

## ONLINE APPENDIX

### The Roma/non-Roma Test Score Gap in Hungary

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**Table 1A.** Details of the sample selection. Numbers of observations and statistics on test scores and the mothers' level of education.

|   | Number of observations | Mean standardized test score <sup>a</sup> |             | Fraction with mother's education |         |
|---|------------------------|---|-------------|----------------------------------|---------|
|   |                        | reading                                   | mathematics | 8 grades or less                 | college |
| Data from the Hungarian National Assessment of Basic Competences, grade 8 |                        |   |             |                                  |         |
| All registered students   | 113,092                | n.a.                                      | n.a.        | n.a.                             | n.a.    |
| Students with test scores in reading                                      | 109,906                | -0.08                                     | n.a.        | n.a.                             | n.a.    |
| Students with test scores in mathematics                                  | 104,566                | n.a.                                      | -0.06       | n.a.                             | n.a.    |
| Students with test scores both in reading and mathematics                 | 104,533                | -0.03                                     | -0.06       | n.a.                             | n.a.    |
| Students with test scores and family background data                      | 88,175                 | -0.01                                     | -0.04       | 0.18                             | 0.21    |
| Students who agreed to participate in the Hungarian Life Course Survey    | 37,027                 | -0.14                                     | -0.09       | 0.24                             | 0.19    |
| Data from the Hungarian Life Course Survey                                |                        |   |             |                                  |         |
| Sample in wave 1 <sup>b</sup>   | 10,022                 | -0.11                                     | -0.05       | 0.21                             | 0.20    |
| Sample in wave 2 <sup>b</sup>   | 9,300                  | -0.10                                     | -0.04       | 0.21                             | 0.20    |
| Estimation sample <sup>b</sup>  | 9,056                  | -0.09                                     | -0.03       | 0.20                             | 0.20    |

Notes.

<sup>a</sup> Test scores are standardized by official figures on national means and standard deviations. Not all students' scores are included in the national statistics, therefore the nonzero means in the total population.

<sup>b</sup> All statistics (mean test scores and fractions) are weighted by sampling weights.

**Table 2A.** Summary statistics

| Variable                                    | Roma      |      |     | Non-Roma |       |      |
|---|-----------|------|-----|----------|-------|------|
|   | mean      | sd   | n   | mean     | sd    | n    |
| Low birth weight                            | 0.17      | 0.38 | 848 | 0.07     | 0.25  | 8208 |
| Body height (standardized)                  | -0.33     | 0.92 | 848 | 0.03     | 0.99  | 8208 |
| Subjective health fair or poor              | 0.17      | 0.37 | 848 | 0.09     | 0.28  | 8208 |
| Frequent bedtime stories (parent's answer)  | 0.35      | 0.48 | 848 | 0.65     | 0.48  | 8208 |
| Rare theater with parents (parent's answer) | 0.83      | 0.38 | 848 | 0.57     | 0.50  | 8208 |
| Rare hiking with parents (parent's answer)  | 0.76      | 0.43 | 848 | 0.44     | 0.50  | 8208 |
| Bedtime stories never (child's answer)      | 0.18      | 0.38 | 848 | 0.03     | 0.16  | 8208 |
| Bedtime stories every day (child's answer)  | 0.21      | 0.41 | 848 | 0.48     | 0.50  | 8208 |
| Cognitive HOME index                        | -1.03     | 0.98 | 848 | 0.09     | 0.94  | 8208 |
| Emotional HOME index                        | -0.17     | 0.98 | 848 | 0.02     | 0.98  | 8208 |
| Lives with biological mother                | 0.96      | 0.20 | 848 | 0.97     | 0.18  | 8208 |
| Lives with stepmother                       | 0.03      | 0.17 | 848 | 0.01     | 0.11  | 8208 |
| Lives with biological father                | 0.78      | 0.41 | 848 | 0.72     | 0.45  | 8208 |
| Lives with stepfather                       | 0.06      | 0.24 | 848 | 0.09     | 0.28  | 8208 |
| Mother's education 0-8 <sup>th</sup> grade  | 0.79      | 0.41 | 848 | 0.15     | 0.36  | 8208 |
| Mother's education vocational               | 0.15      | 0.36 | 848 | 0.25     | 0.43  | 8208 |
| Mother's education secondary                | 0.04      | 0.20 | 848 | 0.36     | 0.48  | 8208 |
| Mother's education college                  | reference |      |     |          |       | 8208 |
| Father's education 0-8 <sup>th</sup> grade  | 0.54      | 0.50 | 848 | 0.08     | 0.27  | 8208 |
| Father's education vocational               | 0.27      | 0.44 | 848 | 0.37     | 0.48  | 8208 |
| Father's education secondary                | 0.03      | 0.18 | 848 | 0.21     | 0.41  | 8208 |
| Father's education college                  | reference |      |     |          |       | 8208 |
| Books: less than 50                         | 0.64      | 0.48 | 848 | 0.09     | 0.28  | 8208 |
| Books: 50                                   | 0.16      | 0.37 | 848 | 0.11     | 0.32  | 8208 |
| Books: 50-150                               | 0.11      | 0.31 | 848 | 0.23     | 0.42  | 8208 |
| Books: 150-300                              | 0.04      | 0.20 | 848 | 0.20     | 0.40  | 8208 |
| Books: 300-600                              | 0.02      | 0.15 | 848 | 0.17     | 0.37  | 8208 |
| Books: 600-1000                             | 0.01      | 0.09 | 848 | 0.09     | 0.28  | 8208 |
| Books: more                                 | reference |      |     |          |       | 8208 |
| Internet at home                            | 0.07      | 0.25 | 848 | 0.51     | 0.50  | 8208 |
| Mother employed                             | 0.24      | 0.43 | 848 | 0.70     | 0.46  | 8208 |
| Father employed                             | 0.35      | 0.48 | 848 | 0.66     | 0.47  | 8208 |
| Fraction of years mother was employed       | 0.30      | 0.35 | 848 | 0.64     | 0.32  | 8208 |
| Fraction of years father was employed       | 0.52      | 0.45 | 848 | 0.73     | 0.43  | 8208 |
| ln Household income                         | 11.68     | 0.46 | 848 | 12.03    | 0.46  | 8208 |
| ln Household size                           | 1.58      | 0.35 | 848 | 1.39     | 0.29  | 8208 |
| Non-employed adults in household            | 1.39      | 0.99 | 848 | 0.67     | 0.81  | 8208 |
| Square meter per capita                     | 17.55     | 9.62 | 848 | 23.57    | 10.16 | 8208 |
| Rooms per capita                            | 0.55      | 0.25 | 848 | 0.79     | 0.29  | 8208 |
| Bathroom                                    | 0.75      | 0.43 | 848 | 0.97     | 0.17  | 8208 |
| Poverty indicator (no money for food)       | 0.23      | 0.42 | 848 | 0.05     | 0.21  | 8208 |
| Poverty indicator (no money for heating)    | 0.35      | 0.48 | 848 | 0.12     | 0.32  | 8208 |
| Poverty indicator (child welfare allowance) | 0.67      | 0.47 | 848 | 0.22     | 0.42  | 8208 |
| Poverty indicator (free lunch)              | 0.17      | 0.38 | 848 | 0.08     | 0.27  | 8208 |
| Poverty indicator (free schoolbooks)        | 0.87      | 0.33 | 848 | 0.56     | 0.50  | 8208 |

**Table 3A.** Detailed results of the regressions on standardized test scores in reading

|   | (1)               | (2)               | (3)               | (4)               | (5)               | (6)               | (7)               |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Roma  | -0.97<br>[0.05]** | -0.87<br>[0.05]** | -0.38<br>[0.05]** | -0.25<br>[0.06]** | -0.16<br>[0.07]*  | -0.11<br>[0.05]*  | -0.05<br>[0.07]   |
| Low birth weight                            |                   | -0.27<br>[0.04]** | -0.18<br>[0.04]** | -0.11<br>[0.05]*  | -0.09<br>[0.05]   | -0.13<br>[0.04]** | -0.08<br>[0.05]   |
| Body height (standardized)                  |                   | 0.11<br>[0.01]**  | 0.06<br>[0.01]**  | 0.05<br>[0.01]**  | 0.04<br>[0.02]*   | 0.03<br>[0.01]**  | 0.03<br>[0.01]    |
| Subjective health fair or poor              |                   | -0.33<br>[0.04]** | -0.18<br>[0.04]** | -0.15<br>[0.04]** | -0.13<br>[0.05]** | -0.13<br>[0.04]** | -0.12<br>[0.05]*  |
| Frequent bedtime stories (parent's answer)  |                   |                   | 0.12<br>[0.03]**  | 0.10<br>[0.03]**  | 0.11<br>[0.04]**  | 0.07<br>[0.02]**  | 0.09<br>[0.04]*   |
| Rare theater with parents (parent's answer) |                   |                   | -0.13<br>[0.03]** | -0.04<br>[0.03]   | -0.04<br>[0.04]   | -0.05<br>[0.03]   | -0.01<br>[0.04]   |
| Rare hiking with parents (parent's answer)  |                   |                   | -0.06<br>[0.03]*  | -0.04<br>[0.03]   | 0.00<br>[0.04]    | 0.01<br>[0.03]    | 0.03<br>[0.04]    |
| Bedtime stories never (child's answer)      |                   |                   | -0.16<br>[0.06]** | -0.06<br>[0.06]   | -0.07<br>[0.07]   | -0.14<br>[0.06]*  | -0.06<br>[0.07]   |
| Bedtime stories every day (child's answer)  |                   |                   | 0.16<br>[0.02]**  | 0.12<br>[0.03]**  | 0.10<br>[0.03]**  | 0.09<br>[0.02]**  | 0.06<br>[0.03]    |
| Cognitive HOME index                        |                   |                   | 0.34<br>[0.01]**  | 0.28<br>[0.02]**  | 0.24<br>[0.02]**  | 0.17<br>[0.02]**  | 0.16<br>[0.02]**  |
| Emotional HOME index                        |                   |                   | -0.05<br>[0.01]** | -0.05<br>[0.02]** | -0.03<br>[0.02]   | -0.04<br>[0.01]** | -0.03<br>[0.02]   |
| Lives with biological mother                |                   |                   |                   |                   |                   | 0.03<br>[0.27]    | -0.28<br>[0.34]   |
| Lives with stepmother                       |                   |                   |                   |                   |                   | -0.09<br>[0.28]   | -0.33<br>[0.34]   |
| Lives with biological father                |                   |                   |                   |                   |                   | -0.07<br>[0.45]   | 0.10<br>[0.49]    |
| Lives with stepfather                       |                   |                   |                   |                   |                   | -0.07<br>[0.45]   | 0.16<br>[0.49]    |
| Mother's education 0-8 <sup>th</sup> grade  |                   |                   |                   |                   |                   | -0.26<br>[0.05]** | -0.11<br>[0.07]   |
| Mother's education vocational               |                   |                   |                   |                   |                   | -0.29<br>[0.04]** | -0.17<br>[0.06]** |
| Mother's education secondary                |                   |                   |                   |                   |                   | -0.13<br>[0.03]** | -0.06<br>[0.05]   |
| Father's education 0-8 <sup>th</sup> grade  |                   |                   |                   |                   |                   | -0.37<br>[0.05]** | -0.22<br>[0.08]** |
| Father's education vocational               |                   |                   |                   |                   |                   | -0.28<br>[0.04]** | -0.16<br>[0.06]** |
| Father's education secondary                |                   |                   |                   |                   |                   | -0.19<br>[0.04]** | -0.09<br>[0.06]   |
| Books: 0-50                                 |                   |                   |                   |                   |                   | -0.53<br>[0.05]** | -0.42<br>[0.08]** |
| Books: 50                                   |                   |                   |                   |                   |                   | -0.33<br>[0.05]** | -0.28<br>[0.07]** |
| Books: 50-150                               |                   |                   |                   |                   |                   | -0.29<br>[0.04]** | -0.24<br>[0.06]** |
| Books: 150-300                              |                   |                   |                   |                   |                   | -0.19<br>[0.04]** | -0.11<br>[0.06]   |
| Books: 300-600                              |                   |                   |                   |                   |                   | -0.13<br>[0.04]** | -0.10<br>[0.06]   |
| Books: 600-1000                             |                   |                   |                   |                   |                   | -0.08<br>[0.04]   | -0.13<br>[0.07]   |
| Internet at home                            |                   |                   |                   |                   |                   | 0.18<br>[0.03]**  | 0.15<br>[0.04]**  |

|   |          |         |          |        |          |        |
|---|----------|---------|----------|--------|----------|--------|
| Mother employed                             |          |         |          |        | -0.05    | 0.00   |
|   |          |         |          |        | [0.03]   | [0.05] |
| Father employed                             |          |         |          |        | 0.01     | 0.02   |
|   |          |         |          |        | [0.04]   | [0.05] |
| Fraction of years mother was employed       |          |         |          |        | -0.02    | -0.11  |
|   |          |         |          |        | [0.04]   | [0.06] |
| Fraction of years father was employed       |          |         |          |        | 0.11     | 0.10   |
|   |          |         |          |        | [0.05]*  | [0.07] |
| In Household income                         |          |         |          |        | -0.03    | -0.03  |
|   |          |         |          |        | [0.03]   | [0.04] |
| In Household size                           |          |         |          |        | -0.11    | -0.10  |
|   |          |         |          |        | [0.05]*  | [0.08] |
| Non-employed adults in household            |          |         |          |        | -0.05    | -0.03  |
|   |          |         |          |        | [0.02]** | [0.03] |
| Apartment size, square meters per capita    |          |         |          |        | 0.00     | 0.00   |
|   |          |         |          |        | [0.00]   | [0.00] |
| Rooms per capita                            |          |         |          |        | 0.07     | -0.11  |
|   |          |         |          |        | [0.05]   | [0.08] |
| Bathroom                                    |          |         |          |        | -0.01    | -0.05  |
|   |          |         |          |        | [0.06]   | [0.08] |
| Poverty indicator (no money for food)       |          |         |          |        | -0.15    | -0.03  |
|   |          |         |          |        | [0.05]** | [0.06] |
| Poverty indicator (no money for heating)    |          |         |          |        | -0.03    | 0.00   |
|   |          |         |          |        | [0.03]   | [0.05] |
| Poverty indicator (child welfare allowance) |          |         |          |        | 0.10     | 0.07   |
|   |          |         |          |        | [0.03]** | [0.04] |
| Poverty indicator (free lunch)              |          |         |          |        | -0.11    | -0.11  |
|   |          |         |          |        | [0.04]** | [0.06] |
| Poverty indicator (free schoolbooks)        |          |         |          |        | -0.10    | -0.06  |
|   |          |         |          |        | [0.03]** | [0.04] |
| Missing birth weight                        | -0.58    | -0.34   | -0.40    | -0.37  | -0.20    | -0.33  |
|   | [0.15]** | [0.13]* | [0.15]** | [0.21] | [0.14]   | [0.21] |
| Missing height                              | -0.15    | -0.11   | -0.16    | -0.16  | -0.10    | -0.13  |
|   | [0.08]   | [0.08]  | [0.09]   | [0.11] | [0.07]   | [0.11] |
| Missing subjective health                   | -0.29    | -0.18   | -0.14    | 0.03   | -0.20    | 0.04   |
|   | [0.10]** | [0.09]* | [0.12]   | [0.14] | [0.08]*  | [0.13] |
| Missing bedtime stories                     |          | 0.11    | 0.07     | 0.06   | 0.06     | 0.03   |
|   |          | [0.06]* | [0.07]   | [0.08] | [0.06]   | [0.08] |
| Missing cognitive HOME index                |          | -0.13   | -0.08    | -0.06  | -0.05    | -0.02  |
|   |          | [0.09]  | [0.11]   | [0.14] | [0.09]   | [0.15] |
| Missing emotional HOME index                |          | 0.06    | 0.09     | 0.15   | 0.05     | 0.12   |
|   |          | [0.07]  | [0.09]   | [0.11] | [0.07]   | [0.12] |
| Missing number of books                     |          |         |          |        | -0.20    | -0.19  |
|   |          |         |          |        | [0.13]   | [0.18] |
| Missing Internet                            |          |         |          |        | -0.10    | -0.13  |
|   |          |         |          |        | [0.19]   | [0.21] |
| Missing education of mother                 |          |         |          |        | -0.31    | -0.46  |
|   |          |         |          |        | [0.26]   | [0.33] |
| Missing education of father                 |          |         |          |        | -0.21    | 0.05   |
|   |          |         |          |        | [0.45]   | [0.50] |
| Missing household income                    |          |         |          |        | -0.04    | -0.05  |
|   |          |         |          |        | [0.03]   | [0.05] |
| Missing apartment size, square meters       |          |         |          |        | -0.04    | -0.06  |
|   |          |         |          |        | [0.09]   | [0.13] |
| Missing number of rooms                     |          |         |          |        | 0.04     | 0.16   |
|   |          |         |          |        | [0.16]   | [0.19] |
| Missing bathroom                            |          |         |          |        | -0.07    | -0.22  |
|   |          |         |          |        | [0.18]   | [0.27] |
| Missing poverty indices                     |          |         |          |        | 0.12     | -0.11  |
|   |          |         |          |        | [0.11]   | [0.16] |

|                   |                 |                 |                  |                   |                   |                |                |
|-------------------|-----------------|-----------------|------------------|-------------------|-------------------|----------------|----------------|
| Constant          | -0.01<br>[0.02] | 0.04<br>[0.02]* | -0.07<br>[0.03]* | -0.12<br>[0.03]** | -0.15<br>[0.04]** | 1.06<br>[0.57] | 0.95<br>[0.81] |
| School FE         |                 |                 |                  | YES               | YES               |                | YES            |
| School × Class FE |                 |                 |                  |                   | YES               |                | YES            |
| Observations      | 9056            | 9056            | 9056             | 9056              | 9056              | 9056           | 9056           |
| R-squared         | 0.06            | 0.09            | 0.25             | 0.53              | 0.66              | 0.33           | 0.68           |

**Table 4A.** Detailed results of the regressions on standardized test scores in mathematics

|   | (1)               | (2)               | (3)               | (4)               | (5)               | (7)               | (6)               |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Roma  | -1.05<br>[0.05]** | -0.94<br>[0.05]** | -0.51<br>[0.05]** | -0.33<br>[0.05]** | -0.28<br>[0.07]** | -0.22<br>[0.05]** | -0.15<br>[0.07]*  |
| Low birth weight                            |                   | -0.38<br>[0.04]** | -0.29<br>[0.04]** | -0.19<br>[0.05]** | -0.17<br>[0.05]** | -0.23<br>[0.04]** | -0.16<br>[0.05]** |
| Body height (standardized)                  |                   | 0.11<br>[0.01]**  | 0.06<br>[0.01]**  | 0.06<br>[0.01]**  | 0.04<br>[0.02]*   | 0.03<br>[0.01]**  | 0.03<br>[0.02]    |
| Subjective health fair or poor              |                   | -0.35<br>[0.04]** | -0.23<br>[0.04]** | -0.17<br>[0.05]** | -0.19<br>[0.06]** | -0.16<br>[0.04]** | -0.17<br>[0.06]** |
| Frequent bedtime stories (parent's answer)  |                   |                   | 0.12<br>[0.03]**  | 0.08<br>[0.03]**  | 0.07<br>[0.04]    | 0.06<br>[0.03]*   | 0.04<br>[0.04]    |
| Rare theater with parents (parent's answer) |                   |                   | -0.12<br>[0.03]** | -0.03<br>[0.03]   | -0.03<br>[0.04]   | -0.02<br>[0.03]   | -0.01<br>[0.04]   |
| Rare hiking with parents (parent's answer)  |                   |                   | -0.11<br>[0.03]** | -0.09<br>[0.03]** | -0.06<br>[0.04]   | -0.03<br>[0.03]   | -0.02<br>[0.04]   |
| Bedtime stories never (child's answer)      |                   |                   | -0.06<br>[0.06]   | -0.06<br>[0.06]   | -0.06<br>[0.07]   | -0.04<br>[0.06]   | -0.04<br>[0.07]   |
| Bedtime stories every day (child's answer)  |                   |                   | 0.14<br>[0.03]**  | 0.09<br>[0.03]**  | 0.08<br>[0.04]*   | 0.07<br>[0.03]**  | 0.05<br>[0.04]    |
| Cognitive HOME index                        |                   |                   | 0.31<br>[0.01]**  | 0.24<br>[0.02]**  | 0.20<br>[0.02]**  | 0.12<br>[0.02]**  | 0.10<br>[0.02]**  |
| Emotional HOME index                        |                   |                   | -0.06<br>[0.01]** | -0.05<br>[0.02]** | -0.04<br>[0.02]   | -0.06<br>[0.01]** | -0.04<br>[0.02]*  |
| Lives with biological mother                |                   |                   |                   |                   |                   | -0.15<br>[0.30]   | -0.02<br>[0.32]   |
| Lives with stepmother                       |                   |                   |                   |                   |                   | -0.23<br>[0.31]   | 0.01<br>[0.33]    |
| Lives with biological father                |                   |                   |                   |                   |                   | -0.12<br>[0.26]   | -0.59<br>[0.56]   |
| Lives with stepfather                       |                   |                   |                   |                   |                   | -0.17<br>[0.26]   | -0.61<br>[0.56]   |
| Mother's education 0-8 <sup>th</sup> grade  |                   |                   |                   |                   |                   | -0.32<br>[0.05]** | -0.21<br>[0.07]** |
| Mother's education vocational               |                   |                   |                   |                   |                   | -0.29<br>[0.04]** | -0.22<br>[0.06]** |
| Mother's education secondary                |                   |                   |                   |                   |                   | -0.11<br>[0.04]** | -0.09<br>[0.06]   |
| Father's education 0-8 <sup>th</sup> grade  |                   |                   |                   |                   |                   | -0.50<br>[0.06]** | -0.27<br>[0.09]** |
| Father's education vocational               |                   |                   |                   |                   |                   | -0.41<br>[0.05]** | -0.21<br>[0.07]** |
| Father's education secondary                |                   |                   |                   |                   |                   | -0.21<br>[0.05]** | -0.09<br>[0.07]   |
| Books: 0-50                                 |                   |                   |                   |                   |                   | -0.39<br>[0.06]** | -0.26<br>[0.09]** |
| Books: 50                                   |                   |                   |                   |                   |                   | -0.28<br>[0.06]** | -0.21<br>[0.08]*  |
| Books: 50-150                               |                   |                   |                   |                   |                   | -0.25<br>[0.05]** | -0.14<br>[0.07]   |
| Books: 150-300                              |                   |                   |                   |                   |                   | -0.15<br>[0.05]** | -0.01<br>[0.07]   |
| Books: 300-600                              |                   |                   |                   |                   |                   | -0.12<br>[0.05]*  | -0.05<br>[0.07]   |
| Books: 600-1000                             |                   |                   |                   |                   |                   | -0.10<br>[0.05]   | -0.09<br>[0.08]   |
| Internet at home                            |                   |                   |                   |                   |                   | 0.22<br>[0.03]**  | 0.22<br>[0.04]**  |

|   |          |          |        |        |          |         |
|---|----------|----------|--------|--------|----------|---------|
| Mother employed                             |          |          |        |        | -0.03    | 0.03    |
|   |          |          |        |        | [0.04]   | [0.05]  |
| Father employed                             |          |          |        |        | -0.02    | -0.05   |
|   |          |          |        |        | [0.04]   | [0.06]  |
| Fraction of years mother was employed       |          |          |        |        | -0.01    | -0.08   |
|   |          |          |        |        | [0.05]   | [0.06]  |
| Fraction of years father was employed       |          |          |        |        | 0.07     | 0.16    |
|   |          |          |        |        | [0.06]   | [0.07]* |
| In Household income                         |          |          |        |        | 0.01     | 0.01    |
|   |          |          |        |        | [0.03]   | [0.04]  |
| In Household size                           |          |          |        |        | -0.08    | -0.11   |
|   |          |          |        |        | [0.06]   | [0.08]  |
| Non-employed adults in household            |          |          |        |        | -0.04    | -0.03   |
|   |          |          |        |        | [0.02]*  | [0.03]  |
| Apartment size, square meters per capita    |          |          |        |        | 0.00     | 0.00    |
|   |          |          |        |        | [0.00]   | [0.00]  |
| Rooms per capita                            |          |          |        |        | 0.09     | -0.07   |
|   |          |          |        |        | [0.06]   | [0.09]  |
| Bathroom                                    |          |          |        |        | 0.03     | -0.03   |
|   |          |          |        |        | [0.06]   | [0.07]  |
| Poverty indicator (no money for food)       |          |          |        |        | -0.12    | -0.04   |
|   |          |          |        |        | [0.05]*  | [0.06]  |
| Poverty indicator (no money for heating)    |          |          |        |        | -0.02    | 0.02    |
|   |          |          |        |        | [0.04]   | [0.05]  |
| Poverty indicator (child welfare allowance) |          |          |        |        | 0.05     | 0.04    |
|   |          |          |        |        | [0.03]   | [0.05]  |
| Poverty indicator (free lunch)              |          |          |        |        | -0.06    | -0.13   |
|   |          |          |        |        | [0.05]   | [0.06]* |
| Poverty indicator (free schoolbooks)        |          |          |        |        | -0.03    | 0.03    |
|   |          |          |        |        | [0.03]   | [0.04]  |
| Missing birth weight                        | -0.37    | -0.16    | -0.27  | -0.22  | -0.04    | -0.18   |
|   | [0.16]*  | [0.13]   | [0.17] | [0.19] | [0.12]   | [0.18]  |
| Missing height                              | -0.04    | -0.02    | -0.10  | -0.13  | -0.02    | -0.11   |
|   | [0.09]   | [0.08]   | [0.10] | [0.13] | [0.08]   | [0.13]  |
| Missing subjective health                   | -0.33    | -0.25    | -0.16  | -0.04  | -0.28    | 0.00    |
|   | [0.10]** | [0.10]** | [0.11] | [0.15] | [0.09]** | [0.15]  |
| Missing bedtime stories                     |          | 0.13     | 0.09   | 0.04   | 0.08     | 0.03    |
|   |          | [0.06]*  | [0.07] | [0.09] | [0.06]   | [0.09]  |
| Missing cognitive HOME index                |          | -0.21    | -0.20  | -0.23  | -0.14    | -0.18   |
|   |          | [0.10]*  | [0.11] | [0.13] | [0.09]   | [0.13]  |
| Missing emotional HOME index                |          | -0.02    | 0.01   | 0.03   | -0.04    | -0.01   |
|   |          | [0.08]   | [0.08] | [0.10] | [0.07]   | [0.10]  |
| Missing number of books                     |          |          |        |        | -0.14    | -0.11   |
|   |          |          |        |        | [0.15]   | [0.25]  |
| Missing Internet                            |          |          |        |        | -0.09    | -0.25   |
|   |          |          |        |        | [0.28]   | [0.21]  |
| Missing education of mother                 |          |          |        |        | -0.49    | -0.36   |
|   |          |          |        |        | [0.29]   | [0.31]  |
| Missing education of father                 |          |          |        |        | -0.46    | -0.72   |
|   |          |          |        |        | [0.26]   | [0.57]  |
| Missing household income                    |          |          |        |        | -0.05    | -0.08   |
|   |          |          |        |        | [0.03]   | [0.06]  |
| Missing apartment size, square meters       |          |          |        |        | -0.08    | -0.08   |
|   |          |          |        |        | [0.09]   | [0.12]  |
| Missing number of rooms                     |          |          |        |        | 0.31     | 0.50    |
|   |          |          |        |        | [0.22]   | [0.22]* |
| Missing bathroom                            |          |          |        |        | 0.22     | 0.22    |
|   |          |          |        |        | [0.19]   | [0.23]  |
| Missing poverty indices                     |          |          |        |        | 0.13     | 0.03    |
|   |          |          |        |        | [0.12]   | [0.19]  |

|                          |                 |                  |                |                 |                 |                 |                |
|--------------------------|-----------------|------------------|----------------|-----------------|-----------------|-----------------|----------------|
| Constant                 | 0.04<br>[0.02]* | 0.10<br>[0.02]** | 0.01<br>[0.03] | -0.02<br>[0.03] | -0.02<br>[0.04] | 0.79<br>[0.39]* | 0.92<br>[0.85] |
| School FE                |                 |                  |                | YES             | YES             |                 | YES            |
| School $\times$ Class FE |                 |                  |                |                 | YES             |                 | YES            |
| Observations             | 8335            | 8335             | 8335           | 8335            | 8335            | 8335            | 8335           |
| R-squared                | 0.07            | 0.10             | 0.23           | 0.54            | 0.67            | 0.32            | 0.69           |



**Table 5A.** Results excluding students with special education needs.

|                             | (1)      | (2)      | (3)      | (4)      | (5)      | (6)      | (7)      |
|-----------------------------|----------|----------|----------|----------|----------|----------|----------|
| <i>Panel A. Reading</i>     |          |          |          |          |          |          |          |
| Gap                         | -0.95    | -0.86    | -0.4     | -0.26    | -0.19    | -0.14    | -0.07    |
| [S.E.]                      | [0.06]** | [0.06]** | [0.06]** | [0.07]** | [0.08]*  | [0.06]*  | [0.08]   |
| Observations                | 8201     | 8201     | 8201     | 8201     | 8201     | 8201     | 8201     |
| R <sup>2</sup>              | 0.06     | 0.08     | 0.24     | 0.51     | 0.65     | 0.31     | 0.66     |
| <i>Panel B. Mathematics</i> |          |          |          |          |          |          |          |
| Gap                         | -1.05    | -0.94    | -0.51    | -0.33    | -0.28    | -0.23    | -0.14    |
| [S.E.]                      | [0.05]** | [0.05]** | [0.05]** | [0.05]** | [0.07]** | [0.05]** | [0.07]** |
| Observations                | 8193     | 8193     | 8193     | 8193     | 8193     | 8193     | 8193     |
| R <sup>2</sup>              | 0.07     | 0.10     | 0.23     | 0.54     | 0.67     | 0.32     | 0.69     |
| <i>Control variables</i>    |          |          |          |          |          |          |          |
| Health                      |          | Yes      | Yes      | Yes      | Yes      | Yes      | Yes      |
| Home environment            |          |          | Yes      | Yes      | Yes      | Yes      | Yes      |
| School FE                   |          |          |          | Yes      | Yes      |          | Yes      |
| School × Class FE           |          |          |          |          | Yes      |          | Yes      |
| Family background           |          |          |          |          |          | Yes      | Yes      |

Standard errors in brackets are clustered at the school level. \*Significant at the 5 percent level. \*\*Significant at the 1 percent level.

**Table 6A.** Roma/non-Roma test score gap estimates by propensity score matching for specifications (2), (3) and (6).

|   | Nearest neighbor matching |          |         | Stratified matching |          |         |
|---|---------------------------|----------|---------|---------------------|----------|---------|
|   | (2)                       | (3)      | (6)     | (2)                 | (3)      | (6)     |
| <i>Panel A. Reading</i>                           |                           |          |         |                     |          |         |
| Gap   | -0.82                     | -0.40    | -0.09   | -0.83               | -0.39    | -0.10   |
| [S.E.]  | [0.04]**                  | [0.05]** | [0.06]  | [0.03]**            | [0.03]** | [0.04]* |
| # treated observations                            | 837                       | 837      | 837     | 837                 | 837      | 837     |
| # control observations                            | 3306                      | 694      | 522     | 7988                | 7715     | 7757    |
| <i>Panel B. Mathematics</i>                       |                           |          |         |                     |          |         |
| Gap   | -0.89                     | -0.59    | -0.13   | -0.89               | -0.51    | -0.17   |
| [S.E.]  | [0.04]**                  | [0.05]** | [0.06]* | [0.03]**            | [0.03]** | [0.03]* |
| # treated observations                            | 837                       | 837      | 837     | 7988                | 837      | 837     |
| # control observations                            | 3096                      | 597      | 425     | 425                 | 7715     | 7757    |
| <i>Variables in the propensity score equation</i> |                           |          |         |                     |          |         |
| Health  | Yes                       | Yes      | Yes     | Yes                 | Yes      | Yes     |
| Home environment                                  |                           | Yes      | Yes     |                     | Yes      | Yes     |
| Family background                                 |                           |          | Yes     |                     |          | Yes     |

Standard errors in brackets are clustered at the school level. \*Significant at the 5 percent level. \*\*Significant at the 1 percent level.

**Table 7A.** Ethnic gap in health and parenting. Detailed estimates of the regressions on the Roma dummy and family background variables. OLS results.

|                                       | Low birth weight | Standardized height | Fair or poor health | Frequent bedtime stories | Rare theater      | Rare hiking       | Bedtime stories never | Bedtime stories every day | HOME cognitive    | HOME emotional    |
|---------------------------------------|------------------|---------------------|---------------------|--------------------------|-------------------|-------------------|-----------------------|---------------------------|-------------------|-------------------|
| Roma                                  | 0.04<br>[0.02]*  | -0.07<br>[0.05]     | 0.01<br>[0.02]      | -0.05<br>[0.03]*         | -0.03<br>[0.02]   | -0.01<br>[0.02]   | 0.06<br>[0.02]**      | -0.03<br>[0.02]           | -0.09<br>[0.05]*  | 0.09<br>[0.05]    |
| Lives with bio. Mother                | -0.05<br>[0.08]  | -0.37<br>[0.31]     | -0.14<br>[0.11]     | 0.19<br>[0.15]           | -0.07<br>[0.14]   | 0.23<br>[0.14]    | 0.00<br>[0.07]        | 0.04<br>[0.15]            | -0.24<br>[0.29]   | -0.21<br>[0.33]   |
| Lives with stepmother                 | -0.06<br>[0.08]  | -0.47<br>[0.32]     | -0.14<br>[0.11]     | 0.07<br>[0.15]           | 0.04<br>[0.15]    | 0.23<br>[0.14]    | 0.02<br>[0.07]        | 0.00<br>[0.15]            | -0.50<br>[0.30]   | -0.29<br>[0.34]   |
| Lives with bio. Father                | -0.01<br>[0.11]  | 0.62<br>[0.39]      | 0.19<br>[0.18]      | 0.23<br>[0.22]           | 0.15<br>[0.13]    | -0.01<br>[0.18]   | -0.10<br>[0.06]       | 0.22<br>[0.18]            | 0.11<br>[0.39]    | 0.36<br>[0.43]    |
| Lives with stepfather                 | 0.00<br>[0.11]   | 0.56<br>[0.39]      | 0.18<br>[0.18]      | 0.22<br>[0.22]           | 0.16<br>[0.13]    | -0.02<br>[0.18]   | -0.11<br>[0.06]       | 0.24<br>[0.18]            | 0.00<br>[0.39]    | 0.39<br>[0.43]    |
| Mother's edu. 0-8 <sup>th</sup> grade | 0.04<br>[0.01]** | -0.25<br>[0.05]**   | 0.05<br>[0.02]**    | -0.25<br>[0.02]**        | 0.28<br>[0.02]**  | 0.30<br>[0.02]**  | 0.05<br>[0.01]**      | -0.30<br>[0.03]**         | -0.92<br>[0.04]** | -0.17<br>[0.05]** |
| Mother's edu. Vocational              | 0.01<br>[0.01]   | -0.18<br>[0.04]**   | 0.02<br>[0.01]      | -0.17<br>[0.02]**        | 0.22<br>[0.02]**  | 0.19<br>[0.02]**  | 0.00<br>[0.01]        | -0.22<br>[0.02]**         | -0.62<br>[0.03]** | -0.08<br>[0.04]   |
| Mother's edu. Secondary               | 0.00<br>[0.01]   | -0.07<br>[0.04]     | 0.01<br>[0.01]      | -0.07<br>[0.02]**        | 0.11<br>[0.02]**  | 0.08<br>[0.02]**  | 0.00<br>[0.01]        | -0.13<br>[0.02]**         | -0.34<br>[0.03]** | -0.01<br>[0.04]   |
| Father's edu. 0-8 <sup>th</sup> grade | 0.03<br>[0.02]   | -0.05<br>[0.06]     | 0.06<br>[0.02]**    | -0.13<br>[0.03]**        | 0.14<br>[0.03]**  | 0.17<br>[0.03]**  | 0.02<br>[0.01]        | -0.14<br>[0.03]**         | -0.53<br>[0.05]** | -0.12<br>[0.06]   |
| Father's edu. Vocational              | 0.01<br>[0.01]   | -0.03<br>[0.05]     | 0.03<br>[0.01]**    | -0.08<br>[0.02]**        | 0.14<br>[0.02]**  | 0.10<br>[0.02]**  | 0.00<br>[0.01]        | -0.08<br>[0.02]**         | -0.30<br>[0.03]** | -0.06<br>[0.05]   |
| Father's edu. Secondary               | 0.00<br>[0.01]   | -0.02<br>[0.05]     | 0.01<br>[0.01]      | -0.04<br>[0.02]          | 0.07<br>[0.02]**  | 0.05<br>[0.02]*   | 0.00<br>[0.01]        | -0.05<br>[0.02]*          | -0.15<br>[0.03]** | -0.06<br>[0.05]   |
| Mother employed                       | -0.02<br>[0.01]  | 0.02<br>[0.04]      | -0.02<br>[0.01]     | -0.02<br>[0.02]          | -0.02<br>[0.02]   | -0.02<br>[0.02]   | 0.00<br>[0.01]        | -0.01<br>[0.02]           | 0.08<br>[0.03]**  | -0.01<br>[0.04]   |
| Father employed                       | -0.01<br>[0.01]  | 0.01<br>[0.04]      | -0.02<br>[0.01]     | -0.01<br>[0.02]          | -0.01<br>[0.02]   | -0.01<br>[0.02]   | 0.01<br>[0.01]        | -0.03<br>[0.02]           | 0.05<br>[0.04]    | -0.08<br>[0.05]   |
| Fraction of years mother was employed | 0.02<br>[0.01]   | 0.02<br>[0.05]      | -0.01<br>[0.02]     | 0.03<br>[0.02]           | -0.01<br>[0.02]   | -0.02<br>[0.02]   | 0.00<br>[0.01]        | -0.02<br>[0.02]           | 0.03<br>[0.04]    | 0.08<br>[0.05]    |
| Fraction of years father was employed | -0.01<br>[0.02]  | 0.07<br>[0.06]      | 0.04<br>[0.02]*     | 0.06<br>[0.03]*          | -0.03<br>[0.03]   | -0.03<br>[0.03]   | -0.03<br>[0.01]*      | 0.07<br>[0.03]**          | 0.21<br>[0.05]**  | 0.20<br>[0.06]**  |
| ln Household income                   | -0.01<br>[0.01]  | 0.03<br>[0.03]      | 0.00<br>[0.01]      | 0.01<br>[0.01]           | -0.04<br>[0.01]** | -0.05<br>[0.01]** | -0.01<br>[0.01]       | 0.00<br>[0.02]            | 0.04<br>[0.03]    | -0.09<br>[0.03]** |
| ln Household size                     | 0.00<br>[0.02]   | -0.08<br>[0.06]     | -0.02<br>[0.02]     | -0.11<br>[0.03]**        | 0.05<br>[0.03]    | 0.02<br>[0.03]    | 0.02<br>[0.01]        | -0.07<br>[0.03]*          | 0.04<br>[0.05]    | 0.12<br>[0.06]*   |
| Non-empl adults in household          | 0.00<br>[0.01]   | 0.00<br>[0.02]      | 0.00<br>[0.01]      | 0.00<br>[0.01]           | 0.00<br>[0.01]    | 0.01<br>[0.01]    | 0.00<br>[0.00]        | 0.01<br>[0.01]            | 0.04<br>[0.02]*   | -0.03<br>[0.02]   |
| Apt sq. meters per capita             | 0.00<br>[0.00]   | 0.00<br>[0.00]      | 0.00<br>[0.00]      | 0.00<br>[0.00]           | 0.00<br>[0.00]*   | 0.00<br>[0.00]**  | 0.00<br>[0.00]        | 0.00<br>[0.00]            | 0.00<br>[0.00]    | 0.00<br>[0.00]    |
| Rooms per capita                      | -0.04<br>[0.02]* | 0.10<br>[0.06]      | 0.01<br>[0.02]      | 0.07<br>[0.03]*          | -0.13<br>[0.03]** | -0.15<br>[0.03]** | -0.01<br>[0.01]       | 0.08<br>[0.03]*           | 0.36<br>[0.05]**  | 0.02<br>[0.06]    |
| Bathroom                              | -0.01<br>[0.02]  | 0.20<br>[0.06]**    | -0.01<br>[0.02]     | 0.02<br>[0.03]           | -0.11<br>[0.02]** | -0.08<br>[0.03]** | -0.09<br>[0.02]**     | 0.02<br>[0.03]            | 0.52<br>[0.06]**  | 0.13<br>[0.06]*   |
| Poverty (no money for food)           | 0.01<br>[0.02]   | -0.05<br>[0.05]     | 0.03<br>[0.02]      | -0.04<br>[0.03]          | 0.03<br>[0.02]    | 0.04<br>[0.02]    | 0.04<br>[0.02]**      | -0.01<br>[0.02]           | -0.17<br>[0.05]** | -0.15<br>[0.06]** |
| Poverty (no money for heating)        | 0.00<br>[0.01]   | 0.02<br>[0.04]      | 0.01<br>[0.01]      | -0.04<br>[0.02]*         | -0.01<br>[0.02]   | 0.00<br>[0.02]    | 0.01<br>[0.01]        | -0.03<br>[0.02]           | -0.16<br>[0.03]** | -0.06<br>[0.04]   |
| Poverty (child welfare allowance)     | -0.01<br>[0.01]  | -0.03<br>[0.03]     | -0.01<br>[0.01]     | -0.03<br>[0.02]*         | 0.06<br>[0.02]**  | 0.06<br>[0.02]**  | 0.00<br>[0.01]        | -0.06<br>[0.02]**         | -0.15<br>[0.03]** | -0.06<br>[0.04]   |
| Poverty (free lunch)                  | 0.02<br>[0.02]   | -0.07<br>[0.05]     | 0.01<br>[0.02]      | -0.02<br>[0.02]          | 0.05<br>[0.02]*   | 0.04<br>[0.02]*   | -0.01<br>[0.01]       | 0.00<br>[0.02]            | -0.10<br>[0.04]** | -0.10<br>[0.04]*  |
| Poverty (free                         | 0.01             | -0.01               | 0.03                | 0.04                     | 0.01              | -0.01             | 0.00                  | 0.00                      | 0.01              | -0.10             |

|              |          |         |          |          |          |          |          |          |          |          |
|--------------|----------|---------|----------|----------|----------|----------|----------|----------|----------|----------|
| schoolbooks) | [0.01]   | [0.03]  | [0.01]** | [0.01]** | [0.01]   | [0.01]   | [0.01]   | [0.01]   | [0.02]   | [0.03]** |
| Missing edu. | -0.04    | -0.62   | -0.11    | -0.13    | 0.17     | 0.34     | 0.03     | -0.27    | -1.05    | -0.04    |
| of mother    | [0.08]   | [0.30]* | [0.10]   | [0.14]   | [0.14]   | [0.13]** | [0.06]   | [0.14]   | [0.28]** | [0.32]   |
| Missing edu. | 0.01     | 0.66    | 0.24     | 0.15     | 0.20     | 0.03     | -0.11    | 0.19     | -0.12    | -0.22    |
| of father    | [0.11]   | [0.39]  | [0.18]   | [0.22]   | [0.13]   | [0.18]   | [0.06]   | [0.18]   | [0.39]   | [0.43]   |
| Missing      | 0.01     | 0.04    | 0.01     | 0.04     | -0.07    | -0.07    | -0.01    | 0.00     | 0.04     | 0.04     |
| income       | [0.01]   | [0.04]  | [0.01]   | [0.02]*  | [0.02]** | [0.02]** | [0.01]   | [0.02]   | [0.03]   | [0.04]   |
| Missing apt  | 0.08     | -0.08   | 0.02     | -0.12    | 0.04     | 0.00     | 0.13     | -0.12    | -0.07    | -0.47    |
| size         | [0.05]   | [0.10]  | [0.04]   | [0.05]*  | [0.05]   | [0.05]   | [0.05]** | [0.04]** | [0.09]   | [0.10]** |
| Missing      | -0.03    | 0.54    | 0.00     | 0.13     | -0.13    | -0.08    | -0.12    | -0.05    | 0.04     | 0.65     |
| n.rooms      | [0.04]   | [0.21]* | [0.05]   | [0.08]   | [0.09]   | [0.08]   | [0.03]** | [0.10]   | [0.14]   | [0.17]** |
| Missing      | -0.09    | 0.09    | 0.07     | -0.15    | -0.11    | 0.00     | 0.06     | -0.07    | -0.11    | 0.35     |
| bathroom     | [0.02]** | [0.32]  | [0.11]   | [0.11]   | [0.10]   | [0.09]   | [0.07]   | [0.10]   | [0.21]   | [0.19]   |
| Missing      | -0.03    | -0.30   | 0.03     | -0.10    | -0.10    | -0.06    | -0.03    | -0.04    | 0.00     | 0.14     |
| poverty      | [0.03]   | [0.13]* | [0.05]   | [0.07]   | [0.07]   | [0.06]   | [0.02]   | [0.07]   | [0.10]   | [0.14]   |
| Constant     | 0.28     | -0.58   | 0.07     | 0.36     | 0.92     | 0.81     | 0.32     | 0.40     | -0.73    | 0.87     |
|              | [0.12]*  | [0.47]  | [0.16]   | [0.23]   | [0.23]** | [0.25]** | [0.09]** | [0.25]   | [0.49]   | [0.51]   |
| Observations | 9056     | 9056    | 9056     | 9056     | 9056     | 9056     | 9056     | 9056     | 9056     | 9056     |
| R-squared    | 0.03     | 0.04    | 0.03     | 0.11     | 0.16     | 0.16     | 0.09     | 0.11     | 0.42     | 0.11     |