**Appendix**

**(Supplementary Data and Analyses)**

Table A1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Length, frequency, predictability, neighborhood density (ND), and neighborhood frequency (NF) means and standard deviations (in parentheses) for all words in all English and French paragraphs.*

|  |
| --- |
| All Words in Paragraphs |
| Lexical Variable |  Paragraph 1 |  Paragraph 2 |  Paragraph 3 |  Paragraph 4 |
| English | French | English | French | English | French | English | French |
| Length | 4.99 | 4.83 | 5.23 | 5.48 | 4.58 | 4.62 | 4.92 | 5.09 |
|  | (2.87) | (2.34) | (2.70) | (3.15) | (2.30) | (2.69) | (2.59) | (3.10) |
| Frequency | 5,431.91 | 5,252.96 | 4,773.04 | 5,635.30 | 6,457.89 | 4,878.05 | 5,917.41 | 4,945.53 |
|  | (8,477.61) | (8,742.68) | (9,245.75) | (7,354.51) | (9,553.44) | (6,633.78) | (9,528.00) | (8,023.46) |
| Predictability | 0.26 | 0.26 | 0.27 | 0.36 | 0.32 | 0.34 | 0.27 | 0.25 |
|  | (0.35) | (0.34) | (0.32) | (0.33) | (0.32) | (0.32) | (0.32) | (0.28) |
|  |  |  |  |  |  |  |  |  |
| Cross-language ND | 3.67(5.29) | 7.90(7.94) | 3.85(5.10) | 8.25(8.39) | 4.38(4.98) | 7.65(7.73) | 3.44(4.39) | 7.22(8.21) |
|  |  |  |  |  |  |  |  |  |
| Within-language ND | 6.96 | 7.23 | 7.96 | 7.43 | 9.56 | 7.32 | 8.09 | 6.52 |
|  | (7.88) | (6.25) | (7.72) | (6.61) | (8.18) | (5.52) | (8.03) | (5.88) |
|  |  |  |  |  |  |  |  |  |
| Cross-language NF | 661.42(1298.36) | 605.93(925.08) | 941.18(1640.55) | 829.28(1640.58) | 897.32(1567.27) | 1878.24(5660.24) | 671.39(1363.15) | 1342.94(4876.29) |
|  |  |  |  |  |  |  |  |  |
| Within-language NF | 711.33 | 1812.99 | 738.63 | 1747.69 | 1009.14 | 1804.07 | 647.73 | 1547.59 |
|  | (1363.53) | (2538.00) | (1060.74) | (2482.98) | (1750.88) | (2534.48) | (1068.74) | (2367.51) |

 |
| Table A2*Length, frequency, predictability, neighborhood density (ND), and neighborhood frequency (NF) means and standard deviations (in parentheses) for all English and French target words.*

|  |
| --- |
| Target Words in Paragraphs |
| Lexical Variable |  Paragraph 1 |  Paragraph 2 |  Paragraph 3 |  Paragraph 4 |
| English | French | English | French | English | French | English | French |
| Length | 6.61 | 7.15 | 6.60 | 6.63 | 5.93 | 6.44 | 6.33 | 7.05 |
|  | (2.16) | (2.76) | (2.52) | (2.95) | (1.97) | (2.29) | (2.28) | (2.38) |
| Frequency | 181.64 | 151.42 | 116.58 | 308.52 | 381.27 | 332.87 | 241.97 | 226.79 |
|  | (564.26) | (308.03) | (229.74) | (644.27) | (627.13) | (615.70) | (602.78) | (463.66) |
| Predictability | 0.14 | 0.16 | 0.16 | 0.17 | 0.19 | 0.16 | 0.17 | 0.16 |
|  | (0.24) | (0.22) | (0.26) | (0.30) | (0.24) | (0.24) | (0.15) | (0.16) |
|  |  |  |  |  |  |  |  |  |
| Cross-language ND | 1.38 | 3.40 | 1.55 | 2.25 | 2.49 | 2.69 | 1.80 | 0.99 |
|  | (3.43) | (4.96) | (4.09) | (4.20) | (3.65) | (3.89) | (3.81) | (2.52) |
|  |  |  |  |  |  |  |  |  |
| Within-language ND | 4.48 | 4.50 | 4.55 | 3.50 | 6.67 | 4.40 | 5.05 | 3.34 |
|  | (6.64) | (5.46) | (5.55) | (3.25) | (7.54) | (3.83) | (5.78) | (3.92) |
|  |  |  |  |  |  |  |  |  |
| Cross-language NF | 382.54 | 10.31 | 298.65 | 14.91 | 250.27 | 79.42 | 84.06 | 40.41 |
|  | (1619.80) | (24.03) | (1515.28) | (45.42) | (641.65) | (439.05) | (373.11) | (186.33) |
|  |  |  |  |  |  |  |  |  |
| Within-language NF | 36.72 | 67.84 | 91.31 | 331.11 | 82.25 | 98.46 | 221.37 | 96.47 |
|  | (76.14) | (100.83) | (261.04) | (960.87) | (157.98) | (245.34) | (853.40) | (238.87) |

 |

Table A3

*Effect Sizes (b), Standard Errors (SE), and t Values for First Fixation Duration Models.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | **Model 11** | **Model 22** | **Model 33** | **Model 44** |
| **Fixed Effects** | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* |
| Word frequency | -7.76 | 1.78 | -6.59\* | -10.93 | 1.39 | -7.87\* | -7.58 | 1.18 | -6.42\* | -11.45 | 1.38 | -8.27\* |
| Neighborhood density  | -2.64 | 1.33 | -1.99 | -0.07 | 1.83 | -0.04 | -1.89 | 1.43 | -1.31 | -2.11 | 1.49 | -1.42 |
| Age group  | -23.13 | 5.86 | -3.95\* | -24.53 | 7.10 | -3.45\* | -23.21 | 5.88 | -3.95\* | -24.35 | 7.07 | -3.45\* |
| Word frequency x Neighborhood density | -0.09 | 1.03 | -0.09 | -0.09 | 1.20 | -0.08 | 0.89 | 0.99 | 0.90 | 0.85 | 0.96 | 0.82 |
| Word frequency x Age group | -0.42 | 1.91 | -0.22 | -1.46 | 2.36 | -0.62 | 0.63 | 2.00 | 0.31 | -1.06 | 2.20 | -0.48 |
| Neighborhood density x Age group | 0.48 | 2.12 | 0.23 | -0.03 | 2.71 | -0.01 | -2.00 | 2.24 | -0.89 | -1.45 | 2.44 | -0.59 |
| Word frequency x Neighborhood density x Age group | 0.96 | 1.96 | 0.49 | 0.73 | 2.22 | 0.33 | 1.14 | 1.88 | 0.61 | 0.43 | 2.23 | 0.19 |
| **Control Predictors** | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* |
| Neighborhood density | -0.71 | 1.25 | -0.57 | -0.78 | 1.36 | -0.58 | 2.79 | 1.19 | 2.43# | -0.38 | 1.54 | -0.24 |
| Neighborhood frequency | -1.57 | 0.96 | -1.65 | -1.17 | 1.10 | -1.07 | -2.21 | 0.97 | -2.28# | 0.02 | 1.10 | 0.02 |
| Word length | 1.52 | 1.41 | 1.08 | -3.91 | 1.77 | -2.21# | 0.68 | 1.45 | 0.47 | -4.56 | 1.69 | -2.70\* |
| Word predictability | -0.72 | 0.96 | -0.75 | -1.69 | 1.08 | -1.57 | -0.90 | 0.95 | -0.94 | -1.61 | 1.09 | -1.48 |
| Participant native language | -5.79 | 6.91 | -0.84 | 4.80 | 5.73 | 0.87 | -7.02 | 5.75 | -1.22 | 5.08 | 5.31 | 0.92 |
| Paragraph language version | -7.79 | 6.33 | -1.23 | 5.71 | 7.64 | 0.66 | -7.11 | 6.34 | -1.12 | 5.73 | 7.63 | 0.67 |
| Intercept | 234.68 | 4.11 | 57.12\* | 250.65 | 4.50 | 55.64\* | 234.14 | 4.06 | 57.61\* | 249.89 | 4.45 | 56.11\* |
| **Random Effects** | Variance | Variance | Variance | Variance |
| Participants | 947.62 | 1,394.66 | 946.69 | 1,394.99 |
| Paragraph version | 26.65 | 21.58 | 24.68 | 20.32 |
| Residual | 7,184.59 | 9,331.21 | 7,181.93 | 9,327.94 |

1 Model 1 examined the impact of L2 (cross-language) neighborhood density on L1 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

2 Model 2 examined the impact of L1 (cross-language) neighborhood density on L2 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

3 Model 3 examined the impact of L1 (within-language) neighborhood density on L1 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

4 Model 4 examined the impact of L2 (within-language) neighborhood density on L2 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

\* *p < 0.0125*

 *# = marginal effects*

Table A4

*Effect Sizes (b), Standard Errors (SE), and t Values for Gaze Duration Models.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | **Model 11** | **Model 22** | **Model 33** | **Model 44** |
| **Fixed Effects** | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* |
| Word frequency | -19.97 | 2.23 | -8.97\* | -33.49 | 2.81 | -11.90\* | -20.49 | 2.23 | -9.20\* | -33.56 | 2.81 | -11.95\* |
| Neighborhood density  | 3.99 | 2.51 | 1.59 | -6.44 | 3.71 | -1.74 | -10.49 | 2.71 | -3.87\* | -3.20 | 3.02 | -1.06 |
| Age group  | -29.75 | 10.23 | -2.91\* | -35.39 | 13.47 | -2.63\* | -29.35 | 10.28 | -2.86\* | -37.58 | 13.39 | -2.81\* |
| Word frequency x Neighborhood density | 4.63 | 1.94 | 2.38\* | 11.66 | 2.43 | 4.81\* | 11.08 | 1.86 | 5.94\* | 10.47 | 2.36 | 4.43\* |
| Word frequency x Age group | 7.92 | 3.61 | 2.19# | 12.35 | 4.79 | 2.58\* | 8.73 | 3.77 | 2.32# | 12.98 | 4.47 | 2.90\* |
| Neighborhood density x Age group | 2.59 | 4.01 | 0.64 | 4.04 | 5.50 | 0.73 | 0.46 | 4.23 | 0.11 | 0.62 | 4.97 | 0.12 |
| Word frequency x Neighborhood density x Age group | -1.04 | 3.71 | -0.28 | -5.30 | 4.51 | -1.17 | -1.81 | 3.54 | -0.51 | -0.62 | 4.53 | -0.14 |
| **Control Predictors** | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* |
| Neighborhood density | -2.61 | 2.36 | -1.11 | 2.10 | 2.75 | 0.76 | 6.33 | 2.25 | 2.81\* | 1.29 | 3.13 | 0.41 |
| Neighborhood frequency | -1.01 | 1.81 | -0.56 | 1.11 | 2.22 | 0.50 | -0.04 | 1.83 | -0.02 | 0.91 | 2.24 | 0.43 |
| Word length | 25.31 | 2.67 | 9.48\* | 30.75 | 3.58 | 8.60\* | 22.15 | 2.73 | 8.10\* | 32.58 | 3.41 | 9.55\* |
| Word predictability | -3.11 | 1.81 | -1.72 | -6.98 | 2.17 | -3.22\* | -3.31 | 1.80 | -1.84 | -7.21 | 2.18 | -3.30\* |
| Participant native language | -1.99 | 9.96 | -0.20 | -17.28 | 14.46 | -1.20 | -0.65 | 9.96 | -0.07 | 15.31 | 14.45 | 1.06 |
| Paragraph language version | -3.70 | 11.06 | -0.34 | 18.15 | 14.45 | 1.26 | -1.07 | 11.06 | -0.10 | 16.79 | 14.46 | 1.16 |
| Intercept | 286.94 | 8.11 | 35.39\* | 326.97 | 7.29 | 44.88\* | 283.09 | 7.70 | 36.78\* | 328.77 | 7.25 | 45.33\* |
| **Random Effects** | Variance | Variance | Variance | Variance |
| Participants | 2,825.91 | 4,923.12 | 2,830.44 | 4,930.03 |
| Paragraph version | 137.88 | 0.00 | 110.87 | 0.00 |
| Residual | 25,656.67 | 38,503.04 | 25,572.21 | 38,520.04 |

1 Model 1 examined the impact of L2 (cross-language) neighborhood density on L1 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

2 Model 2 examined the impact of L1 (cross-language) neighborhood density on L2 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

3 Model 3 examined the impact of L1 (within-language) neighborhood density on L1 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

4 Model 4 examined the impact of L2 (within-language) neighborhood density on L2 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

\**p < 0.0125*

*# = marginal effects*

Table A5

*Effect Sizes (b), Standard Errors (SE), and t Values for Go-Past Time Models.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | **Model 11** | **Model 22** | **Model 33** | **Model 44** |
| **Fixed Effects** | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* |
| Word frequency | -136.47 | 14.99 | -9.10\* | -85.24 | 16.55 | -5.15\* | -133.00 | 14.97 | -8.89\* | -97.14 | 16.49 | -5.89\* |
| Neighborhood density  | -7.11 | 16.51 | -0.43 | -36.79 | 21.65 | -1.70 | -6.31 | 18.12 | -0.35 | -12.31 | 17.37 | -0.71 |
| Age group  | -172.43 | 65.97 | 2.61\* | -154.13 | 61.22 | -2.52# | -178.80 | 66.39 | -2.69\* | -147.98 | 60.52 | -2.45# |
| Word frequency x Neighborhood density | -6.84 | 13.11 | -0.52 | -14.59 | 14.11 | -1.03 | 4.09 | 12.63 | 0.32 | 17.62 | 13.84 | 1.23 |
| Word frequency x Age group | -17.09 | 24.28 | -0.70 | -20.52 | 27.91 | -0.74 | 9.01 | 25.36 | 0.36 | -40.56 | 25.97 | -1.56 |
| Neighborhood density x Age group | 29.72 | 26.73 | 1.11 | -53.34 | 42.00 | -1.43 | -42.64 | 28.49 | -1.50 | -58.34 | 38.47 | -1.88 |
| Word frequency x Neighborhood density x Age group | 9.70 | 25.10 | 0.39 | 36.21 | 26.16 | 1.38 | 27.43 | 23.88 | 1.15 | 43.18 | 26.04 | 1.76 |
| **Control Predictors** | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* |
| Neighborhood density | 20.01 | 15.67 | 1.28 | 6.12 | 15.91 | 0.38 | -5.20 | 14.95 | -0.35 | -42.61 | 18.10 | -2.35# |
| Neighborhood frequency | -24.87 | 12.06 | -2.06# | -43.84 | 12.96 | -3.38\* | -45.02 | 12.24 | -3.68\* | -40.39 | 13.07 | -3.09\* |
| Word length | 175.96 | 17.94 | 9.81\* | 122.83 | 21.04 | 5.84\* | 161.61 | 18.47 | 8.75\* | 109.21 | 20.09 | 5.44\* |
| Word predictability | -39.14 | 12.03 | -3.25\* | -70.22 | 12.72 | -5.52\* | -41.96 | 11.99 | -3.50\* | -62.92 | 12.85 | -4.90\* |
| Participant native language | -37.44 | 65.81 | -0.55 | -88.41 | 65.43 | -1.49 | -34.87 | 65.90 | -0.53 | -99.38 | 65.34 | -1.52 |
| Paragraph language version | -40.47 | 71.25 | -0.57 | 97.20 | 65.35 | 1.66 | -31.26 | 71.41 | -0.44 | 91.16 | 65.25 | 1.40 |
| Intercept | 1,991.77 | 35.75 | 55.72\* | 2,245.24 | 39.36 | 57.05\* | 1,986.45 | 36.06 | 55.08\* | 2,227.25 | 37.44 | 59.90\* |
| **Random Effects** | Variance | Variance | Variance | Variance |
| Participants | 116,205.91 | 92,539.67 | 116,700.23 | 92,327.59 |
| Paragraph version | 0.00 | 1,742.83 | 0.00 | 1,259.04 |
| Residual | 1,270,000.02 | 1,392,367.54 | 1,269,060.53 | 1,392,167.88 |

1 Model 1 examined the impact of L2 (cross-language) neighborhood density on L1 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

2 Model 2 examined the impact of L1 (cross-language) neighborhood density on L2 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

3 Model 3 examined the impact of L1 (within-language) neighborhood density on L1 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

4 Model 4 examined the impact of L2 (within-language) neighborhood density on L2 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

\* *p < 0.0125*

*# = marginal effects*

Table A6

*Effect Sizes (b), Standard Errors (SE), and t Values for Total Reading Time Models.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | **Model 11** | **Model 22** | **Model 33** | **Model 44** |
| **Fixed Effects** | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* |
| Word frequency | -45.94 | 4.76 | -9.66\* | -78.52 | 6.46 | -12.16\* | -47.14 | 4.76 | -9.91\* | -80.70 | 6.43 | -12.56\* |
| Neighborhood density  | -15.22 | 5.37 | -2.83\* | 7.90 | 8.48 | 0.93 | -12.30 | 5.76 | -2.14# | -6.55 | 6.89 | -0.95 |
| Age group  | -70.81 | 31.64 | -2.24# | -155.82 | 44.04 | -3.54\* | -72.69 | 31.76 | -2.29# | -155.57 | 43.86 | -3.55\* |
| Word frequency x Neighborhood density | 8.71 | 4.18 | 2.08# | 20.97 | 5.55 | 3.78\* | 19.62 | 4.01 | 4.90\* | 33.61 | 5.38 | 6.25\* |
| Word frequency x Age group | 22.68 | 7.73 | 2.93\* | 46.70 | 10.94 | 4.27\* | 27.16 | 8.06 | 3.37\* | 43.82 | 10.21 | 4.29\* |
| Neighborhood density x Age group | 21.90 | 8.59 | 2.55\* | -7.24 | 12.56 | -0.58 | 3.37 | 9.03 | 0.37 | -2.75 | 11.31 | -0.24 |
| Word frequency x Neighborhood density x Age group | -4.15 | 7.99 | -0.52 | -6.87 | 10.29 | -0.67 | 1.85 | 7.62 | 0.24 | -10.85 | 10.29 | -1.05 |
| **Control Predictors** | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* | *b* | *SE* | *t* |
| Neighborhood density | 0.98 | 5.02 | 0.20 | 11.01 | 6.28 | 1.75 | 18.86 | 4.83 | 3.91\* | 20.45 | 7.16 | 2.86\* |
| Neighborhood frequency | -1.00 | 3.87 | -0.26 | 1.10 | 5.09 | 0.22 | 3.34 | 3.93 | 0.85 | -1.41 | 5.13 | -0.28 |
| Word length | 82.71 | 5.72 | 14.47\* | 92.91 | 8.21 | 11.32\* | 78.06 | 5.85 | 13.35\* | 90.46 | 7.84 | 11.53\* |
| Word predictability | -10.65 | 3.87 | -2.75\* | -28.65 | 5.01 | -5.72\* | -10.84 | 3.86 | -2.81\* | -27.90 | 5.05 | -5.53\* |
| Participant native language | -52.75 | 30.82 | -1.71 | -73.75 | 58.82 | -1.58 | -50.93 | 30.83 | -1.65 | -75.30 | 53.48 | -1.80 |
| Paragraph language version | -56.88 | 34.27 | -1.66 | 77.96 | 57.54 | 1.74 | -52.55 | 34.34 | -1.53 | 76.09 | 57.76 | 1.68 |
| Intercept | 492.59 | 23.32 | 21.13\* | 619.64 | 28.04 | 22.10\* | 485.92 | 22.49 | 21.61\* | 619.07 | 27.95 | 22.15\* |
| **Random Effects** | Variance | Variance | Variance | Variance |
| Participants | 29,122.16 | 56,460.19 | 29,233.55 | 56,335.02 |
| Paragraph version | 986.72 | 854.99 | 823.51 | 852.98 |
| Residual | 119,627.88 | 203,602.74 | 119,439.62 | 203,037.34 |

1 Model 1 examined the impact of L2 (cross-language) neighborhood density on L1 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

2 Model 2 examined the impact of L1 (cross-language) neighborhood density on L2 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

3 Model 3 examined the impact of L1 (within-language) neighborhood density on L1 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

4 Model 4 examined the impact of L2 (within-language) neighborhood density on L2 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

\**p < 0.0125*

*# = marginal effects*

Table A7

*Effect Sizes (b), Standard Errors (SE), and z-Score Values for Skipping Rate Models.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | **Model 11** | **Model 22** | **Model 33** | **Model 44** |
| **Fixed Effects** | *b* | *SE* | *z* | *b* | *SE* | *z* | *b* | *SE* | *z* | *b* | *SE* | *z* |
| Word frequency | 0.16 | 0.05 | 3.20\* | -0.04 | 0.06 | -0.65 | 0.16 | 0.05 | 3.32\* | 0.06 | 0.06 | 0.97 |
| Neighborhood density  | 0.04 | 0.05 | 0.97 | -0.04 | 0.07 | -0.41 | 0.16 | 0.05 | 2.86\* | -0.02 | 0.05 | -0.39 |
| Age group  | -0.13 | 0.15 | -0.86 | -0.13 | 0.19 | -0.65 | -0.10 | 0.15 | -0.68 | -0.11 | 0.19 | -0.58 |
| Word frequency x Neighborhood density | 0.01 | 0.08 | 0.15 | -0.19 | 0.10 | -1.85 | 0.01 | 0.09 | 0.09 | -0.01 | 0.04 | -0.26 |
| Word frequency x Age group | 0.12 | 0.08 | 1.52 | 0.06 | 0.10 | 0.61 | 0.10 | 0.08 | 1.35 | 0.18 | 0.10 | 1.90 |
| Neighborhood density x Age group | 0.05 | 0.07 | 0.69 | 0.07 | 0.06 | 1.86 | -0.21 | 0.17 | -1.28 | 0.19 | 0.15 | 1.82 |
| Word frequency x Neighborhood density x Age group | -0.01 | 0.06 | -0.12 | -0.07 | 0.08 | -0.94 | -0.12 | 0.07 | -1.89 | -0.16 | 0.20 | -0.69 |
| **Control Predictors** | *b* | *SE* | *z* | *b* | *SE* | *z* | *b* | *SE* | *z* | *b* | *SE* | *z* |
| Neighborhood density | -0.09 | 0.04 | -2.08\* | -0.01 | 0.04 | -0.31 | 0.09 | 0.04 | 2.37\* | -0.01 | 0.05 | -0.14 |
| Neighborhood frequency | 0.04 | 0.03 | 1.61 | 0.05 | 0.03 | 1.77 | 0.04 | 0.03 | 1.49 | 0.07 | 0.03 | 2.37\* |
| Word length | -0.65 | 0.07 | -9.18\* | -1.00 | 0.10 | -9.69\* | -0.66 | 0.07 | -9.04\* | -0.87 | 0.10 | -8.98\* |
| Word predictability | 0.05 | 0.03 | 1.55 | 0.18 | 0.04 | 4.44\* | 0.06 | 0.03 | 1.76 | 0.15 | 0.04 | 3.61\* |
| Participant native language | -0.05 | 0.15 | -0.33 | -0.08 | 0.18 | -0.29 | -0.04 | 0.15 | -0.30 | -0.04 | 0.05 | -0.95 |
| Paragraph language version | -0.06 | 0.16 | -0.40 | -0.06 | 0.08 | -0.61 | -0.06 | 0.16 | -0.31 | -0.04 | 0.02 | 1.91 |
| Intercept | -2.62 | 0.08 | -31.99\* | -3.43 | 0.12 | -29.37\* | -2.64 | 0.08 | -31.81\* | -3.36 | 0.11 | -29.71\* |
| **Random Effects** | Variance | Variance | Variance | Variance |
| Participants | 0.46 | 0.76 | 0.46 | 0.76 |
| Paragraph version | 0.00 | 0.00 | 0.00 | 0.00 |
| Residual | ─ | ─ | ─ | ─ |

1 Model 1 examined the impact of L2 (cross-language) neighborhood density on L1 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

2 Model 2 examined the impact of L1 (cross-language) neighborhood density on L2 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

3 Model 3 examined the impact of L1 (within-language) neighborhood density on L1 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

4 Model 4 examined the impact of L2 (within-language) neighborhood density on L2 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

\**z < 0.05*

Table A8

*Effect Sizes (b), Standard Errors (SE), and z-Score Values for Regressions Out Models.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | **Model 11** | **Model 22** | **Model 33** | **Model 44** |
| **Fixed Effects** | *b* | *SE* | *z* | *b* | *SE* | *z* | *b* | *SE* | *z* | *b* | *SE* | *z* |
| Word frequency | -0.04 | 0.01 | -4.54\* | -0.02 | 0.01 | -1.84 | -0.04 | 0.01 | -4.30\* | -0.02 | 0.01 | -2.68\* |
| Neighborhood density  | -0.01 | 0.01 | -1.45 | 0.00 | 0.01 | 0.18 | -0.03 | 0.01 | -2.79\* | 0.00 | 0.01 | -0.30 |
| Age group  | -0.04 | 0.03 | -1.38 | -0.02 | 0.03 | -0.77 | -0.04 | 0.03 | -1.54 | 0.00 | 0.01 | -1.16 |
| Word frequency x Neighborhood density | -0.02 | 0.02 | -1.09 | -0.01 | 0.01 | -1.21 | 0.00 | 0.06 | -0.22 | 0.00 | 0.01 | 0.56 |
| Word frequency x Age group | -0.01 | 0.01 | -0.80 | 0.01 | 0.01 | 0.77 | 0.00 | 0.01 | -0.20 | 0.00 | 0.01 | -0.01 |
| Neighborhood density x Age group | 0.00 | 0.15 | -0.13 | -0.04 | 0.03 | -1.51 | -0.03 | 0.02 | -1.55 | 0.06 | 0.03 | 1.89 |
| Word frequency x Neighborhood density x Age group | -0.02 | 0.01 | -1.24 | -0.01 | 0.01 | -0.38 | 0.00 | 0.01 | 0.03 | 0.02 | 0.01 | 1.75 |
| **Control Predictors** | *b* | *SE* | *z* | *b* | *SE* | *z* | *b* | *SE* | *z* | *b* | *SE* | *z* |
| Neighborhood density | 0.02 | 0.01 | 1.77 | 0.00 | 0.01 | -0.16 | -0.02 | 0.01 | -2.65\* | -0.01 | 0.01 | -1.58 |
| Neighborhood frequency | -0.02 | 0.01 | -2.89\* | -0.03 | 0.01 | -4.45\* | -0.02 | 0.01 | -3.67\* | -0.03 | 0.01 | -4.43\* |
| Word length | 0.09 | 0.01 | 8.78\* | 0.07 | 0.01 | 6.57\* | 0.09 | 0.01 | 8.51\* | 0.06 | 0.01 | 5.77\* |
| Word predictability | -0.02 | 0.01 | -2.17\* | -0.03 | 0.01 | -4.83\* | -0.02 | 0.01 | -2.45\* | -0.02 | 0.01 | -3.97\* |
| Participant native language | 0.00 | 0.03 | -0.02 | -0.02 | 0.03 | -0.79 | -0.01 | 0.03 | -0.22 | -0.02 | 0.03 | -0.72 |
| Paragraph language version | 0.01 | 0.03 | 0.17 | 0.02 | 0.02 | 0.62 | 0.00 | 0.03 | 0.16 | 0.01 | 0.03 | 0.56 |
| Intercept | 2.99 | 0.01 | 201.57\* | 3.08 | 0.02 | 157.17\* | 3.00 | 0.02 | 198.26\* | 3.06 | 0.02 | 163.66\* |
| **Random Effects** | Variance | Variance | Variance | Variance |
| Participants | 0.02 | 0.02 | 0.01 | 0.02 |
| Paragraph version | 0.00 | 0.00 | 0.00 | 0.00 |
| Residual | 0.44 | 0.37 | 0.44 | 0.37 |

1 Model 1 examined the impact of L2 (cross-language) neighborhood density on L1 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

2 Model 2 examined the impact of L1 (cross-language) neighborhood density on L2 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

3 Model 3 examined the impact of L1 (within-language) neighborhood density on L1 reading (while controlling for L1 neighborhood frequency and L2 neighborhood density).

4 Model 4 examined the impact of L2 (within-language) neighborhood density on L2 reading (while controlling for L2 neighborhood frequency and L1 neighborhood density).

\**z < 0.05*