**Supplementary Materials (a): Full Model Output for tables in which only fixed effects and all significant interactions were presented in the manuscript due to length restrictions**

**Table 7**

*Results of the Mixed-Effects Regression Model at the Spillover Regions (pro+1, pro+2, pro+3) (n = 78)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Predictors* | *Estimate* | *SE* | *df* | *t value* | *P* |  |
| (Intercept) | 2.486 | 0.011 | 76.080 | 229.909 | 0.000 | \*\*\* |
| Consistency1 | -0.005 | 0.002 | 69.480 | -2.207 | 0.031 | \* |
| Group1 | 0.061 | 0.011 | 71.830 | 5.711 | 0.000 | \*\*\* |
| Region1 | 0.002 | 0.002 | 7573.000 | 1.021 | 0.307 |  |
| Region2 | -0.013 | 0.002 | 7573.000 | -6.164 | 0.000 | \*\*\* |
| VerbType1 | 0.008 | 0.003 | 49.300 | 2.679 | 0.010 | \*\* |
| PPVT | -0.012 | 0.011 | 70.070 | -1.129 | 0.263 |  |
| CS | -0.002 | 0.011 | 70.050 | -0.201 | 0.841 |  |
| Consistency1:Group1 | 0.000 | 0.002 | 69.460 | -0.114 | 0.909 |  |
| Consistency1:Region1 | -0.002 | 0.002 | 7573.000 | -0.999 | 0.318 |  |
| Consistency1:Region2 | 0.002 | 0.002 | 7573.000 | 0.877 | 0.380 |  |
| Group1:Region1 | -0.001 | 0.002 | 7573.000 | -0.444 | 0.657 |  |
| Group1:Region2 | -0.009 | 0.002 | 7573.000 | -4.113 | 0.000 | \*\*\* |
| Consistency1:VerbType1 | 0.000 | 0.001 | 7619.000 | 0.215 | 0.829 |  |
| Group1:VerbType1 | 0.001 | 0.002 | 50.840 | 0.269 | 0.789 |  |
| Region1:VerbType1 | 0.000 | 0.002 | 7573.000 | 0.196 | 0.845 |  |
| Region2:VerbType1 | 0.001 | 0.002 | 7573.000 | 0.444 | 0.657 |  |
| Consistency1:PPVT | -0.007 | 0.002 | 71.850 | -3.180 | 0.002 | \*\* |
| Group1:PPVT | 0.006 | 0.011 | 70.070 | 0.519 | 0.606 |  |
| Region1:PPVT | 0.003 | 0.002 | 7573.000 | 1.331 | 0.183 |  |
| Region2:PPVT | 0.002 | 0.002 | 7573.000 | 1.006 | 0.314 |  |
| VerbType1:PPVT | 0.002 | 0.002 | 69.620 | 1.093 | 0.278 |  |
| Consistency1:CS | -0.002 | 0.002 | 71.620 | -0.737 | 0.463 |  |
| Group1:CS | -0.014 | 0.011 | 70.050 | -1.314 | 0.193 |  |
| Region1:CS | 0.002 | 0.002 | 7573.000 | 0.887 | 0.375 |  |
| Region2:CS | 0.001 | 0.002 | 7573.000 | 0.277 | 0.782 |  |
| VerbType1:CS | 0.000 | 0.002 | 69.040 | 0.006 | 0.995 |  |
| PPVT:CS | 0.016 | 0.012 | 70.090 | 1.328 | 0.188 |  |
| Consistency1:Group1:Region1 | -0.002 | 0.002 | 7573.000 | -0.937 | 0.349 |  |
| Consistency1:Group1:Region2 | 0.001 | 0.002 | 7573.000 | 0.401 | 0.689 |  |
| Consistency1:Group1:VerbType1 | -0.004 | 0.001 | 7622.000 | -2.808 | 0.005 | \*\* |
| Consistency1:Region1:VerbType1 | -0.003 | 0.002 | 7573.000 | -1.580 | 0.114 |  |
| Consistency1:Region2:VerbType1 | -0.001 | 0.002 | 7573.000 | -0.611 | 0.541 |  |
| Group1:Region1:VerbType1 | 0.000 | 0.002 | 7573.000 | 0.137 | 0.891 |  |
| Group1:Region2:VerbType1 | 0.000 | 0.002 | 7573.000 | 0.018 | 0.986 |  |
| Consistency1:Group1:PPVT | -0.005 | 0.002 | 71.550 | -2.038 | 0.045 | \* |
| Consistency1:Region1:PPVT | 0.003 | 0.002 | 7573.000 | 1.154 | 0.248 |  |
| Consistency1:Region2:PPVT | -0.001 | 0.002 | 7573.000 | -0.670 | 0.503 |  |
| Group1:Region1:PPVT | 0.002 | 0.002 | 7573.000 | 1.030 | 0.303 |  |
| Group1:Region2:PPVT | 0.002 | 0.002 | 7573.000 | 0.989 | 0.323 |  |
| Consistency1:VerbType1:PPVT | -0.002 | 0.002 | 7431.000 | -0.958 | 0.338 |  |
| Group1:VerbType1:PPVT | 0.004 | 0.002 | 69.620 | 1.887 | 0.063 | . |
| Region1:VerbType1:PPVT | 0.003 | 0.002 | 7573.000 | 1.395 | 0.163 |  |
| Region2:VerbType1:PPVT | -0.001 | 0.002 | 7573.000 | -0.627 | 0.531 |  |
| Consistency1:Group1:CS | 0.000 | 0.002 | 71.020 | 0.070 | 0.945 |  |
| Consistency1:Region1:CS | -0.001 | 0.002 | 7573.000 | -0.233 | 0.816 |  |
| Consistency1:Region2:CS | 0.000 | 0.002 | 7573.000 | -0.007 | 0.994 |  |
| Group1:Region1:CS | 0.000 | 0.002 | 7573.000 | 0.071 | 0.943 |  |
| Group1:Region2:CS | 0.002 | 0.002 | 7573.000 | 0.833 | 0.405 |  |
| Consistency1:VerbType1:CS | 0.000 | 0.002 | 7372.000 | 0.207 | 0.836 |  |
| Group1:VerbType1:CS | -0.002 | 0.002 | 69.070 | -0.899 | 0.372 |  |
| Region1:VerbType1:CS | 0.000 | 0.002 | 7573.000 | -0.061 | 0.952 |  |
| Region2:VerbType1:CS | -0.002 | 0.002 | 7573.000 | -0.873 | 0.383 |  |
| Consistency1:PPVT:CS | 0.002 | 0.002 | 70.680 | 0.859 | 0.393 |  |
| Group1:PPVT:CS | -0.001 | 0.012 | 70.090 | -0.088 | 0.930 |  |
| Region1:PPVT:CS | 0.001 | 0.002 | 7573.000 | 0.290 | 0.771 |  |
| Region2:PPVT:CS | -0.001 | 0.002 | 7573.000 | -0.361 | 0.718 |  |
| VerbType1:PPVT:CS | -0.003 | 0.002 | 70.150 | -1.117 | 0.268 |  |
| Consistency1:Group1:Region1:VerbType1 | -0.001 | 0.002 | 7573.000 | -0.563 | 0.574 |  |
| Consistency1:Group1:Region2:VerbType1 | -0.001 | 0.002 | 7573.000 | -0.688 | 0.491 |  |
| Consistency1:Group1:Region1:PPVT | 0.002 | 0.002 | 7573.000 | 0.785 | 0.433 |  |
| Consistency1:Group1:Region2:PPVT | 0.000 | 0.002 | 7573.000 | -0.027 | 0.978 |  |
| Consistency1:Group1:VerbType1:PPVT | -0.004 | 0.002 | 7119.000 | -2.503 | 0.012 | \* |
| Consistency1:Region1:VerbType1:PPVT | -0.002 | 0.002 | 7573.000 | -0.913 | 0.361 |  |
| Consistency1:Region2:VerbType1:PPVT | 0.003 | 0.002 | 7573.000 | 1.507 | 0.132 |  |
| Group1:Region1:VerbType1:PPVT | 0.002 | 0.002 | 7573.000 | 0.760 | 0.447 |  |
| Group1:Region2:VerbType1:PPVT | 0.003 | 0.002 | 7573.000 | 1.202 | 0.229 |  |
| Consistency1:Group1:Region1:CS | 0.001 | 0.002 | 7573.000 | 0.562 | 0.574 |  |
| Consistency1:Group1:Region2:CS | -0.001 | 0.002 | 7573.000 | -0.539 | 0.590 |  |
| Consistency1:Group1:VerbType1:CS | 0.003 | 0.002 | 6697.000 | 2.108 | 0.035 | \* |
| Consistency1:Region1:VerbType1:CS | 0.001 | 0.002 | 7573.000 | 0.516 | 0.606 |  |
| Consistency1:Region2:VerbType1:CS | -0.001 | 0.002 | 7573.000 | -0.524 | 0.600 |  |
| Group1:Region1:VerbType1:CS | 0.000 | 0.002 | 7573.000 | -0.146 | 0.884 |  |
| Group1:Region2:VerbType1:CS | -0.002 | 0.002 | 7573.000 | -1.109 | 0.268 |  |
| Consistency1:Group1:PPVT:CS | 0.001 | 0.002 | 70.680 | 0.324 | 0.747 |  |
| Consistency1:Region1:PPVT:CS | 0.000 | 0.002 | 7573.000 | 0.112 | 0.911 |  |
| Consistency1:Region2:PPVT:CS | 0.000 | 0.002 | 7573.000 | -0.095 | 0.924 |  |
| Group1:Region1:PPVT:CS | -0.002 | 0.002 | 7573.000 | -0.781 | 0.435 |  |
| Group1:Region2:PPVT:CS | 0.002 | 0.002 | 7573.000 | 0.646 | 0.518 |  |
| Consistency1:VerbType1:PPVT:CS | -0.004 | 0.002 | 7635.000 | -2.230 | 0.026 | \* |
| Group1:VerbType1:PPVT:CS | -0.001 | 0.002 | 70.160 | -0.555 | 0.581 |  |
| Region1:VerbType1:PPVT:CS | 0.001 | 0.002 | 7573.000 | 0.492 | 0.623 |  |
| Region2:VerbType1:PPVT:CS | 0.001 | 0.002 | 7573.000 | 0.364 | 0.716 |  |
| Consistency1:Group1:Region1:VerbType1:PPVT | 0.000 | 0.002 | 7573.000 | -0.036 | 0.971 |  |
| Consistency1:Group1:Region2:VerbType1:PPVT | 0.001 | 0.002 | 7573.000 | 0.361 | 0.718 |  |
| Consistency1:Group1:Region1:VerbType1:CS | 0.000 | 0.002 | 7573.000 | -0.170 | 0.865 |  |
| Consistency1:Group1:Region2:VerbType1:CS | -0.001 | 0.002 | 7573.000 | -0.266 | 0.790 |  |
| Consistency1:Group1:Region1:PPVT:CS | -0.001 | 0.002 | 7573.000 | -0.245 | 0.806 |  |
| Consistency1:Group1:Region2:PPVT:CS | 0.001 | 0.002 | 7573.000 | 0.605 | 0.545 |  |
| Consistency1:Group1:VerbType1:PPVT:CS | -0.001 | 0.002 | 7634.000 | -0.656 | 0.512 |  |
| Consistency1:Region1:VerbType1:PPVT:CS | 0.000 | 0.002 | 7573.000 | 0.105 | 0.917 |  |
| Consistency1:Region2:VerbType1:PPVT:CS | 0.002 | 0.002 | 7573.000 | 0.785 | 0.432 |  |
| Group1:Region1:VerbType1:PPVT:CS | 0.000 | 0.002 | 7573.000 | 0.177 | 0.860 |  |
| Group1:Region2:VerbType1:PPVT:CS | 0.000 | 0.002 | 7573.000 | -0.208 | 0.835 |  |
| Consistency1:Group1:Region1:VerbType1:PPVT:CS | 0.001 | 0.002 | 7573.000 | 0.399 | 0.690 |  |
| Consistency1:Group1:Region2:VerbType1:PPVT:CS | 0.001 | 0.002 | 7573.000 | 0.547 | 0.585 |  |

*Note*[[1]](#footnote-1): Formula: lmer (logRT ~ Consistency \* Group \* Region\* VerbType \* PPVT \* CS (1+ Consistency + VerbType|Participant) + (1+Group|Item))

**Table 8**

*Results of the Mixed-Effects Regression Model at the Spillover Regions for NP1 items (n = 78)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Predictors* | *Estimate* | *SE* | *df* | *t value* | *P* |  |
| (Intercept) | 2.494 | 0.012 | 77.790 | 214.841 | 0.000 | \*\*\* |
| Consistency1 | -0.004 | 0.003 | 69.020 | -1.394 | 0.168 |  |
| Region1 | 0.003 | 0.003 | 3758.000 | 0.825 | 0.409 |  |
| Region2 | -0.012 | 0.003 | 3758.000 | -3.881 | 0.000 | \*\*\* |
| Group1 | 0.062 | 0.011 | 70.040 | 5.528 | 0.000 | \*\*\* |
| PPVT | -0.010 | 0.011 | 70.120 | -0.885 | 0.379 |  |
| CS | -0.002 | 0.011 | 70.060 | -0.174 | 0.862 |  |
| Consistency1:Region1 | -0.005 | 0.003 | 3758.000 | -1.750 | 0.080 | . |
| Consistency1:Region2 | 0.001 | 0.003 | 3758.000 | 0.180 | 0.857 |  |
| Consistency1:Group1 | -0.004 | 0.003 | 69.000 | -1.477 | 0.144 |  |
| Region1:Group1 | -0.001 | 0.003 | 3758.000 | -0.208 | 0.835 |  |
| Region2:Group1 | -0.009 | 0.003 | 3758.000 | -2.778 | 0.006 | \*\* |
| Consistency1:PPVT | -0.008 | 0.003 | 71.260 | -2.676 | 0.009 | \*\* |
| Region1:PPVT | 0.006 | 0.003 | 3758.000 | 1.845 | 0.065 | . |
| Region2:PPVT | 0.001 | 0.003 | 3758.000 | 0.257 | 0.798 |  |
| Group1:PPVT | 0.010 | 0.011 | 70.130 | 0.834 | 0.407 |  |
| Consistency1:CS | -0.001 | 0.003 | 70.810 | -0.423 | 0.674 |  |
| Region1:CS | 0.002 | 0.003 | 3758.000 | 0.560 | 0.576 |  |
| Region2:CS | -0.001 | 0.003 | 3758.000 | -0.404 | 0.686 |  |
| Group1:CS | -0.016 | 0.011 | 70.060 | -1.423 | 0.159 |  |
| PPVT:CS | 0.013 | 0.012 | 70.150 | 1.030 | 0.307 |  |
| Consistency1:Region1:Group1 | -0.003 | 0.003 | 3758.000 | -1.018 | 0.309 |  |
| Consistency1:Region2:Group1 | -0.001 | 0.003 | 3758.000 | -0.195 | 0.845 |  |
| Consistency1:Region1:PPVT | 0.001 | 0.003 | 3758.000 | 0.163 | 0.870 |  |
| Consistency1:Region2:PPVT | 0.002 | 0.003 | 3758.000 | 0.567 | 0.571 |  |
| Consistency1:Group1:PPVT | -0.008 | 0.003 | 70.570 | -2.643 | 0.010 | \* |
| Region1:Group1:PPVT | 0.004 | 0.003 | 3758.000 | 1.212 | 0.226 |  |
| Region2:Group1:PPVT | 0.005 | 0.003 | 3758.000 | 1.483 | 0.138 |  |
| Consistency1:Region1:CS | 0.001 | 0.003 | 3758.000 | 0.192 | 0.848 |  |
| Consistency1:Region2:CS | -0.001 | 0.003 | 3758.000 | -0.360 | 0.719 |  |
| Consistency1:Group1:CS | 0.004 | 0.003 | 69.670 | 1.135 | 0.260 |  |
| Region1:Group1:CS | 0.000 | 0.003 | 3758.000 | -0.051 | 0.960 |  |
| Region2:Group1:CS | -0.001 | 0.003 | 3758.000 | -0.187 | 0.852 |  |
| Consistency1:PPVT:CS | -0.002 | 0.003 | 70.490 | -0.492 | 0.624 |  |
| Region1:PPVT:CS | 0.002 | 0.004 | 3758.000 | 0.530 | 0.596 |  |
| Region2:PPVT:CS | 0.000 | 0.004 | 3758.000 | 0.002 | 0.998 |  |
| Group1:PPVT:CS | -0.003 | 0.012 | 70.150 | -0.208 | 0.836 |  |
| Consistency1:Region1:Group1:PPVT | 0.002 | 0.003 | 3758.000 | 0.507 | 0.612 |  |
| Consistency1:Region2:Group1:PPVT | 0.001 | 0.003 | 3758.000 | 0.226 | 0.821 |  |
| Consistency1:Region1:Group1:CS | 0.001 | 0.003 | 3758.000 | 0.265 | 0.791 |  |
| Consistency1:Region2:Group1:CS | -0.002 | 0.003 | 3758.000 | -0.545 | 0.586 |  |
| Consistency1:Region1:PPVT:CS | 0.001 | 0.004 | 3758.000 | 0.147 | 0.883 |  |
| Consistency1:Region2:PPVT:CS | 0.002 | 0.004 | 3758.000 | 0.468 | 0.640 |  |
| Consistency1:Group1:PPVT:CS | 0.000 | 0.003 | 70.420 | -0.124 | 0.902 |  |
| Region1:Group1:PPVT:CS | -0.001 | 0.004 | 3758.000 | -0.410 | 0.682 |  |
| Region2:Group1:PPVT:CS | 0.001 | 0.004 | 3758.000 | 0.297 | 0.767 |  |
| Consistency1:Region1:Group1:PPVT:CS | 0.000 | 0.004 | 3758.000 | 0.104 | 0.917 |  |
| Consistency1:Region2:Group1:PPVT:CS | 0.003 | 0.004 | 3758.000 | 0.781 | 0.435 |  |

*Note*[[2]](#footnote-2): Formula: lmer (logRT ~ Consistency \* Region \* Group \* PPVT \* CS (1+ Consistency |Participant) + (1|Item))

**Table 10**

*Results of the Mixed-Effects Regression Model at the Spillover Regions for NP2 items (n = 78)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Predictors* | *Estimate* | *SE* | *df* | *t value* | *P* |  |
| (Intercept) | 2.477 | 0.011 | 78.640 | 225.959 | 0.000 | \*\*\* |
| Consistency1 | -0.005 | 0.003 | 70.310 | -1.912 | 0.060 | . |
| Region1 | 0.002 | 0.003 | 3763.000 | 0.615 | 0.539 |  |
| Region2 | -0.014 | 0.003 | 3763.000 | -4.924 | 0.000 | \*\*\* |
| Group1 | 0.060 | 0.011 | 75.940 | 5.590 | 0.000 | \*\*\* |
| PPVT | -0.015 | 0.011 | 70.070 | -1.356 | 0.180 |  |
| CS | -0.002 | 0.011 | 70.040 | -0.210 | 0.834 |  |
| Consistency1:Region1 | 0.001 | 0.003 | 3763.000 | 0.432 | 0.665 |  |
| Consistency1:Region2 | 0.003 | 0.003 | 3763.000 | 1.109 | 0.268 |  |
| Consistency1:Group1 | 0.004 | 0.003 | 70.300 | 1.400 | 0.166 |  |
| Region1:Group1 | -0.001 | 0.003 | 3763.000 | -0.434 | 0.665 |  |
| Region2:Group1 | -0.009 | 0.003 | 3763.000 | -3.078 | 0.002 | \*\* |
| Consistency1:PPVT | -0.006 | 0.003 | 72.100 | -2.029 | 0.046 | \* |
| Region1:PPVT | 0.000 | 0.003 | 3763.000 | -0.048 | 0.962 |  |
| Region2:PPVT | 0.004 | 0.003 | 3763.000 | 1.219 | 0.223 |  |
| Group1:PPVT | 0.002 | 0.011 | 70.070 | 0.146 | 0.884 |  |
| Consistency1:CS | -0.002 | 0.003 | 72.000 | -0.659 | 0.512 |  |
| Region1:CS | 0.002 | 0.003 | 3763.000 | 0.707 | 0.480 |  |
| Region2:CS | 0.002 | 0.003 | 3763.000 | 0.857 | 0.391 |  |
| Group1:CS | -0.012 | 0.011 | 70.050 | -1.145 | 0.256 |  |
| PPVT:CS | 0.019 | 0.012 | 70.130 | 1.586 | 0.117 |  |
| Consistency1:Region1:Group1 | -0.001 | 0.003 | 3763.000 | -0.279 | 0.780 |  |
| Consistency1:Region2:Group1 | 0.002 | 0.003 | 3763.000 | 0.811 | 0.417 |  |
| Consistency1:Region1:PPVT | 0.004 | 0.003 | 3763.000 | 1.543 | 0.123 |  |
| Consistency1:Region2:PPVT | -0.005 | 0.003 | 3763.000 | -1.625 | 0.104 |  |
| Consistency1:Group1:PPVT | -0.001 | 0.003 | 72.100 | -0.285 | 0.776 |  |
| Region1:Group1:PPVT | 0.001 | 0.003 | 3763.000 | 0.202 | 0.840 |  |
| Region2:Group1:PPVT | 0.000 | 0.003 | 3763.000 | -0.159 | 0.873 |  |
| Consistency1:Region1:CS | -0.002 | 0.003 | 3763.000 | -0.559 | 0.576 |  |
| Consistency1:Region2:CS | 0.001 | 0.003 | 3763.000 | 0.386 | 0.700 |  |
| Consistency1:Group1:CS | -0.003 | 0.003 | 71.920 | -1.086 | 0.281 |  |
| Region1:Group1:CS | 0.000 | 0.003 | 3763.000 | 0.162 | 0.871 |  |
| Region2:Group1:CS | 0.004 | 0.003 | 3763.000 | 1.449 | 0.148 |  |
| Consistency1:PPVT:CS | 0.006 | 0.003 | 71.540 | 1.934 | 0.057 | . |
| Region1:PPVT:CS | 0.000 | 0.003 | 3763.000 | -0.150 | 0.881 |  |
| Region2:PPVT:CS | -0.002 | 0.003 | 3763.000 | -0.541 | 0.589 |  |
| Group1:PPVT:CS | 0.000 | 0.012 | 70.130 | 0.034 | 0.973 |  |
| Consistency1:Region1:Group1:PPVT | 0.002 | 0.003 | 3763.000 | 0.613 | 0.540 |  |
| Consistency1:Region2:Group1:PPVT | -0.001 | 0.003 | 3763.000 | -0.290 | 0.772 |  |
| Consistency1:Region1:Group1:CS | 0.002 | 0.003 | 3763.000 | 0.546 | 0.585 |  |
| Consistency1:Region2:Group1:CS | -0.001 | 0.003 | 3763.000 | -0.204 | 0.839 |  |
| Consistency1:Region1:PPVT:CS | 0.000 | 0.003 | 3763.000 | 0.005 | 0.996 |  |
| Consistency1:Region2:PPVT:CS | -0.002 | 0.003 | 3763.000 | -0.657 | 0.511 |  |
| Consistency1:Group1:PPVT:CS | 0.002 | 0.003 | 71.540 | 0.650 | 0.518 |  |
| Region1:Group1:PPVT:CS | -0.002 | 0.003 | 3763.000 | -0.715 | 0.475 |  |
| Region2:Group1:PPVT:CS | 0.002 | 0.003 | 3763.000 | 0.637 | 0.524 |  |
| Consistency1:Region1:Group1:PPVT:CS | -0.002 | 0.003 | 3763.000 | -0.480 | 0.631 |  |
| Consistency1:Region2:Group1:PPVT:CS | 0.000 | 0.003 | 3763.000 | 0.044 | 0.965 |  |

*Note*[[3]](#footnote-3): Formula: lmer (logRT ~ Consistency \* Region \* Group \* PPVT \* CS (1+ Consistency|Participant) + (1+Group|Item))

**Table 11**

*Results of the Mixed-Effects Regression Model at the Spillover Regions for NP2 items that only contain PPVT as the ID measure (n = 78)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Predictors* | *Estimate* | *SE* | *df* | *t value* | *P* |  |
| (Intercept) | 2.478 | 0.011 | 82.860 | 227.374 | 0.000 | \*\*\* |
| Consistency1 | -0.005 | 0.003 | 74.570 | -1.828 | 0.072 | . |
| Region1 | 0.002 | 0.003 | 3780.000 | 0.661 | 0.509 |  |
| Region2 | -0.014 | 0.003 | 3780.000 | -5.080 | 0.000 | \*\*\* |
| Group1 | 0.059 | 0.011 | 80.190 | 5.490 | 0.000 | \*\*\* |
| PPVT | -0.013 | 0.011 | 74.050 | -1.255 | 0.213 |  |
| Consistency1:Region1 | 0.001 | 0.003 | 3780.000 | 0.478 | 0.633 |  |
| Consistency1:Region2 | 0.003 | 0.003 | 3780.000 | 1.064 | 0.287 |  |
| Consistency1:Group1 | 0.003 | 0.003 | 74.550 | 1.279 | 0.205 |  |
| Region1:Group1 | -0.001 | 0.003 | 3780.000 | -0.482 | 0.630 |  |
| Region2:Group1 | -0.009 | 0.003 | 3780.000 | -3.037 | 0.002 | \*\* |
| Consistency1:PPVT | -0.006 | 0.003 | 76.070 | -2.131 | 0.036 | \* |
| Region1:PPVT | 0.000 | 0.003 | 3780.000 | 0.123 | 0.902 |  |
| Region2:PPVT | 0.003 | 0.003 | 3780.000 | 1.050 | 0.294 |  |
| Group1:PPVT | -0.002 | 0.011 | 74.050 | -0.183 | 0.855 |  |
| Consistency1:Region1:Group1 | -0.001 | 0.003 | 3780.000 | -0.316 | 0.752 |  |
| Consistency1:Region2:Group1 | 0.002 | 0.003 | 3780.000 | 0.878 | 0.380 |  |
| Consistency1:Region1:PPVT | 0.005 | 0.003 | 3780.000 | 1.604 | 0.109 |  |
| Consistency1:Region2:PPVT | -0.005 | 0.003 | 3780.000 | -1.647 | 0.100 | . |
| Consistency1:Group1:PPVT | -0.002 | 0.003 | 76.090 | -0.685 | 0.495 |  |
| Region1:Group1:PPVT | 0.000 | 0.003 | 3780.000 | 0.174 | 0.862 |  |
| Region2:Group1:PPVT | 0.000 | 0.003 | 3780.000 | -0.022 | 0.983 |  |
| Consistency1:Region1:Group1:PPVT | 0.002 | 0.003 | 3780.000 | 0.704 | 0.481 |  |
| Consistency1:Region2:Group1:PPVT | -0.001 | 0.003 | 3780.000 | -0.203 | 0.839 |  |

*Note*[[4]](#footnote-4): Formula: lmer (logRT ~ Consistency \* Region \* Group \* PPVT (1+ Consistency + |Participant) + (1+Group|Item))

**Table 12**

*Results of the Mixed-Effects Regression Model at the Spillover Regions for NP2 items that only contain Counting Span as the ID measure (n = 78)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Predictors* | *Estimate* | *SE* | *df* | *t value* | *P* |  |
| (Intercept) | 2.478 | 0.011 | 82.800 | 226.686 | 0.000 | \*\*\* |
| Consistency1 | -0.005 | 0.003 | 74.140 | -1.800 | 0.076 | . |
| Region1 | 0.002 | 0.003 | 3779.000 | 0.669 | 0.504 |  |
| Region2 | -0.014 | 0.003 | 3779.000 | -5.041 | 0.000 | \*\*\* |
| Group1 | 0.059 | 0.011 | 79.960 | 5.474 | 0.000 | \*\*\* |
| CS | -0.001 | 0.011 | 74.030 | -0.102 | 0.919 |  |
| Consistency1:Region1 | 0.001 | 0.003 | 3779.000 | 0.484 | 0.628 |  |
| Consistency1:Region2 | 0.003 | 0.003 | 3779.000 | 1.057 | 0.290 |  |
| Consistency1:Group1 | 0.003 | 0.003 | 74.120 | 1.235 | 0.221 |  |
| Region1:Group1 | -0.001 | 0.003 | 3779.000 | -0.471 | 0.637 |  |
| Region2:Group1 | -0.008 | 0.003 | 3779.000 | -3.004 | 0.003 | \*\* |
| Consistency1:CS | -0.002 | 0.003 | 75.710 | -0.593 | 0.555 |  |
| Region1:CS | 0.002 | 0.003 | 3779.000 | 0.673 | 0.501 |  |
| Region2:CS | 0.003 | 0.003 | 3779.000 | 0.897 | 0.370 |  |
| Group1:CS | -0.011 | 0.011 | 74.030 | -1.027 | 0.308 |  |
| Consistency1:Region1:Group1 | -0.001 | 0.003 | 3779.000 | -0.310 | 0.757 |  |
| Consistency1:Region2:Group1 | 0.002 | 0.003 | 3779.000 | 0.875 | 0.382 |  |
| Consistency1:Region1:CS | -0.001 | 0.003 | 3779.000 | -0.525 | 0.600 |  |
| Consistency1:Region2:CS | 0.001 | 0.003 | 3779.000 | 0.232 | 0.816 |  |
| Consistency1:Group1:CS | -0.003 | 0.003 | 75.600 | -0.908 | 0.367 |  |
| Region1:Group1:CS | 0.000 | 0.003 | 3779.000 | 0.095 | 0.924 |  |
| Region2:Group1:CS | 0.004 | 0.003 | 3779.000 | 1.422 | 0.155 |  |
| Consistency1:Region1:Group1:CS | 0.001 | 0.003 | 3779.000 | 0.401 | 0.689 |  |
| Consistency1:Region2:Group1:CS | 0.000 | 0.003 | 3779.000 | -0.084 | 0.933 |  |

*Note*[[5]](#footnote-5): Formula: lmer (logRT ~ Consistency \* Region \* Group \* CS (1+ Consistency + |Participant) + (1+Group|Item))

**Supplementary Materials (b): Verb Selection**

As a first step, the Dutch verbs used in Koornneef and Van Berkum (2006) were translated into English. Only verbs with high IC bias based on a corpus study of English IC verbs by Ferstl et al. (2000) were included. Specifically, we included 10 NP1 verbs whose bias scores were higher than 70, and 11 NP2 verbs whose bias scores were lower than -70 (100: full NP1 bias; -100: full NP2 bias). We then included 8 more NP1 verbs and 7 more NP2 verbs with high IC bias from the list in Ferstl et al. (2000). In order to make sure that all the verbs we selected in English also had a similar bias in Chinese, we referred to Cheng (2016) and Hartshorne et al. (2013). 12 out of 18 NP1 verbs and 16 out of 18 NP2 verbs were either listed in Cheng (2016), which reported 16 NP1 and 16 NP2 verbs with high IC bias in both English and Chinese based on a norming study, or had a high IC bias (NP1: > 60%; NP2: > 70%) according to Hartshorne et al (2013), which provided IC bias scores for 50 Chinese verbs. The remaining of the 6 NP1 verbs and 2 NP2 verbs were judged by the first author, a Chinese native speaker, to have the same direction of reference in both English and Chinese. These biases were then independently tested in Experiment 2 when participants were asked to judge the bias of the verbs in Chinese. Details are reported in the manuscript (see Lexical Tasks). The results showed that verbs in Chinese indeed had the intended bias: Chinese NP1 verbs (Mean = 0.84/1, SD = 0.15, range: 0.44-1.00); Chinese NP2 verbs (Mean = 0.96/1, SD = 0.07, range: 0.67-1.00).

**Supplementary Materials(c): Target Stimuli**

*The stimuli for Experiment 1(Sentence Completion task) and Experiment 2 (Self-paced Reading task) are the same. In Experiment 1, the presentation of the target sentence differed. Participants were instructed to use the two names from the first sentence to fill in the first two blanks, and then to provide a natural ending to the story starting with either he or she, by typing the completed version of the third sentence into a text box.*

**Example stimuli in Sentence Completion Task**

Lindsey and Brad were working at a homeless shelter. They chatted seriously about how to better help the homeless.

\_\_\_\_\_\_\_ fascinated \_\_\_\_\_\_ because (he/she) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

*NP1 items (a. Consistent, b. Inconsistent)*

1. Kevin and Maria were working together at the same company. They did not like each other.

a. Kevin intimidated Maria because he had been making threats to fire her whenever she disagreed with him.

b. Maria intimidated Kevin because he had been making an effort to compromise but she still threatened to fire him.

2. Susan and Matt were having a heated argument. They started to fight about the recent election.

a. Matt scared Susan because he had been saying that he would hit people who did not agree with him.

b. Susan scared Matt because he had been saying that she should stop fighting but she hit him.

3. Nick and Lisa were working as lawyers. They cared about helping in the community.

a. Nick inspired Lisa because he had been trying hard to help people who couldn’t afford legal fees.

b. Lisa inspired Nick because he had been trying hard to help people but she went above and beyond.

4. Claire and Nate were having many problems as a couple. They decided to break up.

a. Nate called Claire because he had been hoping to talk to her about what went wrong.

b. Claire called Nate because he had been hoping to hear from her by the end of the week.

5. Daniel and Isabella were going to give a conference presentation. They only had three days to prepare.

a. Daniel irritated Isabella because he had been expecting that somebody would do all the work for him.

b. Isabella irritated Daniel because he had been expecting that she would do some of the work but she didn’t do anything.

6. Laura and Harry were working in the garden. They started to argue.

a. Harry annoyed Laura because he had been thinking a lot about how to trim the plants and was always ignoring her.

b. Laura annoyed Harry because he had been thinking a lot about how to trim the plants but she kept interrupting him.

7. Brad and Lindsey were working at a homeless shelter. They chatted seriously about how to better help the homeless.

a. Brad fascinated Lindsey because he had been spending all of his money providing the homeless with food and housing.

b. Lindsey fascinated Brad because he had been spending a long time dealing with the unemployment issue and she proposed a great idea.

8.Jenny and Isaac were attending an academic conference. They started to talk about research.

a. Isaac intrigued Jenny because he had been making great suggestions on her project.

b. Jenny intrigued Isaac because he had been making no progress on his project and she offered a very helpful solution.

9. Brian and Sarah were having problems as a couple. They both cheated on each other.

a. Brian confessed to Sarah because he had been expecting her to confront him about cheating.

b. Sarah confessed to Brian because he had been expecting her to finally come clean about her cheating.

10. Grace and Frank were saving to buy a house together. They still needed more money.

a. Frank pleased Grace because he had been trying hard to save money which made her happy.

b. Grace pleased Frank because he had been trying hard to save money but she had already saved enough for the first payment.

11. George and Hannah were attending the same university. They both hoped to win the same scholarship.

a. George lied to Hannah because he had been thinking that he would win if he gave her the wrong information.

b. Hannah lied to George because he had been thinking that he would win and she wanted to ruin his opportunity.

12. Annie and Derek were taking a walk in the park. They didn’t have many mutual interests to talk about.

a. Derek bored Annie because he had been trying to talk about video games but she wasn't interested.

b. Annie bored Derek because he had been trying to talk about some common interests but she only gave brief responses.

13. Paul and Tina were chatting at a party. They soon realized that the conversation became too personal.

a. Paul apologized to Tina because he had been trying to ask her extremely personal questions.

Paul and Tina were chatting at a party.

b. Tina apologized to Paul because he had been trying to avoid answering her personal questions but she persisted.

14. Emma and Steve were going on a trip to Europe. They took an early flight to Rome.

a. Steve delighted Emma because he had been showing excitement about exploring the new city with her.

b. Emma delighted Steve because he had been showing excitement about speaking Italian and she was fluent.

15. James and Rachel were living in the same apartment. They usually had problems sharing the kitchen.

a. James frustrated Rachel because he had been using all of the counter space for his stuff.

b. Rachel frustrated James because he had been using a small corner of the counter for his things but she said his things were everywhere.

16. Mary and Eric were organizing a party under time pressure. They started to argue after a while.

a. Eric angered Mary because he had been making all of the decisions without consulting her.

b. Mary angered Eric because he had been making all of the decisions and she would not help.

17. Thomas and Maggie were talking at a bar. They had a good time talking to each other.

a. Thomas attracted Maggie because he had been making her laugh all night by telling very funny stories.

b. Maggie attracted Thomas because he had been making an effort to find someone funny and she was hilarious.

18. Daisy and Simon were collaborating unhappily on a project. They could not get along well at all.

a. Simon disappointed Daisy because he had been expecting that she would do all of the hard work.

b. Daisy disappointed Simon because he had been expecting a joint partnership but she wouldn’t do any of the work for them.

*NP2 items (a. Consistent, b. Inconsistent)*

19. Luke and Amy were moving into the same neighborhood. They decided it would be easier to do the move together.

a. Amy thanked Luke because he had been using a lot of his time to help her.

b. Luke thanked Amy because he had been using a lot of her tools during the move.

20. Jessica and Samuel were playing soccer on the same team. They just won the season tournament.

a. Jessica congratulated Samuel because he had been making the most important plays all season long.

b. Samuel congratulated Jessica because he had been making an effort to show appreciation to everyone on the team.

21. Martin and Sophia were living together with relatives. They were asked to enforce the rules of the house.

a. Sophia punished Martin because he had been trying to hit her with toys.

b. Martin punished Sophia because he had been trying to stop her from throwing toys but she didn’t listen.

22. Kelly and Christopher were participating in an online chess competition. They started to realize that the games were getting intense.

a. Kelly feared Christopher because he had been making many strong moves and she thought he could win.

b. Christopher feared Kelly because he had been making many bad moves and he thought she could win.

23. Jacob and Kathy were working at the same company. They sometimes talk about personal problems.

a. Kathy pitied Jacob because he had been hoping to get a promotion but she knew it wasn’t possible.

b. Jacob pitied Kathy because he had been hoping that she would do well at the company but she was struggling due to a medical condition.

24. Kate and Josh were working on a project. They recently made some great progress.

a. Kate respected Josh because he had been showing strong commitment to the project.

b. Josh respected Kate because he had been showing strong progress with her assistance.

25. Charles and Kayla were celebrating 30 years of marriage. They discussed what they treasured about each other.

a. Kayla loved Charles because he had been trying to make her happy every day of their lives.

b. Charles loved Kayla because he had been trying to find a caring wife and she was the best.

26. Brittany and William were living together. They both liked the house to be clean.

a. Brittany appreciated William because he had been making an effort to clean the house every day.

b. William appreciated Brittany because he had been making an effort to clean the basement and she was always willing to help.

27. Fred and Elaine were planning to start a restaurant. They finally opened one after graduating.

a. Elaine admired Fred because he had been making great progress in creating the menu and she did not know a lot about food.

b. Fred admired Elaine because he had been making an effort to develop the menu but her ideas were so much better.

28. Linda and Philip were collaborating on an important, top-secret project. They did not cooperate very well.

a. Linda distrusted Philip because he had been saying that he was right even when proved wrong.

b. Philip distrusted Linda because he had been saying that partners need to communicate and she refused.

29. Tom and Julia were great friends. They really needed each other.

a. Julia adored Tom because he had been making an effort to help her whenever she was in trouble.

b. Tom adored Julia because he had been making some stupid mistakes recently and she always helped him.

30. Melanie and Robert were working together at a hospital. They thought highly of each other.

a. Melanie valued Robert because he had been using a lot of his time and money to help people in the community.

b. Robert valued Melanie because he had been using a lot of her time and money to help people in the community.

31. Bob and Lily were both working for the same law firm. They knew that only one person could become a partner.

a. Lily disliked Bob because he had been using the company's resources for his own personal use.

b. Bob disliked Lily because he had been using his personal time to correct all of her mistakes.

32. Diana and Keith were volunteering together at a community shelter. They wanted to show each other appreciation.

a. Diana rewarded Keith because he had been making all of the most difficult jobs at the shelter so much easier.

b. Keith rewarded Diana because he had been making an effort to recognize excellent work at the shelter when he saw it.

33. Vincent and Nancy were taking a few classes together. They were jealous of each other.

a. Nancy envied Vincent because he had been getting great grades all semester and she was failing.

b. Vincent envied Nancy because he had been getting low grades all semester and she was doing really well.

34. Molly and Greg were getting a divorce. They realized that there was no hope for the marriage.

a. Molly hated Greg because he had been expecting her to fix all the problems he created.

b. Greg hated Molly because he had been expecting her to take care of the family but she did nothing.

35. David and Nicole were working together on a class project. They soon realized that it was a disaster.

a. Nicole despised David because he had been using all of her ideas and taking credit for them.

b. David despised Nicole because he had been using all of his ideas for the project but she took credit for them.

36. Kristen and Edward were presenting together at a conference. They had some disagreements during the question and answer session.

a. Kristen corrected Edward because he had been discussing the wrong experiments when he tried to answer the questions.

b. Edward corrected Kristen because he had been discussing the right experiments when answering the questions but she said he was wrong.

1. The random slope of Region was removed due to the singularity warning. [↑](#footnote-ref-1)
2. The random slopes of Region and Group were removed due to the singularity warning. [↑](#footnote-ref-2)
3. The random slope of Region was removed due to the singularity warning. [↑](#footnote-ref-3)
4. The random slope of Region was removed due to the singularity warning. [↑](#footnote-ref-4)
5. The random slope of Region was removed due to the singularity warning. [↑](#footnote-ref-5)