**Intergenerational Effects of Early-Life Health Shocks during**

**the Chinese 1959–61 Famine**

Supplementary Material

***Robustness test of the results***

***Second-Generation Health/Economic Effects Controlling for First-Generation Outcomes***

We investigate whether the economic and health estimates of the second generation vary by the first generation’s economic outcomes (e.g., education). Results are almost unchanged, providing reassurance that our results are not influenced by the first generation’s economic outcomes (Tables S2-1 and S2-2). We do find that either parent’s education is associated with an increase in economic status and health of the second generation. Specifically, each additional year of schooling for the mother is associated with a statistically significant increase in years of schooling, as well as height and weight in the second generation. Each additional year of the father’s schooling is associated with a statistically significant increase in years of schooling as well as height in the second generation.

***Alternative Measures of Schooling and Health***

Owing to the influence of the Cultural Revolution (1966–76) in China, many people fail to complete their education degree, especially for the second generation, which may bias the effect of famine exposure. We investigate whether the estimates are sensitive to the years of schooling and replace our continuous measure of years of schooling with specific intervals (e.g., junior high school or above, senior high school or above). Moreover, we transform the other dependent variable into normalized Z-scores. Tables S3-1 and S3-2 show that Generation 1 male famine *in-utero* exposure is still associated with a statistically significant decrease in education, income, and height of the second generation. Transformation makes little difference to the estimates.

***Effect Driven by Young Parents***

In general, the second generation of young parents, whether they have experienced famine, tend to have many disadvantages compared with their counterparts. Myrskylä and Fenelon (2012) find that offspring born to mothers younger than 25 years have worse outcomes with respect to mortality, self-rated health, height, obesity, and the number of diagnosed health conditions. We re-estimate the famine effect by choosing parents over 25 years old while controlling for Generation 1’s economic outcomes. Table S4 shows that Generation 1 male famine exposure is associated with a statistically significant decrease in education, while the negative effect on income and height is not significant, which may be slightly driven by young parents.

***Additional Analyses***

To minimize the impact of potential selection into giving birth and to see whether variation in effects within the famine group, we follow Buckles and Hungerman (2013) and Bharadwaj et al. (2020) to interact famine severity and each of the birth cohort dummies separately (Table S5-1 and S5-2).

We find that negative impact in second-generation education is mainly driven by fathers, and fathers born in 1960 have a greater impact (column 2). A negative association with Generation 2’s income can also be seen for fathers born in 1959–61, while the effect decreases (column 4). Like economic outcomes, Generation 1 born in 1960 is shown to have a larger negative association with Generation 2’ height outcomes than those born in 1961. Either parent having been born in the famine years does not affect the weight/BMI in the second generation, which means these two phenotypes are more susceptible to nurture effect. Mothers born in 1959 and fathers born in 1960 are associated with significant weight loss at birth.

In sum, Generation 1 famine exposure causes serious health and economic consequences on the second generation, and the 1959 and 1960 cohort have larger negative effects. The result is reassuring, because among the three famine cohorts, the 1959 cohort has the worst famine experience, followed by the 1960 cohort and 1961 cohort. That is, the 1961 cohort experiences much less famine exposure during the prenatal period compared with the 1959–60 cohorts, and less exposure during the postnatal period.

With robust results established above, the next question is whether the effect of *in-utero* famine exposure might persist into the third generation. We extend previous work to explore the question of multigenerational persistence of fetal insults, using the grandparents and maternal grandparents’ famine pandemic as a natural experiment (Table S6). More specifically, we consider the famine effect of grandparents and maternal grandparents simultaneously. Owing to the young age of the third generation, we only investigate some health outcomes: height, weight, BMI, and birth weight. We transform this variable into Z-scores according to the child growth standards issued by the World Health Organization.

Consistent with the second-generation estimations, a persistent effect of the *in-utero* exposure is observed, despite reduced statistical power. For example, grandfather famine exposure will reduce the height and weight and increase the probability of low birth weight in the third generation. This again indicates a persistent effect that may be attenuating. Moreover, the coefficient of maternal grandfather pre-famine exposure will increase the probability of low birth weight in the third generation, which is consistent with intergenerational inheritance.

**TABLE S1-1.** Heterogeneity by gender of economic effects

|  |  |  |
| --- | --- | --- |
|  | Years of Schooling | Income, 2016 |
| Prefamine cohort x CSSI, Female x G2male | 2.49 |  | -4.60 |  |
|  | [-4.81,9.79] |  | [-19.04,9.84] |  |
| Famine cohort x CSSI, Female x G2male | 1.36 |  | -12.98+ |  |
|  | [-6.45,9.18] |  | [-27.98,2.03] |  |
| Postfamine cohort x CSSI, Female x G2male | -0.73 |  | -0.48 |  |
|  | [-8.15,6.70] |  | [-13.77,12.80] |  |
| Prefamine cohort x CSSI, Male x G2male |  | 3.75 |  | 0.40 |
|  |  | [-4.29,11.80] |  | [-14.56,15.35] |
| Famine cohort x CSSI, Male x G2male |  | 2.99 |  | 6.60 |
|  |  | [-5.10,11.07] |  | [-8.38,21.58] |
| Postfamine cohort x CSSI, Male x G2male |  | -3.24 |  | 2.13 |
|  |  | [-11.22,4.75] |  | [-12.93,17.20] |
| *N* | 2326 | 2234 | 906 | 907 |

*Notes.* 95% confidence intervals in brackets + *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**TABLE S1-2.** Heterogeneity by gender of health effects

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Height(cm) | Weight(catty) | BMI | Birth Weight (catty) |
| Prefamine cohort x CSSI, Female x G2male | 2.74 |  | 10.43 |  | 1.50 |  | 1.66 |  |
|  | [-7.71,13.19] |  | [-31.20,52.05] |  | [-5.06,8.05] |  | [-1.22,4.53] |  |
| Famine cohort x CSSI, Female x G2male | 7.51 |  | 14.18 |  | 0.62 |  | 0.32 |  |
|  | [-3.78,18.81] |  | [-30.27,58.62] |  | [-6.70,7.94] |  | [-2.92,3.56] |  |
| Postfamine cohort x CSSI, Female x G2male | 2.53 |  | 47.84\* |  | 7.98\* |  | 1.67 |  |
|  | [-8.20,13.27] |  | [5.01,90.67] |  | [0.80,15.15] |  | [-1.29,4.64] |  |
| Prefamine cohort x CSSI, Male x G2male |  | -2.39 |  | -10.43 |  | -1.11 |  | -0.17 |
|  |  | [-13.57,8.78] |  | [-54.71,33.84] |  | [-8.30,6.08] |  | [-3.53,3.19] |
| Famine cohort x CSSI, Male x G2male |  | -0.21 |  | 47.51+ |  | 7.40+ |  | -0.67 |
|  |  | [-11.94,11.51] |  | [-0.24,95.27] |  | [-0.45,15.24] |  | [-4.05,2.70] |
| Postfamine cohort x CSSI, Male x G2male |  | 1.43 |  | 19.90 |  | 3.11 |  | 0.74 |
|  |  | [-10.77,13.64] |  | [-28.48,68.28] |  | [-4.95,11.17] |  | [-2.77,4.24] |
| *N* | 2324 | 2232 | 2171 | 2075 | 2169 | 2073 | 1071 | 1048 |

*Notes.* 95% confidence intervals in brackets+ *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**TABLE S2-1.** Second-generation health effects controlling for first-generation outcomes

|  |  |  |
| --- | --- | --- |
|  | Years of Schooling | Income, 2016 |
| Prefamine cohort x CSSI, Female | -0.30 |  | -0.17 | 2.16 |  | 5.53 |
|  | [-4.00,3.41] |  | [-5.87,5.53] | [-5.12,9.45] |  | [-7.35,18.41] |
| Famine cohort x CSSI, Female | -0.54 |  | 2.04 | -2.88 |  | 2.99 |
|  | [-4.53,3.46] |  | [-3.04,7.12] | [-10.35,4.58] |  | [-6.12,12.10] |
| Postfamine cohort x CSSI, Female | 2.04 |  | 2.23 | 8.28\* |  | 9.34\* |
|  | [-1.86,5.94] |  | [-1.88,6.33] | [1.69,14.87] |  | [1.87,16.80] |
| G1edu, Female | 0.31\*\*\* |  | 0.19\*\*\* | 0.00 | 0.03 | 0.03 |
|  | [0.27,0.35] |  | [0.15,0.24] | [-0.07,0.08] | [-0.04,0.10] | [-0.05,0.12] |
| Prefamine cohort x CSSI, Male |  | -3.91\* | -3.49 |  | -1.45 | -2.23 |
|  |  | [-7.71, -0.12] | [-9.23,2.24] |  | [-9.39,6.49] | [-14.91,10.45] |
| Famine cohort x CSSI, Male |  | -8.07\*\*\* | -7.66\*\* |  | -9.49\* | -9.64+ |
|  |  | [-12.14, -4.00] | [-12.99, -2.33] |  | [-17.44, -1.54] | [-20.53,1.25] |
| Postfamine cohort x CSSI, Male |  | -1.95 | -3.36 |  | -1.80 | 4.50 |
|  |  | [-6.01,2.12] | [-8.12,1.41] |  | [-9.90,6.30] | [-5.87,14.87] |
| G1edu, Male |  | 0.32\*\*\* | 0.24\*\*\* | 0.06+ | 0.05 | 0.06 |
|  |  | [0.28,0.36] | [0.19,0.29] | [-0.01,0.14] | [-0.02,0.13] | [-0.02,0.15] |
| *N* | 2312 | 2215 | 1620 | 884 | 882 | 653 |

*Notes.* 95% confidence intervals in brackets+ *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**TABLE S2-2.** Second-generation health effects controlling for first-generation outcomes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Height(cm) | Weight(catty) | BMI | Birth Weight (catty) |
| Prefamine cohort x CSSI, Female | 4.88+ |  | 1.16 | 8.61 |  | -6.65 | 0.40 |  | -0.55 | 1.31+ |  | -0.08 |
|  | [-0.52,10.28] |  | [-8.86,11.17] | [-13.84,31.05] |  | [-46.15,32.84] | [-3.08,3.89] |  | [-6.44,5.33] | [-0.21,2.83] |  | [-2.38,2.23] |
| Famine cohort x CSSI, Female | 2.49 |  | 3.27 | 16.24 |  | 18.26 | 1.96 |  | 2.52 | 0.19 |  | -0.86 |
|  | [-3.39,8.36] |  | [-4.64,11.18] | [-7.64,40.12] |  | [-14.63,51.15] | [-1.90,5.82] |  | [-2.72,7.75] | [-1.46,1.84] |  | [-3.00,1.27] |
| Postfamine cohort x CSSI, Female | 3.71 |  | 2.82 | 10.72 |  | 9.51 | 0.46 |  | 1.00 | -0.48 |  | -1.12 |
|  | [-1.89,9.32] |  | [-3.67,9.30] | [-12.14,33.59] |  | [-16.74,35.76] | [-3.31,4.24] |  | [-3.23,5.23] | [-2.00,1.04] |  | [-2.90,0.66] |
| G1edu, Female | 0.06\* | 0.08\* | 0.06+ | 0.33\*\* | 0.29\* | 0.34\* | 0.03+ | 0.03 | 0.03 | 0.02\* | 0.01 | 0.02\* |
|  | [0.00,0.12] | [0.02,0.14] | [-0.01,0.13] | [0.09,0.56] | [0.06,0.52] | [0.07,0.60] | [-0.00,0.07] | [-0.01,0.06] | [-0.01,0.08] | [0.00,0.04] | [-0.01,0.03] | [0.00,0.04] |
| Prefamine cohort x CSSI, Male |  | -1.14 | -4.74 |  | -0.79 | -0.07 |  | -0.22 | 0.50 |  | -0.12 | 1.04 |
|  |  | [-7.14,4.86] | [-14.07,4.59] |  | [-24.58,23.00] | [-36.70,36.55] |  | [-3.93,3.50] | [-5.19,6.19] |  | [-1.86,1.62] | [-1.64,3.71] |
| Famine cohort x CSSI, Male |  | -5.44+ | -7.31+ |  | 15.31 | 13.66 |  | 3.37 | 3.11 |  | -1.01 | -0.39 |
|  |  | [-11.46,0.58] | [-15.58,0.96] |  | [-9.88,40.50] | [-20.76,48.08] |  | [-0.69,7.44] | [-2.23,8.45] |  | [-2.71,0.68] | [-2.78,2.00] |
| Postfamine cohort x CSSI, Male |  | -2.51 | -5.45 |  | 6.77 | -1.18 |  | 1.37 | 0.60 |  | -1.11 | -0.14 |
|  |  | [-8.73,3.71] | [-13.55,2.65] |  | [-18.33,31.86] | [-32.71,30.36] |  | [-2.85,5.60] | [-4.45,5.65] |  | [-2.88,0.66] | [-2.67,2.38] |
| G1edu, Male | 0.09\*\* | 0.09\*\* | 0.08\* | 0.10 | 0.06 | -0.02 | -0.01 | -0.02 | -0.03 | 0.01 | 0.00 |  |
|  | [0.03,0.15] | [0.02,0.15] | [0.01,0.16] | [-0.13,0.34] | [-0.18,0.31] | [-0.31,0.27] | [-0.05,0.03] | [-0.06,0.02] | [-0.08,0.01] | [-0.01,0.02] | [-0.02,0.02] |  |
| *N* | 2275 | 2154 | 1619 | 2123 | 2002 | 1514 | 2122 | 2000 | 1513 | 1054 | 1027 | 774 |

*Notes.* 95% confidence intervals in brackets + *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**TABLE S3-1.** Alternative measures of economic effects

|  |  |  |  |
| --- | --- | --- | --- |
|  | Years of Schooling (>9) | Years of Schooling (>12) | Zscore-Income,2016 |
| Prefamine cohort x CSSI, Female | -2.49+ |  | -1.06 | -0.49 |  | -1.63 | 0.62 |  | 1.24 |
|  | [-5.26,0.27] |  | [-6.26,4.13] | [-1.94,0.97] |  | [-6.29,3.04] | [-1.02,2.26] |  | [-1.68,4.16] |
| Famine cohort x CSSI, Female | -1.36 |  | 0.40 | -0.94 |  | -1.83 | -0.60 |  | 0.84 |
|  | [-4.49,1.77] |  | [-3.89,4.69] | [-2.68,0.81] |  | [-5.63,1.96] | [-2.33,1.12] |  | [-1.27,2.94] |
| Postfamine cohort x CSSI, Female | -1.57 |  | 0.86 | -0.23 |  | -0.65 | 1.82\* |  | 2.06\* |
|  | [-4.28,1.14] |  | [-2.48,4.19] | [-1.59,1.14] |  | [-3.67,2.36] | [0.33,3.32] |  | [0.39,3.73] |
| Prefamine cohort x CSSI, Male |  | -2.27 | 1.87 |  | -1.01 | -2.42 |  | -0.32 | -0.28 |
|  |  | [-5.25,0.71] | [-3.39,7.13] |  | [-2.65,0.63] | [-7.60,2.76] |  | [-2.09,1.45] | [-3.17,2.60] |
| Famine cohort x CSSI, Male |  | -3.11\* | 0.19 |  | -0.70 | -3.59 |  | -2.23\* | -2.20+ |
|  |  | [-6.17, -0.06] | [-4.34,4.72] |  | [-2.24,0.84] | [-8.05,0.88] |  | [-4.02, -0.45] | [-4.65,0.26] |
| Postfamine cohort x CSSI, Male |  | -3.68\* | -0.19 |  | -0.98 | -4.88\* |  | -0.58 | 1.08 |
|  |  | [-6.65, -0.71] | [-4.47,4.09] |  | [-2.65,0.69] | [-9.37, -0.38] |  | [-2.40,1.25] | [-1.28,3.44] |
| *N* | 951 | 1014 | 1273 | 571 | 611 | 736 | 906 | 907 | 662 |

*Notes.* 95% confidence intervals in brackets + *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**TABLE S3-2.** Alternative measures of health effects

|  |  |  |  |
| --- | --- | --- | --- |
|  | Zscore-height | Zscore-weight | Zscore-BMI |
| Prefamine cohort x CSSI, Female | 0.61+ |  | 0.14 | 0.34 |  | -0.26 | 0.11 |  | -0.15 |
|  | [-0.06,1.29] |  | [-1.11,1.40] | [-0.54,1.22] |  | [-1.81,1.29] | [-0.84,1.06] |  | [-1.76,1.46] |
| Famine cohort x CSSI, Female | 0.31 |  | 0.41 | 0.64 |  | 0.72 | 0.54 |  | 0.69 |
|  | [-0.42,1.05] |  | [-0.58,1.40] | [-0.30,1.58] |  | [-0.58,2.01] | [-0.52,1.59] |  | [-0.74,2.12] |
| Postfamine cohort x CSSI, Female | 0.46 |  | 0.35 | 0.42 |  | 0.37 | 0.13 |  | 0.27 |
|  | [-0.24,1.17] |  | [-0.46,1.16] | [-0.48,1.32] |  | [-0.66,1.41] | [-0.91,1.16] |  | [-0.89,1.43] |
| Prefamine cohort x CSSI, Male |  | -0.14 | -0.59 |  | -0.03 | -0.00 |  | -0.06 | 0.14 |
|  |  | [-0.89,0.61] | [-1.76,0.57] |  | [-0.97,0.90] | [-1.44,1.44] |  | [-1.08,0.96] | [-1.42,1.69] |
| Famine cohort x CSSI, Male |  | -0.68+ | -0.91+ |  | 0.60 | 0.54 |  | 0.92 | 0.85 |
|  |  | [-1.43,0.07] | [-1.95,0.12] |  | [-0.39,1.59] | [-0.82,1.89] |  | [-0.19,2.04] | [-0.61,2.31] |
| Postfamine cohort x CSSI, Male |  | -0.31 | -0.68 |  | 0.27 | -0.05 |  | 0.38 | 0.16 |
|  |  | [-1.09,0.46] | [-1.70,0.33] |  | [-0.72,1.25] | [-1.29,1.19] |  | [-0.78,1.53] | [-1.22,1.55] |
| *N* | 2275 | 2154 | 1619 | 2123 | 2002 | 1514 | 2122 | 2000 | 1513 |

*Notes.* 95% confidence intervals in brackets + *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**TABLE S4.** Effect driven by young parents

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Years of Schooling | Income, 2016 | Height(cm) | Weight(catty) | BMI | Birth Weight(catty) |
| Prefamine cohort x CSSI, Female | 5.07 | 3.41 | 0.97 | -10.37 | -0.61 | 1.14 |
|  | [-2.25,12.39] | [-12.13,18.96] | [-10.80,12.74] | [-57.05,36.32] | [-7.59,6.37] | [-1.75,4.02] |
| Famine cohort x CSSI, Female | 2.40 | 5.62 | 0.78 | 26.24 | 4.39 | 0.09 |
|  | [-4.58,9.38] | [-5.40,16.65] | [-8.58,10.13] | [-10.67,63.15] | [-1.60,10.38] | [-2.59,2.76] |
| Postfamine cohort x CSSI, Female | 3.32 | 10.21\* | 3.34 | 16.54 | 2.06 | -1.17 |
|  | [-1.50,8.15] | [1.88,18.54] | [-4.08,10.75] | [-13.85,46.92] | [-2.87,6.99] | [-3.26,0.91] |
| Prefamine cohort x CSSI, Male | -4.27 | 5.74 | -3.76 | 7.13 | 1.67 | 0.67 |
|  | [-11.68,3.13] | [-9.64,21.12] | [-14.89,7.36] | [-37.52,51.78] | [-5.20,8.54] | [-2.51,3.85] |
| Famine cohort x CSSI, Male | -7.11\* | -8.91 | -5.46 | 24.74 | 4.55 | 0.19 |
|  | [-13.60, -0.62] | [-20.74,2.92] | [-15.17,4.26] | [-16.18,65.66] | [-1.49,10.59] | [-2.88,3.27] |
| Postfamine cohort x CSSI, Male | -5.51+ | 7.06 | -4.06 | 19.51 | 4.36 | 0.40 |
|  | [-11.37,0.35] | [-4.18,18.30] | [-13.75,5.64] | [-17.09,56.11] | [-1.35,10.07] | [-2.57,3.36] |
| *N* | 1083 | 397 | 1082 | 1016 | 1015 | 518 |

*Note.* 95% confidence intervals in brackets + *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**TABLE S5-1.** Tests for selection effect

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Years of Schooling | Years of Schooling | Income, 2016 | Income, 2016 | Height (cm) | Height (cm) |
| 1956 cohort x CSSI, Female | 0.00 |  | 0.00 |  | 0.00 |  |
|  | [0.00,0.00] |  | [0.00,0.00] |  | [0.00,0.00] |  |
| 1957 cohort x CSSI, Female | 2.99 |  | 6.49 |  | -0.41 |  |
|  | [-2.99,8.97] |  | [-5.86,18.85] |  | [-8.13,7.31] |  |
| 1958 cohort x CSSI, Female | -0.90 |  | 6.74 |  | 5.07 |  |
|  | [-7.78,5.98] |  | [-7.66,21.15] |  | [-4.00,14.14] |  |
| 1959 cohort x CSSI, Female | 3.59 |  | 5.88 |  | 4.08 |  |
|  | [-2.92,10.09] |  | [-8.49,20.25] |  | [-4.88,13.03] |  |
| 1960 cohort x CSSI, Female | -1.50 |  | -2.62 |  | -4.72 |  |
|  | [-8.58,5.58] |  | [-15.07,9.83] |  | [-12.77,3.33] |  |
| 1961 cohort x CSSI, Female | 0.50 |  | -3.68 |  | 1.02 |  |
|  | [-6.50,7.50] |  | [-18.82,11.45] |  | [-8.26,10.30] |  |
| 1962 cohort x CSSI, Female | 6.39\* |  | 7.08 |  | 4.60 |  |
|  | [0.40,12.39] |  | [-4.69,18.85] |  | [-2.80,12.00] |  |
| 1963 cohort x CSSI, Female | 1.87 |  | 10.99+ |  | -3.96 |  |
|  | [-4.21,7.96] |  | [-0.24,22.21] |  | [-11.23,3.31] |  |
| 1956 cohort x CSSI, Male |  | 0.00 |  | 0.00 |  | 0.00 |
|  |  | [0.00,0.00] |  | [0.00,0.00] |  | [0.00,0.00] |
| 1957 cohort x CSSI, Male |  | -5.23 |  | 1.81 |  | -5.32 |
|  |  | [-12.36,1.89] |  | [-12.87,16.48] |  | [-15.39,4.75] |
| 1958 cohort x CSSI, Male |  | 2.30 |  | -0.20 |  | 0.22 |
|  |  | [-4.42,9.03] |  | [-14.01,13.62] |  | [-9.70,10.13] |
| 1959 cohort x CSSI, Male |  | -2.72 |  | -7.59 |  | -5.49 |
|  |  | [-11.08,5.65] |  | [-21.84,6.66] |  | [-15.74,4.75] |
| 1960 cohort x CSSI, Male |  | -9.57\* |  | -6.63 |  | -8.21 |
|  |  | [-17.10, -2.03] |  | [-21.66,8.40] |  | [-18.82,2.40] |
| 1961 cohort x CSSI, Male |  | -6.49+ |  | -6.64 |  | -5.62 |
|  |  | [-14.18,1.20] |  | [-22.07,8.78] |  | [-15.43,4.19] |
| 1962 cohort x CSSI, Male |  | 0.13 |  | -2.10 |  | -4.73 |
|  |  | [-6.68,6.94] |  | [-16.26,12.06] |  | [-14.58,5.12] |
| 1963 cohort x CSSI, Male |  | -1.46 |  | 1.50 |  | -1.90 |
|  |  | [-8.12,5.21] |  | [-12.04,15.04] |  | [-11.63,7.82] |
| *N* | 1813 | 1751 | 660 | 676 | 1812 | 1750 |

*Notes.* 95% confidence intervals in brackets + *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**TABLE S5-2.** Tests for selection effect

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Weight(catty) | Weight(catty) | BMI | BMI | Birth Weight (catty) | Birth Weight (catty) |
| 1956 cohort x CSSI, Female | 0.00 |  | 0.00 |  | 0.00 |  |
|  | [0.00,0.00] |  | [0.00,0.00] |  | [0.00,0.00] |  |
| 1957 cohort x CSSI, Female | -0.46 |  | 0.16 |  | -0.35 |  |
|  | [-36.69,35.76] |  | [-5.34,5.65] |  | [-2.59,1.90] |  |
| 1958 cohort x CSSI, Female | 8.27 |  | 0.23 |  | 1.24 |  |
|  | [-24.63,41.18] |  | [-4.86,5.31] |  | [-1.40,3.88] |  |
| 1959 cohort x CSSI, Female | 9.17 |  | 0.34 |  | -1.99 |  |
|  | [-29.79,48.12] |  | [-5.79,6.48] |  | [-4.56,0.59] |  |
| 1960 cohort x CSSI, Female | 15.47 |  | 3.46 |  | -0.29 |  |
|  | [-17.61,48.56] |  | [-2.01,8.94] |  | [-2.67,2.10] |  |
| 1961 cohort x CSSI, Female | 4.99 |  | 0.39 |  | -0.87 |  |
|  | [-39.30,49.28] |  | [-6.93,7.70] |  | [-3.91,2.16] |  |
| 1962 cohort x CSSI, Female | 8.76 |  | -0.27 |  | -1.07 |  |
|  | [-24.72,42.24] |  | [-5.75,5.20] |  | [-3.16,1.03] |  |
| 1963 cohort x CSSI, Female | -5.95 |  | -0.27 |  | -2.27\* |  |
|  | [-38.83,26.92] |  | [-5.85,5.31] |  | [-4.43, -0.10] |  |
| 1956 cohort x CSSI, Male |  | 0.00 |  | 0.00 |  | 0.00 |
|  |  | [0.00,0.00] |  | [0.00,0.00] |  | [0.00,0.00] |
| 1957 cohort x CSSI, Male |  | -13.45 |  | -1.19 |  | 0.19 |
|  |  | [-54.79,27.89] |  | [-7.36,4.98] |  | [-2.52,2.91] |
| 1958 cohort x CSSI, Male |  | 6.89 |  | 0.44 |  | -0.57 |
|  |  | [-33.76,47.54] |  | [-5.97,6.86] |  | [-3.56,2.41] |
| 1959 cohort x CSSI, Male |  | 14.64 |  | 2.93 |  | -1.28 |
|  |  | [-27.91,57.20] |  | [-3.40,9.26] |  | [-4.01,1.46] |
| 1960 cohort x CSSI, Male |  | 8.60 |  | 2.65 |  | -2.12 |
|  |  | [-34.38,51.59] |  | [-4.44,9.73] |  | [-4.87,0.63] |
| 1961 cohort x CSSI, Male |  | 10.02 |  | 2.96 |  | 0.22 |
|  |  | [-33.23,53.27] |  | [-3.79,9.71] |  | [-2.61,3.05] |
| 1962 cohort x CSSI, Male |  | -6.20 |  | -0.61 |  | -0.85 |
|  |  | [-45.76,33.35] |  | [-7.18,5.96] |  | [-3.44,1.75] |
| 1963 cohort x CSSI, Male |  | 18.51 |  | 3.64 |  | -1.35 |
|  |  | [-19.91,56.92] |  | [-2.16,9.44] |  | [-3.97,1.27] |
| *N* | 1706 | 1631 | 1705 | 1630 | 813 | 803 |

*Note.* 95% confidence intervals in brackets + *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**TABLE S6.** Generation 3 effects of Generation 1 famine exposure

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | G3height | G3weight | G3BMI | G3LBW |
| Maternal Grandparents | Prefamine cohort x CSSI, Female | -6.66 | -4.26 | 2.4e+07 | -17.26 |
|  | [-27.15,13.83] | [-16.74,8.21] | [-6.0e+07,1.1e+08] | [-44.89,10.37] |
| Famine cohort x CSSI, Female | 4.44 | 1.27 | 3.7e+07 | 2.77 |
|  | [-12.34,21.22] | [-6.87,9.41] | [-2.7e+07,1.0e+08] | [-27.77,33.31] |
| Postfamine cohort x CSSI, Female | 3.73 | -1.63 | -1.9e+07 | -6.22 |
|  | [-5.02,12.48] | [-8.23,4.96] | [-6.2e+07,2.3e+07] | [-31.18,18.75] |
| Prefamine cohort x CSSI, Male | -4.35 | 2.20 | -2.5e+07 | 36.34+ |
|  | [-19.34,10.65] | [-7.96,12.36] | [-1.1e+08,5.7e+07] | [-2.16,74.84] |
| Famine cohort x CSSI, Male | 0.07 | 0.18 | 4.9e+06 | 15.67 |
|  | [-12.88,13.02] | [-8.76,9.12] | [-5.0e+07,6.0e+07] | [-21.05,52.39] |
| Postfamine cohort x CSSI, Male | -5.02 | 5.98 | 6.0e+06 | 16.10 |
|  | [-21.43,11.39] | [-3.05,15.01] | [-5.1e+07,6.3e+07] | [-8.53,40.72] |
|  | Prefamine cohort x CSSI, Female | 93.99 | 2.41 | -5.1e+07 | 72.58 |
| Grandparents |  | [-22.23,210.20] | [-62.05,66.88] | [-3.4e+08,2.3e+08] | [-79.04,224.19] |
| Famine cohort x CSSI, Female | 87.66 | 6.73 | -3.1e+08+ | -56.84 |
|  | [-33.43,208.75] | [-54.98,68.44] | [-6.7e+08,4.6e+07] | [-231.43,117.76] |
| Postfamine cohort x CSSI, Female | 70.32 | 7.94 | -6.1e+08\* | 0.00 |
|  | [-61.99,202.64] | [-63.29,79.16] | [-1.2e+09, -4.9e+06] | [0.00,0.00] |
| Prefamine cohort x CSSI, Male | -90.78 | -0.20 | 6.3e+07 | -84.74 |
|  | [-200.53,18.96] | [-65.66,65.26] | [-2.2e+08,3.5e+08] | [-235.90,66.42] |
| Famine cohort x CSSI, Male | -86.11 | -5.44 | 3.3e+08+ | 39.18 |
|  | [-201.42,29.21] | [-67.20,56.33] | [-3.4e+07,6.8e+08] | [-121.48,199.85] |
| Postfamine cohort x CSSI, Male | -61.61 | -6.07 | 6.5e+08\* | 0.00 |
|  | [-190.90,67.68] | [-79.68,67.54] | [2.2e+07,1.3e+09] | [0.00,0.00] |
| *N* | 207 | 181 | 206 | 180 |

*Note.* 95% confidence intervals in brackets + *p* < 0.1, \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

**References**

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