

Appendix B

Mean durations and standard deviations of each subject and the normal group regarding each temporal parameter, utterance and context

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Standard deviations of vowel duration of each subject in each context for utterances beginning with a voiceless plosive

| | "pak"/puck | | | | "pet"/pet | | | | "pit"/pit | | | | "pad"/putt | | | | "pap"/pup | | | |
|------|------------|------|------|------|-----------|------|------|------|-----------|------|------|------|------------|------|------|------|-----------|------|------|------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 8.5 | 18.7 | 11.8 | 4.3 | 5.7 | 12.0 | 21.7 | 9.0 | 4.4 | 20.3 | 10.2 | 24.8 | 5.2 | 24.2 | 26.8 | 18.7 | 7.9 | 15.9 | 14.3 | 18.3 |
| AOS2 | 21.2 | 26.1 | 13.5 | 12.8 | 12.4 | 7.7 | 12.1 | 13.9 | 4.8 | 4.4 | 9.6 | 2.2 | 11.1 | 12.8 | 12.2 | 12.9 | 7.9 | 15.7 | 12.4 | 9.0 |
| AOS3 | 38.5 | 19.4 | 16.9 | 19.5 | 2.7 | 8.4 | 6.7 | 8.3 | 22.8 | 20.2 | 7.8 | 6.6 | 6.2 | 9.5 | 9.9 | 8.4 | 7.4 | 15.4 | 29.2 | 30.4 |
| N1 | 16.6 | 8.7 | 11.2 | 7.1 | 3.6 | 1.2 | 9.9 | 5.0 | 9.2 | 6.6 | 11.5 | 4.1 | 10.9 | 11.6 | 9.3 | 11.8 | 7.4 | 6.3 | 9.1 | 9.2 |
| N2 | 16.2 | 7.6 | 9.8 | 7.7 | 8.0 | 5.3 | 11.1 | 2.5 | 8.5 | 7.4 | 12.4 | 3.3 | 8.3 | 5.2 | 1.3 | 7.8 | 6.2 | 16.6 | 5.8 | 12.6 |
| N3 | 8.5 | 11.1 | 10.4 | 9.0 | 12.2 | 11.7 | 8.4 | 13.1 | 12.0 | 6.2 | 10.1 | 6.5 | 7.6 | 11.0 | 8.1 | 7.3 | 6.2 | 9.7 | 8.0 | 15.0 |
| N4 | 14.0 | 7.1 | 4.2 | 9.5 | 9.6 | 2.0 | 12.7 | 9.1 | 6.4 | 5.8 | 9.0 | 5.1 | 6.0 | 10.0 | 6.4 | 22.7 | 8.0 | 8.2 | 6.8 | 5.8 |
| N5 | 10.2 | 5.4 | 5.8 | 10.9 | 8.5 | 6.6 | 4.6 | 3.9 | 8.9 | 3.1 | 5.9 | 8.5 | 8.4 | 5.9 | 4.4 | 5.8 | 9.3 | 5.0 | 7.1 | 4.0 |
| NGR | 13.1 | 8.0 | 8.3 | 8.8 | 8.4 | 5.4 | 9.3 | 6.7 | 9.0 | 5.8 | 9.8 | 5.5 | 8.3 | 8.7 | 5.9 | 11.1 | 7.4 | 9.2 | 7.3 | 9.3 |
| PP1 | 5.1 | 7.4 | 9.6 | 8.7 | 9.1 | 7.3 | 9.4 | 8.0 | 8.8 | 6.8 | 5.7 | 2.3 | 8.4 | 7.7 | 9.0 | 5.7 | 7.6 | 7.6 | 10.6 | 3.5 |
| PP2 | 9.6 | 6.2 | 4.4 | 15.1 | 11.1 | 8.9 | 4.7 | 6.7 | 6.9 | 4.6 | 7.7 | 7.3 | 1.9 | 7.3 | 5.8 | 19.6 | 8.7 | 6.8 | 13.7 | 5.9 |
| PP3 | 9.4 | 15.4 | 13.0 | 6.4 | 1.9 | 11.0 | 9.8 | 13.9 | 8.9 | 12.5 | 7.6 | 11.5 | 5.9 | 21.6 | 10.0 | 12.2 | 9.2 | 6.3 | 8.2 | 16.1 |

Standard deviations of vowel duration of each subject in each context for utterances beginning with a voiced plosive

| | "byt"/bait | | | | "bak"/buck | | | | "bas"/bus | | | | "bek"/buck | | | | "bed"/bet | | | |
|------|------------|------|------|------|------------|------|------|------|-----------|------|------|------|------------|------|------|------|-----------|------|------|------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 23.6 | 34.0 | 34.9 | 34.0 | 18.9 | 13.7 | 15.3 | 28.5 | 16.8 | 16.3 | 20.9 | 29.3 | 16.6 | 33.1 | 20.2 | 28.2 | 18.0 | 23.1 | 19.6 | 29.8 |
| AOS2 | 9.2 | 11.4 | 24.8 | 24.0 | 18.5 | 13.6 | 9.1 | 11.4 | 13.1 | 28.5 | 11.9 | 12.7 | 19.1 | 11.0 | 9.7 | 12.3 | 13.9 | 14.8 | 5.0 | 8.7 |
| AOS3 | 12.6 | 58.6 | 18.8 | 41.1 | 13.7 | 14.8 | 24.5 | 32.1 | 53.4 | 24.4 | 27.1 | 38.7 | 18.5 | 7.2 | 24.2 | 20.9 | 18.8 | 28.3 | 10.5 | 14.1 |
| N1 | 8.2 | 7.1 | 30.5 | 10.3 | 8.8 | 5.7 | 10.8 | 10.4 | 11.1 | 4.8 | 11.6 | 16.6 | 7.5 | 12.8 | 10.4 | 13.1 | 9.7 | 13.5 | 23.2 | 9.7 |
| N2 | 19.5 | 4.8 | 24.1 | 9.5 | 4.0 | 3.8 | 8.7 | 9.1 | 12.9 | 7.0 | 13.2 | 11.0 | 13.5 | 14.3 | 7.9 | 9.2 | 14.3 | 4.8 | 9.2 | 10.6 |
| N3 | 13.9 | 5.3 | 10.6 | 10.4 | 8.2 | 10.3 | 10.0 | 10.8 | 6.5 | 8.9 | 9.8 | 12.6 | 3.7 | 7.1 | 12.8 | 15.1 | 6.6 | 7.4 | 5.2 | 10.1 |
| N4 | 7.0 | 4.6 | 5.4 | 12.7 | 6.2 | 8.2 | 5.3 | 11.5 | 9.3 | 19.8 | 4.5 | 8.1 | 12.7 | 10.3 | 5.1 | 10.9 | 16.6 | 9.4 | 7.1 | 10.8 |
| N5 | 9.4 | 7.4 | 9.0 | 14.0 | 9.7 | 5.7 | 12.6 | 13.0 | 10.4 | 5.5 | 9.9 | 9.1 | 10.4 | 5.4 | 9.4 | 2.8 | 2.0 | 6.2 | 1.8 | 6.6 |
| NGR | 11.6 | 5.8 | 15.9 | 11.4 | 7.4 | 6.7 | 9.5 | 11.0 | 10.0 | 9.2 | 9.8 | 11.5 | 9.5 | 10.0 | 9.1 | 10.2 | 9.8 | 8.3 | 9.3 | 9.6 |
| PP1 | 15.3 | 3.5 | 7.2 | 7.2 | 9.1 | 5.4 | 24.4 | 6.2 | 18.8 | 7.5 | 14.9 | 17.3 | 15.2 | 11.7 | 11.0 | 10.0 | 8.6 | 18.8 | 13.8 | 20.8 |
| PP2 | 28.1 | 22.2 | 27.1 | 34.9 | 10.5 | 7.5 | 4.4 | 23.5 | 6.0 | 10.7 | 7.4 | 11.5 | 6.0 | 8.1 | 11.6 | 8.0 | 16.2 | 4.8 | 15.9 | 8.3 |
| PP3 | 21.2 | 7.7 | 12.3 | 16.2 | 13.2 | 18.2 | 8.5 | 16.1 | 15.9 | 10.1 | 11.6 | 6.7 | 9.0 | 7.2 | 21.1 | 14.2 | 13.6 | 4.7 | 8.7 | 12.0 |

Standard deviations of vowel duration of each subject in each context for utterances beginning with a voiceless fricative

| | "set"/set | | | | "vas"/fuss | | | | "feit"/fête | | | | "voet"/foot | | | |
|------|-----------|------|------|------|------------|------|------|------|-------------|------|------|------|-------------|------|------|------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 9.7 | 17.8 | 33.2 | 13.9 | 49.4 | 37.0 | 20.5 | 17.1 | 15.4 | 24.0 | 63.7 | 36.7 | 19.2 | 53.2 | 12.7 | 46.4 |
| AOS2 | 13.7 | 15.6 | 11.5 | 21.2 | 10.4 | 19.6 | 5.8 | 10.1 | 26.5 | 19.8 | 30.8 | 26.2 | 11.1 | 7.5 | 12.4 | 8.7 |
| AOS3 | 12.2 | 24.8 | 15.0 | 7.9 | 20.1 | 7.9 | 9.7 | 14.5 | 5.5 | 18.1 | 31.2 | 12.7 | 15.8 | 16.5 | 12.0 | 11.1 |
| N1 | 5.4 | 5.9 | 8.4 | 7.8 | 10.7 | 8.3 | 18.9 | 10.7 | 2.5 | 7.1 | 19.0 | 9.5 | 7.8 | 11.7 | 10.4 | 10.0 |
| N2 | 6.6 | 5.8 | 6.4 | 5.4 | 8.3 | 8.7 | 7.6 | 6.1 | 6.9 | 8.4 | 14.7 | 13.1 | 4.8 | 10.3 | 14.6 | 13.2 |
| N3 | 5.2 | 12.1 | 9.2 | 15.9 | 9.7 | 12.0 | 13.7 | 5.1 | 5.6 | 10.5 | 7.3 | 15.4 | 5.9 | 8.6 | 12.3 | 13.6 |
| N4 | 5.8 | 6.4 | 4.7 | 10.1 | 11.0 | 7.6 | 9.5 | 12.8 | 16.7 | 6.1 | 8.0 | 5.8 | 7.1 | 5.5 | 17.3 | 13.0 |
| N5 | 8.9 | 8.5 | 5.6 | 6.6 | 13.7 | 5.5 | 12.7 | 8.1 | 23.2 | 5.7 | 8.9 | 6.1 | 8.5 | 4.4 | 3.7 | 7.2 |
| NGR | 6.4 | 7.7 | 6.8 | 9.2 | 10.7 | 8.4 | 12.5 | 8.6 | 11.0 | 7.5 | 11.6 | 10.0 | 6.8 | 8.1 | 11.7 | 11.4 |
| PP1 | 8.2 | 3.1 | 5.4 | 2.8 | 39.9 | 6.2 | 16.3 | 12.9 | 11.6 | 10.3 | 6.0 | 9.8 | 10.9 | 5.2 | 6.5 | 27.6 |
| PP2 | 5.1 | 17.1 | 5.8 | 13.7 | 15.9 | 12.2 | 15.5 | 10.8 | 29.5 | 30.5 | 62.5 | 28.1 | 13.2 | 9.0 | 14.3 | 8.9 |
| PP3 | 12.1 | 15.3 | 6.4 | 7.9 | 9.6 | 18.6 | 8.7 | 17.1 | 9.9 | 9.1 | 2.8 | 8.2 | 7.4 | 5.3 | 11.9 | 14.6 |

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Standard deviations of utterance duration of each subject in each context for utterances beginning with a voiceless plosive

| | "pak"/puck | | | | "pet"/pet | | | | "pit"/pit | | | | "pad"/putt | | | | "pap"/pup | | | |
|------|------------|------|------|-------|-----------|-------|-------|------|-----------|-------|------|-------|------------|-------|-------|-------|-----------|-------|-------|-------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 41.2 | 37.6 | 72.4 | 197.2 | 159.9 | 59.8 | 146.3 | 68.9 | 430.9 | 75.9 | 32.6 | 42.9 | 29.0 | 126.3 | 99.7 | 58.4 | 56.2 | 72.5 | 64.0 | 90.9 |
| AOS2 | 50.3 | 21.1 | 51.3 | 74.4 | 48.1 | 37.1 | 47.1 | 99.3 | 30.2 | 99.9 | 47.2 | 77.1 | 75.1 | 105.0 | 43.3 | 194.3 | 32.1 | 22.8 | 137.9 | 18.0 |
| AOS3 | 58.8 | 74.1 | 46.2 | 50.4 | 50.3 | 53.0 | 57.2 | 45.8 | 114.7 | 92.5 | 19.9 | 48.1 | 50.8 | 14.0 | 65.0 | 85.3 | 53.6 | 40.3 | 50.8 | 129.6 |
| N1 | 22.3 | 14.8 | 36.2 | 15.0 | 8.4 | 22.2 | 36.3 | 16.2 | 25.7 | 15.8 | 35.2 | 16.2 | 22.6 | 25.4 | 25.2 | 17.1 | 19.0 | 7.7 | 18.5 | 9.4 |
| N2 | 22.0 | 39.6 | 50.1 | 51.8 | 45.0 | 53.7 | 32.4 | 88.4 | 61.2 | 30.7 | 92.3 | 134.4 | 37.0 | 24.5 | 66.9 | 54.9 | 61.9 | 15.3 | 59.6 | 87.0 |
| N3 | 8.5 | 23.7 | 37.7 | 75.3 | 53.6 | 89.5 | 40.2 | 49.3 | 21.7 | 32.5 | 51.1 | 42.3 | 50.9 | 72.4 | 42.6 | 32.8 | 57.9 | 59.0 | 27.1 | 47.0 |
| N4 | 35.9 | 22.3 | 75.7 | 36.3 | 23.3 | 57.5 | 52.4 | 63.3 | 81.2 | 105.8 | 37.8 | 21.9 | 55.3 | 52.0 | 89.9 | 79.2 | 35.6 | 39.1 | 55.2 | 88.3 |
| N5 | 26.5 | 67.0 | 51.2 | 9.2 | 33.4 | 31.7 | 53.9 | 38.5 | 97.3 | 67.0 | 78.0 | 35.3 | 51.4 | 38.0 | 68.9 | 31.9 | 52.1 | 13.1 | 67.9 | 78.5 |
| NGR | 23.1 | 33.5 | 50.2 | 37.5 | 32.7 | 50.9 | 43.0 | 51.1 | 57.4 | 50.3 | 58.9 | 50.0 | 43.4 | 42.5 | 58.7 | 43.2 | 45.3 | 26.8 | 45.7 | 62.0 |
| PP1 | 42.4 | 66.5 | 65.9 | 144.5 | 73.7 | 77.4 | 51.2 | 25.9 | 49.1 | 42.5 | 41.9 | 37.0 | 51.7 | 53.5 | 35.4 | 38.9 | 18.7 | 172.3 | 82.2 | 56.4 |
| PP2 | 77.8 | 37.2 | 72.3 | 124.0 | 89.6 | 72.7 | 48.7 | 62.8 | 74.3 | 82.6 | 57.2 | 71.2 | 115.4 | 32.3 | 154.2 | 93.5 | 34.3 | 91.7 | 43.1 | 46.6 |
| PP3 | 41.1 | 63.6 | 93.2 | 88.9 | 95.3 | 109.7 | 44.5 | 96.6 | 69.5 | 85.2 | 40.1 | 95.3 | 26.3 | 80.1 | 37.1 | 58.4 | 103.6 | 74.8 | 63.0 | 101.1 |

Standard deviations of utterance duration of each subject in each context for utterances beginning with a voiced plosive

| | "byt"/bait | | | | "bak"/buck | | | | "bas"/bus | | | | "bek"/back | | | | "bed"/bet | | | |
|------|------------|-------|-------|-------|------------|-------|------|-------|-----------|-------|-------|-------|------------|-------|-------|-------|-----------|-------|-------|-------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 71.8 | 79.5 | 93.3 | 62.4 | 16.9 | 69.7 | 82.4 | 76.1 | 98.5 | 48.3 | 109.0 | 55.4 | 57.3 | 126.0 | 83.6 | 57.1 | 28.5 | 42.2 | 143.1 | 73.8 |
| AOS2 | 58.3 | 56.1 | 76.5 | 85.9 | 20.6 | 62.3 | 38.4 | 63.0 | 457.2 | 53.9 | 52.7 | 32.6 | 81.8 | 80.4 | 23.0 | 157.2 | 93.6 | 135.5 | 136.1 | 166.1 |
| AOS3 | 47.3 | 137.2 | 52.0 | 67.4 | 33.4 | 23.8 | 43.9 | 91.2 | 71.3 | 93.5 | 72.1 | 84.3 | 46.1 | 13.4 | 70.6 | 27.4 | 50.5 | 77.5 | 25.2 | 39.2 |
| N1 | 24.6 | 21.6 | 44.6 | 25.4 | 24.0 | 29.7 | 19.7 | 22.4 | 43.1 | 21.3 | 24.6 | 34.2 | 33.6 | 27.5 | 33.1 | 18.0 | 22.9 | 15.0 | 33.4 | 18.1 |
| N2 | 6.1 | 42.8 | 81.8 | 50.8 | 44.5 | 25.3 | 19.8 | 81.7 | 65.4 | 56.0 | 75.3 | 81.2 | 55.5 | 13.2 | 39.9 | 72.8 | 58.5 | 34.6 | 38.7 | 47.5 |
| N3 | 42.4 | 37.0 | 71.0 | 28.0 | 19.2 | 18.4 | 38.8 | 32.7 | 26.1 | 22.9 | 40.0 | 26.4 | 40.7 | 13.8 | 20.4 | 53.2 | 33.0 | 42.4 | 33.5 | 30.8 |
| N4 | 87.4 | 47.8 | 61.4 | 18.6 | 61.7 | 20.2 | 38.4 | 69.8 | 9.2 | 35.4 | 32.4 | 61.8 | 84.8 | 40.0 | 71.7 | 52.2 | 72.1 | 78.6 | 59.3 | 57.8 |
| N5 | 66.7 | 90.1 | 35.2 | 30.0 | 45.2 | 17.2 | 36.4 | 31.7 | 76.0 | 218.1 | 111.8 | 88.4 | 64.4 | 37.5 | 32.3 | 79.1 | 49.4 | 47.1 | 81.6 | 94.3 |
| NGR | 45.4 | 47.9 | 58.8 | 30.6 | 38.9 | 22.2 | 30.6 | 47.7 | 44.0 | 70.8 | 56.9 | 58.4 | 55.8 | 26.4 | 39.5 | 55.1 | 47.2 | 43.5 | 49.3 | 49.7 |
| PP1 | 63.2 | 80.3 | 34.1 | 21.8 | 52.6 | 150.3 | 44.7 | 435.3 | 73.0 | 53.8 | 80.1 | 112.1 | 321.2 | 139.1 | 63.4 | 104.9 | 103.5 | 55.5 | 64.3 | 31.7 |
| PP2 | 78.5 | 65.3 | 103.6 | 149.8 | 70.6 | 41.8 | 75.1 | 31.1 | 167.1 | 72.7 | 65.6 | 38.6 | 73.3 | 165.4 | 103.7 | 70.9 | 54.9 | 62.9 | 45.9 | 58.5 |
| PP3 | 47.7 | 106.7 | 108.4 | 69.8 | 70.9 | 63.9 | 47.1 | 72.3 | 66.0 | 14.2 | 76.4 | 42.2 | 57.5 | 48.2 | 105.0 | 40.7 | 147.0 | 88.4 | 115.7 | 122.7 |

Standard deviations of utterance duration of each subject in each context for utterances beginning with a voiceless fricative

| | "set"/set | | | | "vas"/fuss | | | | "feit"/fête | | | | "voet"/foot | | | |
|------|-----------|------|-------|-------|------------|-------|-------|-------|-------------|-------|-------|-------|-------------|-------|-------|-------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 29.8 | 68.4 | 44.4 | 167.8 | 103.9 | 146.1 | 65.6 | 129.3 | 207.1 | 124.5 | 141.4 | 113.7 | 163.5 | 111.1 | 151.0 | 130.3 |
| AOS2 | 109.7 | 60.7 | 34.8 | 83.3 | 89.9 | 163.0 | 123.6 | 156.2 | 76.7 | 302.8 | 132.3 | 125.8 | 44.6 | 134.3 | 56.6 | 102.8 |
| AOS3 | 56.8 | 78.8 | 277.4 | 151.1 | 56.4 | 74.5 | 50.5 | 89.4 | 60.2 | 60.7 | 28.9 | 46.0 | 59.6 | 86.7 | 61.5 | 176.6 |
| N1 | 32.8 | 29.9 | 37.3 | 13.6 | 38.3 | 41.4 | 33.2 | 35.3 | 54.4 | 24.3 | 51.1 | 26.2 | 44.3 | 15.1 | 70.3 | 33.4 |
| N2 | 36.2 | 53.8 | 125.6 | 34.1 | 22.1 | 53.4 | 29.9 | 25.4 | 51.7 | 78.3 | 50.3 | 78.4 | 25.6 | 63.7 | 88.3 | 81.1 |
| N3 | 54.1 | 31.4 | 77.4 | 89.2 | 28.9 | 39.3 | 55.1 | 9.6 | 23.9 | 22.8 | 46.2 | 25.1 | 25.4 | 37.6 | 28.3 | 27.5 |
| N4 | 36.0 | 52.0 | 70.3 | 52.3 | 63.8 | 178.2 | 91.2 | 51.8 | 49.9 | 50.7 | 79.9 | 91.8 | 55.1 | 43.8 | 89.1 | 56.6 |
| N5 | 60.0 | 38.2 | 92.8 | 12.2 | 95.0 | 45.9 | 114.3 | 33.6 | 56.4 | 33.1 | 96.9 | 6.4 | 32.5 | 92.4 | 33.9 | 23.1 |
| NGR | 43.9 | 41.1 | 80.7 | 40.3 | 49.6 | 71.7 | 64.7 | 31.1 | 47.3 | 41.8 | 64.9 | 45.6 | 36.6 | 50.5 | 62.0 | 44.3 |
| PP1 | 111.8 | 38.3 | 62.4 | 63.0 | 109.4 | 84.1 | 143.3 | 81.7 | 88.0 | 78.6 | 132.1 | 56.7 | 23.2 | 145.2 | 20.6 | 135.1 |
| PP2 | 58.0 | 81.8 | 44.6 | 83.7 | 92.9 | 58.4 | 187.2 | 31.9 | 115.1 | 37.6 | 67.3 | 101.3 | 65.5 | 71.1 | 152.9 | 102.6 |
| PP3 | 48.9 | 27.9 | 41.6 | 91.2 | 76.7 | 183.4 | 19.0 | 135.3 | 24.1 | 50.7 | 111.7 | 51.1 | 5.1 | 36.4 | 38.7 | 106.5 |

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Standard deviations of utterance onset duration of each subject in each context for utterances beginning with a voiceless plosive

| | "pak"/puck | | | | "pet"/pet | | | | "pit"/pit | | | | "pad"/putt | | | | "pap"/pup | | | |
|------|------------|-------|--------|-------|-----------|-------|-------|-------|-----------|-------|-------|--------|------------|-------|-------|-------|-----------|--------|-------|-------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 110.4 | 908.1 | 1165.0 | 589.1 | 256.9 | 377.2 | 713.9 | 565.8 | 495.3 | 825.3 | 796.1 | 1433.1 | 168.7 | 483.2 | 747.5 | 816.9 | 243.3 | 1380.2 | 463.8 | 636.0 |
| AOS2 | 471.8 | 227.0 | 82.0 | 336.6 | 238.7 | 71.5 | 51.3 | 218.2 | 332.3 | 123.0 | 407.0 | 218.2 | 503.2 | 118.9 | 107.7 | 635.5 | 175.9 | 118.2 | 295.4 | 102.8 |
| AOS3 | 133.2 | 51.5 | 26.2 | 66.8 | 219.7 | 73.7 | 768.6 | 309.5 | 189.7 | 37.7 | 64.4 | 117.1 | 233.3 | 236.1 | 157.5 | 102.8 | 283.2 | 80.7 | 57.4 | 41.4 |
| N1 | 51.0 | 18.5 | 34.7 | 10.0 | 16.9 | 7.8 | 31.0 | 8.4 | 28.0 | 13.6 | 23.8 | 11.6 | 20.2 | 12.6 | 16.9 | 8.2 | 18.9 | 18.2 | 19.8 | 6.8 |
| N2 | 11.2 | 9.4 | 10.2 | 27.3 | 15.6 | 44.5 | 10.1 | 17.0 | 11.7 | 14.8 | 10.8 | 28.1 | 12.7 | 18.3 | 11.1 | 23.7 | 9.8 | 15.5 | 17.5 | 17.9 |
| N3 | 17.4 | 10.4 | 20.9 | 8.0 | 12.8 | 7.9 | 26.3 | 8.8 | 15.4 | 14.4 | 13.8 | 12.4 | 6.8 | 15.8 | 40.1 | 9.0 | 12.7 | 7.2 | 14.4 | 8.0 |
| N4 | 28.3 | 24.3 | 28.7 | 15.6 | 16.2 | 18.4 | 30.5 | 9.8 | 50.9 | 24.8 | 8.8 | 17.4 | 79.2 | 49.7 | 12.9 | 24.9 | 26.5 | 11.3 | 22.8 | 17.3 |
| N5 | 12.2 | 13.6 | 6.5 | 12.9 | 7.8 | 12.6 | 17.3 | 8.2 | 8.8 | 13.8 | 13.2 | 18.0 | 5.4 | 4.9 | 18.6 | 9.9 | 8.9 | 20.4 | 5.4 | 15.3 |
| NGR | 24.0 | 15.2 | 20.2 | 14.7 | 13.9 | 18.2 | 23.0 | 10.5 | 23.0 | 16.3 | 14.1 | 17.5 | 24.9 | 20.3 | 19.9 | 15.2 | 15.4 | 14.5 | 16.0 | 13.0 |
| PP1 | 324.2 | 226.6 | 589.4 | 297.4 | 139.8 | 20.9 | 328.2 | 196.6 | 209.1 | 14.1 | 142.3 | 89.5 | 1053.1 | 13.3 | 164.5 | 34.4 | 531.2 | 164.6 | 674.8 | 195.3 |
| PP2 | 773.4 | 161.4 | 648.6 | 527.1 | 27.3 | 21.1 | 15.9 | 13.8 | 162.6 | 9.4 | 27.2 | 114.1 | 60.1 | 169.6 | 196.6 | 511.2 | 26.7 | 9.5 | 13.6 | 79.9 |
| PP3 | 17.2 | 11.4 | 118.8 | 325.8 | 16.5 | 38.8 | 13.8 | 38.4 | 40.7 | 19.3 | 25.7 | 57.7 | 66.3 | 17.5 | 15.4 | 55.9 | 279.1 | 13.9 | 43.5 | 21.3 |

Standard deviations of utterance onset duration of each subject in each context for utterances beginning with a voiced plosive

| | "byt"/bait | | | | "bak"/buck | | | | "bas"/bus | | | | "bek"/back | | | | "bed"/bet | | | |
|------|------------|-------|--------|-------|------------|-------|--------|-------|-----------|--------|-------|-------|------------|-------|--------|--------|-----------|-------|--------|-------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 761.1 | 141.1 | 1508.9 | 955.8 | 319.8 | 302.4 | 1843.5 | 750.9 | 879.4 | 1334.3 | 636.3 | 196.1 | 782.9 | 571.3 | 1317.1 | 1730.9 | 60.7 | 59.1 | 2187.0 | 966.4 |
| AOS2 | 70.9 | 436.9 | 133.6 | 149.2 | 480.1 | 47.1 | 581.7 | 215.8 | 328.0 | 218.4 | 77.5 | 108.6 | 418.1 | 450.7 | 918.0 | 495.4 | 197.4 | 206.3 | 189.6 | 61.3 |
| AOS3 | 270.6 | 11.0 | 103.1 | 519.4 | 239.7 | 153.1 | 309.8 | 82.4 | 107.6 | 228.3 | 119.1 | 595.0 | 256.6 | 34.6 | 134.2 | 409.5 | 156.2 | 267.2 | 29.7 | 100.6 |
| N1 | 8.3 | 9.2 | 35.3 | 5.1 | 50.1 | 11.3 | 71.4 | 6.3 | 29.2 | 5.9 | 45.7 | 10.0 | 17.3 | 25.2 | 50.2 | 8.2 | 43.5 | 8.3 | 35.1 | 3.1 |
| N2 | 7.3 | 8.6 | 7.8 | 15.9 | 11.5 | 14.3 | 8.6 | 29.7 | 6.2 | 11.9 | 11.5 | 23.7 | 15.7 | 11.0 | 15.8 | 22.1 | 22.9 | 11.5 | 14.6 | 18.7 |
| N3 | 24.5 | 5.7 | 15.2 | 2.6 | 15.8 | 12.6 | 35.8 | 11.3 | 6.9 | 16.2 | 18.9 | 13.3 | 2.7 | 7.4 | 20.4 | 9.7 | 16.0 | 7.6 | 11.1 | 10.1 |
| N4 | 14.4 | 25.0 | 21.8 | 23.0 | 27.7 | 24.3 | 28.7 | 15.6 | 16.8 | 16.1 | 14.9 | 10.8 | 17.0 | 22.1 | 18.9 | 18.5 | 22.4 | 7.6 | 12.0 | 19.2 |
| N5 | 5.4 | 11.2 | 5.2 | 37.8 | 13.2 | 14.5 | 14.3 | 36.2 | 13.1 | 22.4 | 5.2 | 13.3 | 10.0 | 5.9 | 13.4 | 29.0 | 9.3 | 13.9 | 4.2 | 14.3 |
| NGR | 12.0 | 11.9 | 17.0 | 16.9 | 23.7 | 15.4 | 31.8 | 19.8 | 14.5 | 14.5 | 19.2 | 14.2 | 12.5 | 14.3 | 23.7 | 17.5 | 22.8 | 9.8 | 15.4 | 13.1 |
| PP1 | 146.3 | 18.0 | 725.2 | 259.9 | 149.5 | 13.9 | 463.6 | 740.9 | 663.0 | 4.8 | 46.0 | 102.4 | 91.2 | 868.9 | 200.0 | 316.5 | 419.5 | 6.7 | 289.8 | 21.2 |
| PP2 | 15.5 | 17.8 | 394.8 | 307.6 | 98.1 | 34.3 | 112.6 | 263.1 | 564.8 | 101.3 | 136.9 | 8.7 | 77.0 | 116.4 | 10.2 | 18.1 | 21.0 | 83.1 | 11.0 | 7.1 |
| PP3 | 133.3 | 10.3 | 44.5 | 295.7 | 79.8 | 171.4 | 68.6 | 22.5 | 17.9 | 16.7 | 18.8 | 301.6 | 439.9 | 8.5 | 7.1 | 8.0 | 12.4 | 61.8 | 559.8 | 102.8 |

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Standard deviations of voice onset time of each subject in each context for utterances beginning with a voiceless plosive

| | "pak"/puck | | | | "pet"/pet | | | | "pit"/pit | | | | "pad"/putt | | | | "pap"/pup | | | |
|------|------------|------|------|------|-----------|------|------|------|-----------|------|------|------|------------|------|------|------|-----------|------|------|------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 16.0 | 5.0 | 13.3 | 4.0 | 8.5 | 6.7 | 13.8 | 9.0 | 2.9 | 7.1 | 11.7 | 11.1 | 12.0 | 6.7 | 16.1 | 16.8 | 7.0 | 6.5 | 2.6 | 5.5 |
| AOS2 | 7.1 | 3.2 | 2.1 | 2.0 | 4.8 | 2.3 | 5.7 | 1.6 | 4.3 | 2.2 | 2.1 | 0.9 | 6.2 | 3.9 | 4.4 | 3.6 | 5.4 | 3.2 | 4.8 | 2.8 |
| AOS3 | 2.1 | 4.4 | 5.5 | 5.7 | 3.8 | 2.4 | 4.4 | 9.6 | 2.9 | 1.4 | 4.7 | 4.2 | 4.7 | 4.2 | 33.7 | 2.8 | 5.1 | 1.7 | 8.1 | 4.0 |
| N1 | 2.5 | 1.8 | 4.9 | 0.4 | 0.9 | 0.6 | 6.5 | 0.6 | 1.9 | 0.8 | 1.8 | 1.6 | 2.0 | 0.5 | 2.5 | 0.4 | 5.2 | 0.7 | 2.2 | 1.6 |
| N2 | 2.0 | 2.0 | 2.6 | 0.9 | 2.4 | 2.8 | 1.4 | 2.9 | 3.3 | 1.4 | 3.7 | 2.1 | 2.3 | 0.6 | 2.1 | 1.9 | 2.6 | 1.2 | 3.0 | 1.1 |
| N3 | 6.7 | 5.6 | 6.2 | 2.1 | 3.5 | 4.4 | 5.5 | 1.1 | 6.3 | 3.3 | 4.9 | 2.1 | 4.2 | 5.5 | 6.5 | 5.3 | 4.9 | 2.9 | 3.7 | 7.0 |
| N4 | 6.1 | 1.2 | 2.9 | 1.2 | 4.2 | 3.0 | 3.5 | 3.1 | 2.5 | 3.7 | 3.4 | 2.8 | 4.7 | 1.1 | 1.6 | 2.6 | 2.8 | 2.7 | 4.8 | 2.3 |
| N5 | 1.3 | 3.3 | 1.7 | 0.6 | 2.2 | 3.5 | 3.5 | 2.4 | 2.3 | 2.5 | 3.1 | 1.8 | 1.9 | 3.1 | 0.9 | 1.1 | 2.7 | 3.1 | 3.1 | 0.4 |
| NGR | 3.7 | 2.8 | 3.6 | 1.1 | 2.6 | 2.9 | 4.1 | 2.0 | 3.3 | 2.3 | 3.4 | 2.1 | 3.0 | 2.2 | 2.7 | 2.3 | 3.6 | 2.1 | 3.4 | 2.5 |
| PP1 | 8.9 | 7.7 | 8.1 | 4.9 | 6.6 | 5.8 | 20.9 | 5.0 | 4.6 | 4.5 | 2.5 | 2.2 | 6.9 | 7.7 | 15.8 | 4.8 | 6.1 | 5.3 | 10.3 | 4.6 |
| PP2 | 15.7 | 4.0 | 12.5 | 9.1 | 4.7 | 2.0 | 3.0 | 4.2 | 4.2 | 2.2 | 2.6 | 2.3 | 4.8 | 4.0 | 7.4 | 6.2 | 5.1 | 4.9 | 7.6 | 6.4 |
| PP3 | 3.3 | 3.2 | 2.3 | 5.0 | 1.2 | 3.0 | 3.3 | 2.8 | 1.2 | 3.0 | 3.8 | 3.4 | 2.5 | 3.3 | 7.6 | 3.9 | 3.8 | 1.2 | 2.6 | 5.1 |

Standard deviations of voice onset time of each subject in each context for utterances beginning with a voiced plosive

| | "byt"/bait | | | | "bak"/buck | | | | "bas"/bus | | | | "bek"/back | | | | "bed"/bet | | | |
|------|------------|-------|-------|------|------------|-------|-------|------|-----------|------|------|------|------------|------|------|------|-----------|------|------|------|
| | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR | L1NR | L1FR | L2NR | L2FR |
| AOS1 | 6.9 | 147.5 | 144.4 | 5.2 | 2.6 | 26.7 | 172.9 | 5.7 | 10.2 | 12.1 | 82.7 | 87.2 | 9.7 | 74.1 | 85.3 | 64.0 | 32.4 | 23.8 | 71.7 | 76.6 |
| AOS2 | 5.1 | 5.4 | 7.6 | 2.1 | 2.0 | 2.4 | 3.1 | 3.8 | 114.1 | 3.4 | 6.3 | 5.4 | 6.2 | 6.4 | 54.6 | 12.2 | 5.3 | 5.0 | 1.9 | 0.8 |
| AOS3 | 41.7 | 65.7 | 4.2 | 46.9 | 48.6 | 46.9 | 73.6 | 42.8 | 92.3 | 68.1 | 69.9 | 81.4 | 89.1 | 77.0 | 0.0 | 35.8 | 50.6 | 72.0 | 11.0 | 32.6 |
| N1 | 2.7 | 9.2 | 3.5 | 5.1 | 2.6 | 11.3 | 2.9 | 32.7 | 49.6 | 5.9 | 3.7 | 30.2 | 60.1 | 25.2 | 2.7 | 8.2 | 5.6 | 8.3 | 2.6 | 3.1 |
| N2 | 95.7 | 8.6 | 86.4 | 15.9 | 11.5 | 14.3 | 74.1 | 29.7 | 6.4 | 11.9 | 12.4 | 23.7 | 103.2 | 11.0 | 71.6 | 42.2 | 80.9 | 11.5 | 75.1 | 42.0 |
| N3 | 24.5 | 5.7 | 15.2 | 2.6 | 57.4 | 12.6 | 57.2 | 11.3 | 6.9 | 16.2 | 55.5 | 13.3 | 2.7 | 7.4 | 20.4 | 9.7 | 16.0 | 7.6 | 11.1 | 10.1 |
| N4 | 75.3 | 47.5 | 67.1 | 48.8 | 27.7 | 43.0 | 79.8 | 15.6 | 65.7 | 40.2 | 60.8 | 10.8 | 80.9 | 62.9 | 55.0 | 18.5 | 77.4 | 30.3 | 51.7 | 66.0 |
| N5 | 17.4 | 11.2 | 5.2 | 65.4 | 13.2 | 44.7 | 14.3 | 39.9 | 13.1 | 21.0 | 5.2 | 13.3 | 10.0 | 5.9 | 13.4 | 29.0 | 9.3 | 13.9 | 4.2 | 14.3 |
| NGR | 43.1 | 16.4 | 35.4 | 27.6 | 22.5 | 25.2 | 45.7 | 25.8 | 28.4 | 19.0 | 27.5 | 18.3 | 51.4 | 22.5 | 32.6 | 21.5 | 37.8 | 14.3 | 29.0 | 27.1 |
| PP1 | 53.1 | 66.9 | 66.1 | 45.5 | 35.7 | 13.9 | 69.4 | 76.6 | 66.3 | 30.7 | 44.6 | 49.6 | 50.3 | 67.4 | 55.1 | 16.6 | 83.6 | 47.3 | 12.7 | 48.6 |
| PP2 | 6.7 | 48.2 | 7.0 | 11.1 | 15.0 | 8.2 | 21.2 | 10.8 | 11.6 | 6.5 | 47.8 | 7.7 | 7.3 | 74.1 | 8.3 | 10.1 | 8.3 | 5.9 | 69.4 | 6.3 |
| PP3 | 133.3 | 15.0 | 44.5 | 22.9 | 40.6 | 171.4 | 68.6 | 22.5 | 17.9 | 16.7 | 18.8 | 25.2 | 44.7 | 8.5 | 7.1 | 8.0 | 12.4 | 61.8 | 2.0 | 32.7 |