Table S1

*Zero-order correlations between study variables.*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. | 17. | 18. | 19. | 20. | 21. | 22. | 23. | 24. | 25. | 26. | 27. |
| 1. Age | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2. T1 ASEBA total | -.07 | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3. T1 ASEBA intern | -.05 | .84\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4. T1 ASEBA extern | .01 | .89\*\* | .63\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5. T1 LNS | -.39\*\* | .35\*\* | .22\* | .30\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6. T1 CW3 | -.53\*\* | .27\*\* | .26\*\* | .17 | .59\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7. T1 CW4 | -.47\*\* | .25\*\* | .23\*\* | .17 | .58\*\* | .77\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8. T1 TMT | -.42\*\* | .26\*\* | .23\*\* | .18\* | .50\*\* | .53\*\* | .45\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9. T1 EF composite | -.54\*\* | .34\*\* | .27\*\* | .26\*\* | .83\*\* | .87\*\* | .85\*\* | .74\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10. T1 ARS-IV | -.05 | .85\*\* | .66\*\* | .75\*\* | .36\*\* | .23\*\* | .24\*\* | .26\*\* | .34\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11. T2 ASEBA total | -.07 | .81\*\* | .75\*\* | .68\*\* | .35\*\* | .26\*\* | .27\*\* | .38\*\* | .37\*\* | .74\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12. T2 ASEBA intern | .02 | .64\*\* | .73\*\* | .48\*\* | .23\*\* | .19\* | .24\*\* | .36\*\* | .29\*\* | .55\*\* | .89\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13. T2 ASEBA extern | .01 | .76\*\* | .63\*\* | .76\*\* | .28\*\* | .20\* | .20\* | .28\*\* | .29\*\* | .66\*\* | .88\*\* | .70\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14. T2 LNS | -.35\*\* | .33\*\* | .22\* | .29\*\* | .68\*\* | .66\*\* | .60\*\* | .50\*\* | .76\*\* | .25\*\* | .38\*\* | .23\*\* | .36\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15. T2 CW3 | -.46\*\* | .22\* | .18\* | .16 | .55\*\* | .78\*\* | .69\*\* | .58\*\* | .77\*\* | .22\* | .30\*\* | .20\* | .23\*\* | .67\*\* | - |  |  |  |  |  |  |  |  |  |  |  |  |
| 16. T2 CW4 | -.47\*\* | .22\* | .14 | .12 | .52\*\* | .72\*\* | .74\*\* | .56\*\* | .77\*\* | .22\* | .28\*\* | .21\* | .18\* | .62\*\* | .83\*\* | - |  |  |  |  |  |  |  |  |  |  |  |
| 17. T2 TMT | -.33\*\* | .25\* | .17 | .18\* | .55\*\* | .53\*\* | .45\*\* | .59\*\* | .64\*\* | .23\* | .30\*\* | .15 | .27\*\* | .71\*\* | .61\*\* | .53\*\* | - |  |  |  |  |  |  |  |  |  |  |
| 18. T2 EF composite | -.46\*\* | .30\* | .20\* | .23\* | .67\*\* | .81\*\* | .75\*\* | .63\*\* | .86\*\* | .26\*\* | .37\*\* | .22\*\* | .31\*\* | .89\*\* | .89\*\* | .85\*\* | .82\*\* | - |  |  |  |  |  |  |  |  |  |
| 19. T2 ARS-IV | -.09 | .67\*\* | .60\*\* | .58\*\* | .22\* | .23\*\* | .19\* | .22\* | .26\*\* | .71\*\* | .79\*\* | .68\*\* | .69\*\* | .31\*\* | .23\* | .23\*\* | .17 | .28\*\* | - |  |  |  |  |  |  |  |  |
| 20. T3 ASEBA total | .15 | .38\*\* | .35\*\* | .29\*\* | .15 | .03 | .19 | .18 | .17 | .38\*\* | .42\*\* | .36\*\* | .31\*\* | .17 | .13 | .08 | .11 | .16 | .28\*\* | - |  |  |  |  |  |  |  |
| 21. T3 ASEBA intern | .11 | .27\*\* | .28\*\* | .16 | .18 | -.01 | .16 | .19 | .16 | .26\* | .37\*\* | .34\*\* | .24\* | .14 | .09 | .06 | .10 | .13 | .20\* | .90\*\* | - |  |  |  |  |  |  |
| 22. T3 ASEBA extern | .17 | .36\*\* | .29\*\* | .32\*\* | .09 | .09 | .22\* | .09 | .15 | .37\*\* | .30\*\* | .22\* | .25\* | .17 | .16 | .10 | .07 | .17 | .27\*\* | .84\*\* | .61\*\* | - |  |  |  |  |  |
| 23. T3 LNS | -.05 | .37\*\* | .27\*\* | .37\*\* | .63\*\* | .48\*\* | .49\*\* | .37\*\* | .60\*\* | .30\*\* | .37\*\* | .26\*\* | .38\*\* | .74\*\* | .49\*\* | .45\*\* | .52\*\* | .66\*\* | .28\*\* | .28\*\* | .23\* | .27\*\* | - |  |  |  |  |
| 24. T3 CW3 | -.23\* | .32\*\* | .28\*\* | .29\*\* | .66\*\* | .74\*\* | .66\*\* | .44\*\* | .76\*\* | .29\*\* | .30\*\* | .20\* | .29\*\* | .74\*\* | .79\*\* | .64\*\* | .61\*\* | .80\*\* | .24\* | .14 | .08 | .20 | .56\*\* | - |  |  |  |
| 25. T3 CW4 | -.19 | .36\*\* | .36\*\* | .29\*\* | .53\*\* | .62\*\* | .61\*\* | .36\*\* | .65\*\* | .28\*\* | .36\*\* | .32\*\* | .31\*\* | .63\*\* | .65\*\* | .71\*\* | .43\*\* | .69\*\* | .31\*\* | .16 | .09 | .23\* | .47\*\* | .70\*\* | - |  |  |
| 26. T3 TMT | -.04 | .16 | .17 | .13 | .50\*\* | .41\*\* | .30\*\* | .44\*\* | .51\*\* | .17 | .25\* | .22\* | .25\* | .45\*\* | .41\*\* | .38\*\* | .56\*\* | .51\*\* | .25\* | .06 | .04 | .04 | .40\*\* | .50\*\* | .43\*\* | - |  |
| 27. T3 EF composite | -.13 | .39\*\* | .33\* | .36\*\* | .74\*\* | .67\*\* | .63\*\* | .49\*\* | .78\*\* | .34\*\* | .42\*\* | .32\*\* | .40\*\* | .82\*\* | .69\*\* | .64\*\* | .64\*\* | .82\*\* | .34\*\* | .23\* | .17 | .25\* | .87\*\* | .81\*\* | .75\*\* | .69\*\* | - |

*Note.* ASEBA = Achenbach System of Empirically Based Assessment, LNS = Letter-number sequencing, CW = Color-Word test, TMT = Trail Making Test, EF = Executive Function, ARS-IV = ADHD Rating Scale IV edition, \**p* ≤ .05, \*\**p* ≤ .01.

Table S2.

*Baseline predictors of internalizing symptoms at baseline, two-year follow-up, and 10-year follow-up.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Baseline (T1) |  | Two-year follow-up (T2) |  | 10-year follow-up (T3) |
|  | Predictors (T1) | *B* | 95% CI | *SE* |  | *B* | 95% CI | *SE* |  | *B* | 95% CI | *SE* |
| Step 1 |  |  |  |  |  |  |  |
|  | Sex | 1.56 | [-2.98, 6.10] | 2.29 |  | .58 | [-4.07, 5.21] | 2.34 |  | 3.94 | [-1.06, 8.93] | 2.52 |
|  | Age | -.28 | [-1.40, .85] | .57 |  | .19 | [-.95, 1.32] | .58 |  | .51 | [-.71, 1.73] | .62 |
| Step 2 |  |  |  |  |  |  |  |
|  | Sex | 1.80 | [-2.58, 6.17] | 2.21 |  | .84 | [-3.52, 5.20] | 1.96 |  | 3.75 | [-1.02, 8.53] | 2.40 |
|  | Age | .83 | [-.44, 2.10] | .64 |  | 1.59 | [.33, 2.85] | .64 |  | 1.68\* | [.31, 3.05] | .69 |
|  | EF composite | .94\*\* | [.38, 1.50] | .28 |  | 1.17\*\*\* | [.62, 1.73] | .28 |  | 1.07\*\* | [.40, 1.73] | .34 |
| Step 3 |  |  |  |  |  |  |  |
|  | Sex | .79 | [-2.66, 4.24] | 1.74 |  | .17 | [-3.70, 4.04] | 1.96 |  | 3.77 | [-.92, 8.47] | 2.37 |
|  | Age | .14 | [-.87, 1.15] | .51 |  | 1.06 | [-.07, 2.19] | .57 |  | 1.47\* | [.10, 2.84] | .69 |
|  | EF composite | .14 | [-.34, .62] | .24 |  | .58\* | [.05, 1.11] | .27 |  | .86\* | [.17, 1.55] | .35 |
|  | ADHD symptoms | .59\*\*\* | [.46, .72] | .07 |  | .43\*\*\* | [.28, .57] | .07 |  | .17\* | [.00, .34] | .09 |
| Step 4 |  |  |  |  |  |  |  |  |  |  |  |
|  | Sex | 1.32 | [-2.51, 5.15] | 1.94 |  | .11 | [-4.20, 4.42] | 2.18 |  | 2.33 | [-2.67, 7.33] | 2.52 |
|  | Age | .12 | [-.90, 1.14] | .51 |  | 1.06 | [-.08, 2.20] | .57 |  | 1.57\* | [.20, 2.93] | .69 |
|  | EF composite | .26 | [-.34, 86] | .30 |  | .57 | [-.10, 1.24] | .34 |  | .39 | [-.50, 1.29] | .45 |
|  | ADHD symptoms | .58\*\*\* | [.45, 72] | .07 |  | .43\*\*\* | [.28, .58] | .07 |  | .19\* | [.02, .36] | .09 |
|  | EF composite x Sex | -.246 | [-1.01, .52] | .38 |  | .03 | [-.81, .87] | .43 |  | .90 | [-.22, 2.02] | .56 |

*Note.* Dependent variable = total problems, Achenbach System of Empirically Based Assessment; *\*p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001*. EF = executive function, ADHD = attention-deficit/hyperactivity disorder.

Table S3.

*Baseline executive functions as predictors of internalizing symptoms at baseline, two-year follow-up, and 10-year follow-up.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Baseline (T1) |  | Two-year follow-up (T2) |  | 10-year follow-up (T3) |
|  | Predictors (T1) | *B* | 95% CI | *SE* |  | *B* | 95% CI | *SE* |  | *B* | 95% CI | *SE* |
|  | Sex | 1.94 | [-2.50, 6.38] | 2.24 |  | .75 | [-3.53, 5.03] | 2.16 |  | 3.56 | [-1.17, 8.30] | 2.38 |
|  | Age | .90 | [-.390, 2.20] | .65 |  | 1.63\* | [.38, 2.88] | .63 |  | 1.32 | [-.05, 2.70] | .69 |
|  | LNS | -.28 | [-1.20, .63] | .46 |  | -.23 | [-1.10, .64] | .44 |  | -.91 | [-2.04, .23] | .57 |
|  | CW3 | .08 | [-.05, .22] | .07 |  | -.03 | [-.16, .10] | .06 |  | -.17\* | [-.32, -.02] | .08 |
|  | CW4 | .02 | [-.12, .15] | .07 |  | .08 | [-.05, .21] | .07 |  | .18\* | [.03, .33] | .08 |
|  | TMT4 | .04 | [-.02, .10] | .03 |  | .11\*\*\* | [.06, .17] | .03 |  | .07\* | [.01, .13] | .03 |

*Note.* Dependent variable = total problems, Achenbach System of Empirically Based Assessment; *\*p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001*. EF = executive function, ADHD = attention-deficit/hyperactivity disorder.

Table S4.

*Baseline predictors of externalizing symptoms at baseline, two-year follow-up, and 10-year follow-up.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Baseline (T1) |  | Two-year follow-up (T2) |  | 10-year follow-up (T3) |
|  | Predictors (T1) | *B* | 95% CI | *SE* |  | *B* | 95% CI | *SE* |  | *B* | 95% CI | *SE* |
| Step 1 |  |  |  |  |  |  |  |
|  | Sex | 1.41 | [-3.29, 6.12] | 2.38 |  | 1.72 | [-2.49, 5.93] | 2.13 |  | 1.42 | [-3.15, 5.99] | 2.30 |
|  | Age | .17 | [-1.00, 1.33] | .59 |  | .11 | [-.93, 1.14] | .52 |  | .89 | [-.22, 2.01] | .56 |
| Step 2 |  |  |  |  |  |  |  |
|  | Sex | 1.70 | [-2.76, 6.16] | 2.25 |  | 1.97 | [-1.96, 5.90] | 1.98 |  | 1.24 | [-3.08, 5.56] | 2.18 |
|  | Age | 1.49\* | [.20, 2.79] | .65 |  | 1.43\* | [.30, 2.57] | .57 |  | 2.05\*\* | [.80, 3.29] | .63 |
|  | EF composite | 1.13\*\*\* | [.56, 1.70] | .29 |  | 1.11\*\*\* | [.61, 1.61] | .25 |  | 1.06\*\* | [.45, 1.66] | .30 |
| Step 3 |  |  |  |  |  |  |  |
|  | Sex | .50 | [-2.59, 3.59] | 1.56 |  | 1.21 | [-1.97, 4.39] | 1.61 |  | 1.27 | [-2.84, 5.38] | 2.07 |
|  | Age | .68 | [-.23, 1.58] | .46 |  | .83 | [-.10, 1.76] | .47 |  | 1.74\*\* | [.55, 2.94] | .60 |
|  | EF composite | .17 | [-.25, .60] | .22 |  | .44\* | [.00, .87] | .22 |  | .76\* | [.16, 1.36] | .30 |
|  | ADHD symptoms | .70\*\*\* | [.58, .82] | .06 |  | .49\*\*\* | [.37, .61] | .06 |  | .25\*\* | [.10, .40] | .08 |
| Step 4 |  |  |  |  |  |  |  |  |  |  |  |
|  | Sex | 1.42 | [-1.99, 4.84] | 1.72 |  | 1.25 | [-2.29, 4.79] | 1.79 |  | .38 | [-4.02, 4.78] | 2.22 |
|  | Age | .63 | [-.27, 1.54] | .46 |  | .83 | [-.10, 1.77] | .47 |  | 1.80\*\* | [.60, 3.00] | .60 |
|  | EF composite | .38 | [-.16, .92] | .27 |  | .45 | [-.10, 1.00] | .28 |  | .47 | [-.32, 1.26] | .40 |
|  | ADHD symptoms | .70\*\*\* | [.58, .81] | .06 |  | .49\*\*\* | [.37, .61] | .06 |  | .26\*\* | [.11, .41] | .08 |
|  | EF composite x Sex | -.43 | [-1.11, .25] | .34 |  | -.02 | [-.71, .67] | .35 |  | .55 | [-.44, 1.53] | .50 |

*Note.* Dependent variable = total problems, Achenbach System of Empirically Based Assessment; *\*p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001*. EF = executive function, ADHD = attention-deficit/hyperactivity disorder.

Table S5.

*Baseline executive functions as predictors of externalizing symptoms at baseline, two-year follow-up, and 10-year follow-up.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Baseline (T1) |  | Two-year follow-up (T2) |  | 10-year follow-up (T3) |
|  | Predictors (T1) | *B* | 95% CI | *SE* |  | *B* | 95% CI | *SE* |  | *B* | 95% CI | *SE* |
|  | Sex | 1.93 | [-2.55, 6.41] | 2.26 |  | 2.19 | [-1.76, 6.14] | 2.00 |  | 1.63 | [-2.78, 6.03] | 2.22 |
|  | Age | 1.35\* | [.04, 2.65] | .66 |  | 1.42\* | [.26, 2.57] | .58 |  | 2.02\*\* | [.74, 3.30] | .64 |
|  | LNS | -1.33\*\* | [-2.26, -.41] | .47 |  | -.70 | [-1.51, .11] | .41 |  | .02 | [-1.04, 1.07] | .53 |
|  | CW3 | .02 | [-.12, .15] | .07 |  | .02 | [-.10, .14] | .06 |  | -.01 | [-.15, .14] | .07 |
|  | CW4 | .01 | [-.13, .14] | .07 |  | .02 | [-.10, .14] | .06 |  | .17\* | [.03, .31] | .07 |
|  | TMT4 | .03 | [-.03, .09] | .03 |  | .07\* | [.01, .12] | .03 |  | .03 | [-.03, .09] | .03 |

*Note.* Dependent variable = total problems, Achenbach System of Empirically Based Assessment; *\*p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001*. EF = executive function, ADHD = attention-deficit/hyperactivity disorder.

**Figures**

Figure S1.

*Scatter plot of the bivariate relationship between baseline executive function composite and baseline total psychopathology symptoms.*



*Note.* TD = typically developing, ADHD = Attention-Deficit/Hyperactivity Disorder, T1 = baseline, EF = Executive function.

Figure S2.

*Scatter plot of the bivariate relationship between baseline executive function composite and T2 total psychopathology symptoms.*



*Note.* TD = typically developing, ADHD = Attention-Deficit/Hyperactivity Disorder, T2 = two-year follow-up, EF = Executive function.