**Appendix: Supplementary Analyses**

**Article:** Relating Individual Differences in White Matter Pathways to Children’s Arithmetic Fluency: A Spherical Deconvolution Study

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**Fig. 1** Overview of the white matter pathways under study, delineated with spherical deconvolution (left) and classic DTI (right): in red the SLF I, SLF II, and SLF III; in fuchsia the AF; in yellow the IFOF; in cyan the ILF; in green the UF; in blue the CR

*Note:* The tracts for both images were delineated on the same participant. Using classic DTI, the SLF is often not traceable, as was the case for this participant. For purpose of clarity, the corpus callosum is not depicted in this image, yet it was also under study.

Table 1

Results of correlations between the HMOA values (spherical deconvolution) and FA values (DTI) of the AF, SLF, IFOF, CST, CR, and CC, and participants’ scores on the TTA for each column and in total

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **TTA****addition** | **TTA****subtraction** | **TTA****multiplication** | **TTA****division** | **TTA****mix** | **TTA****total** |
|  |  | **HMOA** | **FA** | **HMOA** | **FA** | **HMOA** | **FA** | **HMOA** | **FA** | **HMOA** | **FA** | **HMOA** | **FA** |
| Left AFant | Pearson’s *r* | -.048 | -0.152 | .138 | -.059 | .043 | -.030 | .110 | .078 | -.015 | .013 | .061 | -.023 |
| BF10 | 0.144 | 0.101 | 0.450 | 0.143 | 0.231 | 0.163 | 0.361 | 0.293 | 0.168 | 0.201 | 0.258 | 0.168 |
| *p*-value | .625 | 0.326 | .178 | .706 | .386 | .847 | .231 | .614 | .541 | .932 | .342 | .880 |
| Right AFant | Pearson’s *r* | .053 | -0.001 | .264 | .148 | .128 | -.115 | .121 | .129 | .150 | .055 | .168 | .065 |
| BF10 | 0.246 | 0.181 | 1.670 | 0.489 | 0.415 | 0.109 | 0.394 | 0.419 | 0.499 | 0.248 | 0.586 | 0.266 |
| *p*-value | .361 | 0.996 | .036 | .322 | .196 | .441 | .209 | .387 | .157 | .716 | .129 | .662 |
| Left AFdir | Pearson’s *r* | -.009 | -.029 | .087 | .239 | -.071 | -.037 | .032 | .118 | .073 | .150 | .033 | .116 |
| BF10 | 0.174 | 0.157 | 0.307 | 1.228 | 0.130 | 0.152 | 0.217 | 0.385 | 0.278 | 0.500 | 0.218 | 0.378 |
| *p*-value | .523 | .845 | .280 | .105 | .682 | .807 | .415 | .429 | .314 | .313 | .412 | .438 |
| Right AFdir | Pearson’s *r* | .049 | -.049 | .205 | .177 | -.059 | .032 | .204 | .257 | .165 | .090 | .146 | .136 |
| BF10 | 0.240 | 0.161 | 0.837 | 0.596 | 0.137 | 0.233 | 0.833 | 1.251 | 0.569 | 0.323 | 0.482 | 0.438 |
| *p*-value | .372 | .768 | .084 | .281 | .652 | .849 | .084 | .114 | .134 | .586 | .163 | .408 |
| Left AFpost | Pearson’s *r* | -.087 | -.079 | .035 | .137 | -.007 | .093 | .130 | .167 | .053 | .173 | .040 | .123 |
| BF10 | 0.122 | 0.126 | 0.221 | 0.445 | 0.175 | 0.320 | 0.423 | 0.579 | 0.245 | 0.609 | 0.227 | 0.399 |
| *p*-value | .720 | .599 | .407 | .360 | .520 | .534 | .191 | .262 | .363 | .246 | .395 | .411 |
| Right AFpost | Pearson’s *r* | -.069 | .041 | .007 | .240 | -.025 | .185 | -.038 | .260 | -.025 | .258 | -.032 | .234 |
| BF10 | 0.132 | 0.228 | 0.189 | 1.231 | 0.160 | 0.684 | 0.151 | 1.573 | 0.161 | 1.545 | 0.155 | 1.153 |
| *p*-value | .676 | .785 | .480 | .105 | .567 | .214 | .601 | .078 | .565 | .080 | .586 | .113 |
| Left SLF1 | Pearson’s *r* | .080 | / | .151 | / | .236 | / | .162 | / | .262 | / | .202 | / |
| BF10 | 0.293 | / | 0.505 | / | 1.174 | / | 0.551 | / | 1.628 | / | 0.810 | / |
| *p*-value | .296 | / | .155 | / | .055 | / | .139 | / | .037 | / | .087 | / |
| Right SLF1 | Pearson’s *r* | -.006 | / | .072 | / | -.083 | / | -.050 | / | .051 | / | -.001 | / |
| BF10 | 0.176 | / | 0.277 | / | 0.124 | / | 0.143 | / | 0.242 | / | 0.181 | / |
| *p*-value | .516 | / | .315 | / | .710 | / | .631 | / | .368 | / | .502 | / |
| Left SLF2 | Pearson’s *r* | -.048 | / | -.017 | / | .036 | / | .034 | / | .044 | / | .012 | / |
| BF10 | 0.144 | / | 0.167 | / | 0.222 | / | 0.219 | / | 0.232 | / | 0.194 | / |
| *p*-value | .626 | / | .545 | / | .404 | / | .411 | / | .386 | / | .467 | / |
| Right SLF2 | Pearson’s *r* | -.196 | / | -.133 | / | -.169 | / | .031 | / | -.114 | / | -.119 | / |
| BF10 | 0.083 | / | 0.102 | / | 0.091 | / | 0.216 | / | 0.110 | / | 0.108 | / |
| *p*-value | .906 | / | .814 | / | .871 | / | .417 | / | .777 | / | .787 | / |
| Left SLF3 | Pearson’s *r* | -.044 | / | .188 | / | -.073 | / | .040 | / | -.065 | / | .022 | / |
| BF10 | 0.147 | / | 0.706 | / | 0.129 | / | 0.227 | / | 0.133 | / | 0.205 | / |
| *p*-value | .615 | / | .103 | / | .687 | / | .394 | / | .669 | / | .441 | / |
| Right SLF3 | Pearson’s *r* | -.081 | / | .186 | / | .017 | / | -.027 | / | .058 | / | .039 | / |
| BF10 | 0.125 | / | 0.689 | / | 0.199 | / | 0.159 | / | 0.253 | / | 0.226 | / |
| *p*-value | .707 | / | .106 | / | .456 | / | .572 | / | .350 | / | .397 | / |
| Left IFOF | Pearson’s *r* | -.068 | -.091 | .213 | .217 | .012 | -.079 | .069 | .082 | .111 | .135 | .087 | .077 |
| BF10 | 0.132 | 0.120 | 0.910 | 0.947 | 0.194 | .0126 | 0.271 | 0.296 | 0.363 | 0.440 | 0.307 | 0.286 |
| *p*-value | .649 | .542 | .151 | .144 | .935 | .596 | .647 | .585 | .459 | .365 | .560 | .609 |
| Right IFOF | Pearson’s *r* | -.066 | -.053 | .130 | .160 | -.031 | .037 | -.110 | .141 | -.062 | .082 | -.031 | .095 |
| BF10 | 0.133 | 0.141 | 0.422 | 0.543 | 0.156 | 0.223 | 0.112 | 0.461 | 0.136 | 0.296 | 0.156 | 0.324 |
| *p*-value | .661 | .722 | .384 | .283 | .837 | .806 | .463 | .345 | .681 | .585 | .837 | .525 |
| Left CST | Pearson’s *r* | .114 | -.018 | .150 | .081 | .097 | .020 | .030 | .035 | .225 | .080 | .137 | .049 |
| BF10 | 0.374 | 0.168 | 0.494 | 0.295 | 0.330 | 0.204 | 0.216 | 0.222 | 1.026 | 0.294 | 0.447 | 0.241 |
| *p*-value | .450 | .905 | .321 | .593 | .521 | .895 | .842 | .817 | .132 | .597 | .363 | .748 |
| Right CST | Pearson’s *r* | .098 | .014 | .182 | .205 | .246 | .174 | .116 | -.039 | .180 | .168 | .184 | .113 |
| BF10 | 0.331 | 0.198 | 0.663 | 0.830 | 1.293 | 0.615 | 0.378 | 0.152 | 0.647 | 0.580 | 0.670 | 0.370 |
| *p*-value | .519 | .927 | .225 | .171 | .100 | .246 | .444 | .798 | .231 | .265 | .222 | .455 |
| Left CR | Pearson’s *r* | -.123 | .023 | -.211 | .258 | -.386 | .078 | -.124 | .047 | -.286 | .146 | -.247 | .131 |
| BF10 | 0.108 | 0.208 | 0.081 | 1.503 | 0.052 | 0.289 | 0.107 | 0.238 | 0.066 | 0.481 | 0.073 | 0.423 |
| *p*-value | .417 | .878 | .160 | .083 | .008 | .607 | .411 | .757 | .054 | .332 | .098 | .387 |
| Right CR | Pearson’s *r* | .091 | -.014 | .210 | .149 | .087 | -.018 | -.009 | -.126 | .139 | .067 | .116 | .011 |
| BF10 | 0.315 | 0.171 | 0.872 | 0.491 | 0.309 | 0.168 | 0.176 | 0.107 | 0.453 | 0.270 | 0.378 | 0.194 |
| *p*-value | .550 | .926 | .161 | .324 | .564 | .908 | .953 | .403 | .357 | .658 | .444 | .944 |
| CC Forc. Minor | Pearson’s *r* | .137 | -.026 | .210 | .096 | .157 | .045 | .187 | .183 | .335 | .120 | .237 | .106 |
| BF10 | 0.446 | 0.159 | 0.883 | 0.326 | 0.528 | 0.235 | 0.697 | 0.671 | 4.718 | 0.389 | 1.193 | 0.352 |
| *p*-value | .359 | .860 | .157 | .521 | .293 | .761 | .209 | .219 | .021 | .423 | .109 | .476 |
| CC Forc. Major | Pearson’s *r* | -.104 | -.207 | -.056 | -.033 | -.146 | -.089 | -.025 | .105 | .009 | -.055 | -.065 | -.047 |
| BF10 | 0.114 | 0.080 | 0.139 | 0.155 | 0.098 | 0.121 | 0.161 | 0.349 | 0.190 | 0.139 | 0.133 | 0.145 |
| *p*-value | .487 | .162 | .709 | 0.827 | .327 | .552 | .869 | .481 | .954 | .712 | .662 | .754 |

*Note:* Parts of the SLF were only traceable in 5 out of 47 participants with DTI, making the correlation analyses with the FA index impossible.