# Supplementary Material

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| Table S1  Subcortical and cortical brain regions used in statistical analysis. Linear mixed models were used to calculate brain change variables (random slopes) for each region. Coefficient and SE of the fixed effect age term are listed from these analyses. LH: left hemisphere. RH: right hemisphere. | | | | |
|  | LH |  | RH |  |
| Coefficient | Standard error | Coefficient | Standard error |
| Subcortical regions | | | | |
| Accumbens | -5.61 | 1.37 | -3.67 | 1.08 |
| Caudate | -14.71 | 6.11 | -29.43 | 5.37 |
| Putamen | -37.69 | 9.90 | -34.92 | 7.05 |
| Pallidum | 36.05 | 3.20 | 27.45 | 3.22 |
| Hippocampus | 13.60 | 3.94 | 24.79 | 4.04 |
| Amygdala | 17.22 | 2.48 | 12.85 | 2.40 |
| Cortical regions | | | | |
| Caudal ACC | -.02 | .003 | -.03 | .003 |
| Caudal MFG | 2.84 | .01 | -.02 | .002 |
| Lateral OFC | -.03 | .002 | 2.92 | .01 |
| Medial OFC | -.03 | .003 | -.03 | .002 |
| Pars opercularis | -.03 | .003 | -.04 | .002 |
| Pars orbitalis | 3.05 | .02 | -.02 | .003 |
| Pars triangularis | 2.74 | .01 | -.04 | .003 |
| Rostral ACC | -.02 | .003 | -.03 | .003 |
| Rostral MFG | -.04 | .002 | -.07 | .002 |
| Superior FG | -.03 | .01 | -.04 | .002 |
| Frontal pole | -.02 | .01 | -.01 | .01 |

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| Table S2  Correlations between random effect scores (random slopes listed in Table S1) and traditional difference scores (T3-T1) for subcortical and cortical brain regions. LH: left hemisphere. RH: right hemisphere. | | |
|  | LH | RH |
| Correlation | Correlation |
| Subcortical regions | | |
| Accumbens | .97\* | .99\* |
| Caudate | .96\* | .96\* |
| Putamen | .96\* | .99\* |
| Pallidum | .96\* | .99\* |
| Hippocampus | .77\* | .92\* |
| Amygdala | .92\* | .99\* |
| Cortical regions | | |
| Caudal ACC | .99\* | .99\* |
| Caudal MFG | .99\* | .98\* |
| Lateral OFC | .91\* | .97\* |
| Medial OFC | .99\* | .97\* |
| Pars opercularis | .85\* | .99\* |
| Pars orbitalis | .97\* | .94\* |
| Pars triangularis | .98\* | .98\* |
| Rostral ACC | .99\* | .99\* |
| Rostral MFG | .91\* | .91\* |
| Superior FG | .99\* | .97\* |
| Frontal pole | .98\* | .98\* |
| \*p < .05 | | |

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| Table S3  Results for all regression models for positive and aggressive parenting in prediction of depressive symptoms and psychological well-being. | | | | | | | | |
|  | Y-Intercept | Parenting | | Brain structure | | Parenting-by-brain | | Overall model |
|  | β0 | β1 | t | β2 | t | β3 | t |  |
| Positive maternal parenting |  |  |  |  |  |  |  |  |
| Depressive symptoms |  |  |  |  |  |  |  |  |
| Left accumbens | 17.46\* | -0.73 | -0.79 | -0.16 | -1.32 | -0.02 | -0.16 | R2 = .11, F(5, 113) = 4.29\* |
| Right accumbens | 17.34\* | -0.91 | -0.98 | 0.61 | 0.67 | 0.50 | 0.47 | R2 = .10, F(5, 113) = 3.84\* |
| Left caudate | 17.35\* | -0.94 | -1.02 | -0.01 | -0.32 | -0.03 | -0.70 | R2 = .10, F(5, 113) = 3.70\* |
| Right caudate | 17.43\* | -1.00 | -1.08 | -0.06 | -0.12 | 0.26 | 0.33 | R2 = .10, F(5, 113) = 4.18\* |
| Left putamen | 17.43\* | -0.89 | -0.94 | -0.02 | -0.66 | -0.03 | -0.83 | R2 = .10, F(5, 113) = 3.77\* |
| Right putamen | 17.46\* | -0.99 | -1.04 | -0.08 | -0.12 | -0.01 | -0.02 | R2 = .10, F(5, 113) = 4.25\* |
| Left pallidum | 17.21\* | -0.97 | -1.13 | 0.03 | 0.18 | -0.43\* | -2.14 | R2 = .14, F(5, 113) = 4.29\* |
| Right pallidum | 17.22\* | -1.18 | -1.28 | 0.20 | 0.29 | -1.57 | -1.83 | R2 = .12, F(5, 113) = 4.52\* |
| Left hippocampus | 17.28\* | -1.12 | -1.22 | -0.03 | -0.18 | 0.36 | 1.98 | R2 = .12, F(5, 113) = 4.85\* |
| Right hippocampus | 17.37\* | -0.87 | -0.90 | -0.52 | -0.66 | 0.62 | 0.55 | R2 = .10, F(5, 113) = 3.79\* |
| Left amygdala | 17.38\* | -1.00 | -1.07 | 0.02 | 0.10 | -0.22 | -0.89 | R2 = .10, F(5, 113) = 3.79\* |
| Right amygdala | 17.64\* | -1.00 | -1.09 | -0.28 | -0.26 | -0.73 | -0.61 | R2 = .10, F(5, 113) = 3.97\* |
| Left caudal ACC | 17.38\* | -1.11 | -1.21 | -0.08 | -0.10 | -1.20 | -1.12 | R2 = .11, F(5, 113) = 4.16\* |
| Right caudal ACC | 17.44\* | -1.02 | -1.09 | 0.03 | 0.03 | -0.35 | -0.38 | R2 = .10, F(5, 113) = 3.86\* |
| Left caudal MFG | 17.40\* | -1.00 | -1.04 | -0.23 | -0.27 | 0.59 | 0.62 | R2 = .10, F(5, 113) = 3.70\* |
| Right caudal MFG | 17.47\* | -1.00 | -1.07 | 0.33 | 0.36 | 0.42 | 0.32 | R2 = .10, F(5, 113) = 3.67\* |
| Left lateral OFC | 17.32\* | -1.09 | -1.14 | -0.17 | -0.17 | -0.61 | -0.43 | R2 = .10, F(5, 113) = 3.70\* |
| Right lateral OFC | 17.38\* | -0.90 | -0.97 | -0.36 | -0.44 | 0.69 | 0.65 | R2 = .10, F(5, 113) = 3.97\* |
| Left medial OFC | 17.42\* | -0.96 | -1.04 | 0.32 | 0.45 | 0.06 | 0.07 | R2 = .10, F(5, 113) = 3.76\* |
| Right medial OFC | 18.00\* | -0.78 | -0.85 | 1.19 | 1.56 | 2.03\* | 2.37 | R2 = .14, F(5, 113) = 7.04\* |
| Left pars opercularis | 17.32\* | -1.03 | -1.10 | 0.40 | 0.54 | 0.88 | 0.96 | R2 = .10, F(5, 113) = 3.90\* |
| Right pars opercularis | 17.51\* | -1.03 | -1.09 | -1.40 | -1.86 | -0.66 | -0.81 | R2 = .12, F(5, 113) = 5.59\* |
| Left pars orbitalis | 17.46\* | -0.92 | -1.03 | -1.36 | -1.69 | 1.41 | 1.62 | R2 = .14, F(5, 113) = 4.95\* |
| Right pars orbitalis | 17.40\* | -0.89 | -1.00 | -1.00 | -1.70 | 1.27 | 1.46 | R2 = .13, F(5, 113) = 4.51\* |
| Left pars triangularis | 17.45\* | -1.09 | -1.12 | -1.14 | -1.37 | 0.18 | 0.12 | R2 = .11, F(5, 113) = 4.36\* |
| Right pars triangularis | 17.49\* | -0.89 | -0.96 | -1.52\* | -2.31 | -0.10 | -0.13 | R2 = .12, F(5, 113) = 5.08\* |
| Left rostral ACC | 17.34\* | -1.17 | -1.20 | 0.23 | 0.28 | -0.83 | -1.05 | R2 = .10, F(5, 113) = 4.15\* |
| Right rostral ACC | 17.52\* | -1.05 | -1.21 | -2.33\* | -2.51 | 1.61 | 1.67 | R2 = .17, F(5, 113) = 4.71\* |
| Left rostral MFG | 17.54\* | -1.04 | -1.12 | -0.24 | -0.29 | 0.78 | 0.87 | R2 = .10, F(5, 113) = 3.82\* |
| Right rostral MFG | 17.56\* | -0.76 | -0.79 | 0.44 | 0.65 | 0.97 | 1.05 | R2 = .10, F(5, 113) = 4.03\* |
| Left superior FG | 17.48\* | -0.99 | -1.06 | 0.67 | -0.42 | 0.78 | 0.89 | R2 = .10, F(5, 113) = 3.86\* |
| Right superior FG | 17.56\* | -0.91 | -0.93 | -0.54 | -0.56 | 1.17 | 1.38 | R2 = .11, F(5, 113) = 4.04\* |
| Left frontal pole | 17.55\* | -0.97 | -1.05 | 0.06 | 0.07 | -0.66 | -0.65 | R2 = .10, F(5, 113) = 4.17\* |
| Right frontal pole | 17.42\* | -0.97 | -1.02 | -0.56 | -0.62 | 0.41 | 0.51 | R2 = .10, F(5, 113) = 4.34\* |
| Positive maternal parenting |  |  |  |  |  |  |  |  |
| Psychological well-being |  |  |  |  |  |  |  |  |
| Left accumbens | 69.23\* | 5.37\* | 2.30 | -0.08 | -0.30 | 0.18 | 0.72 | R2 = .02, F(4, 115) = 1.80 |
| Right accumbens | 71.20\* | 4.44\* | 2.09 | -4.20\* | -1.97 | 2.89 | 1.36 | R2 = .07, F(4, 115) = 2.70\* |
| Left caudate | 69.47\* | 5.01\* | 2.28 | 0.04 | 0.54 | -0.01 | -0.02 | R2 = .02, F(4, 115) = 3.76 |
| Right caudate | 69.54\* | 5.01\* | 2.30 | 1.06 | 0.66 | -1.09 | -0.53 | R2 = .03, F(4, 115) = 1.97 |
| Left putamen | 69.41\* | 5.11\* | 2.23 | -0.03 | -0.42 | -0.03 | -0.25 | R2 = .02, F(4, 115) = 1.70 |
| Right putamen | 69.70\* | 5.12\* | 2.33 | 0.05 | 0.03 | -1.77 | -0.74 | R2 = .02, F(4, 115) = 1.99 |
| Left pallidum | 69.44\* | 4.85\* | 2.22 | -0.23 | -0.50 | -0.25 | -0.58 | R2 = .02, F(4, 115) = 1.90 |
| Right pallidum | 70.21\* | 5.05\* | 2.29 | -2.17 | -1.33 | 1.96 | 1.04 | R2 = .03, F(4, 115) = 2.06 |
| Left hippocampus | 67.32\* | 4.52\* | 2.11 | 1.01\* | 2.24 | 0.01 | 0.01 | R2 = .06, F(4, 115) = 2.72\* |
| Right hippocampus | 69.96\* | 4.30\* | 2.05 | 5.09\* | 2.30 | -0.67 | -0.33 | R2 = .07, F(4, 115) = 2.69\* |
| Left amygdala | 69.35\* | 4.46\* | 2.06 | -1.12\* | -1.74 | 0.02 | 0.04 | R2 = .05, F(4, 115) = 2.64\* |
| Right amygdala | 69.52\* | 4.72\* | 2.17 | 5.83\* | 2.37 | -3.41 | -1.47 | R2 = .09, F(4, 115) = 2.58\* |
| Left caudal ACC | 69.35\* | 5.04\* | 2.32 | -0.53 | -0.26 | 0.49 | 0.18 | R2 = .02, F(4, 115) = 1.94 |
| Right caudal ACC | 68.95\* | 4.50\* | 2.00 | -2.65 | -1.16 | -1.07 | -0.41 | R2 = .03, F(4, 115) = 2.20 |
| Left caudal MFG | 69.36\* | 5.31\* | 2.42 | -2.73 | -1.15 | -1.21 | -0.63 | R2 = .04, F(4, 115) = 2.75 |
| Right caudal MFG | 69.80\* | 4.47 | 1.97 | -4.12 | -1.58 | -1.12 | -0.50 | R2 = .05, F(4, 115) = 2.79\* |
| Left lateral OFC | 69.41\* | 4.93\* | 2.25 | -0.27 | -0.12 | -0.03 | -0.01 | R2 = .02, F(4, 115) = 1.78 |
| Right lateral OFC | 70.05\* | 4.66\* | 2.06 | 3.12 | 1.11 | -2.12 | -0.73 | R2 = .04, F(4, 115) = 2.24 |
| Left medial OFC | 69.41\* | 4.88\* | 2.21 | -0.35 | -0.15 | -1.11 | -0.41 | R2 = .02, F(4, 115) = 2.04 |
| Right medial OFC | 68.09\* | 4.80\* | 2.14 | -3.06 | -1.25 | -4.02 | -1.92 | R2 = .05, F(4, 115) = 3.68\* |
| Left pars opercularis | 69.50\* | 4.98\* | 2.27 | 0.29 | 0.13 | -0.69 | -0.34 | R2 = .02, F(4, 115) = 1.77 |
| Right pars opercularis | 70.01\* | 4.07 | 1.88 | -0.35 | -0.17 | 3.26 | 1.60 | R2 = .04, F(4, 115) = 2.40 |
| Left pars orbitalis | 69.94\* | 5.00\* | 2.31 | 2.35 | 1.19 | 1.40 | 0.59 | R2 = .03, F(4, 115) = 2.13 |
| Right pars orbitalis | 69.47\* | 4.78\* | 2.18 | 1.37 | 0.56 | -2.92 | -0.98 | R2 = .04, F(4, 115) = 2.42 |
| Left pars triangularis | 69.59\* | 5.40\* | 2.44 | 2.70 | 1.19 | 3.17 | 1.27 | R2 = .04, F(4, 115) = 2.51 |
| Right pars triangularis | 69.47\* | 4.91\* | 2.23 | 0.33 | 0.15 | 0.40 | 0.20 | R2 = .02, F(4, 115) = 1.75 |
| Left rostral ACC | 69.89\* | 5.64\* | 2.34 | -0.05 | -0.02 | 2.42 | 1.13 | R2 = .03, F(4, 115) = 1.90 |
| Right rostral ACC | 69.54\* | 4.94\* | 2.26 | -0.41 | -0.15 | 0.55 | 0.19 | R2 = .02, F(4, 115) = 1.75 |
| Left rostral MFG | 69.23\* | 5.01\* | 2.30 | -0.78 | -0.37 | -0.90 | -0.46 | R2 = .02, F(4, 115) = 1.90 |
| Right rostral MFG | 69.70\* | 4.93\* | 2.07 | -2.21 | -0.87 | 1.02 | 0.41 | R2 = .03, F(4, 115) = 2.08 |
| Left superior FG | 69.36\* | 5.03\* | 2.31 | -1.55 | -0.65 | -0.28 | -0.13 | R2 = .02, F(4, 115) = 1.76 |
| Right superior FG | 69.67\* | 4.97\* | 2.22 | -3.58 | -1.28 | -0.84 | -0.35 | R2 = .04, F(4, 115) = 2.39 |
| Left frontal pole | 68.90\* | 4.71\* | 2.18 | 2.11 | 1.00 | 0.96 | 0.52 | R2 = .03, F(4, 115) = 2.04 |
| Right frontal pole | 69.39\* | 4.85\* | 2.19 | 2.02 | 1.06 | -0.49 | -0.31 | R2 = .03, F(4, 115) = 2.05 |
| Aggressive maternal parenting | | | | | | | | |
| Depressive symptoms | | | | | | | | |
| Left accumbens | 17.49\* | 2.49\* | 2.81 | -0.08 | -0.74 | -0.10 | -0.53 | R2 = .17, F(5, 113) = 7.03\* |
| Right accumbens | 17.58\* | 2.61\* | 3.12 | 0.37 | 0.43 | -0.22 | -0.21 | R2 = .17, F(5, 113) = 6.48\* |
| Left caudate | 17.69\* | 2.82\* | 3.25 | 0.02 | 0.84 | -0.05 | -1.23 | R2 = .18, F(5, 113) = 7.04\* |
| Right caudate | 17.63\* | 2.65\* | 3.15 | -0.01 | -0.17 | 0.01 | 0.11 | R2 = .16, F(5, 113) = 6.45\* |
| Left putamen | 17.63\* | 2.66\* | 3.04 | 0.001 | 0.04 | -0.01 | -0.12 | R2 = .16, F(5, 113) = 6.77\* |
| Right putamen | 17.76\* | 2.62\* | 3.15 | -0.03 | -1.11 | 0.06 | 0.94 | R2 = .17, F(5, 113) = 7.48\* |
| Left pallidum | 17.56\* | 2.84\* | 3.30 | 0.23 | 1.23 | -0.14 | -0.68 | R2 = .18, F(5, 113) = 7.17\* |
| Right pallidum | 17.57\* | 2.59\* | 3.22 | 0.02 | 0.27 | 0.04 | 0.44 | R2 = .17, F(5, 113) = 6.77\* |
| Left hippocampus | 17.47\* | 2.85\* | 3.33 | -0.93 | -1.08 | 1.22 | 1.06 | R2 = .19, F(5, 113) = 8.86\* |
| Right hippocampus | 17.64\* | 2.47\* | 3.54 | -0.52 | -0.65 | -1.36 | -1.55 | R2 = .19, F(5, 113) = 7.23\* |
| Left amygdala | 17.71\* | 2.68\* | 3.18 | 0.13 | 0.55 | 0.02 | 0.15 | R2 = .17, F(5, 113) = 7.86\* |
| Right amygdala | 17.63\* | 2.69\* | 3.11 | -0.39 | -0.40 | -0.33 | -0.43 | R2 = .17, F(5, 113) = 7.42\* |
| Left caudal ACC | 17.67\* | 2.65\* | 3.18 | 0.23 | 0.27 | -0.02 | -0.03 | R2 = .16, F(5, 113) = 6.72\* |
| Right caudal ACC | 17.67\* | 2.59\* | 2.97 | -0.17 | -0.20 | -0.42 | -0.47 | R2 = .17, F(5, 113) = 6.62\* |
| Left caudal MFG | 17.62\* | 2.73\* | 3.08 | -0.24 | -0.29 | 0.37 | 0.54 | R2 = .17, F(5, 113) = 7.07\* |
| Right caudal MFG | 17.66\* | 2.55\* | 2.81 | 0.23 | 0.27 | -0.42 | -0.46 | R2 = .17, F(5, 113) = 6.35\* |
| Left lateral OFC | 17.47\* | 2.21\* | 2.57 | -0.94 | -1.04 | -1.19 | -2.50 | R2 = .18, F(5, 113) = 6.60\* |
| Right lateral OFC | 17.56\* | 2.75\* | 2.87 | -0.35 | -0.38 | 0.33 | 0.29 | R2 = .17, F(5, 113) = 6.62\* |
| Left medial OFC | 17.57\* | 2.86\* | 3.32 | 0.46 | 0.64 | 0.97 | 1.09 | R2 = .17, F(5, 113) = 7.50\* |
| Right medial OFC | 17.80\* | 2.59\* | 2.53 | 0.71 | 0.85 | -0.11 | -0.12 | R2 = .17, F(5, 113) = 7.27\* |
| Left pars opercularis | 17.50\* | 2.65\* | 2.97 | 0.78 | 1.10 | -0.34 | -0.48 | R2 = .17, F(5, 113) = 6.52\* |
| Right pars opercularis | 17.69\* | 2.57\* | 2.53 | -0.88 | -1.23 | 0.15 | 0.20 | R2 = .17, F(5, 113) = 7.05\* |
| Left pars orbitalis | 17.43\* | 2.53\* | 2.69 | -1.30 | -1.58 | 0.19 | 0.22 | R2 = .18, F(5, 113) = 7.69\* |
| Right pars orbitalis | 17.61\* | 2.56\* | 2.66 | -1.11 | -1.85 | -0.08 | -0.10 | R2 = .18, F(5, 113) = 7.01\* |
| Left pars triangularis | 17.49\* | 1.82\* | 2.07 | -0.87 | -1.05 | -1.98\* | -2.29 | R2 = .21, F(5, 113) = 5.88\* |
| Right pars triangularis | 17.63\* | 2.11\* | 2.24 | -1.17 | -1.96 | -0.71 | -0.90 | R2 = .19, F(5, 113) = 5.71\* |
| Left rostral ACC | 17.76\* | 2.85\* | 3.09 | 0.53 | 0.65 | 0.58 | 0.79 | R2 = .17, F(5, 113) = 8.41\* |
| Right rostral ACC | 17.51\* | 2.29\* | 2.18 | -1.99 | -2.07 | -0.35 | -0.28 | R2 = .20, F(5, 113) = 7.29\* |
| Left rostral MFG | 17.61\* | 2.56\* | 2.78 | -0.03 | -0.04 | -0.25 | -0.28 | R2 = .16, F(5, 113) = 6.37\* |
| Right rostral MFG | 17.67\* | 2.52\* | 2.55 | -0.09 | -0.15 | -0.45 | -0.41 | R2 = .17, F(5, 113) = 6.47\* |
| Left superior FG | 17.61\* | 2.55\* | 2.83 | -0.34 | -0.43 | -0.30 | -0.35 | R2 = .17, F(5, 113) = 6.54\* |
| Right superior FG | 17.79\* | 2.54\* | 2.78 | -0.72 | -0.79 | -0.57 | -0.64 | R2 = .17, F(5, 113) = 7.23\* |
| Left frontal pole | 17.65\* | 2.73\* | 2.03 | 0.30 | 0.32 | 0.18 | 0.23 | R2 = .17, F(5, 113) = 6.60\* |
| Right frontal pole | 17.69\* | 2.63\* | 3.14 | -0.59 | -0.69 | -0.23 | -0.35 | R2 = .17, F(5, 113) = 7.06\* |
| Aggressive maternal parenting | | | | | | | | |
| Psychological well-being | | | | | | | | |
| Left accumbens | 68.90\* | -8.12\* | -3.38 | -0.07 | -0.26 | -0.29 | -0.94 | R2 = .10, F(4, 115) = 3.28\* |
| Right accumbens | 71.11\* | -7.29\* | -3.17 | -4.09\* | -2.24 | -1.50 | -0.81 | R2 = .14, F(4, 115) = 4.14\* |
| Left caudate | 69.38\* | -7.87\* | -3.23 | 0.04 | 0.77 | -0.02 | -0.27 | R2 = .10, F(4, 115) = 3.37\* |
| Right caudate | 69.25\* | -8.36\* | -3.68 | 1.92 | 1.34 | -2.69 | -1.64 | R2 = .11, F(4, 115) = 4.44\* |
| Left putamen | 69.26\* | -8.05\* | -3.18 | -0.03 | -0.41 | 0.01 | 0.12 | R2 = .10, F(4, 115) = 3.25\* |
| Right putamen | 69.17\* | -7.91\* | -3.32 | 0.73 | 0.38 | 0.70 | 0.22 | R2 = .10, F(4, 115) = 3.83\* |
| Left pallidum | 69.47\* | -8.33\* | -3.57 | -0.39 | -0.99 | 0.48 | 0.89 | R2 = .11, F(4, 115) = 3.83\* |
| Right pallidum | 70.01\* | -7.73\* | -3.37 | -2.19 | -1.48 | -2.91 | -1.41 | R2 = .12, F(4, 115) = 3.82\* |
| Left hippocampus | 69.70\* | -8.40\* | -3.80 | 6.44\* | 3.12 | -0.44 | -0.16 | R2 = .18, F(4, 115) = 7.17\* |
| Right hippocampus | 69.91\* | -7.27\* | -3.49 | 4.98\* | 2.32 | 3.17 | 1.56 | R2 = .17, F(4, 115) = 5.03\* |
| Left amygdala | 69.11\* | -8.26\* | -3.64 | -1.44\* | -2.27 | 0.08 | 0.17 | R2 = .14, F(4, 115) = 4.43\* |
| Right amygdala | 68.39\* | -8.05\* | -3.31 | 5.41\* | 2.33 | -0.96 | -0.49 | R2 = .15, F(4, 115) = 5.69\* |
| Left caudal ACC | 68.86\* | -8.22\* | -3.76 | -1.15 | -0.60 | -1.09 | -0.43 | R2 = .10, F(4, 115) = 8.80\* |
| Right caudal ACC | 69.21\* | -7.79\* | -3.23 | -2.93 | -1.23 | -0.80 | -0.30 | R2 = .11, F(4, 115) = 3.45\* |
| Left caudal MFG | 69.30\* | -8.22\* | -3.76 | -1.15 | -0.60 | -1.09\* | -0.43 | R2 = .10, F(4, 115) = 4.43\* |
| Right caudal MFG | 70.30\* | -8.28\* | -3.83 | -3.32 | -1.35 | -3.75 | -1.71 | R2 = .15, F(4, 115) = 4.35\* |
| Left lateral OFC | 69.56\* | -9.67\* | -4.25 | 0.56 | 0.25 | -4.93 | -1.91 | R2 = .13, F(4, 115) = 5.14\* |
| Right lateral OFC | 69.93\* | -8.42\* | -3.09 | 3.03 | 1.12 | -1.40 | -0.43 | R2 = .11, F(4, 115) = 3.44\* |
| Left medial OFC | 69.51\* | -9.77\* | -5.02 | -1.25 | -0.62 | -7.30\* | -3.35 | R2 = .18, F(4, 115) = 8.80\* |
| Right medial OFC | 69.11\* | -9.57\* | -3.63 | -2.59 | -1.09 | -4.19 | -1.70 | R2 = .13, F(4, 115) = 3.86\* |
| Left pars opercularis | 68.09\* | -9.25\* | -4.10 | 0.33 | 0.14 | -4.26 | -1.89 | R2 = .13, F(4, 115) = 4.79\* |
| Right pars opercularis | 69.04 | -10.03\* | -4.52 | -0.64 | -0.33 | -4.56\* | -2.75 | R2 = .16, F(4, 115) = 6.08\* |
| Left pars orbitalis | 69.83\* | -10.56\* | -4.36 | 2.06 | 1.06 | -6.69\* | -3.25 | R2 = .17, F(4, 115) = 6.66\* |
| Right pars orbitalis | 69.35\* | -8.58\* | -3.40 | 1.22 | 0.52 | -2.44 | -0.75 | R2 = .11, F(4, 115) = 3.42\* |
| Left pars triangularis | 69.09\* | -8.85\* | -3.63 | 1.43 | 0.66 | -2.95 | -1.39 | R2 = .11, F(4, 115) = 4.31\* |
| Right pars triangularis | 69.36\* | -9.26\* | -3.49 | -0.21 | -0.09 | -2.77 | -1.50 | R2 = .11, F(4, 115) = 3.47\* |
| Left rostral ACC | 68.97\* | -9.24\* | -4.01 | -0.46 | -0.24 | -4.27\* | -2.49 | R2 = .18, F(4, 115) = 4.36\* |
| Right rostral ACC | 69.79\* | -9.18\* | -4.22 | -0.87 | -0.34 | -6.28 | -2.35 | R2 = .15, F(4, 115) = 5.51\* |
| Left rostral MFG | 68.92\* | -9.90\* | -4.86 | -0.07 | -0.03 | -6.69\* | -2.83 | R2 = .17, F(4, 115) = 7.29\* |
| Right rostral MFG | 69.77\* | -9.13\* | -3.82 | -0.58 | -0.24 | -4.33 | -1.51 | R2 = .12, F(4, 115) = 4.06\* |
| Left superior FG | 69.38\* | -9.73\* | -4.72 | -1.34 | -0.53 | -6.53\* | -2.61 | R2 = .16, F(4, 115) = 6.72\* |
| Right superior FG | 70.46\* | -8.74\* | -3.87 | -1.78 | -0.63 | -4.54 | -1.56 | R2 = .14, F(4, 115) = 4.47\* |
| Left frontal pole | 68.43\* | -8.30\* | -3.45 | 2.03 | 0.98 | -1.68 | -0.93 | R2 = .11, F(4, 115) = 3.56\* |
| Right frontal pole | 69.05\* | -8.32\* | -3.43 | 2.73 | 1.54 | -0.83 | -0.51 | R2 = .11, F(4, 115) = 3.70\* |
| Regression models: Y(depression/well-being) = β0(intercept) + β1X(parenting) + β2Z(brain) + β3XZ(parenting-by-brain).  \* *p<*.05 | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table S4  Results for depression models with the T1 depression covariate excluded for positive and aggressive parenting in prediction of depressive symptoms and psychological well-being. Parent-by-brain interactions are not significant after correction. | | | | | | | | |
|  | Y-Intercept | Parenting | | Brain structure | | Parenting-by-brain | | Overall model |
|  | β0 | β1 | t | β2 | t | β3 | t |  |
| Positive maternal parenting |  |  |  |  |  |  |  |  |
| Depressive symptoms |  |  |  |  |  |  |  |  |
| Left accumbens | 17.90\* | -1.57 | -1.86 | -0.89 | -0.95 | -0.05 | -0.05 | R2 = .03, F(4, 114) = 2.01 |
| Right accumbens | 17.70\* | -1.67 | -1.94 | 0.80 | 1.00 | 0.65 | 0.71 | R2 = .03, F(4, 114) = 1.97 |
| Left caudate | 17.86\* | -1.74\* | -2.00 | 0.02 | 0.60 | -0.004 | -0.14 | R2 = .02, F(4, 114) = 1.59 |
| Right caudate | 17.87\* | -1.80\* | -2.08 | -0.03 | -0.05 | 0.32 | 0.44 | R2 = .02, F(4, 114) = 1.81 |
| Left putamen | 17.87\* | -1.63 | -1.84 | -0.02 | -0.78 | -0.04 | -0.90 | R2 = .02, F(4, 114) = 1.78 |
| Right putamen | 17.84\* | -1.78\* | -2.00 | -0.02 | -0.03 | -0.25 | 0.30 | R2 = .02, F(4, 114) = 1.74 |
| Left pallidum | 17.86\* | -1.96\* | -2.37 | 0.02 | 0.14 | -0.32\* | -2.03 | R2 = .04, F(4, 114) = 2.38\* |
| Right pallidum | 17.77\* | -2.03\* | -2.31 | 0.03 | -0.05 | -1.26 | -1.52 | R2 = .03, F(4, 114) = 2.07 |
| Left hippocampus | 17.74\* | -1.67 | -1.96 | -1.02 | -1.26 | 1.20 | 1.30 | R2 = .05, F(4, 114) = 2.55\* |
| Right hippocampus | 17.77\* | -1.65 | -1.83 | -0.52 | -0.71 | 0.50 | 0.56 | R2 = .03, F(4, 114) = 1.87 |
| Left amygdala | 17.87\* | -1.76\* | -2.02 | 0.07 | 0.31 | -0.06 | -0.27 | R2 = .02, F(4, 114) = 1.50 |
| Right amygdala | 17.95\* | -1.78 | -2.04 | 0.06 | 0.06 | -0.34 | -0.31 | R2 = .02, F(4, 114) = 1.64 |
| Left caudal ACC | 17.88\* | -1.94\* | -2.30 | 0.28 | 0.35 | -1.61 | -1.49 | R2 = .04, F(4, 114) = 2.19 |
| Right caudal ACC | 17.73\* | -1.78\* | -2.06 | 0.29 | 0.34 | -0.60 | -0.67 | R2 = .02, F(4, 114) = 1.58 |
| Left caudal MFG | 17.87\* | -1.80\* | -2.06 | 0.27 | 0.32 | 0.24 | 0.30 | R2 = .02, F(4, 114) = 1.58 |
| Right caudal MFG | 17.78\* | -1.69 | -1.92 | 0.69 | 0.77 | 0.09 | 0.09 | R2 = .02, F(4, 114) = 1.94 |
| Left lateral OFC | 18.03\* | -1.89\* | -2.19 | -0.37 | -0.42 | 0.93 | 0.81 | R2 = .03, F(4, 114) = 1.72 |
| Right lateral OFC | 17.92\* | -1.72\* | -1.99 | -0.08 | 0.09 | 0.60 | 0.60 | R2 = .02, F(4, 114) = 1.68 |
| Left medial OFC | 17.80\* | -1.68\* | -2.00 | 0.89 | 1.14 | -0.18 | -0.21 | R2 = .03, F(4, 114) = 1.69 |
| Right medial OFC | 18.34\* | -1.76\* | -2.10 | 1.07 | 1.41 | 1.52\* | 2.10 | R2 = .05, F(4, 114) = 4.25\* |
| Left pars opercularis | 17.81\* | -1.84\* | -2.15 | 0.50 | 0.68 | 0.57 | 0.71 | R2 = .02, F(4, 114) = 1.83 |
| Right pars opercularis | 17.94\* | -1.72 | -1.88 | -1.05 | -1.40 | -0.35 | -0.51 | R2 = .03, F(4, 114) = 2.72\* |
| Left pars orbitalis | 17.97\* | -1.76\* | -2.07 | -0.41 | -0.53 | 1.12 | 1.56 | R2 = .03, F(4, 114) = 1.95 |
| Right pars orbitalis | 17.83\* | -1.67\* | -1.99 | -0.88 | -1.36 | 0.86 | 1.00 | R2 = .04, F(4, 114) = 2.05 |
| Left pars triangularis | 17.80\* | -1.86\* | -2.15 | -0.39 | -0.45 | -0.72 | 0.55 | R2 = .02, F(4, 114) = 1.72 |
| Right pars triangularis | 17.90\* | -1.68 | -1.93 | -1.02 | -1.34 | -0.03 | 0.04 | R2 = .03, F(4, 114) = 2.30 |
| Left rostral ACC | 17.81\* | -1.92\* | -2.08 | 0.99 | 1.07 | -1.01 | -1.27 | R2 = .04, F(4, 114) = 1.68 |
| Right rostral ACC | 17.98\* | -1.78\* | -2.19 | -1.21 | -1.08 | 1.00 | 0.97 | R2 = .04, F(4, 114) = 2.12 |
| Left rostral MFG | 18.06\* | -1.81\* | -2.11 | 0.53 | 0.68 | 0.69 | 0.81 | R2 = .03, F(4, 114) = 1.91 |
| Right rostral MFG | 18.14\* | -1.55 | -1.80 | 0.30 | 0.46 | 1.36 | 1.83 | R2 = .03, F(4, 114) = 2.89\* |
| Left superior FG | 17.91\* | -1.78\* | -2.05 | 0.44 | 0.51 | 0.25 | 0.27 | R2 = .02, F(4, 114) = 1.53 |
| Right superior FG | 17.89\* | -1.70 | -1.93 | 0.36 | 0.37 | 0.84 | 0.98 | R2 = .03, F(4, 114) = 1.97 |
| Left frontal pole | 17.93\* | -1.83\* | -2.08 | 0.52 | 0.61 | -0.40 | -0.49 | R2 = .02, F(4, 114) = 1.60 |
| Right frontal pole | 17.75\* | -1.71 | -1.95 | -0.21 | -0.25 | 0.68 | 1.00 | R2 = .03, F(4, 114) = 2.23 |
|  | Y-Intercept | Parenting | | Brain structure | | Parenting-by-brain | | Overall model |
|  | β0 | β1 | t | β2 | t | β3 | t |  |
| Aggressive maternal parenting | | | | | | | | |
| Depressive symptoms | | | | | | | | |
| Left accumbens | 17.92\* | 1.72\* | 4.7 | -0.05 | -0.44 | -0.15 | -0.91 | R2 = .14, F(4, 114) = 6.55\* |
| Right accumbens | 18.04\* | 3.47\* | 4.69 | 0.36 | 0.47 | -0.19 | -0.23 | R2 = .13, F(4, 114) = 6.55\* |
| Left caudate | 18.17\* | 3.70\* | 4.88 | 0.04 | 1.32 | -0.06 | -1.47 | R2 = .15, F(4, 114) = 7.24\* |
| Right caudate | 18.10\* | 3.51\* | 4.79 | 0.06 | 0.14 | -0.04 | -0.09 | R2 = .13, F(4, 114) = 6.15\* |
| Left putamen | 18.11\* | 3.55\* | 4.61 | 0.003 | 0.15 | -0.01 | 0.75 | R2 = .13, F(4, 114) = 6.29\* |
| Right putamen | 18.23\* | 3.52\* | 4.85 | -0.63 | -1.03 | 0.85 | 0.70 | R2 = .13, F(4, 114) = 7.62\* |
| Left pallidum | 18.07\* | 3.61\* | 4.87 | 0.16 | 0.87 | -0.11 | -0.58 | R2 = .13, F(4, 114) = 6.92\* |
| Right pallidum | 18.12\* | 3.53\* | 4.83 | -0.01 | -0.01 | -0.22 | -0.25 | R2 = .13, F(4, 114) = 6.35\* |
| Left hippocampus | 17.90\* | 3.69\* | 5.06 | -1.48 | -1.88 | 1.17 | 1.12 | R2 = .17, F(4, 114) = 9.89\* |
| Right hippocampus | 18.06\* | 3.34\* | 5.23 | -0.53 | -0.74 | -1.22 | -1.66 | R2 = .15, F(4, 114) = 7.84\* |
| Left amygdala | 18.06\* | 3.55\* | 4.91 | 0.20 | 0.95 | -0.08 | -0.58 | R2 = .13, F(4, 114) = 6.74\* |
| Right amygdala | 17.99\* | 3.56\* | 4.84 | -0.03 | -0.04 | -0.57 | -0.81 | R2 = .13, F(4, 114) = 6.62\* |
| Left caudal ACC | 18.33\* | 3.65\* | 4.77 | 0.78 | 0.89 | 0.29 | 0.34 | R2 = .13, F(4, 114) = 6.15\* |
| Right caudal ACC | 18.13\* | 3.50\* | 4.71 | 0.23 | 0.26 | 0.004 | 0.005 | R2 = .13, F(4, 114) = 6.29\* |
| Left caudal MFG | 18.10\* | 3.62\* | 4.74 | 0.43 | 0.54 | 0.18 | 0.28 | R2 = .13, F(4, 114) = 6.23\* |
| Right caudal MFG | 18.09\* | 3.37\* | 4.37 | 0.64 | 0.77 | -0.59 | -0.77 | R2 = .14, F(4, 114) = 6.82\* |
| Left lateral OFC | 18.10\* | 3.12\* | 3.98 | 0.01 | 0.01 | -1.15 | -1.10 | R2 = .14, F(4, 114) = 5.86\* |
| Right lateral OFC | 18.14\* | 3.63\* | 4.17 | 0.20 | 0.22 | 0.31 | 0.30 | R2 = .13, F(4, 114) = 6.34\* |
| Left medial OFC | 18.05\* | 3.74\* | 4.88 | 1.07 | 1.40 | 0.95 | 1.14 | R2 = .15, F(4, 114) = 7.46\* |
| Right medial OFC | 18.31\* | 3.61\* | 3.93 | 1.00 | 1.15 | 0.20 | 0.21 | R2 = .14, F(4, 114) = 7.69\* |
| Left pars opercularis | 17.88\* | 3.51\* | 5.54 | 1.10 | 1.59 | -0.58 | -0.90 | R2 = .14, F(4, 114) = 7.22\* |
| Right pars opercularis | 18.16\* | 3.50\* | 4.07 | -0.46 | -0.67 | 0.13 | 0.21 | R2 = .13, F(4, 114) = 6.56\* |
| Left pars orbitalis | 18.06\* | 3.57\* | 4.26 | -0.22 | -0.27 | 0.18 | 0.21 | R2 = .13, F(4, 114) = 6.35\* |
| Right pars orbitalis | 18.08\* | 3.50\* | 4.20 | -0.79 | -1.19 | 0.14 | 0.17 | R2 = .13, F(4, 114) = 6.72\* |
| Left pars triangularis | 17.98\* | 2.87\* | 3.88 | 0.003 | 0.003 | -1.80\* | -2.15 | R2 = .16, F(4, 114) = 5.95\* |
| Right pars triangularis | 18.10\* | 3.27\* | 3.72 | -0.69 | -0.98 | -0.33 | -0.43 | R2 = .13, F(4, 114) = 5.96\* |
| Left rostral ACC | 18.34\* | 3.74\* | 4.59 | 1.31 | 1.53 | 0.67 | 0.94 | R2 = .15, F(4, 114) = 8.57\* |
| Right rostral ACC | 18.08\* | 3.48\* | 4.05 | -0.86 | -0.82 | 0.20 | 0.18 | R2 = .13, F(4, 114) = 7.04\* |
| Left rostral MFG | 18.17\* | 3.44\* | 4.30 | 0.86 | 1.11 | -0.48 | -0.58 | R2 = .14, F(4, 114) = 6.47\* |
| Right rostral MFG | 18.15\* | 3.31\* | 3.88 | 0.38 | 0.58 | -0.67 | -0.71 | R2 = .13, F(4, 114) = 7.30\* |
| Left superior FG | 18.11\* | 3.34\* | 4.30 | 0.48 | 0.56 | -0.68 | -0.88 | R2 = .13, F(4, 114) = 6.33\* |
| Right superior FG | 18.23\* | 3.32\* | 4.31 | 0.15 | 0.17 | -0.91 | -1.14 | R2 = .14, F(4, 114) = 7.20\* |
| Left frontal pole | 18.06\* | 3.59\* | 4.36 | 0.68 | 0.79 | 0.01 | 0.02 | R2 = .13, F(4, 114) = 6.29\* |
| Right frontal pole | 18.11\* | 3.41\* | 4.82 | -0.36 | -0.47 | -0.68 | -1.20 | R2 = .13, F(4, 114) = 6.45\* |
| \* *p<*.05 Significant interactions in this table were not significant after correction. | | | | | | | | |



Figure S1

Adolescent psychological well-being predicted by aggressive maternal parenting and structural brain development of the left caudal middle frontal cortex (left), and left pars orbitalis (right). Neither model met criteria for either diathesis-stress or differential susceptibility; however, reduced cortical thinning was associated with higher sensitivity to aggressive parenting, consistent with models that did satisfy Roisman criteria.



Figure S2

Distributions for the temperament variables effortful control (left), which was normally distributed, and negative emotionality (right), which approximated a normal distribution.