|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table 1. Results from the standard and sibling-comparison models for inhibitory control (SSRT) | | | | | | | | | |
|  | Model | | | | | | | | |
|  | Standard NoCov1 | | Standard Cov2 | | Sib Comp NoCov3 | | Sib Comp Cov4 | |
|  | *b* | SE | *b* | SE | *b* | SE | *b* | SE |
| Intercept | 304.09\*\*\* | (7.76) | 184.74\*\*\* | (56.21) | 302.80\*\*\* | (13.74) | 187.44\*\*\* | (57.82) |
| **SDP** |  |  |  |  |  |  |  |  |
| Child-specific SDP | -1.09 | (2.07) | 0.95 | (2.62) | -0.93 | (2.40) | 2.93 | (3.26) |
| Family average SDP | — | | — | | -0.42 | (4.27) | 3.42 | (4.79) |
| **Controls** |  |  |  |  |  |  |  |  |
| Child Sex |  |  | 13.44 | (9.66) |  |  | 3.68 | (12.81) |
| Family Average Child Sex |  |  | — | |  |  | 21.77 | (13.69) |
| Birth Order |  |  | 11.01 | (1130) |  |  | 73.43\*\*\* | (20.92) |
| Mother Education (CS) |  |  | 4.96 | (2.88) |  |  | 9.87 | (6.55) |
| Mother Education (FA) |  |  | — | |  |  | 4.05 | (3.15) |
| Mother Age (CS) |  |  | -1.47 | (.96) |  |  | -24.52\*\*\* | (5.97) |
| Mother age (FA) |  |  | — | |  |  | -0.33 | (0.99) |
| Mother Marital Status |  |  | -11.92 | (14.36) |  |  | -15.09 | (14.26) |
| Food Stamp (CS) |  |  | 4.80 | (16.40) |  |  | 20.09 | (31.16) |
| Food Stamp (FA) |  |  | — | |  |  | -1.04 | (18.39) |
| SHSE (CS) |  |  | 1.75 | (3.45) |  |  | -3.40 | (6.65) |
| SHSE (FA) |  |  | — | |  |  | 2.70 | (4.02) |
| IQ (CS) |  |  | 0.60 | (.45) |  |  | 2.21\* | (0.83) |
| IQ (FA) |  |  | — | |  |  | 0.35 | (0.49) |
| **Variance** |  |  |  |  |  |  |  |  |
| Family-level | 0 | | 692.37 | | 0 | | 634.97 | |
| Individual-level (residual) | 4721.64\*\*\* | | 4476.85\*\*\* | | 4393.54\*\*\* | | 3130.40\*\*\* | |
| **Model Fit** |  |  |  |  |  |  |  |  |
| -2 Res LL | 2665.7 | | 2300.0 | | 2634.6 | | 2225.9 | |
| AIC | 2671.7 | | 2308.0 | | 2640.6 | | 2233.9 | |
| N | 173 | | 153 | | 169 | | 151 | |
| 1standard model, no covariates (Model 1); 2standard model, maternal covariates (Model 2); 3sibling comparison model, no covariates (Model 3); 4sibling comparison model, maternal covariates (Model 4). SDP= smoking during pregnancy; CS=child specific; FA=family average SHSE=secondhand smoke exposure. \*\*\**p*<.001; \*\**p*<.01; \**p*<.05  Supplemental Table 2. Results from the standard and sibling-comparison models for set-shifting – visual motor (DKEFS Trails) | | | | | | | | | |
|  | Model | | | | | | | | |
|  | Standard NoCov1 | | Standard Cov2 | | Sib Comp NoCov3 | | Sib Comp Cov4 | |
|  | *b* | SE | *b* | SE | *b* | SE | *b* | SE |
| Intercept | 9.51\*\*\* | (0.31) | -2.08 | (1.81) | 9.35\*\*\* | (.55) | -2.64 | (1.92) |
| **SDP** |  |  |  |  |  |  |  |  |
| Child-specific SDP | 0.01 | (0.07) | 0.06 | (.08) | 0.02 | (.08) | 0.09 | (.10) |
| Family average SDP | — | | — | | 0.06 | (.17) | 0.11 | (.16) |
| **Controls** |  |  |  |  |  |  |  |  |
| Child Sex |  |  | 0.42 | (.30) |  |  | 0.56 | (.40) |
| Family Average Child Sex |  |  | — | |  |  | 0.32 | (.46) |
| Birth Order |  |  | -0.11 | (.34) |  |  | -0.38 | (.66) |
| Mother Education (CS) |  |  | -0.23\* | (.10) |  |  | -0.21 | (.23) |
| Mother Education (FA) |  |  | — | |  |  | -0.19 | (.11) |
| Mother Age (CS) |  |  | 0.002 | (.03) |  |  | 0.10 | (.19) |
| Mother age (FA) |  |  | — | |  |  | -0.004 | (.04) |
| Mother Marital Status |  |  | -0.79 | (.50) |  |  | -0.81 | (.51) |
| Food Stamp (CS) |  |  | -1.30\*\* | (.54) |  |  | -2.48\*\* | (.98) |
| Food Stamp (FA) |  |  | — | |  |  | -0.84 | (.65) |
| SHSE (CS) |  |  | -0.06 | (.11) |  |  | -0.15 | (.21) |
| SHSE (FA) |  |  | — | |  |  | -0.02 | (.14) |
| IQ (CS) |  |  | 0.13\*\* | (.01) |  |  | 0.14\*\*\* | (.02) |
| IQ (FA) |  |  | — | |  |  | 0.12\*\*\* | (.02) |
| Mother set-shifting |  |  | .21\*\* | (.08) |  |  | 0.22\*\* | (.09) |
| **Variance** |  |  |  |  |  |  |  |  |
| Family-level | 3.81\*\* | | 2.27\*\* | | 1.19\* | | 0.68 | |
| Individual-level (residual) | 7.74\*\*\* | | 5.65\*\*\* | | 7.87\*\*\* | | 5.84\*\*\* | |
| **Model Fit** |  |  |  |  |  |  |  |  |
| -2 Res LL | 1648.7 | | 1331.7 | | 1632.1 | | 1331.6 | |
| AIC | 1654.8 | | 1337.7 | | 1638.1 | | 1337.6 | |
| N | 171 | | 150 | | 169 | | 148 | |
| 1standard model, no covariates (Model 1); 2standard model, maternal covariates (Model 2); 3sibling comparison model, no covariates (Model 3); 4sibling comparison model, maternal covariates (Model 4). SDP= smoking during pregnancy; CS=child specific; FA=family average SHSE=secondhand smoke exposure. \*\*\**p*<.001; \*\**p*<.01; \**p*<.05   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Supplemental Table 3. Results from the standard and sibling-comparison models for set-shifting - verbal (DKEFS Verbal Fluency) | | | | | | | | | | |  | Model | | | | | | | | | |  | Standard NoCov1 | | Standard Cov2 | | Sib Comp NoCov3 | | Sib Comp MomCov4 | | |  | *b* | SE | *b* | SE | *b* | SE | *b* | SE | | Intercept | 9.32\*\*\* | (.29) | 6.31\*\*\* | (2.32) | 9.08\*\*\* | (.54) | 6.07\*\* | (2.57) | | **SDP** |  |  |  |  |  |  |  |  | | Child-specific SDP | -.04 | (.08) | -0.07 | (.09) | -0.05 | (.09) | -0.08 | (.12) | | Family average SDP | — | | — | | 0.05 | (.17) | -0.02 | (.20) | | **Controls** |  |  |  |  |  |  |  |  | | Child Sex |  |  | 0.52 | (.37) |  |  | 0.30 | (.49) | | Family Average Child Sex |  |  | — | |  |  | 0.51 | 0.78 | | Birth Order |  |  | -0.06 | (.41) |  |  | 0.39 | (.79) | | Mother Education (CS) |  |  | -0.14 | (.11) |  |  | 0.22 | (.27) | | Mother Education (FA) |  |  | — | |  |  | -0.23 | -0.22 | | Mother Age (CS) |  |  | 0.02 | (.04) |  |  | -0.17 | (.23) | | Mother age (FA) |  |  | — | |  |  | 0.05 | 0.03 | | Mother Marital Status |  |  | -1.22\* | (.60) |  |  | -1.17 | (.61) | | Food Stamp (CS) |  |  | -0.41 | (.66) |  |  | -0.89 | (1.17) | | Food Stamp (FA) |  |  | — | |  |  | -0.13 | -0.39 | | SHSE (CS) |  |  | 0.37\*\* | (.14) |  |  | 0.43 | (.25) | | SHSE (FA) |  |  | — | |  |  | 0.39\* | 0.34\* | | IQ (CS) |  |  | -0.01 | (.02) |  |  | 0.01 | (.03) | | IQ (FA) |  |  | — | |  |  | 0.02 | 0.02 | | Mother verbal fluency |  |  | 0.06 | (.06) |  |  | 0.04 | (.07) | | **Variance** |  |  |  |  |  |  |  |  | | Family-level | 0.96 | | 1.51 | | 0.98 | | 1.44\* | | | Random effect on SDP |  | |  | |  | |  | | | Individual-level (residual) | 8.27\*\*\* | | 7.90\*\*\* | | 8.29\*\*\* | | 8.05\*\*\* | | | **Model Fit** |  |  |  |  |  |  |  |  | | -2 Res LL | 1665.5 | | 1453.4 | | 1653.3 | | 1445.6 | | | AIC | 1671.5 | | 1459.4 | | 1661.3 | | 1449.6 | | | N | 173 | | 151 | | 169 | | 149 | | | 1standard model, no covariates (Model 1); 2standard model, maternal covariates (Model 2); 3sibling comparison model, no covariates (Model 3); 4sibling comparison model, maternal covariates (Model 4). SDP= smoking during pregnancy; CS=child specific; FA=family average SHSE=secondhand smoke exposure. \*\*\**p*<.001; \*\**p*<.01; \**p*<.05 | | | | | | | | | | | | | | | | | | | |
| Supplemental Table 4. Results from the standard and sibling-comparison models for auditory working memory (Digit Span Backward) | | | | | | | | | |
|  | Model | | | | | | | | |
|  | Standard NoCov1 | | Standard Cov2 | | Sib Comp NoCov3 | | Sib Comp MomCov4 | |
|  | *b* | SE | *b* | SE | *b* | SE | *b* | SE |
| Intercept | 6.97\*\*\* | (.10) | 3.61\*\*\* | (1.09) | 7.15\*\*\* | (.31) | 2.29 | (1.20) |
| **SDP** |  |  |  |  |  |  |  |  |
| Child-specific SDP | 0.03 | (.04) | -0.02 | (.05) | 0.04 | (.05) | -0.02 | (.07) |
| Family average SDP | — | | — | | -0.03 | (.10) | -0.06 | (.11) |
| **Controls** |  |  |  |  |  |  |  |  |
| Child Sex |  |  | .33 | (.20) |  |  | 0.20 | (.27) |
| Family Average Child Sex |  |  | — | |  |  | 0.40 | (.30) |
| Birth Order |  |  | -.71\*\* | (.22) |  |  | 0.44 | (.44) |
| Mother Education (CS) |  |  | -0.02 | (.06) |  |  | 0.04 | (.15) |
| Mother Education (FA) |  |  | — | |  |  | -0.05 | (.07) |
| Mother Age (CS) |  |  | 0.03 | (.02) |  |  | -0.33\*\* | (.13) |
| Mother age (FA) |  |  | — | |  |  | 0.05\* | (.02) |
| Mother Marital Status |  |  | -0.32 | (.31) |  |  | -0.31 | (.32) |
| Food Stamp (CS) |  |  | -0.65 | (.35) |  |  | -1.18 | (.66) |
| Food Stamp (FA) |  |  | — | |  |  | -0.47 | (.42) |
| SHSE (CS) |  |  | 0.04 | (.07) |  |  | 0.15 | (.27) |
| SHSE (FA) |  |  | — | |  |  | 0.01 | (.09) |
| IQ (CS) |  |  | 0.03\*\*\* | (.01) |  |  | 0.03\* | (.02) |
| IQ (FA) |  |  | — | |  |  | 0.04\*\* | (.01) |
| Mother Digit Span Bkwd |  |  | 0.04 | (.04) |  |  | 0.03 | (.05) |
| **Variance** |  |  |  |  |  |  |  |  |
| Family-level | 0.35 | | 0.14 | | 0.35 | | 0.15 | |
| Individual-level (residual) | 2.67\*\*\* | | 2.57\*\*\* | | 2.69\*\*\* | | 2.54\*\*\* | |
| **Model Fit** |  |  |  |  |  |  |  |  |
| -2 Res LL | 1308.3 | | 1125.1 | | 1300.0 | | 1122.8 | |
| AIC | 1312.3 | | 1129.1 | | 1304.0 | | 1125.8 | |
| N | 173 | | 151 | | 169 | | 149 | |
| 1standard model, no covariates (Model 1); 2standard model, maternal covariates (Model 2); 3sibling comparison model, no covariates (Model 3); 4sibling comparison model, maternal covariates (Model 4). SDP= smoking during pregnancy; CS=child specific; FA=family average SHSE=secondhand smoke exposure. \*\*\**p*<.001; \*\**p*<.01; \**p*<.05 | | | | | | | | | |
| Supplemental Table 5. Results from the standard and sibling-comparison models for visual working memory (Spatial Span Backward) | | | | | | | | | |
|  | Model | | | | | | | | |
|  | Standard NoCov1 | | Standard Cov2 | | Sib Comp NoCov3 | | Sib Comp MomCov4 | |
|  | *b* | SE | *b* | SE | *b* | SE | *b* | SE |
| Intercept | 11.07\*\*\* | (.24) | 3.12\* | (1.63) | 11.38\*\*\* | (.47) | 4.49\*\* | (1.83) |
| **SDP** |  |  |  |  |  |  |  |  |
| Child-specific SDP | -0.14\*\* | (.06) | -0.07 | (.08) | -0.13\* | (.07) | -0.03 | (.09) |
| Family average SDP | — | | — | | -0.25 | (.15) | -0.17 | (.15) |
| **Controls** |  |  |  |  |  |  |  |  |
| Child Sex |  |  | 0.27 | (.28) |  |  | 0.46 | (.38) |
| Family Average Child Sex |  |  | — | |  |  | 0.10 | (.44) |
| Birth Order |  |  | 0.32 | (.32) |  |  | -0.50 | (.60) |
| Mother Education (CS) |  |  | 0.04 | (.09) |  |  | -0.18 | (.19) |
| Mother Education (FA) |  |  | — | |  |  | 0.10 | (.10) |
| Mother Age (CS) |  |  | -0.02 | (.03) |  |  | 0.28 | (.17) |
| Mother age (FA) |  |  | — | |  |  | -0.05 | (.03) |
| Mother Marital Status |  |  | -0.26 | (.48) |  |  | -0.28 | (.48) |
| Food Stamp (CS) |  |  | -0.44 | (.52) |  |  | 0.36 | (.49) |
| Food Stamp (FA) |  |  | — | |  |  | -0.80 | (.65) |
| SHSE (CS) |  |  | -0.07 | (.11) |  |  | -0.15 | (.20) |
| SHSE (FA) |  |  | — | |  |  | -0.03 | (.13) |
| IQ (CS) |  |  | 0.06\*\*\* | (.01) |  |  | 0.06\*\* | (.02) |
| IQ (FA) |  |  | — | |  |  | 0.05\*\*\* | (.02) |
| Mother symbol search |  |  | 0.15\* | (.07) |  |  | 0.15\* | (.07) |
| **Variance** |  |  |  |  |  |  |  |  |
| Family-level | 3.69\*\* | | 2.22 | | 2.49\*\* | | 1.57\*\* | |
| Individual-level (residual) | 3.66\*\*\* | | 4.15\*\*\* | | 2.81\*\*\* | | 3.44\*\*\* | |
| **Model Fit** |  |  |  |  |  |  |  |  |
| -2 Res LL | 1543.1 | | 1332.1 | | 1527.0 | | 1322.4 | |
| AIC | 1551.1 | | 1340.1 | | 1535.0 | | 1330.4 | |
| N | 173 | | 151 | | 169 | | 149 | |
| 1standard model, no covariates (Model 1); 2standard model, maternal covariates (Model 2); 3sibling comparison model, no covariates (Model 3); 4sibling comparison model, maternal covariates (Model 4). SDP= smoking during pregnancy; CS=child specific; FA=family average SHSE=secondhand smoke exposure. \*\*\**p*<.001; \*\**p*<.01; \**p*<.05 | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table 6. Results from the standard and sibling-comparison models for inhibitory control (DKEFS Color-Word Interference) – from Micalizzi et al., 2018 | | | | | | | | | |
|  | Model | | | | | | | | |
|  | Standard NoCov1 | | Standard Cov2 | | Sib Comp NoCov3 | | Sib Comp MomCov4 | |
|  | *b* | SE | *b* | SE | *b* | SE | *b* | SE |
| Intercept | 10.72 \*\* | (.24) | -0.06 | (1.81) | 10.76\*\*\* | (.47) | 0.69 | (2.06) |
| **SDP** |  |  |  |  |  |  |  |  |
| Child-specific SDP | -0.18 \* | (.07) | -0.08 | (.08) | -0.17\* | (.07) | -0.02 | (.10) |
| Family average SDP | — | | — | | -0.20 | (.17) | -0.21 | (.17) |
| **Controls** |  |  |  |  |  |  |  |  |
| Child Sex |  |  | 0.52 | (.30) |  |  | 0.68 | (.41) |
| Family Average Child Sex |  |  | — | |  |  | 0.16 | (.47) |
| Birth Order |  |  | 0.50 | (.35) |  |  | -0.22 | (.67) |
| Mother Education (CS) |  |  | -0.10 | (.10) |  |  | -0.03 | (.23) |
| Mother Education (FA) |  |  | — | |  |  | 0.09 | (.11) |
| Mother Age (CS) |  |  | -0.02 | (.03) |  |  | 0.30 | (.19) |
| Mother age (FA) |  |  | — | |  |  | -0.02 | (.04) |
| Mother Marital Status |  |  | -0.48 | (.51) |  |  | -0.49 | (.52) |
| Food Stamp (CS) |  |  | -0.39 | (.56) |  |  | -1.35 | (1.01) |
| Food Stamp (FA) |  |  | — | |  |  | 0.07 | (.69) |
| SHSE (CS) |  |  | -0.33 | (.12) |  |  | 0.04 | (.21) |
| SHSE (FA) |  |  | — | |  |  | 0.05 | (.14) |
| IQ (CS) |  |  | 0.09\*\*\* | (.01) |  |  | 0.09\*\* | (.02) |
| IQ (FA) |  |  | — | |  |  | 0.10\*\*\* | (.02) |
| Mother CWI |  |  | 0.18\*\* | (.06) |  |  | 0.18\*\* | (.06) |
| **Variance** |  |  |  |  |  |  |  |  |
| Family-level | 0 | | 0 | | 1.76\*\* | | 1.02 | |
| Individual-level (residual) | 5.93\*\* | | 5.66\*\*\* | | 6.51\*\*\* | | 5.33\*\*\* | |
| **Model Fit** |  |  |  |  |  |  |  |  |
| -2 Res LL | 1598.4 | | 1342.6 | | 1585.0 | | 1333.9 | |
| AIC | 1604.4 | | 1348.6 | | 1591.0 | | 1341.9 | |
| N | 173 | | 151 | | 169 | | 149 | |
| 1standard model, no covariates (Model 1); 2standard model, maternal covariates (Model 2); 3sibling comparison model, no covariates (Model 3); 4sibling comparison model, maternal covariates (Model 4). SDP= smoking during pregnancy; CS=child specific; FA=family average SHSE=secondhand smoke exposure. \*\*\**p*<.001; \*\**p*<.01; \**p*<.05 | | | | | | | | | |