# Supplementary Material

This document contains additional tables and figures for the paper *An Ex-Gaussian Analysis of Eye Movements in L2 Reading*

## Study 1

Table 4. Demographic Characteristics of Participants

|  |  |  |
| --- | --- | --- |
|  | Native English Speakers | Native Chinese Speakers |
| *N* | 22 | 17 |
| Age | 21.77 (20-24) | 24.4 (21-43) |
| LexTale Score (English) | 92.5 (77.5-100) | 63.16 (45-92.5) |
| Age of Initial L2 Learning | 14.86 years | 7.88 years |
| Self-Rated L2 Proficiency – Speaking  (1 = low, 10 = perfect) | 7.9 | 6.76 |
| Self-Rated L2 Proficiency – Understanding  (1 = low, 10 = perfect) | 7.56 | 7.29 |
| Self-Rated L2 Proficiency – Reading  (1 = low, 10 = perfect) | 6.64 | 6.29 |
| Current L2 Exposure (% of day) | 11 | 52.53 |

Chart, histogram

Description automatically generated

*Figure 6.* Distribution of rightward saccade amplitudes in Study 1 for native speakers of Chinese reading Chinese text (red, solid lines) and native speakers of English reading English text (blue, dotted lines). The vertical lines represent the mean saccade amplitudes for each group. Histogram bin width was 0.1 degrees.

Chart, histogram

Description automatically generated

*Figure 7.* Distribution of fixation durations in Study 1 for native speakers of Chinese reading Chinese text (red, solid lines) and native speakers of English reading English text (blue, dotted lines). The vertical lines represent the mean fixation durations for each group. Histogram bin width was 2 ms.

Chart, histogram

Description automatically generated*Figure 8.* Distribution of fixation durations in Study 1 for native speakers reading normal text (black, solid lines) and pseudo-text (orange, dotted lines). Distributions in the top panel are from reading Chinese text, while the distributions in the bottom panel are from reading English text. The vertical lines represent the mean fixation durations for each group. Histogram bin width was 2 ms.

Table 5. *Results of Analysis of* *Saccade Amplitude in Study 1*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 3.69 | 0.23 | 16.35 | < .0001 |
| Text Language = English | 0.013 | 0.3 | 0.042 | 0.97 |
| Task = Pseudo-Reading | 2.028 | 0.39 | 5.14 | < .0001 |
| Reader = L2 | -2.57 | 0.26 | -10.027 | < .0001 |
| Text Language = English X Task = Pseudo-Reading | -1.16 | 0.52 | -2.21 | 0.033 |
| Text Language = English X Reader = L2 | 1.81 | 0.4 | 4.55 | < .0001 |
| Task = Pseudo-Reading X Reader = L2 | 0.6 | 0.52 | 1.14 | < .0001 |
| Text Language = English X Task = Pseudo-Reading X Reader = L2 | 0.67 | 1.048 | 0.64 | 0.53 |

Table 6. *Results of Analysis of* *Fixation Duration in Study 1*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 220.66 | 7.92 | 27.88 | < .0001 |
| Text Language = English | -18.086 | 9.43 | -1.92 | 0.062 |
| Task = Pseudo-Reading | 14.94 | 7.84 | 1.91 | 0.064 |
| Reader = L2 | 122.15 | 10.47 | 11.67 | < .0001 |
| Text Language = English X Task = Pseudo-Reading | 25.005 | 10.38 | 2.41 | 0.021 |
| Text Language = English X Reader = L2 | -89.65 | 15.87 | -5.65 | < .0001 |
| Task = Pseudo-Reading X Reader = L2 | -80.59 | 10.36 | -7.78 | < .0001 |
| Text Language = English X Task = Pseudo-Reading X Reader = L2 | 47.55 | 20.41 | 2.33 | 0.025 |
| Language = English X Task = Pseudo-Reading X Status = L2 | 220.66 | 7.92 | 27.88 | < .0001 |

Table 7. *Results of Analysis of* *Mu in Study 1*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 157.98 | 4.18 | 37.77 | < .0001 |
| Text Language = English | -18.33 | 5.57 | -3.29 | 0.0019 |
| Task = Pseudo-Reading | -10.38 | 5.21 | -1.99 | 0.05 |
| Reader = L2 | 20.98 | 5.98 | 3.51 | 0.00084 |
| Text Language = English X Task = Pseudo-Reading | 28.37 | 6.94 | 4.089 | 0.00012 |
| Text Language = English X Reader = L2 | 7.25 | 10.4 | 0.7 | 0.49 |
| Task = Pseudo-Reading X Reader = L2 | -19.55 | 6.94 | -2.82 | 0.0063 |
| Text Language = English X Task = Pseudo-Reading X Reader = L2 | -6.76 | 11.24 | -0.6 | 0.55 |

Table 8. *Results of Analysis of* *Sigma in Study 1*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 47.38 | 2.156 | 21.98 | < .0001 |
| Text Language = English | -9.19 | 2.87 | -3.2 | 0.0024 |
| Task = Pseudo-Reading | -3.3 | 2.77 | -1.192 | 0.24 |
| Reader = L2 | 12.32 | 2.95 | 4.18 | < .0001 |
| Text Language = English X Task = Pseudo-Reading | 9.96 | 3.68 | 2.704 | 0.0087 |
| Text Language = English X Reader = L2 | -0.22 | 4.91 | -0.044 | 0.97 |
| Task = Pseudo-Reading X Reader = L2 | -10.97 | 3.68 | -2.98 | 0.004 |
| Text Language = English X Task = Pseudo-Reading X Reader = L2 | 3.74 | 6.069 | 0.616 | 0.54 |

Table 9. *Results of Analysis of* *Tau in Study 1*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 61.97 | 5.42 | 11.44 | < .0001 |
| Text Language = English | 0.15 | 7.22 | 0.021 | 0.98 |
| Task = Pseudo-Reading | 25.74 | 6.78 | 3.8 | 0.00031 |
| Reader = L2 | 102.14 | 7.98 | 12.8 | < .0001 |
| Text Language = English X Task = Pseudo-Reading | -1.4 | 9.026 | -0.16 | 0.88 |
| Text Language = English X Reader = L2 | -97.21 | 13.54 | -7.18 | < .0001 |
| Task = Pseudo-Reading X Reader = L2 | -64.37 | 9.026 | -7.13 | < .0001 |
| Text Language = English X Task = Pseudo-Reading X Reader = L2 | 55.58 | 14.43 | 3.85 | 0.00045 |

## Study 2

Table 10. Demographic Characteristics of Participants

|  |  |  |
| --- | --- | --- |
|  | L2 Chinese | L2 English |
| *N* | 27 | 15 |
| Age | 21.36 (18-23) | 31.67 (18-56) |
| ACTFL L2 Proficiency | 3 Novice,  9 Intermediate,  15 Advanced | 6 Novice,  8 Intermediate,  1 Advanced |
| Age of Initial L2 Learning | 15.46 years (3.52) | 8.86 years (4.55) |
| Self-Rated L2 Proficiency – Speaking  (1 = low, 10 = perfect) | 6.71 (1.41) | 5.79 (2.72) |
| Self-Rated L2 Proficiency – Reading  (1 = low, 10 = perfect) | 6.62 (1.65) | 5.71 (2.76) |

Chart, histogram

Description automatically generated

*Figure 9.* Distribution of fixation durations for native speakers of Chinese reading Chinese text (red, solid lines) and native speakers of English reading English text (blue, dotted lines) in Study 2. The vertical lines represent the mean fixation durations for each group. Histogram bin width was 2 ms.

Table 11. *Results of Analysis of* *Saccade Amplitude in Study 2*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 2.61 | 0.25 | 10.49 | < .0001 |
| Text Language = English | 1.03 | 0.31 | 3.3 | 0.002 |
| Reader = L2 | -1.5 | 0.26 | -5.82 | < .0001 |
| Text Language = English X Reader = L2 | 0.17 | 0.39 | 0.45 | 0.66 |

Table 12. *Results of Analysis of* *Fixation Durations in Study 2*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 239 | 6.4 | 37.2 | < .0001 |
| Text Language = English | -44.03 | 8.03 | -5.48 | < .0001 |
| Reader = L2 | 110.36 | 8.02 | 13.76 | < .0001 |
| Text Language = English X Reader = L2 | -60.9 | 15.96 | -3.82 | 0.00044 |

Table 13. *Results of Analysis of* *Mu in Study 2*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 150.914 | 4.57 | 33 | < .0001 |
| Text Language = English | -16.77 | 5.7 | -2.94 | 0.0044 |
| Reader = L2 | 13.34 | 5.7 | 2.34 | 0.022 |
| Text Language = English X Reader = L2 | 9.82 | 9.12 | 1.08 | 0.29 |

Table 14.  *Results of Analysis of* *Sigma in Study 2*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 50.89 | 2.2 | 23.1 | < .0001 |
| Text Language = English | -16.45 | 2.75 | -5.99 | < .0001 |
| Reader = L2 | 0.18 | 2.75 | 0.067 | 0.95 |
| Text Language = English X Reader = L2 | 18.38 | 4.85 | 3.79 | 0.0005 |

Table 15.  *Results of Analysis of* *Tau in Study 2*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 88.45 | 7.73 | 11.44 | < .0001 |
| Text Language = English | -27.57 | 9.64 | -2.86 | 0.0056 |
| Reader = L2 | 96.27 | 9.64 | 9.99 | < .0001 |
| Text Language = English X Reader = L2 | -67.52 | 16.07 | -4.2 | 0.00015 |

## Study 3

Table 16. Demographic Characteristics of Participants

|  |  |  |
| --- | --- | --- |
|  | L2 Portuguese | L2 English |
| *N* | 34 | 18 |
| Age | 22.21 (20-25) | 24.41 (18-40) |
| ACTFL L2 Proficiency | 6 Intermediate,  11 Advanced,  17 Superior | 4 Novice,  12 Intermediate,  2 Advanced |
| Age of Initial L2 Learning | 18.76 years (0.96) | 13.46 years (3.87) |
| Self-Rated L2 Proficiency – Speaking  (1 = low, 10 = perfect) | 7.76 (0.65) | 6.24 (2.02) |
| Self-Rated L2 Proficiency – Reading  (1 = low, 10 = perfect) | 8.03 (0.93) | 6.47 (2.32) |

Chart, histogram

Description automatically generated

*Figure 10.* Distribution of fixation durations for native speakers of Portuguese reading Portuguese text (red, solid lines) and native speakers of English reading English text (blue, dotted lines) in Study 3. The vertical lines represent the mean fixation durations for each group. Histogram bin width was 2 ms.

Table 17. *Results of Analysis of* *Saccade Amplitude in Study 3*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 2.65 | 0.15 | 17.42 | < .0001 |
| Text Language = English | 0.61 | 0.19 | 3.27 | 0.002 |
| Reader = L2 | -0.2 | 0.18 | -1.09 | 0.28 |
| Text Language = English X Reader = L2 | -0.81 | 0.34 | -2.39 | 0.021 |

Table 18. *Results of Analysis of* *Fixation Durations in Study 2*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 205 | 4.57 | 44.86 | < .0001 |
| Text Language = English | -5.78 | 5.65 | -1.02 | 0.31 |
| Reader = L2 | 19.18 | 6.02 | 3.18 | 0.0024 |
| Text Language = English X Reader = L2 | 0.77 | 12.09 | 0.063 | 0.95 |

Table 19. *Mu in Analysis of Study 3 Data*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 134.82 | 3.26 | 41.4 | < .0001 |
| Text Language = English | -0.084 | 4.03 | -0.021 | 0.98 |
| Reader = L2 | 3.31 | 4.03 | 0.82 | 0.42 |
| Text Language = English X Reader = L2 | -0.47 | 7.79 | -0.061 | 0.95 |

Table 20. *Sigma in Analysis of Study 3 Data*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 43.39 | 1.6 | 27.18 | < .0001 |
| Text Language = English | -14.9 | 1.97 | -7.55 | < .0001 |
| Reader = L2 | -12.07 | 1.97 | -6.12 | < .0001 |
| Text Language = English X Reader = L2 | 27.27 | 3.75 | 7.28 | < .0001 |

Table 21. *Tau in Analysis of Study 3 Data*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *b* | *SE* | *t* value | *p*-value |
| (Intercept) | 69.78 | 4.02 | 17.37 | < .0001 |
| Text Language = English | -5.53 | 4.97 | -1.11 | 0.27 |
| Reader = L2 | 16.11 | 4.97 | 3.24 | 0.002 |
| Text Language = English X Reader = L2 | 0.73 | 9.54 | 0.077 | 0.94 |