Supplements.

Table S1.a. Correlations among study variables in Avon Longitudinal Study of Parents and Children (ALSPAC)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1.Very preterm birth | 1 |  |  |  |  |  |  |  |
| 2.Female | -.16\* | 1 |  |  |  |  |  |  |
| 3.Minority ethnic group | -.04\* | .01 | 1 |  |  |  |  |  |
| 4.Parental education below tertiarya | -.20\*\* | .02\*\* | .02\* | 1 |  |  |  |  |
| 5.Self-control in childhood | -.02 | .20\*\* | .02 | -.08\*\* | 1 |  |  |  |
| 6.Self-reported emotional problems in adolescence | -.01 | .23\*\* | .01 | .02 | -.05\*\* | 1 |  |  |
| 7.Mother-reported emotional problems in adolescence | -.01 | .21\*\* | .02 | .03\* | -.11\*\* | .32\*\* | 1 |  |
| 8.Self-reported peer victimization | -.01 | .01 | .004 | -.01 | -.12\*\* | .21\*\* | .14\*\* | 1 |
| 9.Mother-reported self-victimization in adolescence | .01 | -.07\*\* | .001 | .02 | -.25\*\* | .12\*\* | .25\*\* | .25\*\* |

\*\*\*p<.001, \*\*p<.01, \*p<.05

aTertiary education is any level of education pursued beyond high school.

Table S1.b. Correlations among study variables in Bavarian Longitudinal Study (BLS)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1.Very preterm birth | 1 |  |  |  |  |  |  |  |
| 2.Female | -.07 | 1 |  |  |  |  |  |  |
| 3.Minority ethnic group | .03 | .05 | 1 |  |  |  |  |  |
| 4.Parental education below tertiarya | .02 | -.002 | -.09\* | 1 |  |  |  |  |
| 5.Self-control in childhood | .03 | .04 | .08 | -.08 | 1 |  |  |  |
| 6.Self-reported emotional problems in adolescence | -.22\*\* | .13\*\* | .004 | .01 | -.04 | 1 |  |  |
| 7.Mother-reported emotional problems in adolescence | .18\*\* | .09\* | .05 | .03 | -.17\*\* | .55\*\* | 1 |  |
| 8.Self-reported peer victimization | .16\*\* | -.05 | .02 | -.02 | -.04 | .32\*\* | .16\*\* | 1 |
| 9.Mother-reported self-victimization in adolescence | .22\*\* | -.04 | .02 | -.03 | -.21\*\* | .25\*\* | .39\*\* | .37\*\* |

\*\*\*p<.001, \*\*p<.01, \*p<.05

aTertiary education is any level of education pursued beyond high school.

Table S1.c. Correlations among study variables in Basel Study of Preterm Children (BSPC)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1.Very preterm birth | 1 |  |  |  |  |  |  |  |
| 2.Female | -.09 | 1 |  |  |  |  |  |  |
| 3.Minority ethnic group | .29\* | -.07 | 1 |  |  |  |  |  |
| 4.Parental education below tertiarya | .38\*\* | .05 | .05 | 1 |  |  |  |  |
| 5.Self-control in childhood | -.21\* | .17\* | -.10 | -.17 | 1 |  |  |  |
| 6.Self-reported emotional problems in adolescence | .12 | .04 | .02 | -.09 | .10 | 1 |  |  |
| 7.Mother-reported emotional problems in adolescence | .16 | .15 | .16\* | .15 | -.21\*\* | .45\*\* | 1 |  |
| 8.Self-reported peer victimization | .13 | -.12 | .11 | -.01 | -.19\*\* | .43\*\* | .20\*\* | 1 |
| 9.Mother-reported self-victimization in adolescence | .09 | -.09 | .16 | .15 | -.18\*\* | .28\*\* | .43\*\* | .23\*\* |

\*\*\*p<.001, \*\*p<.01, \*p<.05

aTertiary education is any level of education pursued beyond high school.

Table S1.d. Correlations among study variables in Millennium Cohort Study (MCS)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1.Very preterm birth | 1 |  |  |  |  |  |  |  |
| 2.Female | -.02\* | 1 |  |  |  |  |  |  |
| 3.Minority ethnic group | .02\*\* | .01 | 1 |  |  |  |  |  |
| 4.Parental education below tertiarya | .01 | -.003 | -.02\* | 1 |  |  |  |  |
| 5.Self-control in childhood | -.02\* | .21\*\* | .06\*\* | -.12\*\* | 1 |  |  |  |
| 6.Self-reported emotional problems in adolescence | -.01 | .25\*\* | -.05\*\* | .04\*\* | -.08\*\* | 1 |  |  |
| 7.Mother-reported emotional problems in adolescence | .03\* | .14\*\* | .03\*\* | .10\* | -.25\*\* | .27\*\* | 1 |  |
| 8.Self-reported peer victimization | .004 | -.01 | -.04\*\* | .01 | -.13\*\* | .30\*\* | .16\*\* | 1 |
| 9.Mother-reported self-victimization in adolescence | .04\*\* | -.05\*\* | .05\*\* | .12\*\* | -.31\*\* | .17\*\* | .49\*\* | .25\*\* |

\*\*\*p<.001, \*\*p<.01, \*p<.05

aTertiary education is any level of education pursued beyond high school.

Table S2. Multiple regression results for self-control as a moderator of the association between very preterm birth and emotional problems in adolescence

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | ALSPACN= 12757 |  | BLS(N=659) |  | BSPC(N= 134) |  | MCS(N=10732) |  |
| *Self-reported* | Blocks | β | p | β | p | β | p | β | p |
| Age at assessment | 1 | - |  | .25 (.11) | .03 | -.02 (.09) | .84 | .07 (.04) | .06 |
| Female |  | .47 (.03) | <.001 | .26 (.09) | .003 | .25 (.21) | .22 | .52 (.02) | <.001 |
| Minority |  | .13 (.07) | .08 | .26 (.52) | .61 | -.40 (.32) | .21 | -.08 (.04) | .03 |
| Below tertiary parental education |  | .02 (.02) | .50 | .004 (.10) | .97 | -.14 (.23) | .53 | .10 (.03) | .003 |
| Very preterm birth |  | -.08 (.06) | .25 | .02 (.04) | .68 | .17 (.13) | .17 | .04 (.06) | .55 |
| Age at assessment | 2 |  |  | .24 (.11) | .04 | -.03 (.09) | .71 | .09 (.04) | .02 |
| Female |  | .51 (.03) | <.001 | .26 (.08) | .003 | .23 (.21) | .28 | .57 (.03) | <.001 |
| Minority |  | .14 (.07) | .06 | .27 (.51) | .59 | -.39 (.32) | .23 | -.07 (.04) | .05 |
| Below tertiary parental education |  | .01 (.02) | .75 | -.002 (.10) | .98 | -.12 (.23) | .61 | .07 (.03) | .06 |
| Very preterm birth |  | -.09 (.06) | .17 | .01 (.04) | .79 | .18 (.13) | .15 | .02 (.06) | .80 |
| Self-control |  | -.10 (.02) | <.001 | -.03 (.05) | .52 | .08 (.11) | .44 | -.13 (.01) | <.001 |
| Age at assessment | 3 |  |  | .15 (.12) | .23 | -.04 (.09) | .71 | .08 (.04) | .02 |
| Female |  | .49 (.03) | <.001 | .24 (.09) | .01 | .24 (.21) | .27 | .58 (.03) | <.001 |
| Minority |  | .14 (.08) | .09 | .23 (.49) | .63 | -.44 (.33) | .19 | -.08 (.03) | .02 |
| Below tertiary parental education |  | .02 (.03) | .58 | .01 (.10) | .93 | -.12 (.23) | .59 | .08 (.04) | .04 |
| Very preterm birth |  | -.08 (.08) | .28 | .05 (.05) | .27 | .19 (.13) | .15 | -.003 (.06) | .95 |
| Self-control |  | -.08 (.07) | .29 | -.05 (.05) | .33 | .08 (.11) | .50 | -.11 (.07) | .12 |
| Very preterm birth \* Self-control |  | .01 (.07) | .87 | -.09 (.05) | .05 | -.03 (.11) | .81 | .03 (.07) | .71 |
| *Mother-reported* |  |  |  |  |  |  |  |  |  |
| Age at assessment | 1 |  |  | .12 (.12) | .30 | -.14 (.09) | .11 | -.04 (.03) | .19 |
| Female |  | .42 (.03) | <.001 | .17 (.09) | .05 | .22 (.20) | .28 | .28 (.02) | <.001 |
| Minority |  | .10 (.07) | .13 | .61 (.45) | .18 | .21 (.30) | .48 | .02 (.03) | .47 |
| Below tertiary parental education |  | .03 (.02) | .16 | -.08 (.10) | .41 | .33 (.22) | .13 | .23 (.03) | <.001 |
| Very preterm birth |  | -.02 (.06) | .75 | .18 (.04) | <.001 | .07 (.12) | .55 | .17(.07) | .03 |
| Age at assessment | 2 |  |  | .06 (.11) | .61 | -.09 (.09) | .35 | -.01 (.03) | .83 |
| Female |  | .48 (.03) | <.001 | .18 (.08) | .03 | .31 (.20) | .12 | .40 (.02) | <.001 |
| Minority |  | .12 (.07) | .09 | .70 (.45) | .11 | .16 (.29) | .58 | .05 (.03) | .10 |
| Below tertiary parental education |  | .02 (.02) | .44 | -.12 (.10) | .24 | .24 (.21) | .27 | .16 (.03) | <.001 |
| Very preterm birth |  | -.04 (.06) | .57 | .14 (.04) | .001 | .04 (.12) | .71 | .12 (.08) | .12 |
| Self-control |  | -.16 (.01) | <.001 | -.18 (.05) | <.001 | -.28 (.10) | .01 | -.28 (.01) | <.001 |
| Age at assessment | 3 | . |  | .01 (.12) | .92 | -.09 (.09) | .34 | -.02 (.04) | .67 |
| Female |  | .47 (.03) | <.001 | .17 (.09) | .06 | .33 (.20) | .11 | .41 (.02) | <.001 |
| Minority |  | .15 (.08) | .05 | .68 (.49) | .17 | .20 (.30) | .50 | .03 (.03) | .41 |
| Below tertiary parental education |  | .02 (.03) | .47 | -.05 (.10) | .61 | .22 (.22) | .31 | .16 (.03) | <.001 |
| Very preterm birth |  | -.06 (.08) | .46 | .15 (.05) | .001 | .04 (.12) | .73 | .16 (.08) | .05 |
| Self-control |  | -.14 (.07) | .06 | -.19 (.05) | <.001 | -.27 (.10) | .01 | -.09 (.08) | .27 |
| Very preterm birth \* Self-control |  | .02 (.07) | .81 | -.07 (.05) | .16 | .05 (.10) | .59 | .19 (.08) | .02 |

ALSPAC: Avon Longitudinal Study of Parents and Children; BLS: Bavarian Longitudinal Study; BSPC: Basel Study of Preterm Children; MCS: Millennium Cohort Study.

Table S3. Findings of IPD meta-analysis regarding the associations between Very preterm birth, self-control in childhood and emotional problems and peer victimization in adolescence

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Beta** | **95% CI Lower Bound** | **95% CI Upper Bound** | **Cochran *Q* Test** | **I2** | **Test for Heterogeneity (*P*)** |
| **Self-Reported Emotional Problems** |  |  |  |  |
| Very preterm birth |  | .026 | -.046 | .098 | 4.08 | 26.4 | .253 |
| Self-control |  | -.115 | -0.165 | -0.064 | 8.55 | 64.9 | .036 |
| Very preterm birth \* Self-control |  | -.029 | -.097 | .038 | 2.49 | .000 | .478 |
| **Mother Reported Emotional Problems** |  |  |  |  |  |  |
| Very preterm birth |  | .130 | .019 | .241 | 8.35 | 64.1 | .039 |
| Self-control |  | -.228 | -.340 | -.117 | 73.00 | 95.9 | <.001 |
| Very preterm birth \* Self-control |  | .038 | -.083 | .159 | 7.80 | 61.5 | .050 |
| **Self-Reported Peer Victimization** |  |  |  |  |  |
| Very preterm birth |  | .068 | -.058 | .193 | 8.77 | 65.8 | .033 |
| Self-control |  | -.137 | -.181 | -.093 | 6.55 | 54.2 | .088 |
| Very preterm birth \* Self-control |  | .026 | -.050 | .102 | 2.60 | .000 | .458 |
| **Mother-Reported Peer Victimization** |  |  |  |  |
| Very preterm birth |  | .136 | .064 | .208 | 3.56 | 15.7 | .313 |
| Self-control |  | -.238 | -.332 | -.144 | 52.58 | 94.3 | <.001 |
| Very preterm birth \* Self-control |  | .082 | -.031 | .195 | 6.76 | 55.6 | .080 |

% Weights for the analyses on emotional problems in very preterm birth main effect and interaction term: ALSPAC: 17.21%; BLS: 40.93%; BSPC: 11.47%; MCS: 30.39%; self-control main effect: ALSPAC: 41.25%; BLS: 2.15%; BSPC: 0.43%; MCS: 56.17%

% Weights for the analyses on peer victimization in very preterm birth main effect and interaction term: BLS: 49.44%; BSPC: 13.86; MCS: 36.70; self-control main effect: BLS: 3.65%; BSPC: 0.74%; MCS: 95.61%

Table S4. Findings of IPD meta-analysis regarding the associations between Very preterm birth, self-control in childhood and emotional problems and peer victimization in adolescence excluding participants with neurosensory impairment

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Beta** | **95% CI Lower Bound** | **95% CI Upper Bound** | **Cochran *Q* Test** | **I2** | **Test for Heterogeneity (*P*)** |
| **Self-Reported Emotional Problems** |  |  |  |  |
| Very preterm birth |  | .033 | -.028 | .094 | 1.48 | .000 | .687 |
| Self-control |  | -.115 | -.165 | -.064 | 8.55 | 64.9 | .036 |
| Very preterm birth \* Self-control |  | -.021 | -.095 | .053 | 3.47 | 13.6 | .324 |
| **Mother Reported Emotional Problems** |  |  |  |  |  |  |
| Very preterm birth |  | .135 | .016 | .253 | 12.59 | 76.2 | .006 |
| Self-control |  | -.227 | -.319 | -.134 | 51.13 | 94.1 | <.001 |
| Very preterm birth \* Self-control |  | .043 | -.071 | .156 | 6.50 | 53.9 | .090 |
| **Self-Reported Peer Victimization** |  |  |  |  |  |
| Very preterm birth |  | .065 | -.047 | .177 | 11.71 | 74.4 | .008 |
| Self-Control |  | -.137 | -.186 | -.088 | 7.66 | 60.8 | .054 |
| Very preterm birth \* Self-control |  | .034 | -.046 | .114 | 2.53 | .000 | .469 |
| **Mother-Reported Peer Victimization** |  |  |  |  |
| Very preterm birth |  | .080 | -.038 | .199 | 12.28 | 75.6 | .006 |
| Self-control |  | -.115 | -.233 | .003 | 39.73 | 92.4 | <.001 |
| Very preterm birth \* Self-control |  | .028 | -.068 | .124 | 5.03 | 40.3 | .170 |

Table S5. Findings of IPD meta-analysis regarding the associations between Very preterm birth, self-control in childhood and emotional problems and peer victimization in adolescence without data imputation

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Data Points** | **Beta** | **95% CI Lower Bound** | **95% CI Upper Bound** | **Cochran *Q* Test** | **I2** | **Test for Heterogeneity (*P*)** |
| **Self-Reported Emotional Problems** |  |  |  |  |
| Very preterm birth | 4 | .036 | -.027 | .098 | 2.93 | .000 | .402 |
| Self-Control | 4 | -.107 | -.165 | -.048 | 10.68 | 71.9 | .014 |
| Very preterm birth \*Self-Control | 4 | -.035 | -.103 | .033 | 2.01 | .000 | .571 |
| **Mother Reported Emotional Problems** |  |  |  |  |  |  |
| Very preterm birth | 4 | .129 | .021 | .237 | 6.74 | 55.5 | .081 |
| Self-Control | 4 | -.224 | -.345 | -.104 | 85.41 | 96.5 | <.001 |
| Very preterm birth \*Self-Control | 4 | .045 | -.075 | .165 | 7.33 | 59.0 | .062 |
| **Self-Reported Peer Victimization** |  |  |  |  |  |
| Very preterm birth | 4 | .066 | -.064 | .195 | 8.63 | 65.2 | .035 |
| Self-Control | 4 | -.137 | -.181 | -.093 | 6.55 | 54.2 | .088 |
| Very preterm birth \*Self-Control | 4 | .045 | -.074 | .164 | 6.67 | 55.0 | .083 |
| **Mother-Reported Peer Victimization** |  |  |  |  |
| Very preterm birth | 4 | .073 | -.048 | .194 | 6.03 | 50.2 | .110 |
| Self-Control | 4 | -.234 | -.335 | -.133 | 60.13 | 95.0 | <.001 |
| VPT\*Self-Control | 4 | .029 | -.103 | .162 | 7.96 | 62.3 | .047 |

Table S6. Multiple regression results for self-control as a moderator of the association between very preterm birth and peer victimization in adolescence

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | ALSPAC |  | BLS |  | BSPC |  | MCS |  |
|  | Blocks | β | p | β | p | β | p | β | p |
| *Self-reported* |  |  |  |  |  |  |  |  |  |
| Age at assessment | 1 | - | - | -.09 (.11) | .43 | -.15 (.09) | .10 | -.06 (.05) | .23 |
| Female |  | .01 (.03) | .57 | -.01 (.09) | .92 | -.19 (.21) | .38 | -.09 (.03) | .01 |
| Minority |  | .002 (.06) | .97 | .20 (.49) | .68 | -.18 (.33) | .58 | -.08 (.05) | .09 |
| Below tertiary parental education |  | -.01 (.02) | .95 | -.02 (.10) | .85 | -.17 (.22) | .47 | .02 (.03) | .56 |
| Very preterm birth |  | -.06 (.07) | .42 | .15 (.04) | .001 | .17 (.13) | .18 | -.01 (.08) | .85 |
| Age at assessment | 2 |  |  | -.09 (.12) | .42 | -.12 (.09) | .19 | -.04 (.05) | .41 |
| Female |  | .07 (.03) | .01 | -.01 (.09) | .93 | -.14 (.22) | .49 | -.04 (.03) | .24 |
| Minority |  | .01 (.06) | .81 | .21 (.49) | .67 | -.21 (.33) | .52 | -.07 (.05) | .15 |
| Below tertiary parental education |  | -.01 (.02) | .53 | -.02 (.10) | .84 | -.21 (.23) | .36 | -.02 (.03) | .55 |
| Very preterm birth |  | -.07 (.07) | .33 | .14 (.04) | .001 | .15 (.13) | .21 | -.04 (.07) | .63 |
| Self-control |  | -.14 (.01) | <.001 | -.01 (.05) | .89 | -.13 (.11) | .21 | -.14 (.02) | <.001 |
| Age at assessment | 3 |  |  | -.11 (.12) | .34 | -.12 (.09) | .20 | -.05 (.05) | .35 |
| Female |  | .06 (.03) | .03 | -.04 (.09) | .68 | -.15 (.21) | .48 | -.04 (.03) | .24 |
| Minority |  | -.01 (.07) | .94 | .19 (.51) | .71 | -.36 (.34) | .30 | -.06 (.05) | .22 |
| Below tertiary parental education |  | -.03 (.03) | .33 | .01 (.11) | .95 | -.22 (.23) | .36 | -.02 (.03) | .59 |
| Very preterm birth |  | -.08 (.07) | .27 | .16 (.05) | .001 | .19 (.13) | .15 | -.09 (.07) | .23 |
| Self-control |  | .001 (.07) | .99 | -.01 (.05) | .91 | -.12 (.11) | .25 | -.12 (.09) | .21 |
| Very preterm birth \* Self-control |  | .13 (.07) | .08 | -.02 (.05) | .72 | .05 (.10) | .61 | .02 (.09) | .81 |
| *Mother reported* |  |  |  |  |  |  |  |  |  |
| Age at assessment | 1 |  |  | .12 (.12) | .28 | -.23 (.09) | .01 | -.04 (.03) | .19 |
| Female |  | -.07 (.02) | .002 | .03 (.09) | .74 | -.24 (.21) | .28 | .29 (.02) | <.001 |
| Minority |  | -.08 (.06) | .19 | -.33 (.45) | .46 | -.24 (.32) | .45 | .02 (.03) | .47 |
| Below tertiary parental education |  | .05 (.02) | .01 | -.15 (.10) | .14 | .23 (.23) | .32 | .23 (.03) | <.001 |
| Very preterm birth |  | .08 (.07) | .27 | .18 (.04) | <.001 | -.03 (.13) | .79 | .17 (.07) | .03 |
| Age at assessment | 2 |  |  | .10 (.12) | .37 | -.18 (.09) | .06 | -.01 (.03) | .83 |
| Female |  | -.01 (.02) | .76 | .03 (.09) | .69 | -.16 (.22) | .47 | .40 (.02) | <.001 |
| Minority |  | -.06 (.06) | .30 | -.30 (.45) | .51 | -.29 (.31) | .35 | .05 (.03) | .10 |
| Below tertiary parental education |  | .03 (.01) | .07 | -.16 (.10) | .12 | .14 (.23) | .54 | .16 (.03) | <.001 |
| Very preterm birth |  | .06 (.07) | .39 | .17 (.04) | <.001 | -.06 (.12) | .63 | .12 (.08) | .12 |
| Self-control |  | -.19 (.01) | <.001 | -.06 (.05) | .21 | -.26 (.11) | .02 | -.28 (.01) | <.001 |
| Age at assessment | 3 |  |  | .17 (.12) | .16 | -.18 (.09) | .06 | -.02 (.04) | .67 |
| Female |  | -.01 (.03) | .76 | .03 (.09) | .77 | -.13 (.22) | .54 | .41 (.02) | <.001 |
| Minority |  | -.07 (.07) | .32 | -.17 (.50) | .74 | -.27 (.32) | .40 | .03 (.03) | .41 |
| Below tertiary parental education |  | .08 (.02) | .001 | -.17 (.10) | .11 | .12 (.23) | .58 | .16 (.03) | <.001 |
| Very preterm birth |  | .05 (.07) | .49 | .18 (.05) | <.001 | -.06 (.13) | .62 | .16 (.08) | .05 |
| Self-control |  | -.03 (.07) | .71 | -.06 (.05) | .18 | -.26 (.11) | .02 | -.09 (.08) | .27 |
| Very preterm birth \* Self-control |  | .16 (.07) | .03 | -.01 (.05) | .92 | .01 (.11) | .93 | .19 (.08) | .02 |

ALSPAC: Avon Longitudinal Study of Parents and Children; BLS: Bavarian Longitudinal Study; BSPC: Basel Study of Preterm Children; MCS: Millennium Cohort Study.