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Supplementary Online Materials for

Birth Weight and Adult Social Trust: Evidence for Early Calibration of Social Cognition

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Contents

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S1: Sample characteristics, measures, and results from the Survey of Researchers

Sample characteristics. The survey was fielded in November 2013 to researchers in sociology, economics, and health research at a leading Danish research university. A total of 117 researchers participated in the survey, 28 from econometrics, 23 from sociology, and 66 from clinical medicine. Of the respondents, 32% were female and the average age was 50. In terms of academic rank, 43% were professors, 27% associate professors, 6% were assistant professors or postdocs, 18% were graduate students, while 7% indicated "other" rank.

Measures. To measure the relative importance of three potential, early determinants of social trust, the respondents were asked to indicate the relative importance of two classic socio-economic factors—the education and income of the mother—and birth weight. Specifically, the respondents were asked: "What do you think the relative importance of the following factors is to whether a person as an adult comes to trust others? Indicate the relative importance of the factors so that their relative importance adds up to 100%." Respondents then ranked the relative importance of "the education of the person's mother," "the income of the person's mother," and "the person's birth weight" on a scale ranging from 0–100%. For the purpose of the empirical analysis, the relative rankings were recoded to range from 0–1, higher values indicating greater relative importance. Table S1 summarizes the findings reported in the main text. Entries report the mean relative ranking of importance (standard deviations in parentheses).

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Table S1. Intuitions about the relative importance of three factors for how trusting a person becomes as an adult

Factor	Relative importance ranking (individual factors) M1	Relative importance ranking (socio-economic factors combined vs. birth weight) M2
Mother's education of the person's mother	.56 (.23)	
Mother's income	.26 (.16)	
Socio-economic factors combined	–	.82 (.22)
The person's birth weight	.18 (.22)	.18 (.22)

Note. Entries are mean relative importance rankings ranging from 0–1. The importance rankings in M1 and M2 add up to 1. The results are based on 117 observations.

S2: Sample characteristics—Sample 1

The European Social Survey (ESS) is a random and representative probability sample of Danish citizens over age 15. Of the 1664 respondents for whom we have birth weight data, 50% were female and the average age was 24.56 years. In terms of education, 1.38% had less than lower secondary education, 30.76% had completed a lower secondary education, 39.95% had completed upper secondary education, and 27.91% had completed a tertiary education. In terms of income, 60.93% of the respondents reported that their current household income allowed them to live comfortably, 31.15% reported that they could get by without much problem, 6.50% reported having difficulties, and 1.42% reported that they were really struggling to get by on their present income.

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S3: Measures—Sample 1

Birth weight. As emphasized by Black, Devereux, and Salvanes (2007: 415), "in the literature, different variants of birth weight have been used as the primary variable of interest." Consistent with prior studies based on high quality measures of birth weight from official governmental registries (e.g. Black, Devereux, & Salvanes, 2007; Juarez & Merlo, 2011), we apply a continuous measure of exact birth weight as indicated in the official records provided by the medical staff at birth. In the official Danish government archive data, birth weight is measured in grams (M = 3318, SD = 595).

Social trust: To measure social trust, we rely on the classic international standard measure that is included in the ESS, EVS/WVS, and the GSS (e.g. Inglehart & Welzel, 2005, 22; Knack & Keefer, 1997, 1256; Rosenberg, 1956; Uslaner, 2002, 52). Specifically, respondents answered the following question: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" The respondents were instructed to indicate their evaluation "on a scale from 0–10, 0 indicating that you cannot be too careful and 10 indicating that most people can be trusted." A "Don't know" option was also provided. "Don't know" answers were subsequently excluded from the analysis. Valid responses were recoded on a scale from 0 to 1 (M = .67, SD = .17; higher values indicate greater trust).

Self-reported stress (measured as life satisfaction): Respondents answered the following question: "All things considered, how satisfied are you with your life as a whole? Indicate your evaluation on a scale from 0–10, 0 indicating very dissatisfied and 10 indicating very satisfied." Answers were obtained on an 11-point scale. A "Don't know" option was also provided; "Don't know" answers were subsequently excluded from the analysis.

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Control variables: (1) *Income of the family head* (by default the mother) was measured as income after taxes and interest rates based on information from government registries. (2) *Education of the family head* (by default the mother) was measured as the standard time limit of the highest completed education of the family head based on information from government registries. (3) *Mean birth weight of siblings* was generated by averaging the birth weight of siblings (if any) measured in grams (M = 3359, SD = 570). Specifically, for each year where we have available registry data and in which our survey respondents were potentially born (from 1980–1996), we identified all family members (if any) in the same household as the respondent and removed parents. The remaining family members will be siblings to the respondents. Yet because the family identification variable is defined with reference to the parents, we cannot be 100% certain that all siblings are full siblings to the respondent; they could be half-siblings or even stepsiblings. Importantly, however, this is only a concern for a very small minority of the cases. According to Statistics Denmark, children from different marriages lived together in only 9, 9, and 8% of families in 1985, 1990/1991, and 2001, respectively (Christoffersen, 2004). For all siblings so defined that were alive in the year in question, we added their birth weight and took the average value. For each respondent, we then took the earliest (in years) available value in order to ensure that the sibling birth weight variable captures the weight of the siblings born closest to the respondent in time and, hence, under the most similar circumstances. We were able to obtain this measure for a subsample of 1214 of our respondents with complete information on other key variables. To gain further control regarding similar circumstances, we created another subsample following the logic specified above and also collected data on: (4) *birth weight of closest younger sibling* (M = 3553, SD = 576). Because this measure is created for one identifiable sibling, we are able to include two additional control variables created on the basis of the register entries: *(5) gender of closest younger sibling* and (6) *difference in age between closest younger sibling*

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and the respondent. Family environments will presumably be more similar for same-sex siblings who are of similar age. These measures are available for 447 respondents (and 429 with complete information on all variables). Finally, we also control for (7) *year of birth* and (8) *gender* of the respondent using the ESS measures.

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S4: Sample characteristics—Sample 2

The DALSC included a longitudinal cohort study of 6,011 children (see http://www.sfi.dk/about_the_research-11402.aspx). They were selected as a random sample of "all children living in Denmark who were born between 15 September and 31 October 1995, by mothers with Danish citizenship" (Ottosen, 2011, 121). This survey is commonly referred to as the "Danish Survey." The mothers have been surveyed in five waves while the children were ages 0–15. The children have been surveyed in two of the waves (at ages 11 and 15) (Ottosen, 2011, 122). Across all of the waves, the response rate was ≥ 73.4% of the original sample for the mothers and ≥ 71.9% of the original sample for the children (Ottosen, 2011, 122; 2012, 38). Our analyses are based on between 3300 and 4097 children from the DALSC with complete data on relevant measures. The variation in sample size reflects that children with incomplete data on one or more measures in an analysis are excluded from that analysis.

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S5: Measures—Sample 2

Birth weight. In the Danish survey from the DALSC, the birth weight information was reported by the mothers in wave 1 (children age 0). Specifically, the mothers were asked, "How much did the child weigh at birth?" Answers were recorded in grams (M = 3508, SD = 603, min. = 595 and max. = 5770). Answers were subsequently rescaled to range from 0–1.

Social trust. Our primary dependent variable, social trust, was reported by the children at age 15 (wave 5) using the same measure as in sample 1—the classic international standard measure from the WVS and GSS (e.g. Inglehart & Welzel, 2005, 22; Knack & Keefer, 1997, 1256; Rosenberg, 1956; Uslaner, 2002, 52). Specifically, the children were asked "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" Answers were obtained on an 11-point scale with end points labelled "0. You cannot be too careful" and "10. Most people can be trusted." In the analysis, the answers were rescaled to range from 0–1 (M = .63, SD = .19, min. = 0, max. = 1).

Delayed gratification. In the DALSC, externalizing problems were measured using a scale composed of the items measuring the subscales of conduct problems and hyperactivity from the Strengths and Difficulties Questionnaire (SDQ) (e.g. Goodman 1997, 2001) as observed and reported by the mother. To measure conduct problems, the mothers reported how true the following was of the child: "Often has temper tantrums or hot tempers," "Generally obedient, usually does what… ," "Often fights with other children or bullies them," "Often lies or cheats," "Steals from home, school or elsewhere." To measure hyperactivity, the mothers reported how true the following was of the child "Restless, overactive, cannot stay still for long," "Constantly fidgeting or squirming," "Easily distracted, concentration wanders," "Thinks things out before acting," "Sees tasks through to the end,

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good attention span." The items measuring conduct problems and hyperactivity were first combined in two scales (for detailed information on the scoring of the items, see www.sdqinfo.org). These scales were then added in the final scale measuring the child's level of externalizing problems. In combining these subscales into a broader construct of externalizing problems, we are following recommendations of recent research, particularly as regards a low-risk sample like ours with children of normal mental health (Goodman, Lamping, & Ploubidis 2010, 1189).

Sexual maturity. To measure whether the adolescent has had sexual intercourse, they were asked at age 15 (wave 5) "Have you ever had sexual intercourse?" Affirmative responses were coded 1 (31.3%), negative 0 (68.7%).

Control variables. (1) *Length of hospitalization:* For all of the hospital-born children (97.2%), the length of hospitalization when the child was born was measured in wave 1 (age 0), as was the number of days spent in the hospital (M = 4.8 day, min. 0 days, max. 93 days). For the purpose of the analysis, the variable was rescaled to vary from 0 (0 days) to 1 (93 days). (2) *Health of the child at age 0* was reported by the mothers in the first wave based on the following question: "How would you describe your child's health in general?" Response categories included "excellent," "good," "reasonable," "rather poor," "very poor." Answers were rescaled to range from 0 (excellent) to 1 (very poor) (M = .08, min. = 0, max. = 1). (3) *Mother's education when the child was born*: To measure the mother's education around the time when the child was born, we rely on measures from wave 1 (age 0 of children). Mother's education ranges on a 7-point scale, the endpoints representing respondents who have not completed "Any vocational education and training" (0) and "Long-cycle higher education program" (1) (M = .33, min. = 0, max. = 1). (4) *Mother's personal income when the child was born*: To measure the mother's income around the time when the child was born, we rely on measures from wave 1 (age 0 of children). Income was measured as the total personal gross income in 1995. Answers were

measured on an 11-point scale with endpoints “DKK 0–49,000” (0) and “DKK 500,000+” (1). “Don't know” answers were also recorded and subsequently excluded from the analysis. (5) *Mother's smoking habits*: To measure the smoking habits of the mother around the time when the child was born we rely on answers from wave 1 (children age 0). Mother's smoking habits were measured as the average number of cigarettes smoked daily (M = 3.2, min. = 0, max. = 88). For the purpose of the analysis, mother's smoking habits were rescaled to range from 0 (0 cigarettes) to 1 (88 cigarettes). (6) *Intelligence*: As part of the survey collected in wave 4 when the children were 11, they were given 17 minutes to complete a cognitive test consisting of 40 questions divided into three categories. The test had the form of a cognitive figure test corresponding to a Raven test. A total score was calculated based on answers to the 40 questions. In the analysis in Study 3, we use this total score as our intelligence indicator (Munk & Olsen, 2009: 4). Finally, we also include control for (7) the *gender of the child* and (8) the *number of older siblings.* The final control measure corrects for birth order effects.

S6: Sample characteristics—Sample 3

The data was collected by the Epinion polling agency from 24 October to 1 December, 2013. Based on quota sampling, an approximately nationally representative sample was drawn from the agency's standing online web panel to match population on dimensions of gender, age, geography (region), and education. A total of 2004 respondents completed the survey, 52% of which were female and the average age was 48 years (SD = 16 years). Regarding their highest completed education, 16% had no education other than lower secondary school, 24% had vocational training or an apprenticeship, 12% had finished secondary school, 15% had a short, higher education, 25% had a medium higher

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education, and 9% had a tertiary higher education. In terms of household income, the mode was an income in the interval DKK 200,000–399,999 (approximately $36,250–72,500).

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S7: Measures—Sample 3

Birth weight (measured in weight intervals of 1000 g). To obtain our primary measure of birth weight in the online web survey, we asked participants whether they knew if their birth weight was relatively low, relatively high, or average. All "Don't know" participants were then asked, "Do you remember which of the following intervals your birth weight was in?" "1. Less than 1000 g, 2. 1000–1500 g, 3. 1501–2500 g, 4. 2501–3500 g, 5. 3501–4500 g, 6. Above 4500 g, 7. Don't know." Excluding the "Don't know answers, 1503 respondents, corresponding to 75% of the original sample, placed themselves on the scale. The most frequently chosen birth weight interval was "Between 2501 and 3500 g" (53% of the respondents). This birth weight measure (measured in intervals of 1000 g) constitutes our primary measure of birth weight used in the analysis of Sample 3 for Study 3.

Of importance to the analysis of robustness and replicability, we also included another measure of birth weight in the survey. Specifically, to obtain a measure giving exclusive priority to measurement validity, we asked respondents to indicate their *exact birth weight in grams* as accurately as they could (Mean = 3356 g, SD = 743 g). The measure of *exact birth weight in grams* is used in the analysis of robustness reported in Table S4.

Social trust. To measure social trust, we construct two measures: First, we used the same international standard question as in Samples 1–2. Following Uslaner (2009), however, we recorded answers on a 4-point scale rather than an 11-point scale in order to obtain more reliable estimates of the direction of the subject's level of trust in this smaller sample with self-reported birth weight. To measure social trust based on the standard question, subjects therefore responded to the following item: I) "Do you agree most with A or B? A says: 'In general, you can trust other people.' B says: 'You cannot be too careful when dealing with other people.'" Answers were obtained on the following scale:

"Agree completely with A," "Agree somewhat with A," "Agree somewhat with B," "Agree completely with B" (reverse coded) and subsequently rescaled to range from 0–1, higher values indicating higher social trust (M = .70, SD = .27). This measure constitutes our primary measure of social trust in the analysis of Sample 3 reported in Study 3.

Of importance to the analysis of robustness and replicability, in addition to the single-item measure, we also asked the following two questions to be able to construct an alternative, three-item-based index measuring social trust: "Do you agree most with A or B? A says: 'Most people will try to be fair.' B says: 'Most people will try to take advantage of me.'" "Do you agree most with A or B? A says: 'Most people think mostly of themselves.' B says: 'Most people try to be helpful'" (reverse coded). Answers were obtained on the following scale: "Agree completely with A," "Agree somewhat with A," "Agree somewhat with B," "Agree completely with B." Answers were obtained on the 4-point scale described above. Answers to all three items were summed into an acceptably reliable scale ($\alpha = .69$) of social trust (M = .65, SD = .21). This alternative three-item-based scale measuring social trust is used in the analysis of robustness reported in Table S4.

Experimentally induced stress. To experimentally induce stress, we utilized a design by Navarrete et al. (2004) that activates stress by having respondents simulate physiological reactions to threats to property and safety by having them read a short vignette about a burglary of their home and then being asked to describe their physical state when imagining the situation. The control group read a short vignette about watching their favorite TV program and was asked to describe their physical state when imagining that situation. Respondents were randomly assigned to the conditions. The full wording of the vignettes is presented below:

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Condition	Text	Picture
Stress-activation	Try to imagine the following situation as vividly as possible. You come home late one evening and discover that the door is open and the lock has been broken. Somebody has broken into your home. You open the door carefully, look inside, and call out: "Hello, is anybody there?" Are the burglars gone?	
Control	Try to imagine the following situation as vividly as possible. You come home, take a drink from the fridge and lie down on the couch. You are home just in time for your favorite show on television. You turn on the TV and turn to the program. What will happen this week?	
Rehearsal primes used in both conditions	Describe the emotions you experience in this situation. Describe what runs through your body as you [discover the break-in]/[turn on your favorite show]?	

Control variables. We include controls for sex, age, mother's education, and the respondent's financial situation in early childhood. Specifically, mother's education was measured as the highest education the mother had completed when the respondent was age five. Answers were measured on a 6-point scale. "Not relevant" and "Other" options were also provided; "Not relevant" and "Other" answers were subsequently excluded from the analysis. The respondent's finances in early childhood were measured using the following question: "What was the annual gross income (before tax) in your household when you were 5 years old?" (in the currency of those days). Due to a mistake, the answers of respondents participating in the survey during the first 2 days of data collection (31% of the sample) were measured on a 6-point scale ranging from "less than DKK 199,999" to "DKK 1,000,000 or more." For those participating in the remainder of the data collection, answers were measured on a

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fuller 9-point scale ranging from “Less than DKK 25,000” to “DKK 1,000,000 or more.” Respondents were also presented with a “Have no idea at all” option, and these answers were subsequently excluded from the analysis.

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S8: Sample characteristics—Sample 4

Sample 4 was collected as a laboratory study in December 2012. The participants were students at a large Danish research university. Thirty-two respondents returned information about their birth weight and valid cortisol samples. In this sample, 59 % were female and the mean age was 20.8 years.

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S9: Measures—Sample 4

Birth weight. To increase the reliability of the measurement, upon signing up for the study, the participants were asked to contact their parents and obtain their exact birth weight prior to coming to the laboratory. In the lab, birth weight was measured using the following question: "What was your birth weight (indicate your weight in grams as precisely as you can). Write your birth weight here_____." The mean birth weight was 3547 g, with a standard deviation of 537 g (min. 2500, max. 4500).

Social trust. To measure social trust, participants answered the following question: "The following questions concern the relationship between individuals in society. Do you agree most with A or B? A says: 'In general, you can trust others.' B says: 'You can't be too careful when dealing with others.'" Answers were obtained on the following scale: "Agree completely with A," "Agree somewhat with A," "Agree somewhat with B," "Agree completely with B" (M = .79, SD = .22 on a 0–1 scale, higher values indicating higher social trust).

Cortisol awakening response. To measure the cortisol awakening response, all of the participants were provided with two DRG Sali-Tube test kits for cortisol measurement together with written and verbal instructions. They were instructed to provide two saliva samples the next morning: one immediately after awakening and another after 30 minutes. They were instructed not to brush their teeth or use dental tape before providing both saliva samples to avoid contamination of saliva with blood. They were instructed not to use lip stick or lip balm and not to eat or drink anything before providing both saliva samples. Otherwise they were free to follow their daily routines. The samples were then returned to us, analyzed for cortisol levels at a large regional hospital, and the increase in cortisol from sample 1 to sample 2 was calculated.

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Control variables. In the analysis based on Sample 4, we control for the child's gender, mother's education, and financial situation in early childhood (childhood SES). To measure their mother's level of education in their early childhood, respondents answered the following question: "What was the highest level of education that your mother had completed at the time when you started school?" Answers were measured in 8 categories. A "Not relevant" option was also provided, and these answers were subsequently excluded from the analysis.

To measure childhood SES, the respondents answered the following questions: "When you think back to the time when you started school, how characteristic are the following statements concerning your parents?" "My parents had trouble making the ends meet" (reverse coded), "When something broke, it was difficult for my parents to buy something new" (reverse coded) "My parents could only rarely afford to be me new clothes" (reverse coded), "My parents were not well-off financially" (reverse coded) "My parents were well-off financially". Answers were measured on a 4-point scale, with end points labeled, "Not characteristic at all" and "Very characteristic." A "Not relevant" option was also provided, and these answers were subsequently excluded from the analysis. Answers were summed to a reliable scale of childhood SES ($\alpha = .75$).

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S10: Supplemental Analysis and Results—Study 1

Table S2 displays the effects reported in the main text and an analysis of robustness. The coefficients reported in the table are unstandardized regression coefficients. Given that the data is pooled from several, different ESS rounds conducted several years apart, we reported cluster robust standard errors to account for within-round autocorrelation. Furthermore, following Baum et al. (2007) and Cameron et al. (2011), we adjust these clustered standard errors for the small number of clusters. To estimate a covariance matrix of full rank with the limited available degrees of freedom (equal to the number of clusters), we simply partial out the effect of control variables rather than estimating their coefficients (Baum et al. 2010).

Table S2, M1+3-7 displays results reported in the main text. Table S2, M2 replicates the basic model using the alternative, three-item social trust measure. As can be seen, we are able to replicate the findings reported in the main text using this alternative dependent variable ($b = 0.05$, $p = .029$). Table S2, M7-8 provides in-depth analysis of the control for the birth weight of the closest younger sibling. Specifically, we provide a better control for shared environments by utilizing information about whether the sibling is of the same sex as the respondent and the age difference between the sibling and the respondent. Presumably, shared environments will be more equal for same-sex siblings of similar age. In Table S2, M7, we model this additional control as a three-way interaction between the sibling's birth weight, whether the sibling and the respondent are of the same gender, and how many years they are apart. This three-way interaction is insignificant and the effect of the respondent's birth weight remains significant under this stronger control ($b = .22$, $p = .017$). In Table S2, M8, we model this control as two separate two-way interaction terms: (1) between the sibling's birth weight and whether the sibling and respondent share the same sex or not and (2) between the sibling's birth weight and the age difference between the sibling and respondent. Again, these interaction terms are insignificant, and

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the effect of the respondent's birth weight on social trust remains significant ($b = .18$, $p = .012$). This additional analysis suggests even more strongly that the effects of birth weight on social trust are not confounded by family environment.

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Table S2. The effect of birth weight on measures of social trust (Sample 1)

	Social trust (1 item) M1	Social trust (3 items) M2	Social trust (1 item) M3	Social trust (1 item) M4	Social trust (1 item) M5	Social trust (1 item) M6	Social trust (1 item) M7	Social trust (1 item) M8
Birth weight	.07* (.02)	.05* (.01)	–	–	.07** (.01)	.17* (.05)	.22* (.06)	.18* (.04)
Education of mother at birth	.13* (.03)	.07* (.02)	.13** (.03)	.19** (.02)	partialled out	partialled out	partialled out	partialled out
Income of mother at birth	.10* (.03)	.08 (.04)	.09 (.04)	.08 (.05)	partialled out	partialled out	partialled out	partialled out
Mean sibling birth weight	–	–	.01 (.02)	–	–.02 (.01)	–	–	–
Birth weight of youngest closest sibling	–	–	–	-.03 (.08)	–	–.12 (.10)	partialled out	partialled out
Birth weight of youngest closest sibling × youngest closest sibling and respondent is same gender × age differences between youngest closest sibling and respondent	–	–	–		–	-	.16 (.07)	–
Birth weight of youngest closest sibling × youngest closest sibling and respondent is same gender	–	–	–		–	–	–	.02 (.03)
Birth weight of youngest closest sibling × age differences between youngest closest sibling and respondent	–	–	–		–	–	–	.12 (.27)
Observations	1554	1555	1214	432	1214	429	429	429
R^2	.031	.018	.027	.038	.002	.008	.031	.010

Note. Entries are unstandardized regression coefficients. Adjusted cluster robust standard errors are reported in parentheses. In addition to the variables reported in the table, we additionally partial out the effects of the respondent's gender and year of birth. The findings in Model 1 and Models 3-7 are the results reported in the main text effects. The findings in Model 2 are analyses of robustness using an alternative measure of trust. The findings in Model 8 are an alternatively specified interaction model (compare with Model 7). * $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed.

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S11: Supplemental discussion, analysis and results—Study 2

Figure 1 in the main text was shaped by a number of different but related analytical goals including: 1) providing evidence that the effect of birth weight on social trust exists over and beyond any effects through intelligence; 2) providing evidence that social trust is part of a larger cluster of traits related to an individual's life-history strategy; 3) providing evidence that when individual differences in life-history strategies are taken into account the effect of birth weight becomes negligible; and 4) providing evidence that individual differences in life-history strategies constitute developmental stable differences and, hence, can be traced back to when the individuals are 7 in age.

To accomplish these goals, we made two analytical decisions that can raise conceptual concerns. First, because the only life-history trait that was measured at multiple age levels was the motivation to delay gratification, this trait (assessed at age 7, 11 and 15) gains a disproportionate weight in the measurement of the individual's overall life-history strategy. Second, these goals require that indirect effects of birth weight on social trust through the latent life-history strategy trait are modeled but also that direct effects of intelligence and birth weight (see goals 1 and 3) on trust are modeled. Because social trust is specified as a dependent variable on its own, it is statistically no longer treated as part of the measurement model for the latent life-history strategy trait but rather (and, conceptually, slightly incorrectly) as an observed trait that is caused by the latent trait as measured by the other observed life-history variables.

In this supplementary analysis, we provide a simplified model that does not raise these conceptual concerns. Relative to Figure 1 in the main text, Figure S1 is changed in two ways: First, we do not specify any direct paths to social trust except from the latent life-history strategy trait. Hence, in this model, social trust constitutes as much a part of the latent life-history strategy measure as the other

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life-history traits. Second, we have removed the measures of delayed gratification at age 7 and 11 and, hence, the measurement of the latent trait is now equally influenced by sexual activity, motivation to delay gratification and social trust. This simplified model also lends support to our basic predictions: that social trust constitutes part of a larger cluster of life-history strategy traits and that this cluster of traits is influenced by an individual's birth weight.

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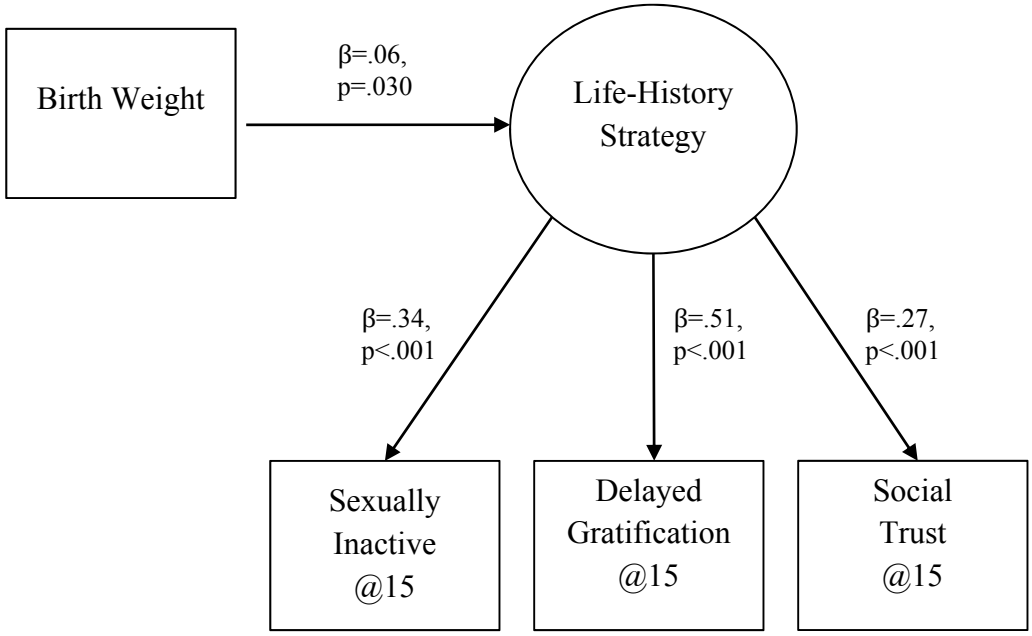
Figure S1. Alternative model of life-history strategy as developmental pathway through which birth weight affects trust (Sample 2)



Note. N = 3735. Markers indicate effect sizes in the form of standardized beta coefficients estimated using Structural Equation Modeling (RMSEA = .040). P-values are two-tailed. The model includes the range of control specified under "Methods" for Study 2 in the main text (including intelligence). Variables in boxes are observed variables, variables in circles are latent traits. Numbers after @ are the year in which the variable was assessed. All paths were estimated simultaneously. The indirect effect of birth weight on trust as statistically mediated by the latent life-history trait is β = .02, p = .034.

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S12: Supplemental analyses and results—Study 3

The findings reported in Tables S3-S5, Model 1, are the OLS regression results upon which the marginal effects in Figure 2 in the main text were calculated. Specifically, Table S3 shows the moderating effect of self-reported stress (Sample 1, Panel A, Figure 2), Table S4 shows the moderating effect of experimental stress (Sample 3, Panel B, Figure 2), and Table S5 shows the moderating effect of biological stress on the impact of birth weight on social trust (Sample 4, Panel C, Figure 1). In Tables S3-5, we also report on the analysis of the robustness of the findings reported in Tables S3-5, Model 1 and in Figure 2 in the main text using an alternative model specification (ordered logit) and different measures of birth weight and social trust.

Regarding the moderating effect of self-reported stress (Sample 1), we analyze the robustness to replicate the findings reported in the main text (Table S3, M1) using the three-item scale measuring social trust instead of the standard single item (Table S3, M2). We are able to replicate the findings reported in the main text using this alternative dependent variable (interaction: b = 0.41 (.11), p = .02).

Regarding the moderating effect of experimental stress (Sample 3), we analyze the robustness to replicate the findings reported in the main text using an ordered logit model specification (Table S3, M2-3), birth weight measured in grams instead of weight intervals (Table S4, M3 and M5), and a three-item scale measuring social trust instead of the standard single item (Table S4, M4-5). Across these four analyses of robustness in Sample 3, we are able to replicate the significant moderating effect of experimental stress on the impact of birth weight on social trust reported in the main text using an ordered logit model specification (M2), an alternative three-item scale measuring social trust instead of the standard single item (M4-5), and birth weight measured in grams instead of weight intervals (M5) (all p-values for the moderating effects of experimental stress $\geq .008 \leq .045$, two-sided tests). This

supports the tentative evidence reported in the main text that the social cognitive effects of low birth weight can be alleviated if adult environments are benign.

Regarding the moderating effect of biological stress (Sample 4), we analyze the robustness using an ordered logit model specification (Table S5, M2) and a three-item scale measuring social trust instead of the standard single item (Table S5, M3). As seen in Table S5, M2, the marginally significant moderating effect of biological stress on the impact of birth weight on social trust remains robust using an ordered logit model instead of the OLS regression model (b = 5.63 (3.36), p = .094). In Table S5, M3, which uses the three-item measure of social trust instead of the standard single item, the moderating effect of biological stress becomes statistically insignificant (p = .569). The findings in Table S5, M3, suggest that the tentative effects in the small student sample are less reliable.

The effect of birth weight for average levels of stress. In Study 3 we also investigated the effects of birth weight on social trust in non-interactive models including the stress measures as covariates. In sample 1, consistent with the results reported in Study 1 for sample 1, we find a significant effect of birth weight on social trust (b = 0.07, p = .010; n = 1548) controlling for self-reported stress (in the model we also partial out the effects of the gender of the respondent, their year of birth, and the education and income of the family head (by default the mother). Estimating the non-interactive model in the smaller Sample 3, we find no significant effect of birth weight controlling for our experimental stress manipulation (and gender, age, education of the mother, and socioeconomic conditions in early childhood) (b = –0.06, p = .398; n = 648). Likewise, estimating the non-interactive model in the small Sample 4, we again find no significant effect of birth weight on social trust controlling for biological stress, age, gender, and socioeconomic conditions in the childhood environment (b = 0.04, p = .814; n = 32). One analytical explanation is that only the stronger interaction effect between stress and birth weight is detectable in samples with less statistical power and less measurement validity, whereas the

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smaller main effect (in terms of effect size) requires more power and better measures of birth weight (e.g., we rely on self-reported placement in broad intervals of birth weight in sample 3). A more theoretical explanation relates to the suggested role of stress-reactivity. Potentially, stress is not only a moderator but also a mediator of the birth weight effect. When stress is directly induced, as in sample 3, this could cancel out the main effect of birth weight. Nonetheless, the fact that the effect of birth weight in sample 1 is unaffected by controlling for self-reported stress argues against this explanation. Finally, it should be noted that a reason for the lack of a main effect of birth weight on social trust in Sample 3 is that the effects of birth weight move in opposite directions in the two experimental conditions. In the control condition where a positive and relaxed mood is induced, the effect of birth weight seems to reverse in this particular sample. This could be taken as an indication that low birth weight individuals are more sensitive to both stressful and positive stimuli. No other samples, however, show an indication of such a reversal.

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Table S3. The moderating effect of self-reported stress (Sample 1)

	Social trust (1 item) M1	Social trust (3 items) M2
Birth weight	.00	–.02
	(.04)	(.02)
Self-reported stress	–.50**	–.48**
	(.10)	(.07)
Birth weight × self-reported stress	.45†	.41*
	(.20)	(.11)
Observations	1548	1549
R^2	.055	.086

Note. Entries are unstandardized regression coefficients. Adjusted cluster robust standard errors are reported in parentheses. In addition to the variables reported in the table, we additionally partial out the effects of the respondent's gender and year of birth and the education and income of the mother in the respondent's year of birth. The findings in Model 1 are the results with which the marginal effects in Figure 1, Panel A, were calculated. The findings in Model 2 are analyses of robustness using an alternative measure of trust. For each model, observations with missing values on at least one of the variables included in the model have been excluded $^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$, two-tailed.

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Table S4. The moderating effect of experimental stress (Sample 3)

	Social trust (single item)			Social trust (three items)	
	Birth weight (intervals)	Birth weight (intervals)	Birth weight (g)	Birth weight (intervals)	Birth weight (g)
	M1[a]	M2[a]	M3[b]	M4[a]	M5[b]
Birth weight (weight intervals)	–.19*	–.85*	–	–.12†	–
	(.09)	(.37)		(.07)	
Birth weight (exact in g)	–	–	–1.48*	–	–.27*
			(.64)		(.12)
Experimental stress	–.20*	–.87*	–1.05†	–.18**	–.26**
	(.09)	(.38)	(.54)	(.07)	(.10)
Birth weight (weight intervals) × exp. stress	.28*	1.16*	–	.23*	–
	(.13)	(.56)		(.10)	
Birth weight (exact in grams) × exp. stress	–	–	1.71*	–	.41**
			(.85)		(.15)
Female	.01	.05	-.06	.04*	.03
	(.02)	(.09)	(.14)	(.02)	(.02)
Age	-.01	.02	.48	.08†	.18**
	(.06)	(.24)	(.40)	(.04)	(.07)
Mother's income	–.13*	–.50*	–.27	–.05	.01
	(.06)	(.25)	(.40)	(.04)	(.07)
Mother's education	.05	.23	.47*	.03	.06
	(.04)	(.16)	(.23)	(.03)	(.04)
Constant	.86***	–	–	.69***	.69***
	(.08)			(.06)	(.10)
cut1	–	–2.36	–2.35	–	–
		(.34)	(.55)		
cut2	–	–1.56	–1.53	–	–
		(.33)	(.55)		
cut3	–	–.28	–.31	–	–
		(.33)	(.54)		
Observations	648	648	301	648	301
R^2/ Pseudo R^2	.020	.001	.018	.039	.069

Entries are unstandardized OLS regression coefficients (Models 1, 4–5) and ordered probit coefficients (Models 2–3). Robust standard errors are reported in parentheses. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$, two-sided tests. The findings reported in Model 1 are the results with which the marginal effects in Figure 1, Panel B, were calculated. Models 2–5 are analyses of robustness using different measures of birth weight and social trust and different model specifications. For each model, observations with missing values on at least one of the variables included in the model have been excluded.

[a] The findings are based on birth weight measured in intervals.

[b] The findings in Models 3 and 6 are based on birth weight measured in grams.

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Table S5. The moderating effect of biological stress (Sample 4)

	Social trust (single item) M1	Social trust (single item) M2	Social trust (3 items) M3
Birth weight	–.42	–2.51	–.16
	(.29)	(2.09)	(.23)
Biological stress	–.67*	–4.24*	–.13
	(.30)	(1.92)	(.23)
Birth weight × biological stress	.90†	5.63†	.21
	(.49)	(3.36)	(.36)
Female	.06	.44	.14*
	(.08)	(.48)	(.05)
Age	.29	1.71†	–.01
	(.17)	(0.96)	(.10)
Childhood financial situation	–1.01†	–6.84†	–.90*
	(.54)	(3.84)	(.34)
Mother's education	.30	1.85†	–.26*
	(.20)	(1.11)	(.12)
Constant	1.74***		1.37*
	(.48)		(.31)
cut1		–8.02	
		(3.53)	
cut2		–.6.17	
		(3.43)	
Observations	32	32	32
R^2/ Pseudo R^2	.330	.202	.508

Note. Entries are unstandardized OLS regression coefficients (Models 1 and 3) and unstandardized ordered probit coefficients (Model 2). Robust standard errors are reported in parentheses. The findings in Model 1 are the results with which the marginal effects in Figure 1, Panel B, were calculated. The findings in Models 2–3 are analyses of robustness using a different model specification and an alternative measure of trust. For each model, observations with missing values on at least one of the variables included in the model have been excluded † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed.

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