

**Table S1.** Correlation Matrices in the Models Tested in Study 1.

|                   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8 |
|-------------------|---------|---------|---------|---------|---------|---------|---------|---|
| 1. Age            | 1       |         |         |         |         |         |         |   |
| 2. g factor score | .661 ** | 1       |         |         |         |         |         |   |
| 3. g × age        | .693 ** | .943 ** | 1       |         |         |         |         |   |
| 4. Speed          | .606 ** | .212 ** | .311 ** | 1       |         |         |         |   |
| 5. Control        | .577 ** | .244 ** | .343 ** | .872 ** | 1       |         |         |   |
| 6. Verbal WM      | .447 ** | .335 ** | .359 ** | .354 ** | .328 ** | 1       |         |   |
| 7. Visual WM      | .577 ** | .951 ** | .926 ** | .184 ** | .214 ** | .296 ** | 1       |   |
| 8. Gf             | .872 ** | .770 ** | .768 ** | .510 ** | .490 ** | .469 ** | .643 ** | 1 |

\*  $p < .05$ , \*\*  $p < .01$ .

**Table S2.** Correlation Matrices in the Models Tested in Study 2.

|                   | 1       | 2       | 3       | 4       | 5       | 6     | 7       | 8       | 9       | 10      | 11 |
|-------------------|---------|---------|---------|---------|---------|-------|---------|---------|---------|---------|----|
| 1. Age            | 1       |         |         |         |         |       |         |         |         |         |    |
| 2. g factor score | .758 ** | 1       |         |         |         |       |         |         |         |         |    |
| 3. g × age        | .795 ** | .985 ** | 1       |         |         |       |         |         |         |         |    |
| 4. Speed          | .395 ** | .137 *  | .197 ** | 1       |         |       |         |         |         |         |    |
| 5. Control        | .143 *  | −.056   | .003    | .687 ** | 1       |       |         |         |         |         |    |
| 6. Inhibition     | .287 ** | .089    | .146 *  | .730 ** | .856 ** | 1     |         |         |         |         |    |
| 7. WM             | .575 ** | .624 ** | .624 ** | .112    | −.035   | .105  | 1       |         |         |         |    |
| 8. Deductive      | .361 ** | .409 ** | .411 ** | .219 ** | .066    | .091  | .292 ** | 1       |         |         |    |
| 9. Inductive      | .588 ** | .766 ** | .741 ** | .063    | −.132 * | −.001 | .531 ** | .321 ** | 1       |         |    |
| 10. Awareness-sim | .509 ** | .779 ** | .761 ** | .058    | −.052   | .042  | .474 ** | .349 ** | .563 ** | 1       |    |
| 11. Awareness-dif | .490 ** | .746 ** | .734 ** | .046    | −.069   | .013  | .398 ** | .232 ** | .480 ** | .505 ** | 1  |

\*  $p < .05$ , \*\*  $p < .01$ .

**Table S3.** Correlation Matrices in the Models Tested in Study 3.

|                    | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      | 11      | 12 |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| 1. Age             | 1       |         |         |         |         |         |         |         |         |         |         |    |
| 2. g factor score  | .834 ** | 1       |         |         |         |         |         |         |         |         |         |    |
| 3. g × age         | .852 ** | .970 ** | 1       |         |         |         |         |         |         |         |         |    |
| 4. Speed           | .596 ** | .759 ** | .703 ** | 1       |         |         |         |         |         |         |         |    |
| 5. Control         | .497 ** | .635 ** | .622 ** | .374 ** | 1       |         |         |         |         |         |         |    |
| 6. Inhibition      | .495 ** | .600 ** | .585 ** | .408 ** | .334 ** | 1       |         |         |         |         |         |    |
| 7. WM              | .576 ** | .631 ** | .633 ** | .350 ** | .350 ** | .273 ** | 1       |         |         |         |         |    |
| 8. Raven A         | .393 ** | .459 ** | .458 ** | .279 ** | .218 ** | .059    | .239 ** | 1       |         |         |         |    |
| 9. Raven B         | .538 ** | .645 ** | .626 ** | .428 ** | .355 ** | .237 ** | .373 ** | .439 ** | 1       |         |         |    |
| 10. Raven C        | .511 ** | .591 ** | .611 ** | .389 ** | .324 ** | .169 ** | .401 ** | .406 ** | .543 ** | 1       |         |    |
| 11. Awareness-Perc | .386 ** | .466 ** | .448 ** | .361 ** | .170 ** | .185 ** | .330 ** | .183 ** | .226 ** | .193 ** | 1       |    |
| 12. Awareness-Infr | .411 ** | .541 ** | .548 ** | .356 ** | .293 ** | .195 ** | .336 ** | .274 ** | .319 ** | .316 ** | .302 ** | 1  |

\*  $p < .05$ , \*\*  $p < .01$ .**Table S4.** Correlation Matrices in the Models Tested in Study 4.

|                   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      | 11      | 12      | 13 | 14 | 15 |
|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|----|----|
| 1. Age            | 1       |         |         |         |         |         |         |         |         |         |         |         |    |    |    |
| 2. g factor score | .648 ** | 1       |         |         |         |         |         |         |         |         |         |         |    |    |    |
| 3. g × age        | .632 ** | .983 ** | 1       |         |         |         |         |         |         |         |         |         |    |    |    |
| 4. Speed          | .563 ** | .370 ** | .351 ** | 1       |         |         |         |         |         |         |         |         |    |    |    |
| 5. Control        | .694 ** | .641 ** | .611 ** | .560 ** | 1       |         |         |         |         |         |         |         |    |    |    |
| 6. Conc. Control  | .552 ** | .344 ** | .346 ** | .589 ** | .546 ** | 1       |         |         |         |         |         |         |    |    |    |
| 7. PWMC           | .081    | .160 ** | .154 ** | .003    | .093    | .023    | 1       |         |         |         |         |         |    |    |    |
| 8. NWMC           | .255 ** | .342 ** | .337 ** | .200 ** | .278 ** | .142 ** | .092    | 1       |         |         |         |         |    |    |    |
| 9. NSWMC          | .271 ** | .283 ** | .284 ** | .204 ** | .272 ** | .209 ** | .089    | .458 ** | 1       |         |         |         |    |    |    |
| 10. Inductive L1  | .688 ** | .789 ** | .757 ** | .421 ** | .611 ** | .407 ** | .070    | .312 ** | .309 ** | 1       |         |         |    |    |    |
| 11. Inductive L2  | .566 ** | .657 ** | .659 ** | .409 ** | .512 ** | .367 ** | .057    | .286 ** | .277 ** | .614 ** | 1       |         |    |    |    |
| 12. Inductive L3  | .493 ** | .591 ** | .628 ** | .277 ** | .406 ** | .283 ** | .039    | .250 ** | .182 ** | .446 ** | .404 ** | 1       |    |    |    |
| 13. Deductive L1  | .439 ** | .750 ** | .734 ** | .297 ** | .410 ** | .292 ** | .136 ** | .245 ** | .249 ** | .522 ** | .370 ** | .328 ** | 1  |    |    |

|                  |         |         |         |         |         |         |      |         |         |         |         |         |         |         |   |
|------------------|---------|---------|---------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|
| 14. Deductive L2 | .523 ** | .683 ** | .683 ** | .330 ** | .505 ** | .349 ** | .070 | .273 ** | .241 ** | .550 ** | .461 ** | .414 ** | .446 ** | 1       |   |
| 15. Deductive L3 | .296 ** | .042    | .038    | .219 ** | .218 ** | .233 ** | .019 | .143 ** | .135 ** | .236 ** | .224 ** | .186 ** | .077    | .243 ** | 1 |

\*  $p < .05$ , \*\*  $p < .01$ .

**Table S5.** Correlation Matrices in the Models Tested in Study 5.

|                   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      | 11      | 12      | 13      | 14      | 15 |
|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| 1. Age            | 1       |         |         |         |         |         |         |         |         |         |         |         |         |         |    |
| 2. g factor score | .810 ** | 1       |         |         |         |         |         |         |         |         |         |         |         |         |    |
| 3. g × age        | .843 ** | .990 ** | 1       |         |         |         |         |         |         |         |         |         |         |         |    |
| 4. Speed          | .566 ** | .670 ** | .644 ** | 1       |         |         |         |         |         |         |         |         |         |         |    |
| 5. Control        | .427 ** | .480 ** | .454 ** | .453 ** | 1       |         |         |         |         |         |         |         |         |         |    |
| 6. Div. Attention | .608 ** | .624 ** | .605 ** | .534 ** | .660 ** | 1       |         |         |         |         |         |         |         |         |    |
| 7. BDS            | .492 ** | .742 ** | .745 ** | .346 ** | .256 ** | .317 ** | 1       |         |         |         |         |         |         |         |    |
| 8. Maths L1       | .516 ** | .609 ** | .599 ** | .370 ** | .365 ** | .441 ** | .384 ** | 1       |         |         |         |         |         |         |    |
| 9. Maths L2       | .704 ** | .789 ** | .791 ** | .404 ** | .347 ** | .516 ** | .498 ** | .684 ** | 1       |         |         |         |         |         |    |
| 10. Maths L3      | .773 ** | .848 ** | .857 ** | .463 ** | .448 ** | .565 ** | .529 ** | .598 ** | .836 ** | 1       |         |         |         |         |    |
| 11. Maths L4      | .800 ** | .854 ** | .872 ** | .468 ** | .344 ** | .524 ** | .526 ** | .591 ** | .834 ** | .858 ** | 1       |         |         |         |    |
| 12. Raven L1      | .122 *  | .190 ** | .186 ** | .120 *  | .159 ** | .121 *  | .132 *  | .333 ** | .291 ** | .207 ** | .201 ** | 1       |         |         |    |
| 13. Raven L2      | .335 ** | .395 ** | .398 ** | .206 ** | .228 ** | .308 ** | .289 ** | .482 ** | .589 ** | .494 ** | .460 ** | .406 ** | 1       |         |    |
| 14. Raven L3      | .497 ** | .551 ** | .557 ** | .286 ** | .283 ** | .430 ** | .376 ** | .649 ** | .692 ** | .606 ** | .617 ** | .361 ** | .683 ** | 1       |    |
| 15. Raven L4      | .683 ** | .763 ** | .783 ** | .374 ** | .322 ** | .461 ** | .532 ** | .547 ** | .741 ** | .796 ** | .770 ** | .189 ** | .489 ** | .642 ** | 1  |

\*  $p < .05$ , \*\*  $p < .01$ .

**Table S6.** Correlation Matrices in the Models Tested in Study 6.

|                    | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      | 11      | 12 |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| 1. Grade           | 1       |         |         |         |         |         |         |         |         |         |         |    |
| 2. g factor score  | .466 ** | 1       |         |         |         |         |         |         |         |         |         |    |
| 3. g $\times$ age  | .342 ** | .839 ** | 1       |         |         |         |         |         |         |         |         |    |
| 4. Causal P        | .412 ** | .568 ** | .453 ** | 1       |         |         |         |         |         |         |         |    |
| 5. Mathematical P  | .422 ** | .813 ** | .677 ** | .462 ** | 1       |         |         |         |         |         |         |    |
| 6. Spatial P       | .350 ** | .772 ** | .650 ** | .410 ** | .495 ** | 1       |         |         |         |         |         |    |
| 7. Deductive P     | .338 ** | .306 ** | .166 ** | .414 ** | .368 ** | .267 ** | 1       |         |         |         |         |    |
| 8. Causal SE       | .209 ** | .264 ** | .267 ** | .385 ** | .175 ** | .133 ** | .160 ** | 1       |         |         |         |    |
| 9. Mathematical SE | .277 ** | .718 ** | .611 ** | .272 ** | .649 ** | .339 ** | .200 ** | .217 ** | 1       |         |         |    |
| 10. Spatial SE     | .208 ** | .577 ** | .554 ** | .182 ** | .228 ** | .469 ** | .135 ** | .135 ** | .229 ** | 1       |         |    |
| 11. Deductive SE   | .215 ** | .123 ** | .060    | .255 ** | .198 ** | .140 ** | .593 ** | .227 ** | .166 ** | .137 ** | 1       |    |
| 12. Cognizance SIM | .414 ** | .572 ** | .328 ** | .418 ** | .468 ** | .327 ** | .378 ** | .140 ** | .309 ** | .181 ** | .203 ** | 1  |

\*  $p < .05$ , \*\*  $p < .01$ .**Table S7.** Correlation Matrices in the Models Tested in study 7.

|                              | 1        | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10 |
|------------------------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| 1. Age                       | 1        |         |         |         |         |         |         |         |         |    |
| 2. g factor score            | -.068    | 1       |         |         |         |         |         |         |         |    |
| 3. g $\times$ age            | -.156 ** | .818 ** | 1       |         |         |         |         |         |         |    |
| 4. Speed                     | -.660 ** | .586 ** | .729 ** | 1       |         |         |         |         |         |    |
| 5. Perceptual Discrimination | -.604 ** | .652 ** | .785 ** | .902 ** | 1       |         |         |         |         |    |
| 6. Att. Control              | -.735 ** | .537 ** | .614 ** | .768 ** | .772 ** | 1       |         |         |         |    |
| 7. Conc. Control             | -.700 ** | .562 ** | .694 ** | .826 ** | .831 ** | .809 ** | 1       |         |         |    |
| 8. STM                       | -.630 ** | .350 ** | .423 ** | .642 ** | .600 ** | .649 ** | .661 ** | 1       |         |    |
| 9. WM                        | -.375 ** | .174 ** | .217 ** | .391 ** | .363 ** | .374 ** | .368 ** | .552 ** | 1       |    |
| 10. Reason Full Test         | -.704 ** | .261 ** | .308 ** | .612 ** | .598 ** | .647 ** | .652 ** | .590 ** | .307 ** | 1  |

\*  $p < .05$ , \*\*  $p < .01$ .

**Table S8.** Correlation Matrices in the Models Tested in Study 8.

|                                    | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      | 11      | 12      | 13 |
|------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| 1. Age                             | 1       |         |         |         |         |         |         |         |         |         |         |         |    |
| 2. g factor score                  | .033    | 1       |         |         |         |         |         |         |         |         |         |         |    |
| 3. g × age                         | .033    | .936 ** | 1       |         |         |         |         |         |         |         |         |         |    |
| 4. Spatial R                       | −.033   | .675 ** | .639 ** | 1       |         |         |         |         |         |         |         |         |    |
| 5. Deductive R                     | −.062   | .136 *  | .133 *  | .379 ** | 1       |         |         |         |         |         |         |         |    |
| 6. Social R                        | .397 ** | .001    | .012    | .108    | .115    | 1       |         |         |         |         |         |         |    |
| 7. Spatial SE                      | .130 *  | .905 ** | .858 ** | .484 ** | .234 ** | .068    | 1       |         |         |         |         |         |    |
| 8. Deductive SE                    | .155 ** | .310 ** | .323 ** | .260 ** | .287 ** | .086    | .414 ** | 1       |         |         |         |         |    |
| 9. Social SE                       | .232 ** | .213 ** | .254 ** | .091    | .082    | .320 ** | .320 ** | .426 ** | 1       |         |         |         |    |
| 10. Spatial SR                     | −.087   | .246 ** | .222 ** | .126 *  | .119 *  | −.012   | .289 ** | .191 ** | .169 ** | 1       |         |         |    |
| 11. Deductive SR                   | −.074   | .033    | .021    | −.041   | .018    | .052    | .042    | .023    | .116    | .453 ** | 1       |         |    |
| 12. Social SR                      | .169 ** | −.114   | −.101   | .014    | .156 ** | .230 ** | .085    | .152 *  | .217 ** | .349 ** | .212 ** | 1       |    |
| 13. Representational efficiency SR | −.064   | .029    | .026    | −.064   | .005    | .059    | .058    | .125 *  | .082    | .474 ** | .504 ** | .190 ** | 1  |

\*  $p < .05$ , \*\*  $p < .01$ .