**Supplementary Materials**

Summary: *Tables S1 and S2 contain the best-fit models for the RT data from the semantic and orthographic control sets. Table S1 illustrates the comparison between older L1 and older L2 speakers, Table S2 illustrates the effects of aging on L1 and on L2 speakers’ RT data for the control items.*

Table S1: *The best-fit model for the RT data from the semantic and orthographic sets for older participants*.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Semantic set | Orthographic set |
| Random effects:  | Name  | Variance | SD | Variance | SD |
| subject  | (Intercept)  | 0.0175 | 0.1323 | 0.0160 | 0.1266 |
| item  | (Intercept)  | 0.0059 | 0.0771 | 0.0031 | 0.0558 |
| Residual  |    | 0.0241 | 0.1553 | 0.0268 | 0.1636 |
| Fixed effects:  |  | SE | t-value |  | SE | t-value |
| Intercept  | 6.3940 | 0.0296 | 215.91 | 6.4020 | 0.0269 | 238.05 |
| trial number  | -0.0001 | 0.00003 | -1.75 | -0.0001 | 0.00004 | -1.40 |
| memory score  | -0.0038 | 0.0052 | -0.73 | -0.0042 | 0.0050 | -0.82 |
| Relevelled for L1:  |   |   |   |  |  |  |
| prime type [identity-related]  | -0.0718 | 0.0138 | -5.19 | -0.1136 | 0.0143 | -7.93 |
| prime type [identity-unrelated]  | -0.0906 | 0.0137 | -6.61 | -0.1014 | 0.0143 | -7.12 |
| prime type [related-unrelated]  | -0.0189 | 0.0139 | -1.36 | 0.0121 | 0.0144 | 0.84 |
| Relevelled for L2:  |   |   |   |  |  |  |
| prime type [identity-related]  | -0.0630 | 0.0133 | -4.73 | -0.0871 | 0.0141 | -6.17 |
| prime type [identity-unrelated]  | -0.0713 | 0.0133 | -5.35 | -0.0880 | 0.0140 | -6.27 |
| prime type [related-unrelated]  | -0.0083 | 0.0134 | -0.62 | -0.0008 | 0.0141 | -0.06 |
| Effects of language group (L1/L2) on RTs:  |   |   |  |  |  |
| identity condition  | 0.2339 | 0.0355 | 6.59 | 0.2215 | 0.0345 | 6.43 |
| related condition | 0.2251 | 0.0355 | 6.34 | 0.1951 | 0.0345 | 5.66 |
| unrelated condition  | 0.2146 | 0.0355 | 6.04 | 0.2080 | 0.0345 | 6.04 |
| Effects of language group (L1/L2) on prime type:  |   |  |  |  |
| prime type [identity-related]  | 0.0088 | 0.0189 | 0.46 | 0.0265 | 0.0198 | 1.34 |
| prime type [identity-unrelated]  | 0.0193 | 0.0189 | 1.02 | 0.0135 | 0.0198 | 0.68 |
| prime type [related-unrelated]  | 0.0106 | 0.0189 | 0.56 | -0.0130 | 0.0198 | -0.66 |

Table S2: *The best-fit model for the RT data from the semantic and orthographic sets*.

L1 groups

|  |  |  |
| --- | --- | --- |
|  | Semantic set | Orthographic Set |
| Fixed effects:  |  | SE | t-value |  | SE | t-value |
| Intercept  | 6.3730 | 0.0300 | 212.34 | 6.3690 | 0.0282 | 225.60 |
| Effects of age group (younger/older) on RTs:  |   |  |  |  |
| identity condition  | -0.0316 | 0.0374 | -0.85 | 0.0444 | 0.0364 | 1.22 |
| related condition | -0.0204 | 0.0373 | -0.55 | 0.0490 | 0.0364 | 1.35 |
| unrelated condition  | -0.0362 | 0.0373 | -0.97 | 0.0442 | 0.0364 | 1.22 |
| Effects of age group (younger/older) on prime type:  |  |  |  |
| prime type [identity-related]  | 0.0113 | 0.0193 | 0.58 | 0.0046 | 0.0201 | 0.23 |
| prime type [identity-unrelated]  | 0.0045 | 0.0194 | 0.23 | 0.0001 | 0.0200 | 0.01 |
| prime type [related-unrelated]  | 0.0158 | 0.0192 | 0.82 | 0.0048 | 0.0200 | 0.24 |

L2 groups

|  |  |  |
| --- | --- | --- |
|  | Semantic set | Orthographic set |
| Fixed effects:  |  | SE | t-value |  | SE | t-value |
| Intercept  | 6.5170 | 0.0339 | 192.16 | 6.5230 | 0.0312 | 208.80 |
| Effects of age group (younger/older) on RTs:  |   |  |  |  |
| identity condition  | 0.1060 | 0.0374 | 2.84 | 0.1003 | 0.0371 | 2.70 |
| related condition | 0.0821 | 0.0373 | 2.20 | 0.1024 | 0.0370 | 2.77 |
| unrelated condition  | 0.0880 | 0.0373 | 2.36 | 0.0845 | 0.0370 | 2.29 |
| Effects of age group (younger/older) on prime type: |
| prime type [identity-related]  | 0.0239 | 0.0204 | 1.17 | -0.0021 | 0.0205 | -0.10 |
| prime type [identity-unrelated]  | 0.0180 | 0.0204 | 0.88 | 0.0158 | 0.0205 | 0.77 |
| prime type [related-unrelated]  | -0.0059 | 0.0203 | -0.29 | 0.0179 | 0.0204 | 0.88 |