**Appendix 1.** Illustrated below are look up tables converting raw NIH Toolbox Cognition Battery scores into normalized scaled scores (M=10, SD=3). The normalized scaled scores are for application in the age- and fully demographically-corrected formulas presented in Appendix 2. To use, select the scaled score table appropriate for the correction desired (age- or fully-corrected) and demographics (i.e., adult or child, and race/ethnicity for fully-corrected) of the given individual. The scaled score is then entered into the appropriate Appendix 2 formula in order to derive the desired corrected score.

**Raw to Scaled Score (ss) for use in Age-corrected Formulas**

**Adults (18-85 years old)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ss |  |  |  |  |  |  |  | ss |
|  | **DCCS** | **Flanker**  | **List Sort**  | **Picture Sequence Memory** | **Pattern Comparison** | **Oral Reading** | **Picture Vocabulary** |  |
| 0 | 0-1.55 | 0-1.92 | 0-2 | 200.00-217.60 | 0-16 | -30- -12.19 | -15- -10.25 | **0** |
| 1 | 1.56-2.07 | 1.93-4.18 | 3-4 | 217.61-257.35 | 17-24 | -12.18- -4.75 | -10.24- -4.78 | **1** |
| 2 | 2.08-2.18 | 4.19-4.45 | 5 | 257.36-393.24 | 25-27 | -4.74- -3.69 | -4.77- -2.94 | **2** |
| 3 | 2.19-2.43 | 4.46-5.11 | 6-7 | 393.25-303.79 | 28-29 | -3.68- -1.97 | -2.93- -0.84 | **3** |
| 4 | 2.44-3.78 | 5.12-6.24 | 8-9 | 303.80-333.22 | 30-33 | -1.96- -1.05 | -0.83-0.46 | **4** |
| 5 | 3.79-5.96 | 6.25-6.93 | 10-11 | 333.23-352.61 | 34-38 | -1.04- -0.01 | 0.47-1.39 | **5** |
| 6 | 5.97-6.68 | 6.94-7.51 | 12 | 352.62-382.38 | 39-42 | 0.00-1.07 | 1.40-2.18 | **6** |
| 7 | 6.69-7.20 | 7.52-7.90 | 13-14 | 382.39-415.59 | 43-46 | 1.08-2.14 | 2.19-3.00 | **7** |
| 8 | 7.21-7.59 | 7.91-8.20 | 15 | 415.60-442.62 | 47-49 | 2.15-3.03 | 3.01-3.74 | **8** |
| 9 | 7.60-7.90 | 8.21-8.45 | 16 | 442.63-481.43 | 50-53 | 3.04-3.96 | 3.75-4.42 | **9** |
| 10 | 7.91-8.18 | 8.46-8.75 | 17 | 481.44-521.53 | 54-57 | 3.97-4.84 | 4.43-4.95 | **10** |
| 11 | 8.19-8.51 | 8.76-8.96 | 18 | 521.54-552.56 | 58-61 | 4.85-5.73 | 4.96-5.57 | **11** |
| 12 | 8.52-8.76 | 8.97-9.19 | 19 | 552.57-599.04 | 62-64 | 5.74-6.81 | 5.58-6.25 | **12** |
| 13 | 8.77-9.03 | 9.20-9.40 | 20 | 599.05-625.89 | 65-68 | 6.82-7.56 | 6.26-7.15 | **13** |
| 14 | 9.04-9.31 | 9.41-9.58 | 21 | 625.90-653.76 | 69-72 | 7.57-8.23 | 7.16-7.95 | **14** |
| 15 | 9.32-9.65 | 9.59-9.72 | 22 | 653.77-677.94 | 73-75 | 8.24-8.84 | 7.96-8.77 | **15** |
| 16 | 9.66-9.87 | 9.73-9.87 | 23-24 | 677.95-689.94 | 76-78 | 8.85-9.16 | 8.78-9.57 | **16** |
| 17 | 9.88-9.99 | 9.88-9.99 | 25 | 689.95-700.89 | 79-81 | 9.17-9.35 | 9.58-9.92 | **17** |
| 18 | >9.99 | >9.99 | 26 | 700.90-722.27 | 82-84 | 9.36-9.97 | 9.93-10.62 | **18** |
| 19 | ---- | ---- | ---- | 722.28-778.57 | 85-97 | 9.98-16.36 | 10.63-12.73 | **19** |
| 20 | ---- | ---- | ---- | 778.58-800.00 | 98-130 | 16.37-20.00 | 12.74-15.00 | **20** |

**Raw to Scaled Score (ss) for use in Age-corrected Formulas**

**Children (3-17 years old)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ss |  |  |  |  |  |  |  | ss |
|  | **DCCS** | **Flanker**  | **List Sort**  | **Picture Sequence Memory** | **Pattern Comparison** | **Reading** | **Vocabulary** |  |
| 0 | --- | 0-0.11 | --- | 200-213.79 | 0-15 | -30- -23.20 | -15- -9.68 | **0** |
| 1 | 0-0.09 | 0.12-0.58 | 0 | 213.80-238.98 | 16-18 | -23.19- -23.10 | -9.67- -8.75 | **1** |
| 2 | 0.10-0.24 | 0.59-0.88 | 1 | 238.99-246.40 | 19 | -23.09- -22.45 | -8.74- -8.17 | **2** |
| 3 | 0.25-0.40 | 0.89-1.26 | 2-3 | 246.41-273.92 | 20-23 | -22.44- -20.82 | -8.16- -7.15  | **3** |
| 4 | 0.40-0.76 | 1.27-1.64 | 4-5 | 273.93-301.72 | 24-27 | -20.81- -19.47 | -7.14- -6.00 | **4** |
| 5 | 0.77-1.21 | 1.65-2.16 | 6-7 | 301.73-345.77 | 28-32 | -19.46- -16.98 | -5.99- -4.88 | **5** |
| 6 | 1.22-3.98 | 2.17-5.12 | 8-9 | 345.78-381.96 | 33-36 | -16.97- -10.41 | -4.87- -3.75 | **6** |
| 7 | 3.99-6.07 | 5.13-6.79 | 10-12 | 381.97-418.98 | 37-40 | -10.40- -4.05 | -3.74- -2.59 | **7** |
| 8 | 6.08-6.85 | 6.80-7.56 | 13-14 | 418.99-459.93 | 41-45 | -4.04- -1.87 | -2.58- -1.31 | **8** |
| 9 | 6.86-7.37 | 7.57-8.08 | 15 | 459.94-492.65 | 46-50 | -1.86- -0.48 | -1.30- -0.08 | **9** |
| 10 | 7.38-7.81 | 8.09-8.51 | 16 | 492.66-530.76 | 51-54 | -0.47-0.63 | -0.07- 1.01 | **10** |
| 11 | 7.82-8.19 | 8.52-8.88 | 17-18 | 530.77-567.13 | 55-58 | 0.64-1.72 | 1.02-1.97 | **11** |
| 12 | 8.20-8.53 | 8.89-9.15 | 19 | 567.14-594.75 | 59-62 | 1.73-2.64 | 1.98-2.87 | **12** |
| 13 | 8.54-8.85 | 9.16-9.37 | 20 | 594.76-618.73 | 63-66 | 2.65-3.53 | 2.88-3.67 | **13** |
| 14 | 8.86-9.22 | 9.38-9.55 | 21 | 618.74-647.45 | 67-70 | 3.54-4.56 | 3.68-4.65 | **14** |
| 15 | 9.23-9.56 | 9.56-9.73 | 22 | 647.46-676.47 | 71-73 | 4.57-5.68 | 4.66-5.30 | **15** |
| 16 | 9.57-9.79 | 9.74-9.86 | 23 | 676.48-682.94 | 74-76 | 5.69-6.77 | 5.31-5.90 | **16** |
| 17 | 9.80-9.88 | 9.87-9.99 | 24 | 682.95-697.90 | 77-80 | 6.78-8.02 | 5.91-6.29 | **17** |
| 18 | 9.89-9.99 | >9.99 | 25 | 697.91-709.23 | 81-83 | 8.03-8.61 | 6.30-7.16 | **18** |
| 19 | >9.99 | --- | 26 | 709.24-751.96 | 84-86 | 8.62-9.16 | 7.17-8.14 | **19** |
| 20 | --- | --- | --- | 751.97-794.69 | 87-112 | 9.17-15.31 | 8.15-14.36 | **20** |
| 21 | --- | --- | --- | 794.70-800 | 113-130 | 15.32-20 | 14.37-15 | **21** |

**Raw to Scaled Score (ss) for use in Fully-corrected Formulas**

**White/Asian Adults (18-85 years old)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ss |  |  |  |  |  |  |  | ss |
|  | **DCCS** | **Flanker**  | **List Sort**  | **Picture Sequence Memory** | **Pattern Comparison** | **Reading** | **Vocabulary** |  |
| 0 | 0-0.54 | 0-0.68 | 0-1 | 200-203.32 | 0-5 | -30- -24.08 | -15- -14.66 | **0** |
| 1 | 0.55-2.06 | 0.69-4.06 | 2-3 | 203.33-244.53 | 6-25 | -24.07- -5.18 | -14.65- -4.72 | **1** |
| 2 | 2.07-2.20 | 4.07-4.36 | 4-5 | 244.54-289.78 | 26-27 | -5.17- -3.43 | -4.71- -3.20 | **2** |
| 3 | 2.21-2.91 | 4.37-4.95 | 6-7 | 289.79-300.46 | 28 | -3.42- -1.06 | -3.19- -1.15 | **3** |
| 4 | 2.92-3.81 | 4.96-6.17 | 8-9 | 300.47-331.71 | 29-32 | -1.05- -0.13 | -1.14-0.53 | **4** |
| 5 | 3.82-5.82 | 6.18-6.75 | 10-11 | 331.72-352.26 | 33-38 | -0.12-0.70 | 0.54-1.87 | **5** |
| 6 | 5.83-6.60 | 6.76-7.42 | 12-13 | 352.27-382.36 | 39-42 | 0.71-1.58 | 1.88-2.77 | **6** |
| 7 | 6.61-7.10 | 7.43-7.83 | 14 | 382.37-417.12 | 43-46 | 1.59-2.58 | 2.78-3.61 | **7** |
| 8 | 7.11-7.53 | 7.84-8.16 | 15 | 417.13-442.95 | 47-49 | 2.59-3.39 | 3.62-4.16 | **8** |
| 9 | 7.54-7.88 | 8.17-8.45 | 16 | 442.96-480.65 | 50-53 | 3.40-4.27 | 4.17-4.73 | **9** |
| 10 | 7.89-8.15 | 8.46-8.73 | 17 | 480.66-522.65 | 54-56 | 4.28-5.12 | 4.74-5.26 | **10** |
| 11 | 8.16-8.50 | 8.74-8.95 | 18 | 522.66-550.57 | 57-60 | 5.13-6.03 | 5.27-5.90 | **11** |
| 12 | 8.51-8.77 | 8.96-9.18 | 19 | 550.58-596.90 | 61-65 | 6.04-6.91 | 5.91-6.60 | **12** |
| 13 | 8.78-9.03 | 9.19-9.40 | 20 | 596.91-624.29 | 66-68 | 6.92-7.71 | 6.61-7.37 | **13** |
| 14 | 9.04-9.30 | 9.41-9.58 | 21 | 624.30-653.19 | 69-72 | 7.72-8.38 | 7.38-8.09 | **14** |
| 15 | 9.31-9.69 | 9.59-9.73 | 22 | 653.20-677.92 | 73-75 | 8.39-8.94 | 8.10-8.88 | **15** |
| 16 | 9.70-9.87 | 9.74-9.87 | 23-24 | 677.93-690.73 | 76-78 | 8.95-9.21 | 8.89-9.62 | **16** |
| 17 | 9.88-9.99 | 9.88-9.99 | 25 | 690.74-700.91 | 79-81 | 9.22-9.63 | 9.63-10.37 | **17** |
| 18 | >9.99 | >9.99 | 26 | 700.92-722.91 | 82-87 | 9.64-11.04 | 10.38-10.75 | **18** |
| 19 | --- | --- | --- | 722.92-794.52 | 88-124 | 11.05-18.78 | 10.76-14.85 | **19** |
| 20 |  |  |  | 794.53-800 | 125-130 | 18.79-20 | 14.86-15 | **20** |

**Raw to Scaled Score (ss) for use in Fully-corrected Formulas**

**African American Adults (18-85 years old)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ss |  |  |  |  |  |  |  | ss |
|  | **DCCS** | **Flanker**  | **List Sort**  | **Picture Sequence Memory** | **Pattern Comparison** | **Reading** | **Vocabulary** |  |
| 0 | --- | --- | --- | --- | --- | --- | --- | **0** |
| 1 | --- | --- | --- | --- | --- | --- | --- | **1** |
| 2 | 0-2.14 | 0-4.59 | 0-6 | 200-311.14 | 0-24 | -30- -10.91 | -15- -2.24 | **2** |
| 3 | 2.15-2.51 | 4.60-5.47 | 7-8 | 311.15-324.52 | 25-30 | -10.90- -3.66 | -2.23- -0.45 | **3** |
| 4 | 2.52-5.10 | 5.48-6.01 | 9-10 | 324.53-333.35 | 31-33 | -3.65- -1.97 | -0.44-0.36 | **4** |
| 5 | 5.11-6.60 | 6.02-6.73 | 11 | 333.36-359.23 | 34-37 | -1.96- -1.32 | 0.37-0.74 | **5** |
| 6 | 6.61-7.07 | 6.74-7.36 | 12-13 | 359.24-376.23 | 38-40 | -1.31- -0.57 | 0.75-1.39 | **6** |
| 7 | 7.08-7.36 | 7.37-7.85 | --- | 376.24-400.45 | 41-43 | -0.56-0.83 | 1.40-2.06 | **7** |
| 8 | 7.37-7.63 | 7.86-8.07 | 14 | 400.46-428.47 | 44-47 | 0.84-1.87 | 2.07-2.77 | **8** |
| 9 | 7.64-7.91 | 8.08-8.31 | 15 | 428.48-469.41 | 48-52 | 1.88-2.74 | 2.78-3.54 | **9** |
| 10 | 7.92-8.17 | 8.32-8.53 | 16 | 469.42-500.82 | 53-55 | 2.75-3.52 | 3.55-3.89 | **10** |
| 11 | 8.18-8.39 | 8.54-8.77 | 17-18 | 500.83-528.54 | 56-58 | 3.53-4.17 | 3.90-4.40 | **11** |
| 12 | 8.40-8.56 | 8.78-8.98 | 19 | 528.55-585.59 | 59-61 | 4.18-5.04 | 4.41-5.08 | **12** |
| 13 | 8.57-8.80 | 8.99-9.30 | --- | 585.60-614.46 | 62-65 | 5.05-5.84 | 5.09-5.33 | **13** |
| 14 | 8.81-9.24 | 9.31-9.44 | 20 | 614.47-639.02 | 66-69 | 5.85-7.39 | 5.34-5.94 | **14** |
| 15 | 9.25-9.52 | 9.45-9.65 | 21-22 | 639.03-667.76 | 70-73 | 7.40-8.36 | 5.95-7.67 | **15** |
| 16 | 9.53-9.73 | 9.66-9.77 | 23 | 667.77-689.98 | 74-76 | 8.37-8.78 | 7.68-9.16 | **16** |
| 17 | 9.74-9.85 | 9.78-9.98 | 24 | 689.99-705.78 | 77-83 | 8.79-8.97 | 9.17-9.43 | **17** |
| 18 | 9.86-10 | >9.98 | 25-26 | 705.79-800 | 84-130 | 8.98-20 | 9.44-15 | **18** |

**Raw to Scaled Score (ss) for use in Fully-corrected Formulas**

**Hispanic Adults (18-85 years old)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ss |  |  |  |  |  |  |  | ss |
|  | **DCCS** | **Flanker**  | **List Sort**  | **Picture Sequence Memory** | **Pattern Comparison** | **Reading** | **Vocabulary** |  |
| 0 | --- | --- | --- | --- | --- | --- | --- | **0** |
| 1 | --- | --- | --- | --- | --- | --- | --- | **1** |
| 2 | 0-0.87 | 0-3.44 | 0-4 | 200-235.69 | 0-16 | -30- -12.15 | -15- -8.50 | **2** |
| 3 | 0.88-2.15 | 3.45-5.69 | 5-7 | 235.70-310.53 | 17-32 | -12.14- -2.01 | -8.49- -1.76 | **3** |
| 4 | 2.16-2.28 | 5.70-6.75 | 8-9 | 310.54-339.79 | 33-39 | -2.00- -1.15 | -1.75-0.07 | **4** |
| 5 | 2.29-4.73 | 6.76-7.64 | 10 | 339.80-355.26 | 40-44 | -1.14-0.26 | 0.08-1.29 | **5** |
| 6 | 4.74-6.70 | 7.65-8.04 | 11-12 | 355.27-403.52 | 45-47 | 0.27-0.86 | 1.30-1.93 | **6** |
| 7 | 6.71-7.43 | 8.05-8.24 | 13-14 | 403.53-428.28 | 48-49 | 0.87-2.21 | 1.94-2.60 | **7** |
| 8 | 7.44-7.74 | 8.25-8.33 | 15 | 428.29-474.55 | 50-52 | 2.22-2.82 | 2.61-3.27 | **8** |
| 9 | 7.75-8.05 | 8.34-8.74 | 16 | 474.56-520.25 | 53-57 | 2.83-3.88 | 3.28-3.68 | **9** |
| 10 | 8.06-8.32 | 8.75-8.98 | 17 | 520.26-571.80 | 58-60 | 3.89-5.08 | 3.69-4.56 | **10** |
| 11 | 8.33-8.67 | 8.99-9.16 | 18 | 571.81-594.02 | 61-63 | 5.09-6.22 | 4.57-5.63 | **11** |
| 12 | 8.68-8.86 | 9.17-9.37 | 19 | 594.03-626.25 | 64-65 | 6.23-7.02 | 5.64-6.24 | **12** |
| 13 | 8.87-9.27 | 9.38-9.48 | 20 | 626.26-651.07 | 66-69 | 7.03-7.57 | 6.25-7.33 | **13** |
| 14 | 9.28-9.46 | 9.49-9.64 | 21-22 | 651.08-677.55 | 70-72 | 7.58-8.00 | 7.34-7.91 | **14** |
| 15 | 9.47-9.66 | 9.65-9.76 | 23 | 677.56-683.45 | 73-74 | 8.01-8.86 | 7.92-8.64 | **15** |
| 16 | 9.67-9.89 | 9.77-9.99 | 24 | 683.46-698.33 | 75-80 | 8.87-9.03 | 8.65-9.23 | **16** |
| 17 | >9.89 | >9.99 | 25 | 698.34-749.31 | 81-102 | 9.04-12.91 | 9.24-12.38 | **17** |
| 18 | --- | --- | 26 | 749.32-800 | 103-130 | 12.92-20 | 12.39-15 | **18** |

**Raw to Scaled Score (ss) for use in Fully-corrected Formulas**

**White/Asian Children (3-17 years old)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ss |  |  |  |  |  |  |  | ss |
|  | **DCCS** | **Flanker**  | **List Sort**  | **Picture Sequence Memory** | **Pattern Comparison** | **Reading** | **Vocabulary** |  |
| 0 | 0-0.02 | 0-0.23 | --- | 200-220.69 | 0-15 | -30- -23.94 | -15- -8.39 | **0** |
| 1 | 0.03-0.10 | 0.24-0.62 | 0 | 220.70-238.89 | 16-18 | -23.93- -23.04 | -8.38- -8.23 | **1** |
| 2 | 0.11-0.25 | 0.63-0.93 | 1 | 238.90-244.73 | 19-20 | -23.03- -21.72 | -8.22- -7.77 | **2** |
| 3 | 0.26-0.45 | 0.94-1.30 | 2-3 | 244.74-272.49 | 21-23 | -21.71- -20.13 | -7.76- -6.72 | **3** |
| 4 | 0.46-0.82 | 1.31-1.70 | 4-5 | 272.50-301.72 | 24-28 | -20.12- -18.83 | -6.71- -5.61 | **4** |
| 5 | 0.83-2.12 | 1.71-2.24 | 6-7 | 301.73-345.66 | 29-32 | -18.82- -16.53 | -5.60- -4.60 | **5** |
| 6 | 2.13-4.68 | 2.25-5.54 | 8-10 | 345.67-385.43 | 33-36 | -16.52- -9.64 | -4.59- -3.30 | **6** |
| 7 | 4.69-6.24 | 5.55-7.01 | 11-12 | 385.44-434.58 | 37-41 | -9.63- -3.51 | -3.29- -2.04 | **7** |
| 8 | 6.25-6.98 | 7.02-7.69 | 13-14 | 434.59-471.92 | 42-46 | -3.50- -1.30 | -2.03- -0.74 | **8** |
| 9 | 6.99-7.50 | 7.70-8.18 | 15-16 | 471.93-504.89 | 47-51 | -1.29- -0.10 | -0.73-0.51 | **9** |
| 10 | 7.51-7.92 | 8.19-8.59 | 17 | 504.90-543.81 | 52-55 | -0.09- 1.03 | 0.52-1.53 | **10** |
| 11 | 7.93-8.28 | 8.60-8.92 | 18 | 543.82-575.26 | 56-59 | 1.04-2.08 | 1.54-2.54 | **11** |
| 12 | 8.29-8.63 | 8.93-9.17 | 19 | 575.27-603.67 | 60-63 | 2.09-3.00 | 2.55-3.29 | **12** |
| 13 | 8.64-8.97 | 9.18-9.40 | 20 | 603.68-627.12 | 64-67 | 3.01-3.83 | 3.30-4.20 | **13** |
| 14 | 8.98-9.34 | 9.41-9.57 | 21 | 627.13-650.15 | 68-70 | 3.84-4.94 | 4.21-4.93 | **14** |
| 15 | 9.35-9.62 | 9.58-9.75 | 22 | 650.16-677.27 | 71-74 | 4.95-6.03 | 4.94-5.56 | **15** |
| 16 | 9.63-9.86 | 9.76-9.87 | 23-24 | 677.28-686.47 | 75-77 | 6.04-6.96 | 5.57-6.01 | **16** |
| 17 | 9.87-9.90 | 9.88-9.99 | 25 | 686.48-700.02 | 78-81 | 6.97-8.14 | 6.02-6.50 | **17** |
| 18 | 9.91-10 | >9.99 | 26 | 700.03-719.19 | 82-84 | 8.15-8.63 | 6.51-7.79 | **18** |
| 19 | --- | --- | --- | 719.19-766.05 | 85-89 | 8.64-9.23 | 7.80-8.21 | **19** |
| 20 | --- | --- | --- | 766.06-800 | 90-130 | 9.24-20 | 8.22-15 | **20** |

**Raw to Scaled Score (ss) for use in Fully-corrected Formulas**

**African American Children (3-17 years old)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ss |  |  |  |  |  |  |  | ss |
|  | **DCCS** | **Flanker**  | **List Sort**  | **Picture Sequence Memory** | **Pattern Comparison** | **Reading** | **Vocabulary** |  |
| 1 | 0-0.02 | 0-0.54 | --- | 200-212.74 | 0-19 | -30- -25.67 | -15- -9.52 | **1** |
| 2 | 0.03-0.19 | 0.55-0.76 | 0 | 212.76-246.48 | 20 | -25.66- -22.22 | -9.51- -8.06 | **2** |
| 3 | 0.20-0.33 | 0.77-1.21 | 1-3 | 246.49-274.80 | 21-23 | -22.21- -21.22 | -8.05- -6.99 | **3** |
| 4 | 0.34-0.58 | 1.22-1.67 | 4 | 274.81-298.08 | 24-28 | -21.21- -18.90 | -6.98- -5.84 | **4** |
| 5 | 0.59-0.92 | 1.68-2.62 | 5-6 | 298.09-345.46 | 29-32 | -18.89- -16.02 | -5.83- -4.91 | **5** |
| 6 | 0.93-3.67 | 2.63-5.02 | 7-9 | 345.47-369.98 | 33-35 | -16.01- -9.31 | -4.90- -4.26 | **6** |
| 7 | 3.68-5.57 | 5.03-6.40 | 10-11 | 369.99-411.03 | 36-39 | -9.30- -4.29 | -4.25- -2.93 | **7** |
| 8 | 5.58-6.54 | 6.41-7.20 | 12 | 411.04-436.76 | 40-44 | -4.28- -2.50 | -2.92- -1.80 | **8** |
| 9 | 6.55-7.21 | 7.21-7.86 | 13-14 | 436.77-472.53 | 45-48 | -2.49- -1.20 | -1.79- -0.74 | **9** |
| 10 | 7.22-7.61 | 7.87-8.36 | 15 | 472.54-501.08 | 49-52 | -1.19- -0.23 | -0.73-0.03 | **10** |
| 11 | 7.62-8.01 | 8.37-8.74 | 16 | 501.09-537.51 | 53-56 | -0.22-0.91 | 0.04-0.90 | **11** |
| 12 | 8.02-8.33 | 8.75-9.09 | 17 | 537.52-570.06 | 57-60 | 0.92-1.83 | 0.91-1.80 | **12** |
| 13 | 8.34-8.69 | 9.10-9.31 | 18-19 | 570.07-594.17 | 61-64 | 1.84-2.55 | 1.81-2.67 | **13** |
| 14 | 8.70-9.02 | 9.32-9.42 | 20 | 594.18-618.94 | 65-67 | 2.56-3.55 | 2.68-3.39 | **14** |
| 15 | 9.03-9.40 | 9.43-9.59 | 21 | 618.95-641.91 | 68-70 | 3.56-4.60 | 3.40-4.31 | **15** |
| 16 | 9.41-9.79 | 9.60-9.83 | 22 | 641.92-679.77 | 71-74 | 4.61-6.18 | 4.32-5.10 | **16** |
| 17 | 9.80-9.89 | 9.84-9.93 | 23 | 679.78-692.02 | 75-78 | 6.19-7.61 | 5.11-6.10 | **17** |
| 18 | 9.89-10 | 9.94-9.99 | 24-25 | 692.03-748.41 | 79-84 | 7.62-8.89 | 6.11-7.16 | **18** |
| 19 | --- | >9.99 | 26 | 748.42-800 | 85-130 | 8.90-20 | 7.17-15 | **19** |

**Raw to Scaled Score (ss) for use in Fully-corrected Formulas**

**Hispanic Children (3-17 years old)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ss |  |  |  |  |  |  |  | ss |
|  | **DCCS** | **Flanker**  | **List Sort**  | **Picture Sequence Memory** | **Pattern Comparison** | **Reading** | **Vocabulary** |  |
| 1 | 0-0.03 | 0-0.03 | --- | 200-246.43 | 0-13 | -30- -24.62 | -15- -9.91 | **1** |
| 2 | 0.04-0.25 | 0.04-0.77 | 0 | 246.44-265.64 | 14-18 | -24.61- -23.10 | -9.90- -8.49 | **2** |
| 3 | 0.26-0.57 | 0.78-1.17 | 1-3 | 265.65-280.96 | 19-20 | -23.09- -21.58 | -8.48- -7.43 | **3** |
| 4 | 0.58-0.92 | 1.18-1.55 | 4 | 280.97-319.17 | 21-26 | -21.57- -19.84 | -7.42- -6.34 | **4** |
| 5 | 0.93-2.27 | 1.56-2.07 | 5-7 | 319.18-349.51 | 27-31 | -19.83- -18.28 | -6.33- -5.26 | **5** |
| 6 | 2.28-4.04 | 2.08-4.94 | 8-9 | 349.52-383.37 | 32-35 | -18.27- -11.90 | -5.25- -3.95 | **6** |
| 7 | 4.05-6.06 | 4.95-6.47 | 10-11 | 383.38-416.43 | 36-39 | -11.89- -5.02 | -3.94- -3.23 | **7** |
| 8 | 6.07-6.75 | 6.48-7.27 | 12-13 | 416.44-456.10 | 40-44 | -5.01- -2.31 | -3.22- -1.99 | **8** |
| 9 | 6.76-7.29 | 7.28-7.92 | 14-15 | 456.11-495.43 | 45-48 | -2.30- -0.83 | -1.98- -0.80 | **9** |
| 10 | 7.30-7.62 | 7.93-8.40 | 16 | 495.44-528.70 | 49-52 | -0.82-0.32 | -0.79-0.29 | **10** |
| 11 | 7.63-8.09 | 8.41-8.81 | 17 | 528.71-558.42 | 53-56 | 0.33-1.26 | 0.30-1.15 | **11** |
| 12 | 8.10-8.40 | 8.82-9.10 | 18 | 558.43-588.69 | 57-61 | 1.27-2.24 | 1.16-2.08 | **12** |
| 13 | 8.41-8.73 | 9.11-9.35 | 19 | 588.70-614.27 | 62-65 | 2.25-3.26 | 2.09-3.17 | **13** |
| 14 | 8.74-9.04 | 9.36-9.52 | 20 | 614.28-645.28 | 66-68 | 3.27-3.92 | 3.18-3.62 | **14** |
| 15 | 9.05-9.37 | 9.53-9.67 | 21 | 645.29-670.54 | 69-71 | 3.93-5.25 | 3.63-4.76 | **15** |
| 16 | 9.38-9.70 | 9.68-9.81 | 22 | 670.55-683.22 | 72-75 | 5.26-6.54 | 4.77-5.42 | **16** |
| 17 | 9.71-9.79 | 9.82-9.98 | 23-24 | 683.23-702.22 | 76-77 | 6.55-8.23 | 5.43-5.97 | **17** |
| 18 | 9.80-9.96 | >9.98 | 25-26 | 702.23-754.11 | 78-79 | 8.24-8.57 | 5.98-7.41 | **18** |
| 19 | 9.97-10 | --- | --- | 754.12-800 | 80-130 | 8.58-20 | 7.42-15 | **19** |

**Raw to Scaled Score (ss) for use in Fully-corrected Formulas**

**Multiracial Children (3-17 years old)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ss |  |  |  |  |  |  |  | ss |
|  | **DCCS** | **Flanker**  | **List Sort**  | **Picture Sequence Memory** | **Pattern Comparison** | **Reading** | **Vocabulary** |  |
| 1 | --- | --- | --- | --- | --- | --- | --- | **1** |
| 2 | 0-0.16 | 0-0.80 | 0-1 | 200-241.49 | 0-11 | -30- -25.79 | -15- -12.04 | **2** |
| 3 | 0.17-0.30 | 0.81-1.40 | 2-3 | 241.50-299.30 | 12-19 | -25.78- -21.95 | -12.03- -6.82 | **3** |
| 4 | 0.31-0.39 | 1.41-1.64 | 4 | 299.31-313.76 | 20-22 | -21.94- -20.82 | -6.81- -6.73 | **4** |
| 5 | 0.40-0.65 | 1.65-1.86 | 5 | 313.77-350.30 | 23-28 | -20.81- -19.64 | -6.72- -5.87 | **5** |
| 6 | 0.66-1.64 | 1.87-2.98 | 6-8 | 350.31-403.03 | 29-31 | -19.63- -17.54 | -5.86- -4.23 | **6** |
| 7 | 1.65-5.00 | 2.99-5.23 | 9-10 | 403.04-418.35 | 32-38 | -17.53- -9.29 | -4.22- -3.57 | **7** |
| 8 | 5.01-6.50 | 5.24-7.28 | 11-13 | 418.36-460.16 | 39-42 | -9.28- -2.57 | -3.56- -2.19 | **8** |
| 9 | 6.51-7.16 | 7.29-8.07 | 14-15 | 460.17-486.77 | 43-48 | -2.56- -0.47 | -2.18- -0.06 | **9** |
| 10 | 7.17-7.67 | 8.08-8.39 | 16 | 486.78-516.55 | 49-52 | -0.46-0.65 | -0.05-1.30 | **10** |
| 11 | 7.68-7.94 | 8.40-8.78 | 17-18 | 516.56-560.29 | 53-56 | 0.66-1.86 | 1.31-2.12 | **11** |
| 12 | 7.95-8.29 | 8.79-9.20 | --- | 560.30-591.76 | 57-60 | 1.87-3.04 | 2.13-3.02 | **12** |
| 13 | 8.30-8.62 | 9.21-9.36 | 19 | 591.77-621.70 | 61-64 | 3.05-3.85 | 3.03-3.84 | **13** |
| 14 | 8.63-9.00 | 9.37-9.58 | 20-21 | 621.71-646.93 | 65-68 | 3.86-4.46 | 3.85-4.40 | **14** |
| 15 | 9.01-9.33 | 9.59-9.68 | 22 | 646.94-659.66 | 69-72 | 4.47-5.72 | 4.41-5.10 | **15** |
| 16 | 9.34-9.65 | 9.69-9.79 | 23 | 659.67-702.10 | 73-75 | 5.73-6.75 | 5.11-6.45 | **16** |
| 17 | 9.66-9.92 | 9.80-9.92 | 24-25 | 702.11-774.64 | 76-96 | 6.76-12.61 | 6.46-11.94 | **17** |
| 18 | 9.93-10 | 9.93-10 | 26 | 774.65-800 | 97-130 | 12.62-20 | 11.95-15 | **18** |

**Appendix 2.1 Raw Scores to Uncorrected Standard Scores Weighted and Normally Distributed against the U.S. Census.**

|  |  |
| --- | --- |
| **Test** | **Formula** |
| DCCS | [(DCCS raw score) - (7.71) / (1.71)] \* 15 + 100 |
| Flanker | [(Flanker raw score) - (8.29) / (1.48)] \* 15 + 100 |
| List Sort | [(List Sort raw score) - (16.69) / (3.90)] \* 15 + 100 |
| Picture Sequence Memory | [(Picture Memory raw score) - (505.59) / (99.83)] \* 15 + 100 |
| Pattern Comparison | [(Pattern Comp raw score) - (55.32) / (11.88)] \* 15 + 100 |
| Oral Reading | [(Reading raw score) - (2.80) / (5.20)] \* 15 + 100 |
| Picture Vocabulary | [(Vocabulary raw score) - (3.73) / (3.14)] \* 15 + 100 |
| Fluid Composite | [(Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Uncorrected Standard Scores) – 100.39) / (11.83)] \* 15 + 100 |
| Crystallized Composite | [(Mean of Oral Reading & Picture Vocabulary Uncorrected Standard Scores) – 100.38) / (13.99)] \* 15 + 100 |
| Total Cognition Composite | [(Mean of Uncorrected Fluid & Crystallized Composite Standard Scores) – 100.84) / (12.04)] \* 15 + 100 |

**Appendix 2.2 Scaled Scores to Age-Corrected Standard Scores.**

|  |  |
| --- | --- |
| **Test** | **Formula** |
| ***Adults*** |
| DCCS | 100 + 15 \* {[(DCCS scaled score) − (14.82 − 9.83\*(age/100))] / [2.17 – 0.62\*(age/100)]}/ 1.29  |
| Flanker | 100 + 15 \* {[(Flanker scaled score) − (14.38 − 8.92\*(age/100))] / [2.28 – 0.63\*(age/100)]}/ 1.28 |
| List Sort | 100 + 15 \* {[(List Sort scaled score) − (11.98 − 7.37\*(age/100)^2)] / [2.36 – 0.34\*(age/100)]} / 1.23 |
| Picture Sequence Memory | 100 + 15 \* {[(Picture Seq Memory scaled score) − (14.06 − 8.48\*(age/100))] / [2.43 – 0.72\*(age/100)]}/ 1.25 |
| Pattern Comparison | 100 + 15 \* {[(Pattern comp scaled score) − (14.68 – 9.62\*(age/100))] / [2.33 – 0.74\*(age/100)]} / 1.24 |
| Oral Reading | 100 + 15 \* {[(Reading scaled score) − (9.68 + 0.65\*(age/100))] / [1.81 + 1.19\*(age/100)]} / 1.26 |
| Picture Vocabulary | 100 + 15 \* {[(Vocabulary scaled score) − (11.41 – 0.57\*(age/100)^−1)] / [1.86 + 1.12\*(age/100)]} /1.24 |
| Fluid Composite | 100 + 15 \* [((Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Age-corrected Standard Scores) – 100.15) / 10.10]  |
| Crystallized Composite | 100 + 15 \* [((Mean of Oral Reading & Picture Vocabulary Age-corrected Standard Scores) – 100.18) / 13.64]  |
| Total Cognition Composite | 100 + 15 \* [((Mean of Age-corrected Fluid & Crystallized Composite Standard Scores) – 100.02) / 12.93]  |
| ***Children*** |
| DCCS | 100 + 15 \* {[(DCCS scaled score) − (−2.02 + 11.67\*(age/10)^0.5)] / [1.35 + 0.69\*log(age/10) + 0.71\*(log(age/10))^2]} / 1.28 |
| Flanker | 100 + 15 \* {[(Flanker scaled score) − (−3.71 + 13.96\*(age/10)^0.5 − 0.33\*(age/10)^3)] / [−3.00 + 4.30\*(age/10)^−0.5 + 3.07\*log(age/10)]} / 1.29 |
| List Sort | 100 + 15 \* {[(List Sort scaled score) − (13.21 − 3.18\*(age/10)^−2 − 1.98\*log(age/10)\*(age/10)^−2)] / [2.04 – 0.33\*(age/10)^−1]} / 1.30 |
| Picture Sequence Memory | 100 + 15 \* {[(Picture Seq Memory scaled score) − (−2.14 + 12.32\*(age/10) − 7.84\*log(age/10)\*(age/10))] / [1.14 + 0.64\*(age/10)]} / 1.25 |
| Pattern Comparison | 100 + 15 \* {[(Pattern Comp scaled score) − (−1.20 + 10.85\*(age/10)^0.5)] / [−4.47 + 5.88\*(age/10)^−0.5 + 3.67\*log(age/10)]} / 1.29 |
| Oral Reading | 100 + 15 \* {[(Reading scaled score) − (21.06 − 11.09\*(age/10)^−1 − 5.05\*log(age/10)\*(age/10)^−1)] / [9.97 – 8.81\*(age/10)^−0.5 – 3.28\*log(age/10)\*(age/10)^−0.5)]} / 1.31 |
| Picture Vocabulary | 100 + 15 \* {[(Vocabulary scaled score) − (2.19 + 8.25\*(age/10) − 0.64\*(age/10)^3)] / [1.15 + 0.90\*log(age/10) + 0.88\*(log(age/10))^2]} / 1.29 |
| Fluid Composite | 100 + 15 \* [(Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Age-corrected Standard Scores) – 100.24) / 9.24]  |
| Crystallized Composite | 100 + 15 \* [((Mean of Oral Reading & Picture Vocabulary Age-corrected Standard Scores) – 100.05) / 12.81]  |
| Total Cognition Composite | 100 + 15 \* [((Mean of Age-corrected Fluid & Crystallized Composite Standard Scores) – 100.25) / 12.48]  |

**Appendix 2.3 Scaled Scores to Fully-Corrected T-scores**

|  |  |
| --- | --- |
| **Test** | **Formula** |
| ***White/Asian Adults****Note:**Formulas should be applied to education levels range 8-20 years; education values outside this range may result in extrapolation errors.* |
| DCCS | 50 + 10 \* {[(DCCS scaled score) − (12.92 − 9.84\*(age/100) + 1.45\*(edu/10) + 0.30\*male)] / [1.78 – 0.63\*(age/100) + 0.16\*(edu/10) + 0.32\*male]} / 1.28 |
| Flanker | 50 + 10 \* {[(Flanker scaled score) − (15.52 − 9.25\*(age/100) − 1.53\*(edu/10)^−2 + 0.29\*male)] / [2.23 – 0.72\*(age/100) – 0.10\*(edu/10) + 0.33\*male]} / 1.30 |
| List Sort | 50 + 10 \* {[(List Sort scaled score) − (12.89 − 8.36\*(age/100) + 1.12\*(edu/10) − 0.25\*male)] / [1.80 + 0.06\*(age/100) + 0.25\*(edu/10) – 0.04\*male]} / 1.22 |
| Picture Sequence Memory | 50 + 10 \* {[(Picture Seq Memory scaled score) − (12.72 − 8.91\*(age/100) + 1.51\*(edu/10) – 0.97\*male)] / [2.42 – 0.49\*(age/100) – 0.17\*(edu/10) – 0.05\*male]} / 1.25 |
| Pattern Comparison | 50 + 10 \* {[(Pattern comp scaled score) − (10.50 – 9.42\*(age/100) + 3.75\*(edu/10)^2 – 4.03\*log(edu/10)\*(edu/10)^2 − 0.28\*male)] / [2.06 – 0.82\*(age/100) + 0.08\*(edu/10) + 0.34\*male]} / 1.24 |
| Oral Reading | 50 + 10 \* {[(Reading scaled score) − (3.55 + 0.87\*(age/100) + 4.20\*(edu/10) + 0.18\*male)] / [−2.10 + 0.73\*(age/100) + 2.02\*(edu/10)^−2 + 2.04\*(edu/10) – 0.16\*male]} / 1.25 |
| Picture Vocabulary | 50 + 10 \* {[(Vocabulary scaled score) − (2.69 + 18.50\*(age/100)^2 − 19.70\*(age/100)^3 + 3.92\*(edu/10) − 0.09\*male)] / [0.82 + 1.09\*(age/100) + 0.52\*(edu/10) + 0.35]} / 1.25 |
| Fluid Composite | 50 + 10 \* [((Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Fully-corrected T-Scores) – 50.13) / 6.60]  |
| Crystallized Composite | 50 + 10 \* [((Mean of Oral Reading & Picture Vocabulary Fully-corrected T-Scores) – 50.10) / 8.95]  |
| Total Cognition Composite | 50 + 10 \* [((Mean of Fully-corrected Fluid & Crystallized Composite T-Scores) – 50.07) / 8.34]  |
| ***African American Adults****Note:**Formulas should be applied to education levels range 10-20 years; education values outside this range may result in extrapolation errors.* |
| DCCS | 50 + 10 \* {[(DCCS scaled score) − (11.82 – 11.22\*(age/100) + 2.13\*(edu/10) + 0.32\*male)] / [3.04 – 1.17\*(age/100) – 0.44\*(edu/10) + 0.10\*male]} / 1.26 |
| Flanker | 50 + 10 \* {[(Flanker scaled score) − (11.77 − 7.52\*(age/100) + 1.07\*(edu/10) + 0.002\*male)] / [1.76 + 0.18\*(age/100) + 0.22\*(edu/10) + 0.37\*male]} / 1.24 |
| List Sort | 50 + 10 \* {[(List Sort scaled score) − (12.42 − 7.41\*(age/100) + 0.57\*(edu/10) + 0.58\*male)] / [2.14 + 0.43\*(age/100) – 0.15\*(edu/10) + 0.06\*male]} / 1.30 |
| Picture Sequence Memory | 50 + 10 \* {[(Picture Seq Memory scaled score) − (13.73 – 5.86\*(age/100) – 0.67\*(edu/10) – 1.15\*male)] / [3.53 – 1.44\*(age/100) – 0.60\*(edu/10) + 0.72\*male]} / 1.25 |
| Pattern Comparison | 50 + 10 \* {[(Pattern Comp scaled score) − (15.27 − 10.82\*(age/100) − 0.51\*(edu/10) + 0.66\*male)] / [2.50 – 0.72\*(age/100) – 0.24\*(edu/10) + 0.58\*male]} / 1.24 |
| Oral Reading | 50 + 10 \* {[(Reading scaled score) − (6.05 − 1.40\*(age/100) + 3.23\*(edu/10) + 0.17\*male)] / [1.95 + 1.09\*(age/100) – 0.16\*(edu/10) + 0.45\*male]} / 1.26 |
| Picture Vocabulary | 50 + 10 \* {[(Vocabulary scaled score) − (0.56 + 3.11\*(age/100) + 5.81\*(edu/10) – 0.39\*male)] / [2.03 – 0.45\*(age/100) + 0.14\*(edu/10) + 0.20\*male]} / 1.27 |
| Fluid Composite | 50 + 10 \* [((Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Fully-corrected T-Scores) – 50.05) / 6.48]  |
| Crystallized Composite | 50 + 10 \* [((Mean of Oral Reading & Picture Vocabulary Fully-corrected T-Scores) – 50.00) / 9.19]  |
| Total Cognition Composite | 10 + 10 \* [((Mean of Fully-corrected Fluid & Crystallized Composite T-Scores) – 50.02) / 8.68]  |
| ***Hispanic White Adults****Note:**Formulas should be applied to education levels range 10-20 years; education values outside this range may result in extrapolation errors.* |
| DCCS | 50 + 10 \* {[(DCCS scaled score) − (9.17 − 10.11\*(age/100) + 3.51\*(edu/10) + 0.18\*male)] / [2.18 – 0.36\*(age/100) – 0.11\*(edu/10) + 0.06\*male]} / 1.29 |
| Flanker | 50 + 10 \* {[(Flanker scaled score) − (11.56 – 10.32\*(age/100) + 1.68\*(edu/10) + 0.99\*male)] / [2.07 – 1.00\*(age/100) + 0.29\*(edu/10) – 0.46\*male]} / 1.30 |
| List Sort | 50 + 10 \* {[(List Sort scaled score) − (11.27 − 9.35\*(age/100) + 1.27\*(edu/10) + 1.53\*male)] / [2.69 – 0.54\*(age/100) – 0.30\*(edu/10) + 0.30\*male]} / 1.20 |
| Picture Sequence Memory | 50 + 10 \* {[(Picture Seq Memory scaled score) − (11.19 − 8.84\*(age/100) + 1.63\*(edu/10) + 0.39\*male)] / [1.07 + 0.09\*(age/100) + 0.58\*(edu/10) + 0.44\*male]} / 1.27 |
| Pattern Comparison | 50 + 10 \* {[(Pattern Comp scaled score) − (12.15 – 11.01\*(age/100) + 1.71\*(edu/10) – 0.13\*male)] / [1.83 – 0.63\*(age/100) + 0.34\*(edu/10) + 0.02\*male]} / 1.21 |
| Oral Reading | 50 + 10 \* {[(Reading scaled score) − (1.37 + 0.51\*(age/100) + 5.84\*(edu/10) + 0.40\*male)] / [1.66+ 2.08\*(age/100) – 0.33(edu/10) + 0.07\*male]} / 1.22 |
| Picture Vocabulary | 50 + 10 \* {[(Vocabulary scaled score) − (0.74 + 5.17\*(age/100) + 4.91\*(edu/10) + 0.74\*male)] / [1.74 + 1.16\*(age/100) – 0.15\*(edu/10) + 0.07\*male]} / 1.23 |
| Fluid Composite | 50 + 10 \* [((Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Fully-corrected T-Scores) – 50.28) / 6.99]  |
| Crystallized Composite | 50 + 10 \* [((Mean of Oral Reading & Picture Vocabulary Fully-corrected T-Scores) – 50.11) / 8.89]  |
| Total Cognition Composite | 50 + 10 \* [((Mean of Fully-corrected Fluid & Crystallized Composite T-Scores) – 49.83) / 8.46]  |
| ***White/Asian Children****Note:**Formulas should be applied to mother’s education levels range 4-20 years; education values outside this range may result in extrapolation errors.* |
| DCCS | 50 + 10 \* {[(DCCS scaled score) − (−3.61 + 12.13\*(age/10)^0.5 + 0.85\*(edu/10)^3 – 1.08\*log(edu/10)\*(edu/10)^3 − 0.24\*male)] / [0.88 + 0.60\*(age/10) – 0.13\*(edu/10) + 0.08\*male]} / 1.29 |
| Flanker | 50 + 10 \* {[(Flanker scaled score) − (0.09+ 11.66\*(age/10) – 2.71\*(age/10)^2 + 0.60\*(edu/10) + 0.02\*male)] / [8.45 – 7.31\*(age/10)^−0.5 – 2.70\*log(age/10)\*(age/10)^−0.5 + 0.09\*(edu/10) + 0.07\*male]} / 1.28 |
| List Sort | 50 + 10 \* {[(List Sort scaled score) − (11.90 – 3.31\*(age/10)^−2 – 2.09\*log(age/10)\*(age/10)^−2 + 1.17\*(edu/10) − 0.05\*male)] / [2.06 – 0.56\*(age/10)^−2 – 0.39\*log(age/10)\*(age/10)^−2 + 0.16\*(edu/10) + 0.05\*male]} / 1.27 |
| Picture Sequence Memory | 50 + 10 \* {[(Picture Seq Memory scaled score) − (17.14 – 7.68\*(age/10)^−0.5 + 0.56\*(edu/10) − 0.11\*male)] / [1.07 + 0.60\*(age/10) + 0.08\*(edu/10) – 0.001\*male]} / 1.25 |
| Pattern Comparison | 50 + 10 \* {[(Pattern Comp scaled score) − (−2.04 + 11.23\*(age/10)^0.5 + 0.47\*(edu/10) − 0.29\*male)] / [1.31 + 0.71\*log(age/10) + 0.74\*(log(age/10))^2 + 0.03\*(edu/10) + 0.06\*male]} / 1.31 |
| Oral Reading | 50 + 10 \* {[(Reading scaled score) – (7.68 + 0.26\*(age/10)^−2 + 6.78\*log(age/10) + 1.42\*(edu/10) − 0.03\*male)] / [5.48 + 2.46\*(age/10)^−1 – 7.02\*(age/10)^−0.5 + 0.13\*(edu/10) + 0.09\*male]} / 1.30 |
| Picture Vocabulary | 50 + 10 \* {[(Vocabulary scaled score) − (0.52 + 8.27\*(age/10) – 0.58\*(age/10)^3 + 0.98\*(edu/10)^3 – 1.15\*log(edu/10)\*(edu/10)^3 + 0.19\*male)] / [9.71 – 9.04\*(age/10)^−0.5 – 3.56\*log(age/10)\*(age/10)^−0.5 + 0.26\*(edu/10) + 0.15\*male]} / 1.27 |
| Fluid Composite | 50 + 10 \* [((Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Fully-corrected T-Scores) – 50.09) / 5.95]  |
| Crystallized Composite | 50 + 10 \* [((Mean of Oral Reading & Picture Vocabulary Fully-corrected T-Scores) – 49.96) / 8.45]  |
| Total Cognition Composite | 50 + 10 \* [((Mean of Fully-corrected Fluid & Crystallized Composite T-Scores) – 50.08) / 8.11]  |
| ***African American Children****Note:**Formulas should be applied to mother’s education levels range 3-20 years; education values outside this range may result in extrapolation errors.* |
| DCCS | 50 + 10 \* {[(DCCS scaled score) − (9.35 + 5.30\*log(age/10) + 0.42\*(edu/10) − 0.10\*male)] / [1.30 + 0.44\*(age/10) – 0.10\*(edu/10) – 0.07\*male]} / 1.27 |
| Flanker | 50 + 10 \* {[(Flanker scaled score) – (9.51 + 5.53\*log(age/10) + 0.29\*(edu/10) − 0.06\*male)] / [0.48 + 0.86\*(age/10) + 0.07\*(edu/10) + 0.02\*male]} / 1.26 |
| List Sort | 50 + 10 \* {[(List Sort scaled score) − (18.20 − 9.53\*(age/10)^−0.5 + 0.91\*(edu/10) + 0.41\*male)] / [0.86 + 0.57\*(age/10) + 0.16\*(edu/10) + 0.16\*male]} / 1.26 |
| Picture Sequence Memory | 50 + 10 \* {[(Picture Seq Memory scaled score) − (16.40 – 7.70\*(age/10)^−0.5 + 1.03\*(edu/10) − 0.09\*male)] / [1.14 + 0.60\*(age/10) + 0.15\*(edu/10) – 0.02\*male]} / 1.22 |
| Pattern Comparison | 50 + 10 \* {[(Pattern Comp scaled score) − (23.35 + 1.02\*(age/10)^−2 – 15.13\*(age/10)^−0.5 + 0.54\*(edu/10) − 0.29\*male)] / [2.92 – 0.88\*(age/10)^−2 – 0.88\*log(age/10)\*(age/10)^−2 – 0.37\*(edu/10) + 0.06\*male]} / 1.27 |
| Oral Reading | 50 + 10 \* {[(Reading scaled score) − (−0.73 + 10.54\*(age/10) − 1.31\*(age/10)^3 + 1.26\*(edu/10) − 0.01\*male)] / [0.04 + 1.02\*(age/10) + 0.11\*(edu/10) + 0.19\*male]} / 1.31 |
| Picture Vocabulary | 50 + 10 \* {[(Vocabulary scaled score) − (1.90 + 9.41\*(age/10)^2 – 3.82\*(age/10)^3 + 1.58\*(edu/10) + 0.34\*male)] / [0.89 + 0.63\*(age/10) – 0.20\*(edu/10) + 0.22\*male]} / 1.30 |
| Fluid Composite | 50 + 10 \* [((Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Fully-corrected T-Scores) – 50.15) / 6.24]  |
| Crystallized Composite | 50 + 10 \* [((Mean of Oral Reading & Picture Vocabulary Fully-corrected T-Scores) – 49.96) / 8.52]  |
| Total Cognition Composite | 50 + 10 \* [((Mean of Fully-corrected Fluid & Crystallized Composite T-Scores) – 50.37) / 8.30]  |
| ***Hispanic Children****Note:**Formulas should be applied to mother’s education levels range 3-18 years; education values outside this range may result in extrapolation errors.* |
| DCCS | 50 + 10 \* {[(DCCS scaled score) − (−2.27 + 11.50\*(age/10)^0.5 + 0.48\*(edu/10) − 0.05\*male)] / [1.06 + 0.43\*(age/10) – 0.09\*(edu/10) + 0.10\*male]}/ 1.30 |
| Flanker | 50 + 10 \* {[(Flanker scaled score) − (9.58 + 5.25\*log(age/10) + 0.31\*(edu/10) + 0.37\*male)] / [0.91 + 0.72\*(age/10) – 0.41\*(edu/10)^3 + 0.74\*log(edu/10)\*(edu/10)^3 + 0.20\*male]} / 1.31 |
| List Sort | 50 + 10 \* {[(List Sort scaled score) − (17.70 − 8.99\*(age/10)^−0.5 + 1.17\*(edu/10) + 0.26\*male)] / [1.12 + 0.48\*(age/10) – 0.004\*(edu/10) + 0.12\*male]} / 1.24 |
| Picture Sequence Memory | 50 + 10 \* {[(Picture Seq Memory scaled score) − (16.35 – 7.57\*(age/10)^−0.5 + 1.22\*(edu/10) + 0.12\*male)] / [1.44 + 0.75\*(age/10) – 0.43\*(edu/10) + 0.07\*male]} / 1.25 |
| Pattern Comparison | 50 + 10 \* {[(Pattern Comp scaled score) − (−1.06 + 10.96\*(age/10)^0.5 + 0.07\*(edu/10) − 0.21\*male)] / [0.32 + 0.63\*(age/10) + 0.42\*(edu/10) + 0.07\*male]} / 1.29 |
| Oral Reading | 50 + 10 \* {[(Reading scaled score) − (16.38 + 1.43\*(age/10)^−2 – 8.60\*(age/10)^−1 + 0.93\*(edu/10) − 0.03\*male)] / [0.72 + 0.84\*(age/10) – 0.37\*(edu/10)^3 + 0.68\*log(edu/10)\*(edu/10)^3 + 0.03\*male]} / 1.35 |
| Picture Vocabulary | 50 + 10 \* {[(Vocabulary scaled score) − (−3.46 + 11.91\*(age/10)^0.5 + 1.18\*(edu/10) + 0.04\*male)] / [0.67 + 0.56\*(age/10) – 0.10\*(edu/10) + 0.16\*male]} / 1.29 |
| Fluid Composite | 50 + 10 \* [((Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Fully-corrected T-Scores) – 50.06) / 6.18]  |
| Crystallized Composite | 50 + 10 \* [((Mean of Oral Reading & Picture Vocabulary Fully-corrected T-Scores) – 49.99) / 8.58]  |
| Total Cognition Composite | 50 + 10 \* [((Mean of Fully-corrected Fluid & Crystallized Composite T-Scores) – 50.21) / 8.03]  |
| ***Multiracial Children****Note:**Formulas should be applied to mother’s education levels range 8-20 years; education values outside this range may result in extrapolation errors.* |
| DCCS | 50 + 10 \* {[(DCCS scaled score) − (2.23 + 5.94\*(age/10) + 1.31\*(edu/10) + 0.07\*male)] / [0.03 + 0.30\*(age/10) + 0.87\*(edu/10) + 0.02\*male]} / 1.23 |
| Flanker | 50 + 10 \* {[(Flanker scaled score) − (−4.21 + 11.60\*(age/10)^0.5 + 2.12\*(edu/10) + 0.24\*male)] / [1.61 + 0.47\*(age/10) – 0.59\*(edu/10) – 0.19\*male]} / 1.23 |
| List Sort | 50 + 10 \* {[(List Sort scaled score) − (17.96 – 8.02\*(age/10)^−0.5 + 0.33\*(edu/10) + 0.12\*male)] / [1.80 + 0.36\*(age/10) – 0.18\*(edu/10) – 0.28\*male]} / 1.22 |
| Picture Sequence Memory | 50 + 10 \* {[(Picture Seq Memory scaled score) − (5.70 + 4.34\*log(age/10) + 3.23\*(edu/10) + 0.91\*male)] / [1.56 + 0.43\*(age/10) – 0.38\*(edu/10) + 0.16\*male]} / 1.24 |
| Pattern Comparison | 50 + 10 \* {[(Pattern Comp scaled score) − (2.83 + 5.98\*(age/10) + 0.81\*(edu/10) + 0.15\*male)] / [0.69 + 0.47\*(age/10) + 0.03\*(edu/10) + 0.29\*male]} / 1.25 |
| Oral Reading | 50 + 10 \* {[(Reading scaled score) − (7.68 + 5.02\*log(age/10) + 2.11\*(edu/10) + 0.32\*male)] / [−0.87 + 0.86\*(age/10) + 0.93\*(edu/10) + 0.04\*male]} / 1.35 |
| Picture Vocabulary | 50 + 10 \* {[(Vocabulary scaled score) − (7.10 + 5.15\*log(age/10) + 3.01\*(edu/10) − 0.76\*male)] / [0.49 + 0.76\*(age/10) – 0.10\*(edu/10) – 0.16\*male]} / 1.23 |
| Fluid Composite | 50 + 10 \* [((Mean of DCC, Flanker, List Sort, Pic Seq Mem, & Pattern Comparison Fully-corrected T-Scores) – 50.53) / 6.51]  |
| Crystallized Composite | 50 + 10 \* [((Mean of Oral Reading & Picture Vocabulary Fully-corrected T-Scores) – 50.29) / 8.03]  |
| Total Cognition Composite | 50 + 10 \* [((Mean of Fully-corrected Fluid & Crystallized Composite T-Scores) – 50.86) / 8.48]  |

**Note:** Sex: 0 = Female and 1 = Male; log is natural log. For children, “edu” = mother’s years of education.