020	0.021	0.036	0.063	0.040
Observations	76,118	47,920	11,931	28,892	29,762	29,687	29,591	30,074	31,475	89,581
Distinct people	23156	20292	9209	15261	15419	15374	15362	15421	12178	21905

Table S7.2

Effect of having a younger sister (as opposed to a younger brother*), including siblings with age gaps in excess of 6 years*. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next younger sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by ** p <0.05, * p <0.1.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien- tiousness	(6) Extra- version	(7) Agree- ableness	(8) Neuro- ticism	(9) Locus of Control	(10) TFP Index
Women										
Younger sister	-0.008	-0.008	-0.008	0.009	0.020	-0.007	-0.008	-0.013	0.007	0.010
SE	(0.011)	(0.013)	(0.018)	(0.016)	(0.014)	(0.016)	(0.014)	(0.015)	(0.015)	(0.009)
95% CI	[-0.030 - 0.013]	[-0.034 - 0.018]	[-0.043 - 0.027]	[-0.022 - 0.040]	[-0.007 - 0.048]	[-0.037 - 0.024]	[-0.036 - 0.020]	[-0.043 - 0.016]	[-0.022 - 0.036]	[-0.007 - 0.028]
Adj. R-squared	0.044	0.030	0.016	0.011	0.042	0.020	0.032	0.033	0.065	0.054
Observations	86,421	57,151	14,056	34,311	35,125	35,063	35,022	35,480	35,510	102,864
Distinct people	25559	23501	10462	17569	17678	17658	17654	17688	13301	24381
Men										
Younger sister	0.019	0.005	-0.028	-0.011	-0.001	-0.008	-0.006	-0.018	-0.026*	-0.020**
SE	(0.013)	(0.014)	(0.018)	(0.016)	(0.015)	(0.016)	(0.015)	(0.015)	(0.015)	(0.010)
95% CI	[-0.006 - 0.044]	[-0.021 - 0.032]	[-0.063 - 0.008]	[-0.041 - 0.020]	[-0.031 - 0.028]	[-0.039 - 0.022]	[-0.035 - 0.024]	[-0.047 - 0.011]	[-0.054 - 0.003]	[-0.039 - -0.000]
Adj. R-squared	0.038	0.028	0.013	0.017	0.047	0.019	0.022	0.035	0.062	0.039
Observations	81,406	50,699	13,456	30,884	31,806	31,729	31,626	32,137	33,434	95,483
Distinct people	25003	21739	10311	16481	16646	16600	16585	16646	12936	23560

Table S7.3

Effect of having a younger sister (as opposed to a younger brother*), including people over age 60 and siblings with age gaps in excess of 6 years*. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next older sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by ** p <0.05, * p <0.1.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien- tiousness	(6) Extra- version	(7) Agree- ableness	(8) Neuro- ticism	(9) Locus of Control	(10 TF Ind
Women										
Older sister	-0.008	-0.008	-0.008	0.009	0.020	-0.007	-0.008	-0.013	0.007	0.0
SE	(0.011)	(0.013)	(0.018)	(0.016)	(0.014)	(0.016)	(0.014)	(0.015)	(0.015)	(0.0
95% CI	[-0.030 - 0.013]	[-0.033 - 0.018]	[-0.043 - 0.027]	[-0.022 - 0.040]	[-0.007 - 0.048]	[-0.037 - 0.024]	[-0.036 - 0.020]	[-0.043 - 0.016]	[-0.022 - 0.036]	[-0.0 0.02
Adj. R-squared	0.044	0.030	0.016	0.011	0.042	0.020	0.032	0.033	0.065	0.0
Observations	86,424	57,252	14,066	34,311	35,125	35,063	35,022	35,480	35,510	102,8
Distinct people	25561	23502	10472	17569	17678	17658	17654	17688	13301	243
Men										
Older sister	0.019	0.005	-0.028	-0.011	-0.001	-0.008	-0.006	-0.018	-0.026*	-0.02
SE	(0.013)	(0.014)	(0.018)	(0.016)	(0.015)	(0.016)	(0.015)	(0.015)	(0.015)	(0.0
95% CI	[-0.006 - 0.044]	[-0.021 - 0.032]	[-0.063 - 0.008]	[-0.041 - 0.020]	[-0.031 - 0.028]	[-0.039 - 0.022]	[-0.035 - 0.024]	[-0.047 - 0.011]	[-0.054 - 0.003]	[-0.0 -0.0
Adj. R-squared	0.038	0.028	0.014	0.017	0.047	0.019	0.022	0.035	0.062	0.0
Observations	81,409	50,781	13,460	30,884	31,806	31,729	31,626	32,137	33,434	95,4
Distinct people	25003	21739	10315	16481	16646	16600	16585	16646	12936	235

Table S8

Regression results from the central analyses reported in Fig. 4, association with having an older sister (as opposed to an older brother). Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next older sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by * p <0.1.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien-tiousness	(6) Extra-version	(7) Agree-ableness	(8) Neuro-ticism	(9) Locus of Control	(10 TF Ind
Women										
Older sister	0.010	0.020	0.008	0.002	0.002	-0.026	-0.002	-0.029	-0.009	-0.0
SE	(0.021)	(0.027)	(0.044)	(0.035)	(0.029)	(0.032)	(0.030)	(0.032)	(0.027)	(0.0
	[-0.031 -	[-0.033 -	[-0.079 -	[-0.066 -	[-0.055 -	[-0.088 -	[-0.060 -	[-0.092 -	[-0.062 -	[-0.0
95% CI	0.051]	0.073]	0.094]	0.069]	0.059]	0.036]	0.056]	0.034]	0.044]	0.02
Adj. R-squared	0.043	0.027	0.014	0.012	0.048	0.017	0.029	0.032	0.066	0.0
Observations	76,422	48,848	11,406	30,247	30,905	30,838	30,759	31,182	31,428	91,3
Distinct people	22065	20082	8664	15344	15426	15400	15392	15437	11997	211
Men										
Older sister	-0.032	0.027	0.024	-0.036	-0.006	0.041	-0.054*	-0.005	0.002	0.00
SE	(0.025)	(0.029)	(0.046)	(0.033)	(0.033)	(0.032)	(0.033)	(0.032)	(0.029)	(0.0
	[-0.080 -	[-0.030 -	[-0.066 -	[-0.101 -	[-0.070 -	[-0.023 -	[-0.118 -	[-0.067 -	[-0.055 -	[-0.0
95% CI	0.016]	0.085]	0.113]	0.028]	0.058]	0.104]	0.010]	0.057]	0.058]	0.04
Adj. R-squared	0.037	0.023	0.013	0.012	0.040	0.020	0.024	0.021	0.066	0.0
Observations	70,459	43,350	10,935	27,050	27,725	27,645	27,576	27,972	29,075	83,3
Distinct people	21296	18633	8544	14209	14335	14289	14277	14340	11519	202

Table S8.1

Association with having an older sister (as opposed to an older brother), *including people over age 60*. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next older sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by ** p <0.05.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien-tiousness	(6) Extra-version	(7) Agree-ableness	(8) Neuro-ticism	(9) Locus of Control	(10) TF Ind
Women										
Older sister	-0.000	0.017	-0.002	-0.001	-0.015	-0.012	-0.004	0.004	-0.006	-0.0
SE	(0.011)	(0.014)	(0.020)	(0.017)	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.0(
	[-0.023 -	[-0.010 -	[-0.041 -	[-0.034 -	[-0.044 -	[-0.044 -	[-0.033 -	[-0.027 -	[-0.037 -	[-0.0;
95% CI	0.022]	0.045]	0.037]	0.032]	0.015]	0.020]	0.026]	0.035]	0.024]	0.01
Adj. R-squared	0.042	0.025	0.014	0.014	0.046	0.018	0.030	0.033	0.064	0.0
Observations	76,424	48,942	11,415	30,247	30,905	30,838	30,759	31,182	31,428	91,3
Distinct people	22066	20082	8673	15344	15426	15400	15392	15437	11997	211(
Men										
Older sister	0.018	0.011	-0.011	-0.017	-0.011	0.004	-0.005	0.012	-0.005	-0.02
SE	(0.013)	(0.015)	(0.020)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.0
	[-0.008 -	[-0.018 -	[-0.049 -	[-0.050 -	[-0.043 -	[-0.028 -	[-0.036 -	[-0.019 -	[-0.035 -	[-0.0¢
95% CI	0.044]	0.041]	0.028]	0.015]	0.021]	0.037]	0.027]	0.043]	0.025]	-0.0(
Adj. R-squared	0.037	0.022	0.012	0.013	0.039	0.020	0.023	0.024	0.065	0.0;
Observations	70,461	43,438	10,940	27,050	27,725	27,645	27,576	27,972	29,075	83,3
Distinct people	21296	18633	8549	14209	14335	14289	14277	14340	11519	202(

Table S8.2

Association with having an older sister (as opposed to an older brother), *including siblings with age gaps in excess of 6 years*. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next older sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by ** p <0.05.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien-tiousness	(6) Extra-version	(7) Agree-ableness	(8) Neuro-ticism	(9) Locus of Control	(10) TF Ind
Women										
Older sister	0.002	0.020	-0.005	-0.004	-0.010	-0.010	-0.005	0.003	-0.003	-0.0
SE	(0.011)	(0.014)	(0.020)	(0.017)	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.00
95% CI	[-0.020 - 0.024]	[-0.007 - 0.048]	[-0.044 - 0.033]	[-0.036 - 0.029]	[-0.039 - 0.019]	[-0.042 - 0.022]	[-0.034 - 0.024]	[-0.027 - 0.034]	[-0.033 - 0.026]	[-0.02 0.01
Adj. R-squared	0.041	0.026	0.014	0.014	0.046	0.018	0.029	0.033	0.063	0.04
Observations	78,860	50,295	11,806	31,127	31,805	31,733	31,654	32,086	32,401	94,1
Distinct people	22810	20716	8989	15778	15861	15833	15825	15872	12385	218
Men										
Older sister	0.017	0.009	-0.008	-0.018	-0.010	0.003	-0.001	0.009	-0.002	-0.02
SE	(0.013)	(0.015)	(0.019)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.0
95% CI	[-0.009 - 0.043]	[-0.019 - 0.038]	[-0.045 - 0.030]	[-0.050 - 0.014]	[-0.041 - 0.022]	[-0.029 - 0.035]	[-0.032 - 0.030]	[-0.022 - 0.039]	[-0.032 - 0.027]	[-0.04 -0.00
Adj. R-squared	0.036	0.021	0.012	0.014	0.039	0.019	0.023	0.024	0.064	0.03
Observations	72,708	44,593	11,305	27,812	28,490	28,404	28,330	28,738	29,999	85,9
Distinct people	22002	19228	8853	14593	14721	14671	14660	14726	11894	208

Table S8.3

Association with having an older sister (as opposed to an older brother), *including people over age 60 and siblings with age gaps in excess of 6 years*. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next older sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by ** $p < 0.05$.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscientiousness	(6) Extraversion	(7) Agreeableness	(8) Neuroticism	(9) Locus of Control	(10) TFP Index
Women										
Older sister	0.002	0.020	-0.005	-0.004	-0.010	-0.010	-0.005	0.003	-0.003	-0.0
SE	(0.011)	(0.014)	(0.020)	(0.017)	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.0
95% CI	[-0.020 - 0.024]	[-0.007 - 0.048]	[-0.044 - 0.033]	[-0.036 - 0.029]	[-0.039 - 0.019]	[-0.042 - 0.022]	[-0.034 - 0.024]	[-0.027 - 0.034]	[-0.033 - 0.026]	[-0.02 0.01
Adj. R-squared	0.041	0.026	0.014	0.014	0.046	0.018	0.029	0.033	0.063	0.04
Observations	78,860	50,295	11,806	31,127	31,805	31,733	31,654	32,086	32,401	94,1
Distinct people	22810	20716	8989	15778	15861	15833	15825	15872	12385	218
Men										
Older sister	0.017	0.009	-0.008	-0.018	-0.010	0.003	-0.001	0.009	-0.002	-0.02
SE	(0.013)	(0.015)	(0.019)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.0
95% CI	[-0.009 - 0.043]	[-0.019 - 0.038]	[-0.045 - 0.030]	[-0.050 - 0.014]	[-0.041 - 0.022]	[-0.029 - 0.035]	[-0.032 - 0.030]	[-0.022 - 0.039]	[-0.032 - 0.027]	[-0.04 -0.00
Adj. R-squared	0.036	0.021	0.012	0.014	0.039	0.019	0.023	0.024	0.064	0.03
Observations	72,708	44,593	11,305	27,812	28,490	28,404	28,330	28,738	29,999	85,9
Distinct people	22002	19228	8853	14593	14721	14671	14660	14726	11894	208

Tables S9.01-S9.10

Regression results from the central analyses shown in Fig. 2, effect of having a younger sister (as opposed to a younger brother) on women's personality in each of the surveys as shown in the column titles. Each of the columns shows the results from a separate regression of the standardized trait shown in table title on a next younger sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by ** p <0.05, * p <0.1. Below the younger sister coefficients we show standard errors in parenthesis, 95 percent confidence intervals in square brackets, and p-value of the *younger sister* coefficient.

Table S9.01 The Effect of a Younger Sister on Women's Risk Tolerance

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) MCS	(5) UKHLS	(6) LISS	(7) SOEP	(8) SHP	(9) HILDA	(10) MXFLS	(11) CFPS	(12) IFLS
younger sister	0.004	-0.003	-0.004	-0.052	-0.123**	0.097	-0.036	-0.087	0.004	0.003	0.145*	-0.088**
SE	(0.081)	(0.023)	(0.023)	(0.039)	(0.056)	(0.095)	(0.032)	(0.076)	(0.020)	(0.033)	(0.074)	(0.038)
95% CI	[-0.154 - 0.163]	[-0.049 - 0.043]	[-0.050 - 0.041]	[-0.129 - 0.025]	[-0.232 - -0.014]	[-0.089 - 0.283]	[-0.099 - 0.026]	[-0.236 - 0.062]	[-0.035 - 0.044]	[-0.063 - 0.068]	[-0.001 - 0.290]	[-0.163 - -0.013]
p-value	0.957	0.901	0.857	0.188	0.027	0.306	0.254	0.254	0.825	0.931	0.052	0.022
Observations	997	11,851	9,284	2,603	1,338	468	11,413	870	34,973	3,409	651	2,590
Adjusted R-squared	0.050	0.006	0.085	0.002	0.019	0.004	0.125	-0.014	0.052	0.026	0.070	-0.002
Unique people	412	2721	2067	2603	1338	455	2815	870	5039	2490	651	2087

Table S9.02 The Effect of a Younger Sister on Women's Trust

	(1) NLSY79	(2) NLSY79CHYA	(3) MCS	(4) UKHLS	(5) LISS	(6) SOEP	(7) SHP	(8) HILDA	(9) CFPS	(10) IFLS
younger sister	0.055	-0.032	-0.045	-0.057	-0.024	-0.031	-0.069	0.020	0.052	-0.025
SE	(0.042)	(0.044)	(0.041)	(0.051)	(0.056)	(0.032)	(0.050)	(0.024)	(0.032)	(0.041)
95% CI	[-0.028 - 0.138]	[-0.119 - 0.054]	[-0.126 - 0.036]	[-0.156 - 0.043]	[-0.135 - 0.086]	[-0.094 - 0.032]	[-0.167 - 0.028]	[-0.028 - 0.068]	[-0.010 - 0.115]	[-0.106 - 0.056]
p-value	0.193	0.461	0.276	0.264	0.667	0.336	0.162	0.417	0.102	0.545
Observations	2,324	2,516	2,621	2,768	6,299	6,584	6,831	14,533	6,361	2,640
Adjusted R-squared	0.015	0.043	0.022	0.031	0.021	0.073	0.055	0.049	0.004	0.015
Unique people	2324	1509	2621	1583	1118	2472	1208	4593	2634	1718

Table S9.03 The Effect of a Younger Sister on Women's Patience

	(1) MCS	(2) LISS	(3) SOEP	(4) MXFLS	(5) IFLS
younger sister	0.042	0.322**	0.026	-0.021	-0.038
SE	(0.040)	(0.160)	(0.047)	(0.036)	(0.035)
95% CI	[-0.037 - 0.121]	[0.006 - 0.639]	[-0.066 - 0.117]	[-0.091 - 0.049]	[-0.106 - 0.030]
p-value	0.301	0.046	0.582	0.562	0.275
Observations	2,617	171	2,589	3,456	3,569
Adjusted R-squared	0.020	0.089	0.004	0.040	0.015
Unique people	2617	171	1715	2517	2282

Table S9.04 The Effect of a Younger Sister on Women's Openness to Exp.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	AddHealth	NLSY79	NLSY79CHYA	UKHLS	LISS	SOEP	SHP	HILDA	IFLS
younger sister	-0.095	0.021	0.027	-0.022	0.098*	-0.002	0.044	-0.006	-0.024
SE	(0.100)	(0.043)	(0.033)	(0.054)	(0.057)	(0.044)	(0.080)	(0.031)	(0.047)
95% CI	[-0.293 - 0.102]	[-0.064 - 0.106]	[-0.037 - 0.091]	[-0.128 - 0.084]	[-0.013 - 0.210]	[-0.089 - 0.085]	[-0.113 - 0.200]	[-0.067 - 0.056]	[-0.115 - 0.068]
p-value	0.344	0.629	0.412	0.682	0.084	0.969	0.585	0.858	0.612
Observations	345	2,205	5,625	1,680	4,330	3,551	872	11,361	1,962
Adjusted R-squared	0.058	0.002	0.008	-0.004	0.017	0.030	0.016	0.004	0.004
Unique people	345	2205	1994	1489	1120	1955	592	4544	1962

Table S9.05 The Effect of a Younger Sister on Women's Conscientiousness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	AddHealth	NLSY79	NLSY79CHYA	UKHLS	LISS	SOEP	SHP	HILDA	IFLS
younger sister	0.006	0.101**	0.025	0.031	0.046	0.018	0.025	-0.003	-0.032
SE	(0.067)	(0.043)	(0.034)	(0.050)	(0.057)	(0.040)	(0.071)	(0.025)	(0.045)
95% CI	[-0.126 - 0.138]	[0.018 - 0.185]	[-0.041 - 0.091]	[-0.067 - 0.129]	[-0.065 - 0.157]	[-0.061 - 0.097]	[-0.115 - 0.165]	[-0.052 - 0.046]	[-0.120 - 0.057]
p-value	0.932	0.018	0.457	0.533	0.418	0.651	0.728	0.911	0.482
Observations	1,101	2,212	5,629	1,680	4,330	3,562	870	11,358	1,962
Adjusted R-squared	0.174	0.009	0.020	0.064	0.031	0.047	0.085	0.025	0.040
Unique people	429	2212	1995	1489	1120	1967	591	4543	1962

Table S9.06 The Effect of a Younger Sister on Women's Extraversion

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) UKHLS	(5) LISS	(6) SOEP	(7) SHP	(8) HILDA	(9) IFLS
younger sister	-0.027	0.006	-0.031	-0.078	-0.064	-0.031	-0.130*	0.047	-0.042
SE	(0.068)	(0.044)	(0.038)	(0.052)	(0.062)	(0.046)	(0.069)	(0.029)	(0.046)
95% CI	[-0.160 - 0.107]	[-0.080 - 0.092]	[-0.106 - 0.044]	[-0.181 - 0.025]	[-0.185 - 0.058]	[-0.122 - 0.060]	[-0.265 - 0.005]	[-0.009 - 0.103]	[-0.132 - 0.049]
p-value	0.696	0.891	0.424	0.137	0.305	0.507	0.059	0.102	0.364
Observations	1,104	2,194	5,591	1,678	4,330	3,561	869	11,354	1,962
Adjusted R-squared	0.070	0.005	0.014	0.013	0.013	0.010	0.232	0.043	0.000
Unique people	430	2194	1994	1489	1120	1968	589	4542	1962

Table S9.07 The Effect of a Younger Sister on Women's Agreeableness

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) UKHLS	(5) LISS	(6) SOEP	(7) SHP	(8) HILDA	(9) IFLS
younger sister	-0.134**	0.087**	0.011	-0.058	-0.016	0.022	-0.075	0.003	-0.035
SE	(0.054)	(0.043)	(0.033)	(0.050)	(0.050)	(0.041)	(0.072)	(0.027)	(0.047)
95% CI	[-0.240 - -0.028]	[0.002 - 0.172]	[-0.053 - 0.076]	[-0.156 - 0.040]	[-0.115 - 0.083]	[-0.057 - 0.102]	[-0.216 - 0.066]	[-0.051 - 0.056]	[-0.126 - 0.056]
p-value	0.014	0.045	0.727	0.242	0.755	0.584	0.298	0.926	0.455
Observations	1,099	2,191	5,546	1,680	4,330	3,570	870	11,356	1,962
Adjusted R-squared	0.263	0.006	0.013	0.014	0.022	0.004	0.071	0.047	0.010
Unique people	430	2191	1994	1489	1120	1965	592	4543	1962

Table S9.08 The Effect of a Younger Sister on Women's Neuroticism

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	AddHealth	NLSY79	NLSY79CHYA	UKHLS	LISS	SOEP	SHP	HILDA	IFLS
younger sister	0.032	-0.102**	-0.023	0.024	-0.018	0.023	0.068	-0.028	-0.046
SE	(0.064)	(0.043)	(0.030)	(0.050)	(0.060)	(0.042)	(0.075)	(0.029)	(0.045)
95% CI	[-0.093 - 0.157]	[-0.187 - -0.017]	[-0.082 - 0.037]	[-0.074 - 0.123]	[-0.136 - 0.101]	[-0.060 - 0.107]	[-0.080 - 0.216]	[-0.085 - 0.030]	[-0.135 - 0.043]
p-value	0.616	0.018	0.455	0.631	0.772	0.581	0.365	0.344	0.307
Observations	1,429	2,222	5,630	1,679	4,330	3,568	872	11,348	1,962
Adjusted R-squared	0.331	-0.004	0.007	0.009	0.014	0.001	0.088	0.011	0.016
Unique people	430	2222	1995	1489	1120	1969	592	4540	1962

Table S9.09 The Effect of a Younger Sister on Women's Locus of Control

	(1)	(2)	(3)	(4)	(5)	(6)
	AddHealth	NLSY79	NLSY79CHYA	SOEP	SHP	HILDA
younger sister	0.065	0.008	0.017	0.024	-0.075*	0.000
SE	(0.085)	(0.026)	(0.036)	(0.043)	(0.043)	(0.026)
95% CI	[-0.101 - 0.231]	[-0.043 - 0.059]	[-0.053 - 0.088]	[-0.060 - 0.108]	[-0.159 - 0.010]	[-0.051 - 0.052]
p-value	0.444	0.759	0.628	0.575	0.084	0.993
Observations	674	7,484	6,872	2,776	1,880	13,541
Adjusted R-squared	0.031	0.093	0.059	0.033	0.429	0.018
Unique people	399	2724	2036	1807	860	4631

Table S9.10 The Effect of a Younger Sister on Women's TFP Index

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) MCS	(5) UKHLS	(6) LISS	(7) SOEP	(8) SHP	(9) HILDA	(10) CFPS	(11) IFLS
younger sister	-0.001	0.021	0.006	0.052	0.001	-0.012	0.033	0.034	0.004	-0.145*	0.007
SE	(0.060)	(0.019)	(0.021)	(0.039)	(0.037)	(0.052)	(0.027)	(0.066)	(0.016)	(0.074)	(0.039)
	[-0.119 - 0.116]	[-0.016 - 0.059]	[-0.036 - 0.048]	[-0.025 - 0.129]	[-0.071 - 0.073]	[-0.115 - 0.091]	[-0.020 - 0.086]	[-0.096 - 0.164]	[-0.027 - 0.036]	[-0.290 - 0.001]	[-0.069 - 0.084]
95% CI											
p-value	0.981	0.266	0.780	0.188	0.972	0.821	0.220	0.608	0.799	0.052	0.848
Observations	1,429	14,053	13,504	2,603	3,018	4,362	12,357	1,249	40,128	651	2,661
Adjusted R-squared	0.271	0.028	0.039	0.002	0.042	0.021	0.116	0.042	0.054	0.070	0.006
Unique people	430	2721	2073	2603	1965	1120	2855	904	5068	651	2158

Table S10.01-S10.10

Regression results from the central analyses shown in Fig. 3, effect of having a younger sister (as opposed to a younger brother) on men's personality in each of the surveys as shown in the column titles. Each of the columns shows the results from a separate regression of the standardized trait shown in table title on a next younger sister dummy, including the controls described in the empirical strategy. Statistical significance is denoted by ** p <0.05, * p <0.1. Below the younger sister coefficients we show standard errors in parenthesis, 95 percent confidence intervals in square brackets, and p-value of the *younger sister* coefficient.

Table S10.01 The Effect of a Younger Sister on Men's Risk Tolerance

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) MCS	(5) UKHLS	(6) LISS	(7) SOEP	(8) SHP	(9) HILDA	(10) MXFLS	(11) CFPS	(12) IFLS
younger sister	-0.122*	-0.008	-0.009	-0.035	-0.021	0.051	0.001	0.049	0.065***	0.005	-0.128	-0.055
SE	(0.069)	(0.026)	(0.024)	(0.039)	(0.054)	(0.109)	(0.034)	(0.070)	(0.025)	(0.036)	(0.090)	(0.042)
95% CI	[-0.258 - 0.014]	[-0.059 - 0.042]	[-0.055 - 0.037]	[-0.112 - 0.042]	[-0.128 - 0.086]	[-0.163 - 0.265]	[-0.066 - 0.069]	[-0.089 - 0.186]	[0.016 - 0.115]	[-0.065 - 0.075]	[-0.305 - 0.050]	[-0.137 - 0.028]
p-value	0.080	0.749	0.698	0.374	0.702	0.640	0.965	0.486	0.009	0.884	0.159	0.193
Observations	1,001	11,119	9,298	2,620	1,321	382	11,657	887	31,574	3,294	485	2,477
Adjusted R-squared	0.073	0.009	0.048	0.000	0.007	-0.022	0.102	0.045	0.045	0.015	0.062	0.010
Unique people	441	2625	2162	2620	1321	369	3038	887	4709	2511	485	1988

Table S10.02 The Effect of a Younger Sister on Men's Trust

	(1)	(2) NLSY79C	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	NLSY79	HYA	MCS	UKHLS	LISS	SOEP	SHP	HILDA	CFPS	IFLS
younger sister	-0.006	0.004	-0.057	0.041	-0.033	0.037	-0.011	0.002	0.009	0.086**
SE	(0.043)	(0.047)	(0.037)	(0.050)	(0.065)	(0.032)	(0.051)	(0.025)	(0.037)	(0.043)
95% CI	[-0.090 - 0.078]	[-0.088 - 0.097]	[-0.129 - 0.015]	[-0.056 - 0.139]	[-0.161 - 0.095]	[-0.026 - 0.101]	[-0.112 - 0.090]	[-0.047 - 0.051]	[-0.064 - 0.083]	[0.000 - 0.171]
p-value	0.892	0.925	0.119	0.406	0.611	0.244	0.832	0.935	0.799	0.049
Observations	2,179	2,399	2,633	2,834	4,341	6,849	6,976	12,978	4,588	2,067
Adjusted R-squared	0.015	0.036	0.009	0.018	0.026	0.061	0.035	0.046	0.004	0.014
Unique people	2179	1506	2633	1609	791	2637	1303	4217	1969	1448

Table S10.03 The Effect of a Younger Sister on Men's Patience

	(1)	(2)	(3)	(4)	(5)
	MCS	LISS	SOEP	MXFLS	IFLS
younger sister	-0.018	-0.068	-0.000	-0.053	-0.047
SE	(0.039)	(0.171)	(0.046)	(0.034)	(0.036)
95% CI	[-0.095 - 0.059]	[-0.405 - 0.270]	[-0.090 - 0.090]	[-0.120 - 0.014]	[-0.119 - 0.024]
p-value	0.648	0.691	0.994	0.122	0.193
Observations	2,624	128	2,601	3,328	3,246
Adjusted R-squared	0.004	0.034	0.010	0.036	0.018
Unique people	2624	128	1758	2530	2165

Table S10.04 The Effect of a Younger Sister on Men's Openness to Exp.

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) UKHLS	(5) LISS	(6) SOEP	(7) SHP	(8) HILDA	(9) IFLS
younger sister	0.159	-0.005	-0.021	-0.017	-0.027	-0.005	0.028	-0.026	0.066
SE	(0.113)	(0.045)	(0.034)	(0.054)	(0.071)	(0.043)	(0.078)	(0.028)	(0.047)
95% CI	[-0.063 - 0.382]	[-0.092 - 0.083]	[-0.087 - 0.045]	[-0.122 - 0.088]	[-0.167 - 0.112]	[-0.091 - 0.080]	[-0.126 - 0.181]	[-0.082 - 0.029]	[-0.025 - 0.158]
p-value	0.160	0.919	0.541	0.747	0.702	0.902	0.725	0.354	0.156
Observations	336	1,996	5,540	1,594	2,986	3,650	852	10,164	1,774
Adjusted R-squared	0.073	-0.004	0.006	0.006	0.021	0.034	0.002	0.018	-0.003
Unique people	336	1996	2058	1400	791	2091	593	4222	1774

Table S10.05 The Effect of a Younger Sister on Men's Conscientiousness

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) UKHLS	(5) LISS	(6) SOEP	(7) SHP	(8) HILDA	(9) IFLS
younger sister	0.066	-0.102**	0.012	-0.065	-0.060	0.077*	0.095	-0.012	0.049
SE	(0.062)	(0.045)	(0.035)	(0.053)	(0.065)	(0.042)	(0.077)	(0.028)	(0.046)
95% CI	[-0.055 - 0.188]	[-0.190 - -0.014]	[-0.056 - 0.080]	[-0.168 - 0.039]	[-0.187 - 0.067]	[-0.004 - 0.159]	[-0.055 - 0.246]	[-0.067 - 0.044]	[-0.041 - 0.138]
p-value	0.284	0.023	0.732	0.220	0.355	0.064	0.215	0.683	0.285
Observations	1,157	2,012	5,560	1,597	2,986	3,663	854	10,159	1,774
Adjusted R-squared	0.207	0.004	0.019	0.032	0.064	0.115	0.123	0.013	0.066
Unique people	467	2012	2059	1401	791	2102	593	4220	1774

Table S10.06 The Effect of a Younger Sister on Men's Extraversion

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) UKHLS	(5) LISS	(6) SOEP	(7) SHP	(8) HILDA	(9) IFLS
younger sister	-0.105	-0.019	0.038	-0.007	0.020	-0.015	-0.039	-0.017	0.017
SE	(0.066)	(0.043)	(0.036)	(0.053)	(0.073)	(0.045)	(0.071)	(0.028)	(0.047)
95% CI	[-0.235 - 0.025]	[-0.103 - 0.066]	[-0.032 - 0.108]	[-0.112 - 0.097]	[-0.123 - 0.163]	[-0.104 - 0.074]	[-0.178 - 0.099]	[-0.073 - 0.039]	[-0.075 - 0.110]
p-value	0.114	0.666	0.288	0.892	0.782	0.741	0.578	0.553	0.711
Observations	1,156	1,969	5,529	1,596	2,986	3,669	852	10,156	1,774
Adjusted R-squared	0.127	-0.004	0.013	0.000	0.017	0.010	0.182	0.038	0.003
Unique people	467	1969	2058	1400	791	2104	592	4219	1774

Table S10.07 The Effect of a Younger Sister on Men's Agreeableness

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) UKHLS	(5) LISS	(6) SOEP	(7) SHP	(8) HILDA	(9) IFLS
younger sister	0.134**	0.055	-0.045	-0.025	-0.087	-0.030	0.003	-0.005	0.042
SE	(0.054)	(0.043)	(0.034)	(0.055)	(0.068)	(0.044)	(0.074)	(0.028)	(0.047)
95% CI	[0.028 - 0.240]	[-0.030 - 0.140]	[-0.112 - 0.022]	[-0.134 - 0.083]	[-0.220 - 0.046]	[-0.116 - 0.056]	[-0.142 - 0.148]	[-0.060 - 0.050]	[-0.051 - 0.134]
p-value	0.013	0.206	0.188	0.647	0.198	0.496	0.967	0.854	0.378
Observations	1,118	1,952	5,481	1,598	2,986	3,670	852	10,160	1,774
Adjusted R-squared	0.138	0.004	0.005	0.004	0.025	0.002	0.072	0.011	0.005
Unique people	468	1952	2058	1401	791	2105	592	4221	1774

Table S10.08 The Effect of a Younger Sister on Men's Neuroticism

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) UKHLS	(5) LISS	(6) SOEP	(7) SHP	(8) HILDA	(9) IFLS
younger sister	0.028	-0.006	-0.003	-0.005	-0.062	-0.027	0.051	-0.006	-0.044
SE	(0.054)	(0.043)	(0.030)	(0.051)	(0.067)	(0.042)	(0.074)	(0.029)	(0.045)
95% CI	[-0.079 - 0.135]	[-0.091 - 0.079]	[-0.062 - 0.055]	[-0.105 - 0.096]	[-0.194 - 0.071]	[-0.109 - 0.056]	[-0.094 - 0.196]	[-0.064 - 0.051]	[-0.132 - 0.044]
p-value	0.608	0.887	0.913	0.929	0.361	0.525	0.491	0.827	0.331
Observations	1,472	2,014	5,556	1,597	2,986	3,670	852	10,153	1,774
Adjusted R-squared	0.252	-0.003	0.010	-0.001	0.023	0.008	0.072	0.014	0.028
Unique people	468	2014	2059	1401	791	2103	592	4219	1774

Table S10.09 The Effect of a Younger Sister on Men's Locus of Control

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) SOEP	(5) SHP	(6) HILDA
younger sister	-0.018	-0.039	-0.005	-0.018	-0.030	-0.021
SE	(0.079)	(0.027)	(0.034)	(0.047)	(0.044)	(0.027)
95% CI	[-0.173 - 0.137]	[-0.091 - 0.013]	[-0.072 - 0.063]	[-0.111 - 0.074]	[-0.117 - 0.058]	[-0.075 - 0.032]
p-value	0.818	0.145	0.886	0.696	0.505	0.433
Observations	690	7,079	6,938	2,835	1,865	12,068
Adjusted R-squared	-0.017	0.087	0.047	0.019	0.440	0.014
Unique people	429	2628	2129	1880	885	4227

Table S10.10 The Effect of a Younger Sister on Men's TFP Index

	(1) AddHealth	(2) NLSY79	(3) NLSY79CHYA	(4) MCS	(5) UKHLS	(6) LISS	(7) SOEP	(8) SHP	(9) HILDA	(10) CFPS	(11) IFLS
younger sister	0.109**	0.021	-0.014	0.035	-0.017	-0.116*	-0.003	0.083	-0.047**	0.128	0.019
SE	(0.052)	(0.019)	(0.022)	(0.039)	(0.036)	(0.065)	(0.028)	(0.062)	(0.019)	(0.090)	(0.038)
95% CI	[0.007 - 0.212]	[-0.017 - 0.059]	[-0.057 - 0.029]	[-0.042 - 0.112]	[-0.088 - 0.054]	[-0.244 - 0.011]	[-0.058 - 0.052]	[-0.037 - 0.204]	[-0.084 - -0.009]	[-0.050 - 0.305]	[-0.056 - 0.094]
p-value	0.036	0.289	0.515	0.374	0.633	0.074	0.911	0.175	0.015	0.159	0.613
Observations	1,472	13,103	13,331	2,620	2,919	3,020	12,673	1,252	36,171	485	2,532
Adjusted R-squared	0.248	0.040	0.021	0.000	0.049	0.031	0.079	0.019	0.032	0.062	0.020
Unique people	468	2625	2166	2620	1936	791	3081	938	4752	485	2043

Table S11

Effect of having a younger sister on personality, no control variables included. Standard errors in parentheses clustered at the individual level, 95% confidence intervals reported in brackets. Statistical significance denoted by * p < 0.1.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien- tiousness	(6) Extra- version	(7) Agree- ableness	(8) Neuro- ticism	(9) Locus of Control	(10) TFP Index
Women										
Younger sister	-0.007	-0.004	-0.003	0.015	0.017	-0.011	-0.013	-0.017	0.003	0.006
SE	(0.011)	(0.014)	(0.019)	(0.016)	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.009)
95% CI	[-0.029 - 0.015]	[-0.030 - 0.023]	[-0.041 - 0.035]	[-0.018 - 0.047]	[-0.013 - 0.046]	[-0.043 - 0.021]	[-0.042 - 0.016]	[-0.048 - 0.014]	[-0.026 - 0.033]	[-0.013 - 0.024]
Adj. R-squared	0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000
Observations	80,447	53,477	12,402	31,931	32,704	32,643	32,604	33,040	33,227	96,015
Distinct people	23548	21780	9302	16206	16308	16288	16286	16319	12457	22548
Men										
Younger sister	0.017	0.006	-0.031	-0.008	0.001	-0.004	-0.015	-0.016	-0.019	-0.019*
SE	(0.013)	(0.014)	(0.019)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.010)
95% CI	[-0.009 - 0.043]	[-0.022 - 0.034]	[-0.068 - 0.007]	[-0.039 - 0.024]	[-0.030 - 0.032]	[-0.036 - 0.028]	[-0.046 - 0.016]	[-0.047 - 0.014]	[-0.049 - 0.011]	[-0.040 - 0.001]
Adj. R-squared	0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	0.000
Observations	76,115	47,844	11,927	28,892	29,762	29,687	29,591	30,074	31,475	89,578
Distinct people	23156	20292	9205	15261	15419	15374	15362	15421	12178	21905

Table S12

Effect of having a younger sister on personality, firstborns only. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next younger sister dummy, including the controls described in the empirical strategy. Standard errors in parentheses clustered at the individual level, 95% confidence intervals reported in brackets. Statistical significance denoted by * $p < 0.1$, ** $p < 0.05$.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien-tiousness	(6) Extra-version	(7) Agree-ableness	(8) Neuro-ticism	(9) Locus of Control	(10) TFP Index
Women										
Younger sister	-0.026*	-0.027	0.024	0.014	0.009	-0.033	-0.016	-0.031	-0.011	0.012
SE	(0.015)	(0.018)	(0.023)	(0.021)	(0.019)	(0.021)	(0.019)	(0.020)	(0.021)	(0.012)
	[-0.055 -	[-0.061 -	[-0.021 -	[-0.028 -	[-0.028 -	[-0.076 -	[-0.053 -	[-0.071 -	[-0.052 -	[-0.012 -
95% CI	0.004]	0.008]	0.070]	0.055]	0.046]	0.009]	0.022]	0.009]	0.029]	0.037]
Adj. R-squared	0.046	0.032	0.013	0.011	0.046	0.024	0.035	0.035	0.066	0.063
Observations	43,696	32,081	8,301	18,658	19,226	19,211	19,211	19,481	17,179	52,608
Distinct people	13829	12894	6073	9768	9842	9836	9841	9842	6597	13616
Men										
Younger sister	0.035**	-0.008	-0.028	-0.001	-0.003	-0.024	0.001	-0.012	-0.022	-0.030**
SE	(0.017)	(0.018)	(0.024)	(0.021)	(0.020)	(0.021)	(0.020)	(0.019)	(0.021)	(0.014)
	[0.001 -	[-0.044 -	[-0.074 -	[-0.042 -	[-0.041 -	[-0.064 -	[-0.039 -	[-0.050 -	[-0.063 -	[-0.056 - -
95% CI	0.069]	0.027]	0.018]	0.040]	0.036]	0.017]	0.040]	0.025]	0.019]	0.004]
Adj. R-squared	0.037	0.029	0.011	0.018	0.057	0.022	0.025	0.043	0.066	0.043
Observations	42,736	30,058	8,070	17,381	18,059	18,045	17,993	18,316	16,853	50,732
Distinct people	13920	12408	6058	9482	9596	9591	9586	9598	6669	13559

Table S13

Effect of having a younger sister on personality, sample restricted to firstborns with only one younger sibling. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next younger sister dummy, including the controls described in the empirical strategy. Standard errors in parentheses clustered at the individual level, 95% confidence intervals reported in brackets. Statistical significance denoted by * $p <$ 0.1, ** $p < 0.05$.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien- tiousness	(6) Extra- version	(7) Agree- ableness	(8) Neuro- ticism	(9) Locus of Control	(10) TFP Index
Women										
Younger sister	-0.050**	-0.038	0.064	0.024	0.010	-0.028	-0.041	-0.004	0.031	0.024
SE	(0.023)	(0.026)	(0.041)	(0.031)	(0.027)	(0.032)	(0.028)	(0.029)	(0.030)	(0.018)
95% CI	[-0.094 - - 0.005]	[-0.089 - 0.012]	[-0.016 - 0.145]	[-0.037 - 0.085]	[-0.043 - 0.064]	[-0.090 - 0.034]	[-0.095 - 0.014]	[-0.062 - 0.053]	[-0.029 - 0.090]	[-0.012 - 0.059]
Adj. R-squared	0.056	0.031	0.012	0.008	0.055	0.025	0.034	0.047	0.082	0.072
Observations	18,836	16,263	2,928	8,976	9,313	9,310	9,312	9,469	7,414	24,171
Distinct people	5938	6161	2234	4564	4596	4598	4598	4598	3067	6503
Men										
Younger sister	0.047*	0.001	-0.087**	-0.005	-0.023	-0.002	0.016	-0.004	-0.004	-0.029
SE	(0.026)	(0.026)	(0.041)	(0.030)	(0.029)	(0.030)	(0.029)	(0.028)	(0.031)	(0.020)
95% CI	[-0.005 - 0.098]	[-0.050 - 0.052]	[-0.167 - -0.007]	[-0.064 - 0.054]	[-0.079 - 0.034]	[-0.061 - 0.057]	[-0.042 - 0.073]	[-0.059 - 0.051]	[-0.064 - 0.057]	[-0.069 - 0.011]
Adj. R-squared	0.038	0.035	0.015	0.019	0.062	0.023	0.026	0.051	0.074	0.048
Observations	18,945	15,745	2,878	8,528	8,927	8,927	8,902	9,084	7,419	23,914
Distinct people	6031	6114	2193	4494	4563	4564	4564	4568	3148	6557

Table S14

Effect of having a younger sister on personality, with control for total number of siblings. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next younger sister dummy, including the controls described in the empirical strategy. Standard errors in parentheses clustered at the individual level, 95% confidence intervals reported in brackets. Statistical significance denoted by * $p < 0.1$.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscien- tiousness	(6) Extra- version	(7) Agree- ableness	(8) Neuro- ticism	(9) Locus of Control	(10) TFP Index
Women										
Younger sister	-0.007	-0.007	-0.003	0.014	0.015	-0.008	-0.006	-0.018	0.005	0.009
SE	(0.011)	(0.014)	(0.019)	(0.016)	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.009)
	[-0.029 -	[-0.034 -	[-0.041	[-0.018 -	[-0.014 -	[-0.041 -	[-0.035 -	[-0.049 -	[-0.024 -	[-0.010 -
95% CI	0.015]	0.020]	- 0.035]	0.046]	0.043]	0.024]	0.023]	0.013]	0.035]	0.027]
Adj. R-squared	0.044	0.030	0.018	0.011	0.042	0.020	0.034	0.033	0.067	0.055
Observations	80,447	53,477	12,402	31,931	32,704	32,643	32,604	33,040	33,227	96,015
Distinct people	23548	21780	9302	16206	16308	16288	16286	16319	12457	22548
Men										
Younger sister	0.018	0.006	-0.032*	-0.011	-0.000	-0.004	-0.013	-0.014	-0.023	-0.017
SE	(0.013)	(0.014)	(0.019)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)	(0.010)
	[-0.008 -	[-0.021 -	[-0.070	[-0.043 -	[-0.031 -	[-0.036 -	[-0.044 -	[-0.045 -	[-0.053 -	[-0.037 -
95% CI	0.044]	0.034]	- 0.006]	0.020]	0.030]	0.027]	0.018]	0.016]	0.007]	0.003]
Adj. R-squared	0.038	0.027	0.014	0.018	0.049	0.021	0.021	0.036	0.065	0.040
Observations	76,115	47,844	11,927	28,892	29,762	29,687	29,591	30,074	31,475	89,578
Distinct people	23156	20292	9205	15261	15419	15374	15362	15421	12178	21905

Table S15

Effect of having a younger sister on personality, excluding data from the UKHLS, CFPS, MXFLS, and HILDA. Each of the columns shows the results from a separate regression of the standardized trait shown in the header on a next younger sister dummy, including the controls described in the empirical strategy. Standard errors in parentheses clustered at the individual level, 95% confidence intervals reported in brackets. Statistical significance denoted by * $p < 0.1$.

	(1) Risk Tolerance	(2) Trust	(3) Patience	(4) Openness to Exp.	(5) Conscientiousness	(6) Extra-version	(7) Agree-ableness	(8) Neuro-ticism	(9) Locus of Control	(10) TFP Index
Women										
Younger sister	-0.020	-0.030	0.006	0.028	0.027	-0.039*	-0.003	-0.018	0.006	0.015
SE	(0.013)	(0.019)	(0.023)	(0.020)	(0.019)	(0.021)	(0.018)	(0.019)	(0.018)	(0.011)
95% CI	[-0.046 - 0.006]	[-0.068 - 0.008]	[-0.039 - 0.051]	[-0.011 - 0.068]	[-0.011 - 0.064]	[-0.080 - 0.003]	[-0.039 - 0.032]	[-0.056 - 0.020]	[-0.029 - 0.041]	[-0.007 - 0.037]
Adj. R-squared	0.056	0.029	0.008	0.015	0.038	0.022	0.033	0.043	0.099	0.057
Observations	40,076	29,815	8,946	18,890	19,666	19,611	19,568	20,013	19,686	52,218
Distinct people	14030	12970	6785	10173	10276	10257	10254	10290	7826	14864
Men										
Younger sister	-0.010	0.002	-0.024	-0.002	0.010	0.005	-0.016	-0.019	-0.023	0.001
SE	(0.014)	(0.020)	(0.023)	(0.021)	(0.019)	(0.021)	(0.020)	(0.019)	(0.018)	(0.012)
95% CI	[-0.038 - 0.018]	[-0.037 - 0.042]	[-0.070 - 0.021]	[-0.042 - 0.039]	[-0.028 - 0.048]	[-0.035 - 0.046]	[-0.055 - 0.022]	[-0.055 - 0.018]	[-0.058 - 0.012]	[-0.022 - 0.024]
Adj. R-squared	0.045	0.026	0.006	0.015	0.063	0.026	0.027	0.042	0.093	0.049
Observations	39,441	27,444	8,599	17,134	18,006	17,935	17,833	18,324	19,407	50,003
Distinct people	14130	12497	6675	9639	9798	9755	9740	9801	7951	14732