

Results

Mixed Model

Model Info

| Info | |
|--------------------------|---|
| Estimate | Linear mixed model fit by REML |
| Call | Rating ~ 1 + Condition + Vowel + Gender + Condition:Vowel + Condition:Gender + Vowel:Gender + Gender:Vowel:Condition+(1 ID) |
| AIC | 43325.002 |
| BIC | 43472.936 |
| LogLikel. | -21600.354 |
| R-squared Marginal | 0.383 |
| R-squared Conditional | 0.542 |
| Converged | yes |
| Optimizer | bobyqa |

[3]

Model Results

Fixed Effect Omnibus tests

| | F | Num df | Den df | p |
|----------------------------|--------|--------|--------|--------|
| Condition | 967.24 | 4 | 4888 | < .001 |
| Vowel | 4.64 | 2 | 4888 | 0.010 |
| Gender | 14.40 | 1 | 4888 | < .001 |
| Condition * Vowel | 3.51 | 8 | 4888 | < .001 |
| Condition * Gender | 33.72 | 4 | 4888 | < .001 |
| Vowel * Gender | 13.99 | 2 | 4888 | < .001 |
| Condition * Vowel * Gender | 6.88 | 8 | 4888 | < .001 |

Note. Satterthwaite method for degrees of freedom

Fixed Effects Parameter Estimates

| Names | Effect | Estimate | SE | df | t | p |
|-------------------------------|---|----------|-------|--------|---------|--------|
| (Intercept) | (Intercept) | 59.531 | 1.959 | 32.0 | 30.396 | < .001 |
| Condition1 | harmonic - reference | -15.759 | 0.851 | 4888.0 | -18.523 | < .001 |
| Condition2 | estimated - reference | -36.639 | 0.851 | 4888.0 | -43.066 | < .001 |
| Condition3 | synthesized - reference | -41.607 | 0.851 | 4888.0 | -48.905 | < .001 |
| Condition4 | anchor - reference | -42.458 | 0.851 | 4888.0 | -49.905 | < .001 |
| Vowel1 | i - (a, i, o) | 0.578 | 0.380 | 4888.0 | 1.520 | 0.129 |
| Vowel2 | o - (a, i, o) | -1.159 | 0.380 | 4888.0 | -3.047 | 0.002 |
| Gender1 | male - female | -2.040 | 0.538 | 4888.0 | -3.791 | < .001 |
| Condition1 * Vowel1 | harmonic - reference * i - (a, i, o) | 0.995 | 1.203 | 4888.0 | 0.827 | 0.408 |
| Condition2 * Vowel1 | estimated - reference * i - (a, i, o) | 1.497 | 1.203 | 4888.0 | 1.244 | 0.213 |
| Condition3 * Vowel1 | synthesized - reference * i - (a, i, o) | 3.228 | 1.203 | 4888.0 | 2.683 | 0.007 |
| Condition4 * Vowel1 | anchor - reference * i - (a, i, o) | -2.121 | 1.203 | 4888.0 | -1.763 | 0.078 |
| Condition1 * Vowel2 | harmonic - reference * o - (a, i, o) | -1.963 | 1.203 | 4888.0 | -1.631 | 0.103 |
| Condition2 * Vowel2 | estimated - reference * o - (a, i, o) | -2.818 | 1.203 | 4888.0 | -2.342 | 0.019 |
| Condition3 * Vowel2 | synthesized - reference * o - (a, i, o) | -2.978 | 1.203 | 4888.0 | -2.475 | 0.013 |
| Condition4 * Vowel2 | anchor - reference * o - (a, i, o) | 1.094 | 1.203 | 4888.0 | 0.909 | 0.363 |
| Condition1 * Gender1 | harmonic - reference * male - female | 3.840 | 1.702 | 4888.0 | 2.257 | 0.024 |
| Condition2 * Gender1 | estimated - reference * male - female | -6.762 | 1.702 | 4888.0 | -3.974 | < .001 |
| Condition3 * Gender1 | synthesized - reference * male - female | -7.731 | 1.702 | 4888.0 | -4.544 | < .001 |
| Condition4 * Gender1 | anchor - reference * male - female | 8.705 | 1.702 | 4888.0 | 5.116 | < .001 |
| Vowel1 * Gender1 | i - (a, i, o) * male - female | -1.710 | 0.761 | 4888.0 | -2.248 | 0.025 |
| Vowel2 * Gender1 | o - (a, i, o) * male - female | -2.301 | 0.761 | 4888.0 | -3.023 | 0.003 |
| Condition1 * Vowel1 * Gender1 | harmonic - reference * i - (a, i, o) * male - female | -6.313 | 2.406 | 4888.0 | -2.624 | 0.009 |
| Condition2 * Vowel1 * Gender1 | estimated - reference * i - (a, i, o) * male - female | -0.408 | 2.406 | 4888.0 | -0.170 | 0.865 |
| Condition3 * Vowel1 * Gender1 | synthesized - reference * i - (a, i, o) * male - female | 0.974 | 2.406 | 4888.0 | 0.405 | 0.686 |
| Condition4 * Vowel1 * Gender1 | anchor - reference * i - (a, i, o) * male - female | 4.186 | 2.406 | 4888.0 | 1.740 | 0.082 |
| Condition1 * Vowel2 * Gender1 | harmonic - reference * o - (a, i, o) * male - female | 2.717 | 2.406 | 4888.0 | 1.129 | 0.259 |
| Condition2 * Vowel2 * Gender1 | estimated - reference * o - (a, i, o) * male - female | -6.214 | 2.406 | 4888.0 | -2.582 | 0.010 |
| Condition3 * Vowel2 * Gender1 | synthesized - reference * o - (a, i, o) * male - female | -10.020 | 2.406 | 4888.0 | -4.164 | < .001 |
| Condition4 * Vowel2 * Gender1 | anchor - reference * o - (a, i, o) * male - female | -2.511 | 2.406 | 4888.0 | -1.044 | 0.297 |

Random Components

| Groups | Name | SD | Variance | ICC |
|----------|-------------|------|----------|-------|
| ID | (Intercept) | 11.1 | 124 | 0.257 |
| Residual | | 18.9 | 358 | |

Note. Number of Obs: 4950 , groups: ID 33

Random Effect LRT

| Test | N. par | AIC | LRT | df | p |
|----------|--------|-------|------|------|--------|
| (1 ID) | 31.0 | 44569 | 1306 | 1.00 | < .001 |

Post Hoc Tests

Post Hoc Comparisons - Condition

| Comparison | | | | | | | |
|-------------|---------------|------------|-------|--------|------|-------------|--|
| Condition | Condition | Difference | SE | t | df | Pbonferroni | |
| harmonic | - synthesized | 25.848 | 0.851 | 30.382 | 4888 | < .001 | |
| harmonic | - anchor | 26.699 | 0.851 | 31.382 | 4888 | < .001 | |
| harmonic | - estimated | 20.881 | 0.851 | 24.543 | 4888 | < .001 | |
| synthesized | - anchor | 0.851 | 0.851 | 1.000 | 4888 | 1.000 | |
| reference | - harmonic | 15.759 | 0.851 | 18.523 | 4888 | < .001 | |
| reference | - synthesized | 41.607 | 0.851 | 48.905 | 4888 | < .001 | |
| reference | - anchor | 42.458 | 0.851 | 49.905 | 4888 | < .001 | |
| reference | - estimated | 36.639 | 0.851 | 43.066 | 4888 | < .001 | |
| estimated | - synthesized | 4.968 | 0.851 | 5.839 | 4888 | < .001 | |
| estimated | - anchor | 5.818 | 0.851 | 6.839 | 4888 | < .001 | |

Post Hoc Comparisons - Vowel

| Comparison | | | | | | | |
|------------|-------|------------|-------|---------|------|-------------|--|
| Vowel | Vowel | Difference | SE | t | df | Pbonferroni | |
| i | - o | 1.73758 | 0.659 | 2.63667 | 4888 | 0.025 | |
| a | - i | 0.00242 | 0.659 | 0.00368 | 4888 | 1.000 | |
| a | - o | 1.74000 | 0.659 | 2.64035 | 4888 | 0.025 | |

Post Hoc Comparisons - Gender

| Comparison | | | | | | | |
|------------|--------|------------|-------|------|------|-------------|--|
| Gender | Gender | Difference | SE | t | df | Pbonferroni | |
| female | - male | 2.04 | 0.538 | 3.79 | 4888 | < .001 | |

| Comparison | | | | | SE | t | df | Pbonferroni |
|-------------|-------|---------------|-------|------------|------|----------|------|-------------|
| Condition | Vowel | Condition | Vowel | Difference | | | | |
| harmonic | i | - harmonic | o | 2.6424 | 1.47 | 1.7932 | 4888 | 1.000 |
| harmonic | i | - synthesized | i | 23.6152 | 1.47 | 16.0257 | 4888 | < .001 |
| harmonic | i | - synthesized | o | 29.5061 | 1.47 | 20.0234 | 4888 | < .001 |
| harmonic | i | - reference | o | -15.0788 | 1.47 | -10.2328 | 4888 | < .001 |
| harmonic | i | - anchor | i | 29.8152 | 1.47 | 20.2332 | 4888 | < .001 |
| harmonic | i | - anchor | o | 26.2848 | 1.47 | 17.8374 | 4888 | < .001 |
| harmonic | i | - estimated | i | 20.3788 | 1.47 | 13.8295 | 4888 | < .001 |
| harmonic | i | - estimated | o | 24.3788 | 1.47 | 16.5439 | 4888 | < .001 |
| harmonic | o | - synthesized | o | 26.8636 | 1.47 | 18.2302 | 4888 | < .001 |
| harmonic | o | - anchor | o | 23.6424 | 1.47 | 16.0442 | 4888 | < .001 |
| harmonic | o | - estimated | o | 21.7364 | 1.47 | 14.7507 | 4888 | < .001 |
| harmonic | a | - harmonic | i | 0.0818 | 1.47 | 0.0555 | 4888 | 1.000 |
| harmonic | a | - harmonic | o | 2.7242 | 1.47 | 1.8487 | 4888 | 1.000 |
| harmonic | a | - synthesized | i | 23.6970 | 1.47 | 16.0812 | 4888 | < .001 |
| harmonic | a | - synthesized | o | 29.5879 | 1.47 | 20.0789 | 4888 | < .001 |
| harmonic | a | - synthesized | a | 27.0667 | 1.47 | 18.3680 | 4888 | < .001 |
| harmonic | a | - reference | i | -14.6818 | 1.47 | -9.9634 | 4888 | < .001 |
| harmonic | a | - reference | o | -14.9970 | 1.47 | -10.1772 | 4888 | < .001 |
| harmonic | a | - anchor | i | 29.8970 | 1.47 | 20.2887 | 4888 | < .001 |
| harmonic | a | - anchor | o | 26.3667 | 1.47 | 17.8930 | 4888 | < .001 |
| harmonic | a | - anchor | a | 26.6394 | 1.47 | 18.0780 | 4888 | < .001 |
| harmonic | a | - estimated | i | 20.4606 | 1.47 | 13.8850 | 4888 | < .001 |
| harmonic | a | - estimated | o | 24.4606 | 1.47 | 16.5995 | 4888 | < .001 |
| harmonic | a | - estimated | a | 20.5273 | 1.47 | 13.9302 | 4888 | < .001 |
| synthesized | i | - harmonic | o | -20.9727 | 1.47 | -14.2325 | 4888 | < .001 |
| synthesized | i | - synthesized | o | 5.8909 | 1.47 | 3.9977 | 4888 | 0.007 |
| synthesized | i | - reference | o | -38.6939 | 1.47 | -26.2585 | 4888 | < .001 |
| synthesized | i | - anchor | i | 6.2000 | 1.47 | 4.2074 | 4888 | 0.003 |
| synthesized | i | - anchor | o | 2.6697 | 1.47 | 1.8117 | 4888 | 1.000 |
| synthesized | i | - estimated | o | 0.7636 | 1.47 | 0.5182 | 4888 | 1.000 |
| synthesized | o | - anchor | o | -3.2212 | 1.47 | -2.1860 | 4888 | 1.000 |
| synthesized | a | - harmonic | i | -26.9848 | 1.47 | -18.3125 | 4888 | < .001 |
| synthesized | a | - harmonic | o | -24.3424 | 1.47 | -16.5193 | 4888 | < .001 |
| synthesized | a | - synthesized | i | -3.3697 | 1.47 | -2.2867 | 4888 | 1.000 |
| synthesized | a | - synthesized | o | 2.5212 | 1.47 | 1.7109 | 4888 | 1.000 |
| synthesized | a | - reference | i | -41.7485 | 1.47 | -28.3314 | 4888 | < .001 |
| synthesized | a | - reference | o | -42.0636 | 1.47 | -28.5452 | 4888 | < .001 |
| synthesized | a | - anchor | i | 2.8303 | 1.47 | 1.9207 | 4888 | 1.000 |
| synthesized | a | - anchor | o | -0.7000 | 1.47 | -0.4750 | 4888 | 1.000 |
| synthesized | a | - anchor | a | -0.4273 | 1.47 | -0.2900 | 4888 | 1.000 |
| synthesized | a | - estimated | i | -6.6061 | 1.47 | -4.4830 | 4888 | < .001 |
| synthesized | a | - estimated | o | -2.6061 | 1.47 | -1.7685 | 4888 | 1.000 |
| reference | i | - harmonic | i | 14.7636 | 1.47 | 10.0189 | 4888 | < .001 |
| reference | i | - harmonic | o | 17.4061 | 1.47 | 11.8121 | 4888 | < .001 |
| reference | i | - synthesized | i | 38.3788 | 1.47 | 26.0446 | 4888 | < .001 |
| reference | i | - synthesized | o | 44.2697 | 1.47 | 30.0423 | 4888 | < .001 |
| reference | i | - reference | o | -0.3152 | 1.47 | -0.2139 | 4888 | 1.000 |

Post Hoc Comparisons - Condition * Vowel

| Comparison | | | | | SE | t | df | Pbonferroni |
|------------|-------|---------------|-------|------------|------|----------|------|-------------|
| Condition | Vowel | Condition | Vowel | Difference | | | | |
| reference | i | - anchor | i | 44.5788 | 1.47 | 30.2521 | 4888 | < .001 |
| reference | i | - anchor | o | 41.0485 | 1.47 | 27.8563 | 4888 | < .001 |
| reference | i | - estimated | i | 35.1424 | 1.47 | 23.8484 | 4888 | < .001 |
| reference | i | - estimated | o | 39.1424 | 1.47 | 26.5628 | 4888 | < .001 |
| reference | o | - harmonic | o | 17.7212 | 1.47 | 12.0260 | 4888 | < .001 |
| reference | o | - synthesized | o | 44.5848 | 1.47 | 30.2562 | 4888 | < .001 |
| reference | o | - anchor | o | 41.3636 | 1.47 | 28.0702 | 4888 | < .001 |
| reference | o | - estimated | o | 39.4576 | 1.47 | 26.7767 | 4888 | < .001 |
| reference | a | - harmonic | i | 14.8727 | 1.47 | 10.0929 | 4888 | < .001 |
| reference | a | - harmonic | o | 17.5152 | 1.47 | 11.8861 | 4888 | < .001 |
| reference | a | - harmonic | a | 14.7909 | 1.47 | 10.0374 | 4888 | < .001 |
| reference | a | - synthesized | i | 38.4879 | 1.47 | 26.1187 | 4888 | < .001 |
| reference | a | - synthesized | o | 44.3788 | 1.47 | 30.1163 | 4888 | < .001 |
| reference | a | - synthesized | a | 41.8576 | 1.47 | 28.4054 | 4888 | < .001 |
| reference | a | - reference | i | 0.1091 | 1.47 | 0.0740 | 4888 | 1.000 |
| reference | a | - reference | o | -0.2061 | 1.47 | -0.1398 | 4888 | 1.000 |
| reference | a | - anchor | i | 44.6879 | 1.47 | 30.3261 | 4888 | < .001 |
| reference | a | - anchor | o | 41.1576 | 1.47 | 27.9304 | 4888 | < .001 |
| reference | a | - anchor | a | 41.4303 | 1.47 | 28.1154 | 4888 | < .001 |
| reference | a | - estimated | i | 35.2515 | 1.47 | 23.9224 | 4888 | < .001 |
| reference | a | - estimated | o | 39.2515 | 1.47 | 26.6369 | 4888 | < .001 |
| reference | a | - estimated | a | 35.3182 | 1.47 | 23.9676 | 4888 | < .001 |
| anchor | i | - harmonic | o | -27.1727 | 1.47 | -18.4400 | 4888 | < .001 |
| anchor | i | - synthesized | o | -0.3091 | 1.47 | -0.2098 | 4888 | 1.000 |
| anchor | i | - reference | o | -44.8939 | 1.47 | -30.4659 | 4888 | < .001 |
| anchor | i | - anchor | o | -3.5303 | 1.47 | -2.3957 | 4888 | 1.000 |
| anchor | i | - estimated | o | -5.4364 | 1.47 | -3.6892 | 4888 | 0.024 |
| anchor | a | - harmonic | i | -26.5576 | 1.47 | -18.0225 | 4888 | < .001 |
| anchor | a | - harmonic | o | -23.9152 | 1.47 | -16.2293 | 4888 | < .001 |
| anchor | a | - synthesized | i | -2.9424 | 1.47 | -1.9968 | 4888 | 1.000 |
| anchor | a | - synthesized | o | 2.9485 | 1.47 | 2.0009 | 4888 | 1.000 |
| anchor | a | - reference | i | -41.3212 | 1.47 | -28.0414 | 4888 | < .001 |
| anchor | a | - reference | o | -41.6364 | 1.47 | -28.2553 | 4888 | < .001 |
| anchor | a | - anchor | i | 3.2576 | 1.47 | 2.2107 | 4888 | 1.000 |
| anchor | a | - anchor | o | -0.2727 | 1.47 | -0.1851 | 4888 | 1.000 |
| anchor | a | - estimated | i | -6.1788 | 1.47 | -4.1931 | 4888 | 0.003 |
| anchor | a | - estimated | o | -2.1788 | 1.47 | -1.4786 | 4888 | 1.000 |
| estimated | i | - harmonic | o | -17.7364 | 1.47 | -12.0363 | 4888 | < .001 |
| estimated | i | - synthesized | i | 3.2364 | 1.47 | 2.1963 | 4888 | 1.000 |
| estimated | i | - synthesized | o | 9.1273 | 1.47 | 6.1940 | 4888 | < .001 |
| estimated | i | - reference | o | -35.4576 | 1.47 | -24.0622 | 4888 | < .001 |
| estimated | i | - anchor | i | 9.4364 | 1.47 | 6.4037 | 4888 | < .001 |
| estimated | i | - anchor | o | 5.9061 | 1.47 | 4.0080 | 4888 | 0.007 |
| estimated | i | - estimated | o | 4.0000 | 1.47 | 2.7145 | 4888 | 0.699 |
| estimated | o | - synthesized | o | 5.1273 | 1.47 | 3.4795 | 4888 | 0.053 |
| estimated | o | - anchor | o | 1.9061 | 1.47 | 1.2935 | 4888 | 1.000 |
| estimated | a | - harmonic | i | -20.4455 | 1.47 | -13.8747 | 4888 | < .001 |

Post Hoc Comparisons - Condition * Vowel

| Comparison | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|---------------|-------|------------|------|----------|------|-------------|
| Condition | Vowel | Condition | Vowel | | | | | |
| estimated | a | - harmonic | o | -17.8030 | 1.47 | -12.0815 | 4888 | < .001 |
| estimated | a | - synthesized | i | 3.1697 | 1.47 | 2.1510 | 4888 | 1.000 |
| estimated | a | - synthesized | o | 9.0606 | 1.47 | 6.1487 | 4888 | < .001 |
| estimated | a | - synthesized | a | 6.5394 | 1.47 | 4.4378 | 4888 | < .001 |
| estimated | a | - reference | i | -35.2091 | 1.47 | -23.8936 | 4888 | < .001 |
| estimated | a | - reference | o | -35.5242 | 1.47 | -24.1075 | 4888 | < .001 |
| estimated | a | - anchor | i | 9.3697 | 1.47 | 6.3585 | 4888 | < .001 |
| estimated | a | - anchor | o | 5.8394 | 1.47 | 3.9627 | 4888 | 0.008 |
| estimated | a | - anchor | a | 6.1121 | 1.47 | 4.1478 | 4888 | 0.004 |
| estimated | a | - estimated | i | -0.0667 | 1.47 | -0.0452 | 4888 | 1.000 |
| estimated | a | - estimated | o | 3.9333 | 1.47 | 2.6692 | 4888 | 0.801 |

| Comparison | | | | Difference | SE | t | df | Pbonferroni |
|-------------|--------|---------------|--------|------------|------|---------|------|-------------|
| Condition | Gender | Condition | Gender | | | | | |
| harmonic | male | - synthesized | male | 31.634 | 1.20 | 26.292 | 4888 | < .001 |
| harmonic | male | - anchor | male | 24.267 | 1.20 | 20.169 | 4888 | < .001 |
| harmonic | male | - estimated | male | 26.182 | 1.20 | 21.761 | 4888 | < .001 |
| harmonic | female | - harmonic | male | -2.190 | 1.20 | -1.820 | 4888 | 1.000 |
| harmonic | female | - synthesized | male | 29.444 | 1.20 | 24.472 | 4888 | < .001 |
| harmonic | female | - synthesized | female | 20.063 | 1.20 | 16.675 | 4888 | < .001 |
| harmonic | female | - reference | male | -16.028 | 1.20 | -13.322 | 4888 | < .001 |
| harmonic | female | - anchor | male | 22.077 | 1.20 | 18.349 | 4888 | < .001 |
| harmonic | female | - anchor | female | 29.131 | 1.20 | 24.212 | 4888 | < .001 |
| harmonic | female | - estimated | male | 23.992 | 1.20 | 19.941 | 4888 | < .001 |
| harmonic | female | - estimated | female | 15.580 | 1.20 | 12.949 | 4888 | < .001 |
| synthesized | male | - anchor | male | -7.368 | 1.20 | -6.124 | 4888 | < .001 |
| synthesized | female | - harmonic | male | -22.253 | 1.20 | -18.495 | 4888 | < .001 |
| synthesized | female | - synthesized | male | 9.382 | 1.20 | 7.798 | 4888 | < .001 |
| synthesized | female | - reference | male | -36.091 | 1.20 | -29.996 | 4888 | < .001 |
| synthesized | female | - anchor | male | 2.014 | 1.20 | 1.674 | 4888 | 1.000 |
| synthesized | female | - anchor | female | 9.069 | 1.20 | 7.537 | 4888 | < .001 |
| synthesized | female | - estimated | male | 3.929 | 1.20 | 3.266 | 4888 | 0.049 |
| reference | male | - harmonic | male | 13.838 | 1.20 | 11.502 | 4888 | < .001 |
| reference | male | - synthesized | male | 45.473 | 1.20 | 37.794 | 4888 | < .001 |
| reference | male | - anchor | male | 38.105 | 1.20 | 31.671 | 4888 | < .001 |
| reference | male | - estimated | male | 40.020 | 1.20 | 33.262 | 4888 | < .001 |
| reference | female | - harmonic | male | 15.489 | 1.20 | 12.873 | 4888 | < .001 |
| reference | female | - harmonic | female | 17.679 | 1.20 | 14.693 | 4888 | < .001 |
| reference | female | - synthesized | male | 47.123 | 1.20 | 39.166 | 4888 | < .001 |
| reference | female | - synthesized | female | 37.741 | 1.20 | 31.368 | 4888 | < .001 |
| reference | female | - reference | male | 1.651 | 1.20 | 1.372 | 4888 | 1.000 |
| reference | female | - anchor | male | 39.756 | 1.20 | 33.042 | 4888 | < .001 |
| reference | female | - anchor | female | 46.810 | 1.20 | 38.906 | 4888 | < .001 |
| reference | female | - estimated | male | 41.671 | 1.20 | 34.634 | 4888 | < .001 |
| reference | female | - estimated | female | 33.259 | 1.20 | 27.642 | 4888 | < .001 |
| anchor | female | - harmonic | male | -31.321 | 1.20 | -26.032 | 4888 | < .001 |
| anchor | female | - synthesized | male | 0.313 | 1.20 | 0.260 | 4888 | 1.000 |
| anchor | female | - reference | male | -45.160 | 1.20 | -37.534 | 4888 | < .001 |
| anchor | female | - anchor | male | -7.055 | 1.20 | -5.863 | 4888 | < .001 |
| anchor | female | - estimated | male | -5.139 | 1.20 | -4.272 | 4888 | < .001 |
| estimated | male | - synthesized | male | 5.453 | 1.20 | 4.532 | 4888 | < .001 |
| estimated | male | - anchor | male | -1.915 | 1.20 | -1.592 | 4888 | 1.000 |
| estimated | female | - harmonic | male | -17.770 | 1.20 | -14.769 | 4888 | < .001 |
| estimated | female | - synthesized | male | 13.865 | 1.20 | 11.523 | 4888 | < .001 |
| estimated | female | - synthesized | female | 4.483 | 1.20 | 3.726 | 4888 | 0.009 |
| estimated | female | - reference | male | -31.608 | 1.20 | -26.271 | 4888 | < .001 |
| estimated | female | - anchor | male | 6.497 | 1.20 | 5.400 | 4888 | < .001 |
| estimated | female | - anchor | female | 13.552 | 1.20 | 11.263 | 4888 | < .001 |
| estimated | female | - estimated | male | 8.412 | 1.20 | 6.992 | 4888 | < .001 |

Post Hoc Comparisons - Vowel * Gender

| Comparison | | | | Difference | SE | t | df | Pbonferroni |
|------------|--------|-------|--------|------------|-------|--------|------|-------------|
| Vowel | Gender | Vowel | Gender | | | | | |
| i | male | - o | male | 2.033 | 0.932 | 2.181 | 4888 | 0.438 |
| i | female | - i | male | 3.750 | 0.932 | 4.024 | 4888 | < .001 |
| i | female | - o | male | 5.783 | 0.932 | 6.205 | 4888 | < .001 |
| i | female | - o | female | 1.442 | 0.932 | 1.548 | 4888 | 1.000 |
| i | female | - a | male | 0.887 | 0.932 | 0.952 | 4888 | 1.000 |
| o | female | - i | male | 2.308 | 0.932 | 2.476 | 4888 | 0.200 |
| o | female | - o | male | 4.341 | 0.932 | 4.657 | 4888 | < .001 |
| o | female | - a | male | -0.555 | 0.932 | -0.596 | 4888 | 1.000 |
| a | male | - i | male | 2.863 | 0.932 | 3.072 | 4888 | 0.032 |
| a | male | - o | male | 4.896 | 0.932 | 5.253 | 4888 | < .001 |
| a | female | - i | male | 0.892 | 0.932 | 0.957 | 4888 | 1.000 |
| a | female | - i | female | -2.858 | 0.932 | -3.067 | 4888 | 0.033 |
| a | female | - o | male | 2.925 | 0.932 | 3.138 | 4888 | 0.026 |
| a | female | - o | female | -1.416 | 0.932 | -1.519 | 4888 | 1.000 |
| a | female | - a | male | -1.971 | 0.932 | -2.115 | 4888 | 0.517 |

| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-------------|----------|-------|-------------|------------|------|---------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| male | i | harmonic | - male | i | synthesized | 25.7576 | 2.08 | 12.3600 | 4888 | < .001 |
| male | i | harmonic | - male | i | anchor | 22.1333 | 2.08 | 10.6208 | 4888 | < .001 |
| male | i | harmonic | - male | i | estimated | 22.7273 | 2.08 | 10.9058 | 4888 | < .001 |
| male | i | harmonic | - male | o | harmonic | -3.0242 | 2.08 | -1.4512 | 4888 | 1.000 |
| male | i | harmonic | - male | o | synthesized | 35.9939 | 2.08 | 17.2719 | 4888 | < .001 |
| male | i | harmonic | - male | o | anchor | 20.8000 | 2.08 | 9.9810 | 4888 | < .001 |
| male | i | harmonic | - male | o | estimated | 28.4788 | 2.08 | 13.6657 | 4888 | < .001 |
| male | i | harmonic | - male | a | synthesized | 24.1455 | 2.08 | 11.5864 | 4888 | < .001 |
| male | i | harmonic | - male | a | anchor | 20.8606 | 2.08 | 10.0101 | 4888 | < .001 |
| male | i | harmonic | - male | a | estimated | 18.3333 | 2.08 | 8.7974 | 4888 | < .001 |
| male | i | harmonic | - female | i | synthesized | 15.9515 | 2.08 | 7.6544 | 4888 | < .001 |
| male | i | harmonic | - female | i | anchor | 31.9758 | 2.08 | 15.3438 | 4888 | < .001 |
| male | i | harmonic | - female | i | estimated | 12.5091 | 2.08 | 6.0026 | 4888 | < .001 |
| male | i | harmonic | - female | o | harmonic | 2.7879 | 2.08 | 1.3378 | 4888 | 1.000 |
| male | i | harmonic | - female | o | synthesized | 17.4970 | 2.08 | 8.3960 | 4888 | < .001 |
| male | i | harmonic | - female | o | anchor | 26.2485 | 2.08 | 12.5955 | 4888 | < .001 |
| male | i | harmonic | - female | o | estimated | 14.7576 | 2.08 | 7.0815 | 4888 | < .001 |
| male | i | harmonic | - female | a | synthesized | 24.3030 | 2.08 | 11.6620 | 4888 | < .001 |
| male | i | harmonic | - female | a | anchor | 26.7333 | 2.08 | 12.8282 | 4888 | < .001 |
| male | i | harmonic | - female | a | estimated | 17.0364 | 2.08 | 8.1750 | 4888 | < .001 |
| male | i | synthesized | - male | i | anchor | -3.6242 | 2.08 | -1.7391 | 4888 | 1.000 |
| male | i | synthesized | - male | o | synthesized | 10.2364 | 2.08 | 4.9120 | 4888 | < .001 |
| male | i | synthesized | - male | o | anchor | -4.9576 | 2.08 | -2.3789 | 4888 | 1.000 |
| male | i | synthesized | - male | a | anchor | -4.8970 | 2.08 | -2.3498 | 4888 | 1.000 |
| male | i | synthesized | - female | i | anchor | 6.2182 | 2.08 | 2.9838 | 4888 | 1.000 |
| male | i | synthesized | - female | o | synthesized | -8.2606 | 2.08 | -3.9639 | 4888 | 0.033 |
| male | i | synthesized | - female | o | anchor | 0.4909 | 2.08 | 0.2356 | 4888 | 1.000 |
| male | i | synthesized | - female | a | anchor | 0.9758 | 2.08 | 0.4682 | 4888 | 1.000 |
| male | i | reference | - male | i | harmonic | 16.0000 | 2.08 | 7.6777 | 4888 | < .001 |
| male | i | reference | - male | i | synthesized | 41.7576 | 2.08 | 20.0377 | 4888 | < .001 |
| male | i | reference | - male | i | anchor | 38.1333 | 2.08 | 18.2985 | 4888 | < .001 |
| male | i | reference | - male | i | estimated | 38.7273 | 2.08 | 18.5836 | 4888 | < .001 |
| male | i | reference | - male | o | harmonic | 12.9758 | 2.08 | 6.2265 | 4888 | < .001 |
| male | i | reference | - male | o | synthesized | 51.9939 | 2.08 | 24.9497 | 4888 | < .001 |
| male | i | reference | - male | o | reference | -1.4667 | 2.08 | -0.7038 | 4888 | 1.000 |
| male | i | reference | - male | o | anchor | 36.8000 | 2.08 | 17.6587 | 4888 | < .001 |
| male | i | reference | - male | o | estimated | 44.4788 | 2.08 | 21.3435 | 4888 | < .001 |
| male | i | reference | - male | a | harmonic | 10.0182 | 2.08 | 4.8073 | 4888 | < .001 |
| male | i | reference | - male | a | synthesized | 40.1455 | 2.08 | 19.2641 | 4888 | < .001 |
| male | i | reference | - male | a | anchor | 36.8606 | 2.08 | 17.6878 | 4888 | < .001 |
| male | i | reference | - male | a | estimated | 34.3333 | 2.08 | 16.4751 | 4888 | < .001 |
| male | i | reference | - female | i | harmonic | 10.4788 | 2.08 | 5.0283 | 4888 | < .001 |
| male | i | reference | - female | i | synthesized | 31.9515 | 2.08 | 15.3322 | 4888 | < .001 |
| male | i | reference | - female | i | anchor | 47.9758 | 2.08 | 23.0215 | 4888 | < .001 |
| male | i | reference | - female | i | estimated | 28.5091 | 2.08 | 13.6803 | 4888 | < .001 |
| male | i | reference | - female | o | harmonic | 18.7879 | 2.08 | 9.0155 | 4888 | < .001 |
| male | i | reference | - female | o | synthesized | 33.4970 | 2.08 | 16.0738 | 4888 | < .001 |

| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-------------|----------|-------|-------------|------------|------|---------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| male | i | reference | - female | o | reference | -2.2121 | 2.08 | -1.0615 | 4888 | 1.000 |
| male | i | reference | - female | o | anchor | 42.2485 | 2.08 | 20.2732 | 4888 | < .001 |
| male | i | reference | - female | o | estimated | 30.7576 | 2.08 | 14.7592 | 4888 | < .001 |
| male | i | reference | - female | a | harmonic | 16.2970 | 2.08 | 7.8202 | 4888 | < .001 |
| male | i | reference | - female | a | synthesized | 40.3030 | 2.08 | 19.3397 | 4888 | < .001 |
| male | i | reference | - female | a | anchor | 42.7333 | 2.08 | 20.5059 | 4888 | < .001 |
| male | i | reference | - female | a | estimated | 33.0364 | 2.08 | 15.8527 | 4888 | < .001 |
| male | i | anchor | - male | o | anchor | -1.3333 | 2.08 | -0.6398 | 4888 | 1.000 |
| male | i | anchor | - female | o | anchor | 4.1152 | 2.08 | 1.9747 | 4888 | 1.000 |
| male | i | estimated | - male | i | synthesized | 3.0303 | 2.08 | 1.4541 | 4888 | 1.000 |
| male | i | estimated | - male | i | anchor | -0.5939 | 2.08 | -0.2850 | 4888 | 1.000 |
| male | i | estimated | - male | o | synthesized | 13.2667 | 2.08 | 6.3661 | 4888 | < .001 |
| male | i | estimated | - male | o | anchor | -1.9273 | 2.08 | -0.9248 | 4888 | 1.000 |
| male | i | estimated | - male | o | estimated | 5.7515 | 2.08 | 2.7599 | 4888 | 1.000 |
| male | i | estimated | - male | a | synthesized | 1.4182 | 2.08 | 0.6805 | 4888 | 1.000 |
| male | i | estimated | - male | a | anchor | -1.8667 | 2.08 | -0.8957 | 4888 | 1.000 |
| male | i | estimated | - female | i | synthesized | -6.7758 | 2.08 | -3.2514 | 4888 | 0.503 |
| male | i | estimated | - female | i | anchor | 9.2485 | 2.08 | 4.4380 | 4888 | 0.004 |
| male | i | estimated | - female | o | synthesized | -5.2303 | 2.08 | -2.5098 | 4888 | 1.000 |
| male | i | estimated | - female | o | anchor | 3.5212 | 2.08 | 1.6897 | 4888 | 1.000 |
| male | i | estimated | - female | o | estimated | -7.9697 | 2.08 | -3.8243 | 4888 | 0.058 |
| male | i | estimated | - female | a | synthesized | 1.5758 | 2.08 | 0.7561 | 4888 | 1.000 |
| male | i | estimated | - female | a | anchor | 4.0061 | 2.08 | 1.9223 | 4888 | 1.000 |
| male | o | harmonic | - male | i | synthesized | 28.7818 | 2.08 | 13.8112 | 4888 | < .001 |
| male | o | harmonic | - male | i | anchor | 25.1576 | 2.08 | 12.0720 | 4888 | < .001 |
| male | o | harmonic | - male | i | estimated | 25.7515 | 2.08 | 12.3570 | 4888 | < .001 |
| male | o | harmonic | - male | o | synthesized | 39.0182 | 2.08 | 18.7231 | 4888 | < .001 |
| male | o | harmonic | - male | o | anchor | 23.8242 | 2.08 | 11.4322 | 4888 | < .001 |
| male | o | harmonic | - male | o | estimated | 31.5030 | 2.08 | 15.1170 | 4888 | < .001 |
| male | o | harmonic | - male | a | synthesized | 27.1697 | 2.08 | 13.0376 | 4888 | < .001 |
| male | o | harmonic | - male | a | anchor | 23.8848 | 2.08 | 11.4613 | 4888 | < .001 |
| male | o | harmonic | - male | a | estimated | 21.3576 | 2.08 | 10.2486 | 4888 | < .001 |
| male | o | harmonic | - female | i | synthesized | 18.9758 | 2.08 | 9.1057 | 4888 | < .001 |
| male | o | harmonic | - female | i | anchor | 35.0000 | 2.08 | 16.7950 | 4888 | < .001 |
| male | o | harmonic | - female | i | estimated | 15.5333 | 2.08 | 7.4538 | 4888 | < .001 |
| male | o | harmonic | - female | o | synthesized | 20.5212 | 2.08 | 9.8472 | 4888 | < .001 |
| male | o | harmonic | - female | o | anchor | 29.2727 | 2.08 | 14.0467 | 4888 | < .001 |
| male | o | harmonic | - female | o | estimated | 17.7818 | 2.08 | 8.5327 | 4888 | < .001 |
| male | o | harmonic | - female | a | synthesized | 27.3273 | 2.08 | 13.1132 | 4888 | < .001 |
| male | o | harmonic | - female | a | anchor | 29.7576 | 2.08 | 14.2794 | 4888 | < .001 |
| male | o | harmonic | - female | a | estimated | 20.0606 | 2.08 | 9.6262 | 4888 | < .001 |
| male | o | synthesized | - male | i | anchor | -13.8606 | 2.08 | -6.6511 | 4888 | < .001 |
| male | o | synthesized | - male | o | anchor | -15.1939 | 2.08 | -7.2909 | 4888 | < .001 |
| male | o | synthesized | - male | a | anchor | -15.1333 | 2.08 | -7.2618 | 4888 | < .001 |
| male | o | synthesized | - female | i | anchor | -4.0182 | 2.08 | -1.9282 | 4888 | 1.000 |
| male | o | synthesized | - female | o | anchor | -9.7455 | 2.08 | -4.6764 | 4888 | 0.001 |
| male | o | synthesized | - female | a | anchor | -9.2606 | 2.08 | -4.4438 | 4888 | 0.004 |

| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-----------|----------|-------|-------------|------------|------|---------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| male | o | reference | - male | i | harmonic | 17.4667 | 2.08 | 8.3815 | 4888 | < .001 |
| male | o | reference | - male | i | synthesized | 43.2242 | 2.08 | 20.7415 | 4888 | < .001 |
| male | o | reference | - male | i | anchor | 39.6000 | 2.08 | 19.0023 | 4888 | < .001 |
| male | o | reference | - male | i | estimated | 40.1939 | 2.08 | 19.2873 | 4888 | < .001 |
| male | o | reference | - male | o | harmonic | 14.4424 | 2.08 | 6.9303 | 4888 | < .001 |
| male | o | reference | - male | o | synthesized | 53.4606 | 2.08 | 25.6534 | 4888 | < .001 |
| male | o | reference | - male | o | anchor | 38.2667 | 2.08 | 18.3625 | 4888 | < .001 |
| male | o | reference | - male | o | estimated | 45.9455 | 2.08 | 22.0472 | 4888 | < .001 |
| male | o | reference | - male | a | harmonic | 11.4848 | 2.08 | 5.5111 | 4888 | < .001 |
| male | o | reference | - male | a | synthesized | 41.6121 | 2.08 | 19.9679 | 4888 | < .001 |
| male | o | reference | - male | a | anchor | 38.3273 | 2.08 | 18.3916 | 4888 | < .001 |
| male | o | reference | - male | a | estimated | 35.8000 | 2.08 | 17.1789 | 4888 | < .001 |
| male | o | reference | - female | i | harmonic | 11.9455 | 2.08 | 5.7321 | 4888 | < .001 |
| male | o | reference | - female | i | synthesized | 33.4182 | 2.08 | 16.0359 | 4888 | < .001 |
| male | o | reference | - female | i | anchor | 49.4424 | 2.08 | 23.7253 | 4888 | < .001 |
| male | o | reference | - female | i | estimated | 29.9758 | 2.08 | 14.3841 | 4888 | < .001 |
| male | o | reference | - female | o | harmonic | 20.2545 | 2.08 | 9.7193 | 4888 | < .001 |
| male | o | reference | - female | o | synthesized | 34.9636 | 2.08 | 16.7775 | 4888 | < .001 |
| male | o | reference | - female | o | anchor | 43.7152 | 2.08 | 20.9770 | 4888 | < .001 |
| male | o | reference | - female | o | estimated | 32.2242 | 2.08 | 15.4630 | 4888 | < .001 |
| male | o | reference | - female | a | harmonic | 17.7636 | 2.08 | 8.5240 | 4888 | < .001 |
| male | o | reference | - female | a | synthesized | 41.7697 | 2.08 | 20.0435 | 4888 | < .001 |
| male | o | reference | - female | a | anchor | 44.2000 | 2.08 | 21.2097 | 4888 | < .001 |
| male | o | reference | - female | a | estimated | 34.5030 | 2.08 | 16.5565 | 4888 | < .001 |
| male | o | estimated | - male | i | synthesized | -2.7212 | 2.08 | -1.3058 | 4888 | 1.000 |
| male | o | estimated | - male | i | anchor | -6.3455 | 2.08 | -3.0449 | 4888 | 1.000 |
| male | o | estimated | - male | o | synthesized | 7.5152 | 2.08 | 3.6062 | 4888 | 0.137 |
| male | o | estimated | - male | o | anchor | -7.6788 | 2.08 | -3.6847 | 4888 | 0.101 |
| male | o | estimated | - male | a | synthesized | -4.3333 | 2.08 | -2.0794 | 4888 | 1.000 |
| male | o | estimated | - male | a | anchor | -7.6182 | 2.08 | -3.6556 | 4888 | 0.113 |
| male | o | estimated | - female | i | synthesized | -12.5273 | 2.08 | -6.0113 | 4888 | < .001 |
| male | o | estimated | - female | i | anchor | 3.4970 | 2.08 | 1.6780 | 4888 | 1.000 |
| male | o | estimated | - female | o | synthesized | -10.9818 | 2.08 | -5.2697 | 4888 | < .001 |
| male | o | estimated | - female | o | anchor | -2.2303 | 2.08 | -1.0702 | 4888 | 1.000 |
| male | o | estimated | - female | a | synthesized | -4.1758 | 2.08 | -2.0038 | 4888 | 1.000 |
| male | o | estimated | - female | a | anchor | -1.7455 | 2.08 | -0.8376 | 4888 | 1.000 |
| male | a | harmonic | - male | i | harmonic | 5.9818 | 2.08 | 2.8704 | 4888 | 1.000 |
| male | a | harmonic | - male | i | synthesized | 31.7394 | 2.08 | 15.2304 | 4888 | < .001 |
| male | a | harmonic | - male | i | anchor | 28.1152 | 2.08 | 13.4913 | 4888 | < .001 |
| male | a | harmonic | - male | i | estimated | 28.7091 | 2.08 | 13.7763 | 4888 | < .001 |
| male | a | harmonic | - male | o | harmonic | 2.9576 | 2.08 | 1.4192 | 4888 | 1.000 |
| male | a | harmonic | - male | o | synthesized | 41.9758 | 2.08 | 20.1424 | 4888 | < .001 |
| male | a | harmonic | - male | o | anchor | 26.7818 | 2.08 | 12.8514 | 4888 | < .001 |
| male | a | harmonic | - male | o | estimated | 34.4606 | 2.08 | 16.5362 | 4888 | < .001 |
| male | a | harmonic | - male | a | synthesized | 30.1273 | 2.08 | 14.4568 | 4888 | < .001 |
| male | a | harmonic | - male | a | anchor | 26.8424 | 2.08 | 12.8805 | 4888 | < .001 |
| male | a | harmonic | - male | a | estimated | 24.3152 | 2.08 | 11.6678 | 4888 | < .001 |

| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-------------|----------|-------|-------------|------------|------|---------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| male | a | harmonic | - female | i | harmonic | 0.4606 | 2.08 | 0.2210 | 4888 | 1.000 |
| male | a | harmonic | - female | i | synthesized | 21.9333 | 2.08 | 10.5249 | 4888 | < .001 |
| male | a | harmonic | - female | i | anchor | 37.9576 | 2.08 | 18.2142 | 4888 | < .001 |
| male | a | harmonic | - female | i | estimated | 18.4909 | 2.08 | 8.8730 | 4888 | < .001 |
| male | a | harmonic | - female | o | harmonic | 8.7697 | 2.08 | 4.2082 | 4888 | 0.011 |
| male | a | harmonic | - female | o | synthesized | 23.4788 | 2.08 | 11.2665 | 4888 | < .001 |
| male | a | harmonic | - female | o | anchor | 32.2303 | 2.08 | 15.4659 | 4888 | < .001 |
| male | a | harmonic | - female | o | estimated | 20.7394 | 2.08 | 9.9519 | 4888 | < .001 |
| male | a | harmonic | - female | a | synthesized | 30.2848 | 2.08 | 14.5324 | 4888 | < .001 |
| male | a | harmonic | - female | a | anchor | 32.7152 | 2.08 | 15.6986 | 4888 | < .001 |
| male | a | harmonic | - female | a | estimated | 23.0182 | 2.08 | 11.0454 | 4888 | < .001 |
| male | a | synthesized | - male | i | synthesized | 1.6121 | 2.08 | 0.7736 | 4888 | 1.000 |
| male | a | synthesized | - male | i | anchor | -2.0121 | 2.08 | -0.9655 | 4888 | 1.000 |
| male | a | synthesized | - male | o | synthesized | 11.8485 | 2.08 | 5.6856 | 4888 | < .001 |
| male | a | synthesized | - male | o | anchor | -3.3455 | 2.08 | -1.6053 | 4888 | 1.000 |
| male | a | synthesized | - male | a | anchor | -3.2848 | 2.08 | -1.5763 | 4888 | 1.000 |
| male | a | synthesized | - female | i | synthesized | -8.1939 | 2.08 | -3.9319 | 4888 | 0.037 |
| male | a | synthesized | - female | i | anchor | 7.8303 | 2.08 | 3.7574 | 4888 | 0.076 |
| male | a | synthesized | - female | o | synthesized | -6.6485 | 2.08 | -3.1903 | 4888 | 0.622 |
| male | a | synthesized | - female | o | anchor | 2.1030 | 2.08 | 1.0092 | 4888 | 1.000 |
| male | a | synthesized | - female | a | anchor | 2.5879 | 2.08 | 1.2418 | 4888 | 1.000 |
| male | a | reference | - male | i | harmonic | 17.0545 | 2.08 | 8.1837 | 4888 | < .001 |
| male | a | reference | - male | i | synthesized | 42.8121 | 2.08 | 20.5437 | 4888 | < .001 |
| male | a | reference | - male | i | reference | 1.0545 | 2.08 | 0.5060 | 4888 | 1.000 |
| male | a | reference | - male | i | anchor | 39.1879 | 2.08 | 18.8046 | 4888 | < .001 |
| male | a | reference | - male | i | estimated | 39.7818 | 2.08 | 19.0896 | 4888 | < .001 |
| male | a | reference | - male | o | harmonic | 14.0303 | 2.08 | 6.7325 | 4888 | < .001 |
| male | a | reference | - male | o | synthesized | 53.0485 | 2.08 | 25.4557 | 4888 | < .001 |
| male | a | reference | - male | o | reference | -0.4121 | 2.08 | -0.1978 | 4888 | 1.000 |
| male | a | reference | - male | o | anchor | 37.8545 | 2.08 | 18.1648 | 4888 | < .001 |
| male | a | reference | - male | o | estimated | 45.5333 | 2.08 | 21.8495 | 4888 | < .001 |
| male | a | reference | - male | a | harmonic | 11.0727 | 2.08 | 5.3133 | 4888 | < .001 |
| male | a | reference | - male | a | synthesized | 41.2000 | 2.08 | 19.7701 | 4888 | < .001 |
| male | a | reference | - male | a | anchor | 37.9152 | 2.08 | 18.1939 | 4888 | < .001 |
| male | a | reference | - male | a | estimated | 35.3879 | 2.08 | 16.9811 | 4888 | < .001 |
| male | a | reference | - female | i | harmonic | 11.5333 | 2.08 | 5.5344 | 4888 | < .001 |
| male | a | reference | - female | i | synthesized | 33.0061 | 2.08 | 15.8382 | 4888 | < .001 |
| male | a | reference | - female | i | reference | -1.9939 | 2.08 | -0.9568 | 4888 | 1.000 |
| male | a | reference | - female | i | anchor | 49.0303 | 2.08 | 23.5275 | 4888 | < .001 |
| male | a | reference | - female | i | estimated | 29.5636 | 2.08 | 14.1863 | 4888 | < .001 |
| male | a | reference | - female | o | harmonic | 19.8424 | 2.08 | 9.5215 | 4888 | < .001 |
| male | a | reference | - female | o | synthesized | 34.5515 | 2.08 | 16.5798 | 4888 | < .001 |
| male | a | reference | - female | o | reference | -1.1576 | 2.08 | -0.5555 | 4888 | 1.000 |
| male | a | reference | - female | o | anchor | 43.3030 | 2.08 | 20.7793 | 4888 | < .001 |
| male | a | reference | - female | o | estimated | 31.8121 | 2.08 | 15.2653 | 4888 | < .001 |
| male | a | reference | - female | a | harmonic | 17.3515 | 2.08 | 8.3262 | 4888 | < .001 |
| male | a | reference | - female | a | synthesized | 41.3576 | 2.08 | 19.8457 | 4888 | < .001 |

| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-------------|----------|-------|-------------|------------|------|---------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| male | a | reference | - female | a | anchor | 43.7879 | 2.08 | 21.0119 | 4888 | < .001 |
| male | a | reference | - female | a | estimated | 34.0909 | 2.08 | 16.3588 | 4888 | < .001 |
| male | a | anchor | - male | i | anchor | 1.2727 | 2.08 | 0.6107 | 4888 | 1.000 |
| male | a | anchor | - male | o | anchor | -0.0606 | 2.08 | -0.0291 | 4888 | 1.000 |
| male | a | anchor | - female | i | anchor | 11.1152 | 2.08 | 5.3337 | 4888 | < .001 |
| male | a | anchor | - female | o | anchor | 5.3879 | 2.08 | 2.5854 | 4888 | 1.000 |
| male | a | estimated | - male | i | synthesized | 7.4242 | 2.08 | 3.5626 | 4888 | 0.161 |
| male | a | estimated | - male | i | anchor | 3.8000 | 2.08 | 1.8235 | 4888 | 1.000 |
| male | a | estimated | - male | i | estimated | 4.3939 | 2.08 | 2.1085 | 4888 | 1.000 |
| male | a | estimated | - male | o | synthesized | 17.6606 | 2.08 | 8.4746 | 4888 | < .001 |
| male | a | estimated | - male | o | anchor | 2.4667 | 2.08 | 1.1836 | 4888 | 1.000 |
| male | a | estimated | - male | o | estimated | 10.1455 | 2.08 | 4.8684 | 4888 | < .001 |
| male | a | estimated | - male | a | synthesized | 5.8121 | 2.08 | 2.7890 | 4888 | 1.000 |
| male | a | estimated | - male | a | anchor | 2.5273 | 2.08 | 1.2127 | 4888 | 1.000 |
| male | a | estimated | - female | i | synthesized | -2.3818 | 2.08 | -1.1429 | 4888 | 1.000 |
| male | a | estimated | - female | i | anchor | 13.6424 | 2.08 | 6.5464 | 4888 | < .001 |
| male | a | estimated | - female | i | estimated | -5.8242 | 2.08 | -2.7948 | 4888 | 1.000 |
| male | a | estimated | - female | o | synthesized | -0.8364 | 2.08 | -0.4013 | 4888 | 1.000 |
| male | a | estimated | - female | o | anchor | 7.9152 | 2.08 | 3.7981 | 4888 | 0.064 |
| male | a | estimated | - female | o | estimated | -3.5758 | 2.08 | -1.7159 | 4888 | 1.000 |
| male | a | estimated | - female | a | synthesized | 5.9697 | 2.08 | 2.8646 | 4888 | 1.000 |
| male | a | estimated | - female | a | anchor | 8.4000 | 2.08 | 4.0308 | 4888 | 0.025 |
| female | i | harmonic | - male | i | harmonic | 5.5212 | 2.08 | 2.6494 | 4888 | 1.000 |
| female | i | harmonic | - male | i | synthesized | 31.2788 | 2.08 | 15.0093 | 4888 | < .001 |
| female | i | harmonic | - male | i | anchor | 27.6545 | 2.08 | 13.2702 | 4888 | < .001 |
| female | i | harmonic | - male | i | estimated | 28.2485 | 2.08 | 13.5552 | 4888 | < .001 |
| female | i | harmonic | - male | o | harmonic | 2.4970 | 2.08 | 1.1982 | 4888 | 1.000 |
| female | i | harmonic | - male | o | synthesized | 41.5152 | 2.08 | 19.9213 | 4888 | < .001 |
| female | i | harmonic | - male | o | anchor | 26.3212 | 2.08 | 12.6304 | 4888 | < .001 |
| female | i | harmonic | - male | o | estimated | 34.0000 | 2.08 | 16.3151 | 4888 | < .001 |
| female | i | harmonic | - male | a | synthesized | 29.6667 | 2.08 | 14.2358 | 4888 | < .001 |
| female | i | harmonic | - male | a | anchor | 26.3818 | 2.08 | 12.6595 | 4888 | < .001 |
| female | i | harmonic | - male | a | estimated | 23.8545 | 2.08 | 11.4468 | 4888 | < .001 |
| female | i | harmonic | - female | i | synthesized | 21.4727 | 2.08 | 10.3038 | 4888 | < .001 |
| female | i | harmonic | - female | i | anchor | 37.4970 | 2.08 | 17.9932 | 4888 | < .001 |
| female | i | harmonic | - female | i | estimated | 18.0303 | 2.08 | 8.6520 | 4888 | < .001 |
| female | i | harmonic | - female | o | harmonic | 8.3091 | 2.08 | 3.9872 | 4888 | 0.030 |
| female | i | harmonic | - female | o | synthesized | 23.0182 | 2.08 | 11.0454 | 4888 | < .001 |
| female | i | harmonic | - female | o | anchor | 31.7697 | 2.08 | 15.2449 | 4888 | < .001 |
| female | i | harmonic | - female | o | estimated | 20.2788 | 2.08 | 9.7309 | 4888 | < .001 |
| female | i | harmonic | - female | a | synthesized | 29.8242 | 2.08 | 14.3114 | 4888 | < .001 |
| female | i | harmonic | - female | a | anchor | 32.2545 | 2.08 | 15.4776 | 4888 | < .001 |
| female | i | harmonic | - female | a | estimated | 22.5576 | 2.08 | 10.8244 | 4888 | < .001 |
| female | i | synthesized | - male | i | synthesized | 9.8061 | 2.08 | 4.7055 | 4888 | 0.001 |
| female | i | synthesized | - male | i | anchor | 6.1818 | 2.08 | 2.9664 | 4888 | 1.000 |
| female | i | synthesized | - male | o | synthesized | 20.0424 | 2.08 | 9.6175 | 4888 | < .001 |
| female | i | synthesized | - male | o | anchor | 4.8485 | 2.08 | 2.3266 | 4888 | 1.000 |

| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-------------|--------|--------|-----------|------------|------|---------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| female | i | synthesized | - | male | a | 4.9091 | 2.08 | 2.3557 | 4888 | 1.000 |
| female | i | synthesized | - | female | i | 16.0242 | 2.08 | 7.6893 | 4888 | < .001 |
| female | i | synthesized | - | female | o | 1.5455 | 2.08 | 0.7416 | 4888 | 1.000 |
| female | i | synthesized | - | female | o | 10.2970 | 2.08 | 4.9411 | 4888 | < .001 |
| female | i | synthesized | - | female | a | 10.7818 | 2.08 | 5.1737 | 4888 | < .001 |
| female | i | reference | - | male | i | 19.0485 | 2.08 | 9.1405 | 4888 | < .001 |
| female | i | reference | - | male | i | 44.8061 | 2.08 | 21.5005 | 4888 | < .001 |
| female | i | reference | - | male | i | 3.0485 | 2.08 | 1.4628 | 4888 | 1.000 |
| female | i | reference | - | male | i | 41.1818 | 2.08 | 19.7614 | 4888 | < .001 |
| female | i | reference | - | male | i | 41.7758 | 2.08 | 20.0464 | 4888 | < .001 |
| female | i | reference | - | male | o | 16.0242 | 2.08 | 7.6893 | 4888 | < .001 |
| female | i | reference | - | male | o | 55.0424 | 2.08 | 26.4125 | 4888 | < .001 |
| female | i | reference | - | male | o | 1.5818 | 2.08 | 0.7590 | 4888 | 1.000 |
| female | i | reference | - | male | o | 39.8485 | 2.08 | 19.1216 | 4888 | < .001 |
| female | i | reference | - | male | o | 47.5273 | 2.08 | 22.8063 | 4888 | < .001 |
| female | i | reference | - | male | a | 13.0667 | 2.08 | 6.2701 | 4888 | < .001 |
| female | i | reference | - | male | a | 43.1939 | 2.08 | 20.7269 | 4888 | < .001 |
| female | i | reference | - | male | a | 39.9091 | 2.08 | 19.1507 | 4888 | < .001 |
| female | i | reference | - | male | a | 37.3818 | 2.08 | 17.9379 | 4888 | < .001 |
| female | i | reference | - | female | i | 13.5273 | 2.08 | 6.4912 | 4888 | < .001 |
| female | i | reference | - | female | i | 35.0000 | 2.08 | 16.7950 | 4888 | < .001 |
| female | i | reference | - | female | i | 51.0242 | 2.08 | 24.4843 | 4888 | < .001 |
| female | i | reference | - | female | i | 31.5576 | 2.08 | 15.1431 | 4888 | < .001 |
| female | i | reference | - | female | o | 21.8364 | 2.08 | 10.4783 | 4888 | < .001 |
| female | i | reference | - | female | o | 36.5455 | 2.08 | 17.5366 | 4888 | < .001 |
| female | i | reference | - | female | o | 0.8364 | 2.08 | 0.4013 | 4888 | 1.000 |
| female | i | reference | - | female | o | 45.2970 | 2.08 | 21.7361 | 4888 | < .001 |
| female | i | reference | - | female | o | 33.8061 | 2.08 | 16.2221 | 4888 | < .001 |
| female | i | reference | - | female | a | 19.3455 | 2.08 | 9.2831 | 4888 | < .001 |
| female | i | reference | - | female | a | 43.3515 | 2.08 | 20.8025 | 4888 | < .001 |
| female | i | reference | - | female | a | 45.7818 | 2.08 | 21.9687 | 4888 | < .001 |
| female | i | reference | - | female | a | 36.0848 | 2.08 | 17.3156 | 4888 | < .001 |
| female | i | anchor | - | male | i | -9.8424 | 2.08 | -4.7230 | 4888 | 0.001 |
| female | i | anchor | - | male | o | -11.1758 | 2.08 | -5.3628 | 4888 | < .001 |
| female | i | anchor | - | female | o | -5.7273 | 2.08 | -2.7483 | 4888 | 1.000 |
| female | i | estimated | - | male | i | 13.2485 | 2.08 | 6.3574 | 4888 | < .001 |
| female | i | estimated | - | male | i | 9.6242 | 2.08 | 4.6183 | 4888 | 0.002 |
| female | i | estimated | - | male | i | 10.2182 | 2.08 | 4.9033 | 4888 | < .001 |
| female | i | estimated | - | male | o | 23.4848 | 2.08 | 11.2694 | 4888 | < .001 |
| female | i | estimated | - | male | o | 8.2909 | 2.08 | 3.9785 | 4888 | 0.031 |
| female | i | estimated | - | male | o | 15.9697 | 2.08 | 7.6632 | 4888 | < .001 |
| female | i | estimated | - | male | a | 11.6364 | 2.08 | 5.5838 | 4888 | < .001 |
| female | i | estimated | - | male | a | 8.3515 | 2.08 | 4.0075 | 4888 | 0.027 |
| female | i | estimated | - | female | i | 3.4424 | 2.08 | 1.6519 | 4888 | 1.000 |
| female | i | estimated | - | female | i | 19.4667 | 2.08 | 9.3412 | 4888 | < .001 |
| female | i | estimated | - | female | o | 4.9879 | 2.08 | 2.3935 | 4888 | 1.000 |
| female | i | estimated | - | female | o | 13.7394 | 2.08 | 6.5929 | 4888 | < .001 |

| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-------------|----------|-------|-------------|------------|------|---------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| female | i | estimated | - female | o | estimated | 2.2485 | 2.08 | 1.0790 | 4888 | 1.000 |
| female | i | estimated | - female | a | synthesized | 11.7939 | 2.08 | 5.6594 | 4888 | < .001 |
| female | i | estimated | - female | a | anchor | 14.2242 | 2.08 | 6.8256 | 4888 | < .001 |
| female | o | harmonic | - male | i | synthesized | 22.9697 | 2.08 | 11.0222 | 4888 | < .001 |
| female | o | harmonic | - male | i | anchor | 19.3455 | 2.08 | 9.2831 | 4888 | < .001 |
| female | o | harmonic | - male | i | estimated | 19.9394 | 2.08 | 9.5681 | 4888 | < .001 |
| female | o | harmonic | - male | o | harmonic | -5.8121 | 2.08 | -2.7890 | 4888 | 1.000 |
| female | o | harmonic | - male | o | synthesized | 33.2061 | 2.08 | 15.9342 | 4888 | < .001 |
| female | o | harmonic | - male | o | anchor | 18.0121 | 2.08 | 8.6432 | 4888 | < .001 |
| female | o | harmonic | - male | o | estimated | 25.6909 | 2.08 | 12.3280 | 4888 | < .001 |
| female | o | harmonic | - male | a | synthesized | 21.3576 | 2.08 | 10.2486 | 4888 | < .001 |
| female | o | harmonic | - male | a | anchor | 18.0727 | 2.08 | 8.6723 | 4888 | < .001 |
| female | o | harmonic | - male | a | estimated | 15.5455 | 2.08 | 7.4596 | 4888 | < .001 |
| female | o | harmonic | - female | i | synthesized | 13.1636 | 2.08 | 6.3167 | 4888 | < .001 |
| female | o | harmonic | - female | i | anchor | 29.1879 | 2.08 | 14.0060 | 4888 | < .001 |
| female | o | harmonic | - female | i | estimated | 9.7212 | 2.08 | 4.6648 | 4888 | 0.001 |
| female | o | harmonic | - female | o | synthesized | 14.7091 | 2.08 | 7.0583 | 4888 | < .001 |
| female | o | harmonic | - female | o | anchor | 23.4606 | 2.08 | 11.2577 | 4888 | < .001 |
| female | o | harmonic | - female | o | estimated | 11.9697 | 2.08 | 5.7437 | 4888 | < .001 |
| female | o | harmonic | - female | a | synthesized | 21.5152 | 2.08 | 10.3242 | 4888 | < .001 |
| female | o | harmonic | - female | a | anchor | 23.9455 | 2.08 | 11.4904 | 4888 | < .001 |
| female | o | harmonic | - female | a | estimated | 14.2485 | 2.08 | 6.8372 | 4888 | < .001 |
| female | o | synthesized | - male | i | anchor | 4.6364 | 2.08 | 2.2248 | 4888 | 1.000 |
| female | o | synthesized | - male | o | synthesized | 18.4970 | 2.08 | 8.8759 | 4888 | < .001 |
| female | o | synthesized | - male | o | anchor | 3.3030 | 2.08 | 1.5850 | 4888 | 1.000 |
| female | o | synthesized | - male | a | anchor | 3.3636 | 2.08 | 1.6141 | 4888 | 1.000 |
| female | o | synthesized | - female | i | anchor | 14.4788 | 2.08 | 6.9477 | 4888 | < .001 |
| female | o | synthesized | - female | o | anchor | 8.7515 | 2.08 | 4.1995 | 4888 | 0.012 |
| female | o | synthesized | - female | a | anchor | 9.2364 | 2.08 | 4.4321 | 4888 | 0.004 |
| female | o | reference | - male | i | harmonic | 18.2121 | 2.08 | 8.7392 | 4888 | < .001 |
| female | o | reference | - male | i | synthesized | 43.9697 | 2.08 | 21.0992 | 4888 | < .001 |
| female | o | reference | - male | i | anchor | 40.3455 | 2.08 | 19.3601 | 4888 | < .001 |
| female | o | reference | - male | i | estimated | 40.9394 | 2.08 | 19.6451 | 4888 | < .001 |
| female | o | reference | - male | o | harmonic | 15.1879 | 2.08 | 7.2880 | 4888 | < .001 |
| female | o | reference | - male | o | synthesized | 54.2061 | 2.08 | 26.0112 | 4888 | < .001 |
| female | o | reference | - male | o | reference | 0.7455 | 2.08 | 0.3577 | 4888 | 1.000 |
| female | o | reference | - male | o | anchor | 39.0121 | 2.08 | 18.7202 | 4888 | < .001 |
| female | o | reference | - male | o | estimated | 46.6909 | 2.08 | 22.4050 | 4888 | < .001 |
| female | o | reference | - male | a | harmonic | 12.2303 | 2.08 | 5.8688 | 4888 | < .001 |
| female | o | reference | - male | a | synthesized | 42.3576 | 2.08 | 20.3256 | 4888 | < .001 |
| female | o | reference | - male | a | anchor | 39.0727 | 2.08 | 18.7493 | 4888 | < .001 |
| female | o | reference | - male | a | estimated | 36.5455 | 2.08 | 17.5366 | 4888 | < .001 |
| female | o | reference | - female | i | harmonic | 12.6909 | 2.08 | 6.0898 | 4888 | < .001 |
| female | o | reference | - female | i | synthesized | 34.1636 | 2.08 | 16.3937 | 4888 | < .001 |
| female | o | reference | - female | i | anchor | 50.1879 | 2.08 | 24.0830 | 4888 | < .001 |
| female | o | reference | - female | i | estimated | 30.7212 | 2.08 | 14.7418 | 4888 | < .001 |
| female | o | reference | - female | o | harmonic | 21.0000 | 2.08 | 10.0770 | 4888 | < .001 |

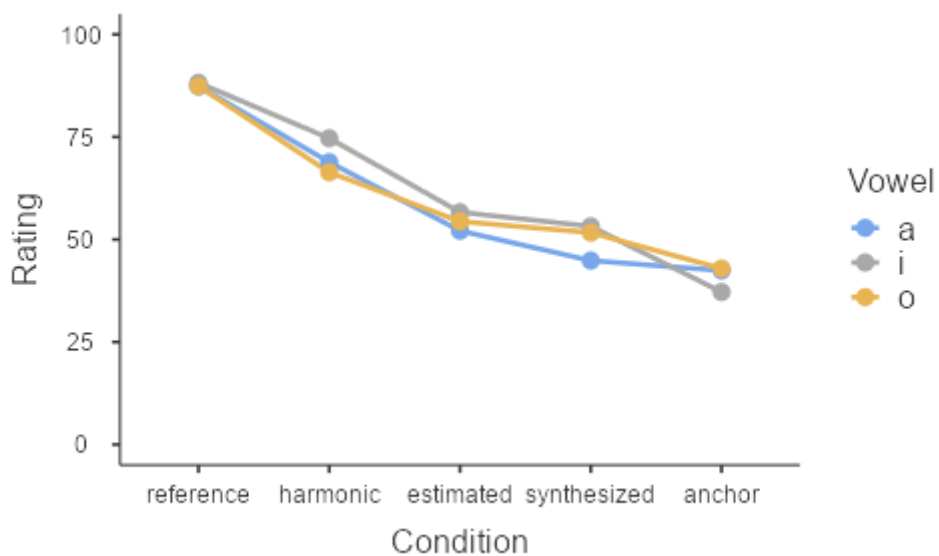
| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-------------|----------|-------|-------------|------------|------|---------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| female | o | reference | - female | o | synthesized | 35.7091 | 2.08 | 17.1353 | 4888 | < .001 |
| female | o | reference | - female | o | anchor | 44.4606 | 2.08 | 21.3347 | 4888 | < .001 |
| female | o | reference | - female | o | estimated | 32.9697 | 2.08 | 15.8207 | 4888 | < .001 |
| female | o | reference | - female | a | harmonic | 18.5091 | 2.08 | 8.8817 | 4888 | < .001 |
| female | o | reference | - female | a | synthesized | 42.5152 | 2.08 | 20.4012 | 4888 | < .001 |
| female | o | reference | - female | a | anchor | 44.9455 | 2.08 | 21.5674 | 4888 | < .001 |
| female | o | reference | - female | a | estimated | 35.2485 | 2.08 | 16.9142 | 4888 | < .001 |
| female | o | anchor | - male | o | anchor | -5.4485 | 2.08 | -2.6145 | 4888 | 1.000 |
| female | o | estimated | - male | i | synthesized | 11.0000 | 2.08 | 5.2784 | 4888 | < .001 |
| female | o | estimated | - male | i | anchor | 7.3758 | 2.08 | 3.5393 | 4888 | 0.176 |
| female | o | estimated | - male | o | synthesized | 21.2364 | 2.08 | 10.1904 | 4888 | < .001 |
| female | o | estimated | - male | o | anchor | 6.0424 | 2.08 | 2.8995 | 4888 | 1.000 |
| female | o | estimated | - male | o | estimated | 13.7212 | 2.08 | 6.5842 | 4888 | < .001 |
| female | o | estimated | - male | a | synthesized | 9.3879 | 2.08 | 4.5048 | 4888 | 0.003 |
| female | o | estimated | - male | a | anchor | 6.1030 | 2.08 | 2.9286 | 4888 | 1.000 |
| female | o | estimated | - female | i | synthesized | 1.1939 | 2.08 | 0.5729 | 4888 | 1.000 |
| female | o | estimated | - female | i | anchor | 17.2182 | 2.08 | 8.2623 | 4888 | < .001 |
| female | o | estimated | - female | o | synthesized | 2.7394 | 2.08 | 1.3145 | 4888 | 1.000 |
| female | o | estimated | - female | o | anchor | 11.4909 | 2.08 | 5.5140 | 4888 | < .001 |
| female | o | estimated | - female | a | synthesized | 9.5455 | 2.08 | 4.5805 | 4888 | 0.002 |
| female | o | estimated | - female | a | anchor | 11.9758 | 2.08 | 5.7467 | 4888 | < .001 |
| female | a | harmonic | - male | i | harmonic | -0.2970 | 2.08 | -0.1425 | 4888 | 1.000 |
| female | a | harmonic | - male | i | synthesized | 25.4606 | 2.08 | 12.2175 | 4888 | < .001 |
| female | a | harmonic | - male | i | anchor | 21.8364 | 2.08 | 10.4783 | 4888 | < .001 |
| female | a | harmonic | - male | i | estimated | 22.4303 | 2.08 | 10.7633 | 4888 | < .001 |
| female | a | harmonic | - male | o | harmonic | -3.3212 | 2.08 | -1.5937 | 4888 | 1.000 |
| female | a | harmonic | - male | o | synthesized | 35.6970 | 2.08 | 17.1294 | 4888 | < .001 |
| female | a | harmonic | - male | o | anchor | 20.5030 | 2.08 | 9.8385 | 4888 | < .001 |
| female | a | harmonic | - male | o | estimated | 28.1818 | 2.08 | 13.5232 | 4888 | < .001 |
| female | a | harmonic | - male | a | harmonic | -6.2788 | 2.08 | -3.0129 | 4888 | 1.000 |
| female | a | harmonic | - male | a | synthesized | 23.8485 | 2.08 | 11.4439 | 4888 | < .001 |
| female | a | harmonic | - male | a | anchor | 20.5636 | 2.08 | 9.8676 | 4888 | < .001 |
| female | a | harmonic | - male | a | estimated | 18.0364 | 2.08 | 8.6549 | 4888 | < .001 |
| female | a | harmonic | - female | i | harmonic | -5.8182 | 2.08 | -2.7919 | 4888 | 1.000 |
| female | a | harmonic | - female | i | synthesized | 15.6545 | 2.08 | 7.5119 | 4888 | < .001 |
| female | a | harmonic | - female | i | anchor | 31.6788 | 2.08 | 15.2013 | 4888 | < .001 |
| female | a | harmonic | - female | i | estimated | 12.2121 | 2.08 | 5.8601 | 4888 | < .001 |
| female | a | harmonic | - female | o | harmonic | 2.4909 | 2.08 | 1.1953 | 4888 | 1.000 |
| female | a | harmonic | - female | o | synthesized | 17.2000 | 2.08 | 8.2535 | 4888 | < .001 |
| female | a | harmonic | - female | o | anchor | 25.9515 | 2.08 | 12.4530 | 4888 | < .001 |
| female | a | harmonic | - female | o | estimated | 14.4606 | 2.08 | 6.9390 | 4888 | < .001 |
| female | a | harmonic | - female | a | synthesized | 24.0061 | 2.08 | 11.5195 | 4888 | < .001 |
| female | a | harmonic | - female | a | anchor | 26.4364 | 2.08 | 12.6857 | 4888 | < .001 |
| female | a | harmonic | - female | a | estimated | 16.7394 | 2.08 | 8.0325 | 4888 | < .001 |
| female | a | synthesized | - male | i | synthesized | 1.4545 | 2.08 | 0.6980 | 4888 | 1.000 |
| female | a | synthesized | - male | i | anchor | -2.1697 | 2.08 | -1.0411 | 4888 | 1.000 |
| female | a | synthesized | - male | o | synthesized | 11.6909 | 2.08 | 5.6100 | 4888 | < .001 |

| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-------------|----------|-------|-------------|------------|------|----------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| female | a | synthesized | - male | o | anchor | -3.5030 | 2.08 | -1.6810 | 4888 | 1.000 |
| female | a | synthesized | - male | a | synthesized | -0.1576 | 2.08 | -0.0756 | 4888 | 1.000 |
| female | a | synthesized | - male | a | anchor | -3.4424 | 2.08 | -1.6519 | 4888 | 1.000 |
| female | a | synthesized | - female | i | synthesized | -8.3515 | 2.08 | -4.0075 | 4888 | 0.027 |
| female | a | synthesized | - female | i | anchor | 7.6727 | 2.08 | 3.6818 | 4888 | 0.102 |
| female | a | synthesized | - female | o | synthesized | -6.8061 | 2.08 | -3.2659 | 4888 | 0.478 |
| female | a | synthesized | - female | o | anchor | 1.9455 | 2.08 | 0.9335 | 4888 | 1.000 |
| female | a | synthesized | - female | a | anchor | 2.4303 | 2.08 | 1.1662 | 4888 | 1.000 |
| female | a | reference | - male | i | harmonic | 18.2121 | 2.08 | 8.7392 | 4888 | < .001 |
| female | a | reference | - male | i | synthesized | 43.9697 | 2.08 | 21.0992 | 4888 | < .001 |
| female | a | reference | - male | i | reference | 2.2121 | 2.08 | 1.0615 | 4888 | 1.000 |
| female | a | reference | - male | i | anchor | 40.3455 | 2.08 | 19.3601 | 4888 | < .001 |
| female | a | reference | - male | i | estimated | 40.9394 | 2.08 | 19.6451 | 4888 | < .001 |
| female | a | reference | - male | o | harmonic | 15.1879 | 2.08 | 7.2880 | 4888 | < .001 |
| female | a | reference | - male | o | synthesized | 54.2061 | 2.08 | 26.0112 | 4888 | < .001 |
| female | a | reference | - male | o | reference | 0.7455 | 2.08 | 0.3577 | 4888 | 1.000 |
| female | a | reference | - male | o | anchor | 39.0121 | 2.08 | 18.7202 | 4888 | < .001 |
| female | a | reference | - male | o | estimated | 46.6909 | 2.08 | 22.4050 | 4888 | < .001 |
| female | a | reference | - male | a | harmonic | 12.2303 | 2.08 | 5.8688 | 4888 | < .001 |
| female | a | reference | - male | a | synthesized | 42.3576 | 2.08 | 20.3256 | 4888 | < .001 |
| female | a | reference | - male | a | reference | 1.1576 | 2.08 | 0.5555 | 4888 | 1.000 |
| female | a | reference | - male | a | anchor | 39.0727 | 2.08 | 18.7493 | 4888 | < .001 |
| female | a | reference | - male | a | estimated | 36.5455 | 2.08 | 17.5366 | 4888 | < .001 |
| female | a | reference | - female | i | harmonic | 12.6909 | 2.08 | 6.0898 | 4888 | < .001 |
| female | a | reference | - female | i | synthesized | 34.1636 | 2.08 | 16.3937 | 4888 | < .001 |
| female | a | reference | - female | i | reference | -0.8364 | 2.08 | -0.4013 | 4888 | 1.000 |
| female | a | reference | - female | i | anchor | 50.1879 | 2.08 | 24.0830 | 4888 | < .001 |
| female | a | reference | - female | i | estimated | 30.7212 | 2.08 | 14.7418 | 4888 | < .001 |
| female | a | reference | - female | o | harmonic | 21.0000 | 2.08 | 10.0770 | 4888 | < .001 |
| female | a | reference | - female | o | synthesized | 35.7091 | 2.08 | 17.1353 | 4888 | < .001 |
| female | a | reference | - female | o | reference | 1.56e-14 | 2.08 | 7.48e-15 | 4888 | 1.000 |
| female | a | reference | - female | o | anchor | 44.4606 | 2.08 | 21.3347 | 4888 | < .001 |
| female | a | reference | - female | o | estimated | 32.9697 | 2.08 | 15.8207 | 4888 | < .001 |
| female | a | reference | - female | a | harmonic | 18.5091 | 2.08 | 8.8817 | 4888 | < .001 |
| female | a | reference | - female | a | synthesized | 42.5152 | 2.08 | 20.4012 | 4888 | < .001 |
| female | a | reference | - female | a | anchor | 44.9455 | 2.08 | 21.5674 | 4888 | < .001 |
| female | a | reference | - female | a | estimated | 35.2485 | 2.08 | 16.9142 | 4888 | < .001 |
| female | a | anchor | - male | i | anchor | -4.6000 | 2.08 | -2.2073 | 4888 | 1.000 |
| female | a | anchor | - male | o | anchor | -5.9333 | 2.08 | -2.8472 | 4888 | 1.000 |
| female | a | anchor | - male | a | anchor | -5.8727 | 2.08 | -2.8181 | 4888 | 1.000 |
| female | a | anchor | - female | i | anchor | 5.2424 | 2.08 | 2.5156 | 4888 | 1.000 |
| female | a | anchor | - female | o | anchor | -0.4848 | 2.08 | -0.2327 | 4888 | 1.000 |
| female | a | estimated | - male | i | synthesized | 8.7212 | 2.08 | 4.1849 | 4888 | 0.013 |
| female | a | estimated | - male | i | anchor | 5.0970 | 2.08 | 2.4458 | 4888 | 1.000 |
| female | a | estimated | - male | i | estimated | 5.6909 | 2.08 | 2.7308 | 4888 | 1.000 |
| female | a | estimated | - male | o | synthesized | 18.9576 | 2.08 | 9.0969 | 4888 | < .001 |
| female | a | estimated | - male | o | anchor | 3.7636 | 2.08 | 1.8060 | 4888 | 1.000 |

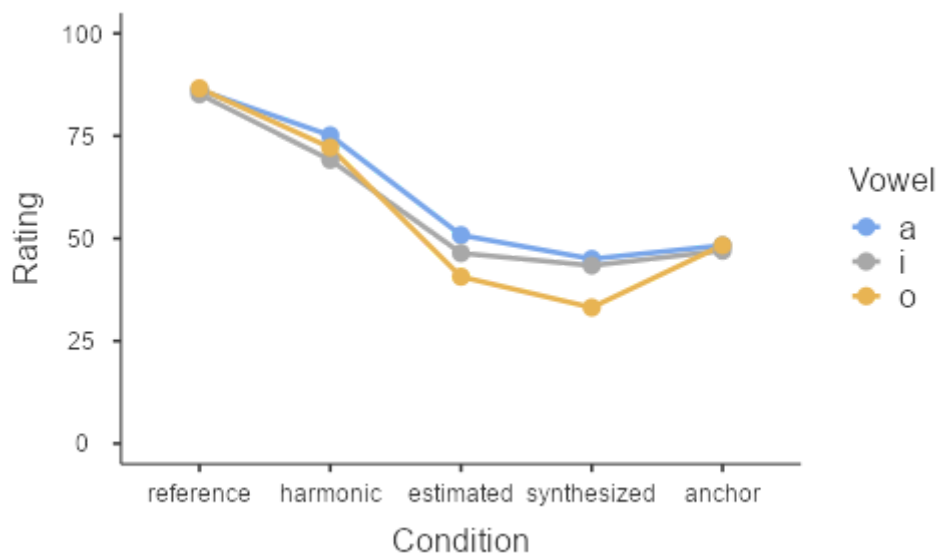
| Comparison | | | | | | Difference | SE | t | df | Pbonferroni |
|------------|-------|-----------|----------|-------|-------------|------------|------|---------|------|-------------|
| Gender | Vowel | Condition | Gender | Vowel | Condition | | | | | |
| female | a | estimated | - male | o | estimated | 11.4424 | 2.08 | 5.4907 | 4888 | < .001 |
| female | a | estimated | - male | a | synthesized | 7.1091 | 2.08 | 3.4113 | 4888 | 0.283 |
| female | a | estimated | - male | a | anchor | 3.8242 | 2.08 | 1.8351 | 4888 | 1.000 |
| female | a | estimated | - male | a | estimated | 1.2970 | 2.08 | 0.6224 | 4888 | 1.000 |
| female | a | estimated | - female | i | synthesized | -1.0848 | 2.08 | -0.5206 | 4888 | 1.000 |
| female | a | estimated | - female | i | anchor | 14.9394 | 2.08 | 7.1688 | 4888 | < .001 |
| female | a | estimated | - female | i | estimated | -4.5273 | 2.08 | -2.1724 | 4888 | 1.000 |
| female | a | estimated | - female | o | synthesized | 0.4606 | 2.08 | 0.2210 | 4888 | 1.000 |
| female | a | estimated | - female | o | anchor | 9.2121 | 2.08 | 4.4205 | 4888 | 0.004 |
| female | a | estimated | - female | o | estimated | -2.2788 | 2.08 | -1.0935 | 4888 | 1.000 |
| female | a | estimated | - female | a | synthesized | 7.2667 | 2.08 | 3.4870 | 4888 | 0.214 |
| female | a | estimated | - female | a | anchor | 9.6970 | 2.08 | 4.6532 | 4888 | 0.001 |

Results Plots

Gender = female



Gender = male

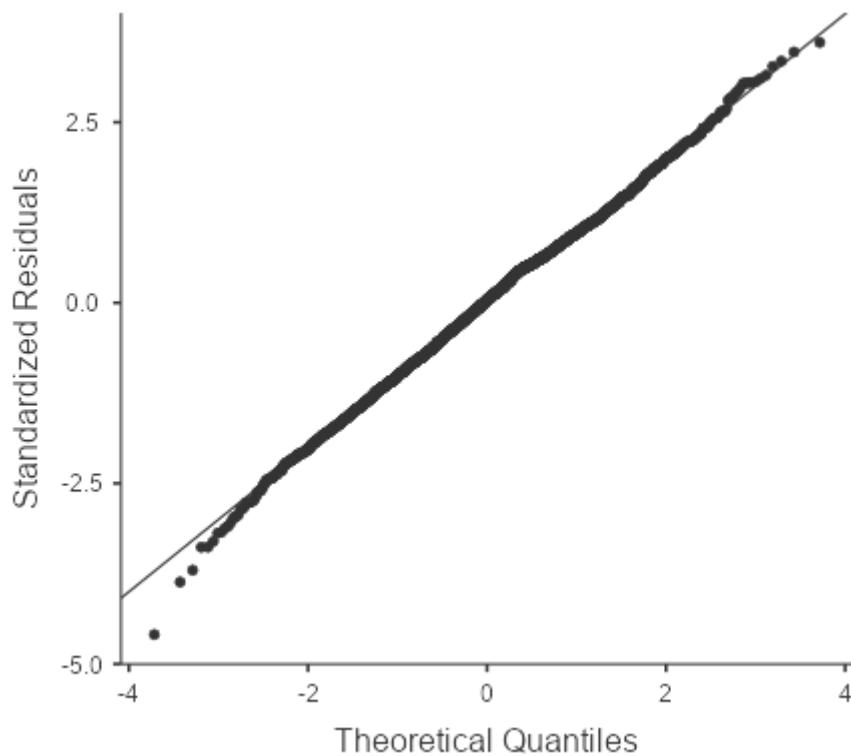


Assumption Checks

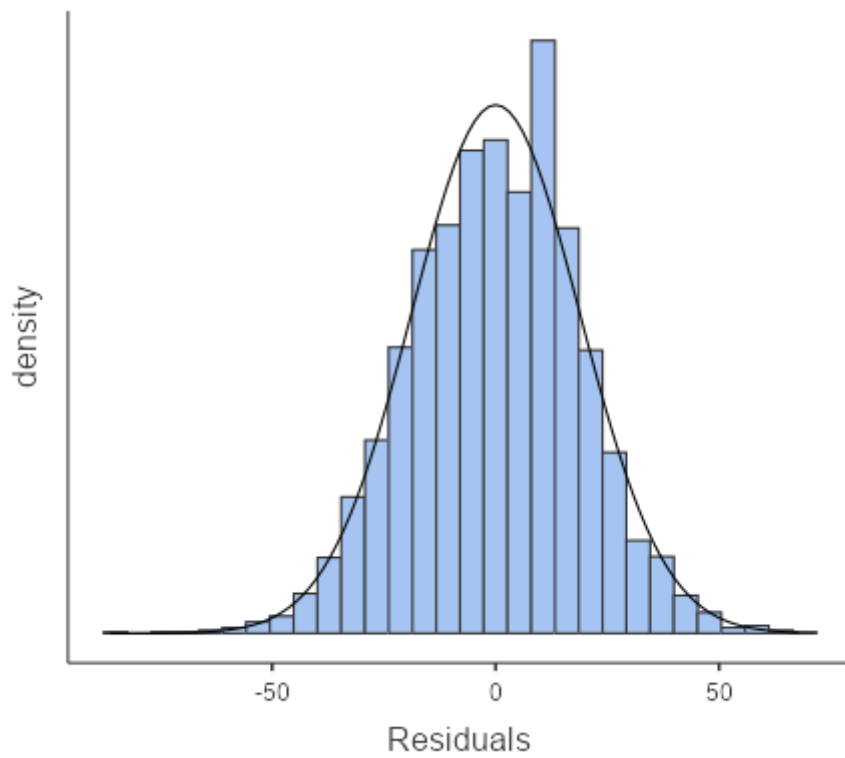
Test for Normality of residuals

| Test | Statistics | p |
|--------------------|------------|--------|
| Kolmogorov-Smirnov | 0.0311 | < .001 |
| Shapiro-Wilk | 0.9984 | < .001 |

Q-Q Plot



Residual histogram



References

- [1] The jamovi project (2020). *jamovi*. (Version 1.6) [Computer Software]. Retrieved from <https://www.jamovi.org>.
- [2] R Core Team (2020). *R: A Language and environment for statistical computing*. (Version 4.0) [Computer software]. Retrieved from <https://cran.r-project.org>. (R packages retrieved from MRAN snapshot 2020-08-24).
- [3] Gallucci, M. (2019). *GAMLj: General analyses for linear models*. [jamovi module]. Retrieved from <https://gamlj.github.io/>.