Supplementary material S1.

Symbolic representation of the GLMM.

Left / Right ~ differences in vocal parameters + 
   differences in vocal parameters*age + 
   differences in vocal parameters*ancestry + 
   differences in vocal parameters*sexual orientation + 
   Random effect of the judge + 
   Random effect of the vocal stimuli

The response variable (‘Left / Right’) corresponds to whether the judge chose the voice on the left or the one on the right.

The differences in vocal parameters correspond to the difference between F0, F0-SD, Df, Pf, HNR, jitter and intensity between the voice on the left and the one on the right. Thus, if one of those differences is negative for a given pair of voices, it means that the voice on the left has lower values that the one on the right. If it is positive, the voice on the left has higher values.

Now for each judge, she chose one of these two voices for each of her choices, and we know whether she clicked on the left or the right. Thus, we know if she preferred for each vocal parameter, the voice with the lower F0 (negative difference, clicked left) or the highest F0 (positive difference, clicked right) for each single pair of voices. Overall, if the estimate of the GLMM for the difference in mean F0 is negative, judges chose on average voices with the lower F0; if the estimate is positive, it means that the judges chose on average voices with the higher F0.

Lastly, implementing control variables as main factors would not make any sense as it would mean that age, ancestry and sexual orientation have an influence on whether a judge just preferred to click on the left or the right. Thus, they need to be put in interaction with the differences in vocal parameters to know whether it influenced the judge’s choice.
Supplementary material S2.

Below are presented all the models without the control variables (sexual orientation and ancestry) and the model without female judges with hearing impairment.

1. GLMM without ‘sexual orientation’

|                      | Estimate | SE  | $\chi^2$ | p value |
|----------------------|----------|-----|----------|---------|
| Intercept            | 0.08     | 0.06| /        | /       |
| Difference in mean F0| -0.47    | 0.09| 25.92    | <0.001  |
| Difference in F0-SD  | 0.46     | 0.08| 25.29    | <0.001  |
| Difference in Df     | 0.16     | 0.09| 2.99     | 0.083   |
| Difference in Pf     | -0.08    | 0.07| 1.37     | 0.241   |
| Difference in HNR    | -0.12    | 0.10| 1.43     | 0.231   |
| Difference in jitter | -0.02    | 0.08| 0.09     | 0.761   |
| Difference in intensity | 0.22   | 0.06| 12.40    | <0.001  |

**Interactions with age**

|                      | Estimate | SE  | $\chi^2$ | p value |
|----------------------|----------|-----|----------|---------|
| Difference in F0     | 0.14     | 0.09| 2.44     | 0.117   |
| Difference in F0-SD  | 0.07     | 0.09| 0.52     | 0.468   |
| Difference in Df     | 0.11     | 0.08| 1.75     | 0.185   |
| Difference in Pf     | -0.05    | 0.07| 0.52     | 0.469   |
| Difference in HNR    | -0.10    | 0.10| 1.07     | 0.300   |
| Difference in jitter | 0.10     | 0.08| 1.42     | 0.232   |
| Difference in intensity | 0.15  | 0.06| 5.77     | 0.016   |

**Interactions with ancestry**

|                      | Estimate | SE  | $\chi^2$ | p value |
|----------------------|----------|-----|----------|---------|
| Difference in F0     | -0.005   | 0.22| 0.00     | 0.981   |
| Difference in F0-SD  | -0.38    | 0.20| 3.58     | 0.058   |
| Difference in Df     | 0.05     | 0.23| 0.05     | 0.815   |
| Difference in Pf     | -0.17    | 0.18| 0.87     | 0.349   |
| Difference in HNR    | 0.01     | 0.25| 0.002    | 0.961   |
| Difference in jitter | 0.04     | 0.21| 0.04     | 0.829   |
| Difference in intensity | -0.14 | 0.17| 0.66     | 0.414   |
2. GLMM without ‘ancestry’

|                                     | Estimate | SE  | $\chi^2$   | $p$ value |
|-------------------------------------|----------|-----|------------|-----------|
| Intercept                           | 0.09     | 0.06| /          | /         |
| Difference in mean F0               | -0.50    | 0.09| 30.88      | <0.001    |
| Difference in F0-SD                 | 0.46     | 0.08| 31.33      | <0.001    |
| Difference in Df                    | 0.16     | 0.09| 3.03       | 0.081     |
| Difference in Pf                    | -0.06    | 0.07| 0.74       | 0.388     |
| Difference in HNR                   | -0.09    | 0.10| 0.86       | 0.352     |
| Difference in jitter                | -0.01    | 0.08| 0.01       | 0.900     |
| Difference in intensity             | 0.17     | 0.06| 7.87       | 0.004     |
| **Interactions with age**           |          |     |            |           |
| Difference in F0                    | 0.15     | 0.09| 2.78       | 0.097     |
| Difference in F0-SD                 | 0.03     | 0.09| 0.11       | 0.736     |
| Difference in Df                    | 0.12     | 0.09| 2.08       | 0.148     |
| Difference in Pf                    | -0.07    | 0.07| 0.81       | 0.368     |
| Difference in HNR                   | -0.12    | 0.10| 1.56       | 0.210     |
| Difference in jitter                | 0.10     | 0.08| 1.61       | 0.204     |
| Difference in intensity             | 0.15     | 0.06| 5/77       | 0.016     |
| **Interactions with sexual orientation** |       |     |            |           |
| Difference in F0                    | 0.16     | 0.24| 0.46       | 0.497     |
| Difference in F0-SD                 | -0.54    | 0.22| 5.71       | 0.016     |
| Difference in Df                    | -0.10    | 0.23| 0.20       | 0.652     |
| Difference in Pf                    | -0.12    | 0.18| 0.43       | 0.511     |
| Difference in HNR                   | -0.15    | 0.28| 0.30       | 0.581     |
| Difference in jitter                | 0.14     | 0.24| 0.35       | 0.553     |
| Difference in intensity             | 0.25     | 0.17| 2.04       | 0.153     |
### 3. GLMM without ‘age’

|                        | Estimate | SE   | $\chi^2$ | p value   |
|------------------------|----------|------|----------|-----------|
| Intercept              | 0.08     | 0.06 | /        | /         |
| Difference in mean F0  | -0.50    | 0.10 | 26.54    | <0.001    |
| Difference in F0-SD    | 0.50     | 0.10 | 32.47    | <0.001    |
| Difference in Df       | 0.15     | 0.10 | 2.39     | 0.121     |
| Difference in Pf       | -0.04    | 0.07 | 0.23     | 0.629     |
| Difference in HNR      | -0.11    | 0.10 | 1.12     | 0.289     |
| Difference in jitter   | -0.04    | 0.09 | 0.18     | 0.667     |
| Difference in intensity| 0.17     | 0.06 | 6.90     | 0.008     |
| **Interactions with ancestry** |          |      |          |           |
| Difference in F0       | 0.10     | 0.24 | 0.17     | 0.67      |
| Difference in F0-SD    | -0.50    | 0.22 | 4.98     | 0.025     |
| Difference in Df       | -0.11    | 0.24 | 0.24     | 0.625     |
| Difference in Pf       | -0.13    | 0.18 | 0.53     | 0.465     |
| Difference in HNR      | -0.09    | 0.28 | 0.11     | 0.738     |
| Difference in jitter   | 0.14     | 0.24 | 0.36     | 0.548     |
| Difference in intensity| -0.22    | 0.17 | 1.61     | 0.20      |
| **Interactions with sexual orientation** |          |      |          |           |
| Difference in F0       | 0.06     | 0.21 | 0.09     | 0.765     |
| Difference in F0-SD    | -0.40    | 0.20 | 4.02     | 0.044     |
| Difference in Df       | 0.03     | 0.23 | 0.02     | 0.886     |
| Difference in Pf       | -0.16    | 0.18 | 0.79     | 0.372     |
| Difference in HNR      | 0.07     | 0.25 | 0.08     | 0.778     |
| Difference in jitter   | 0.08     | 0.21 | 0.16     | 0.687     |
| Difference in intensity| -0.12    | 0.17 | 0.575    | 0.448     |
4. GLMM without judges with hearing impairment (n = 4)

|                          | Estimate | SE   | $\chi^2$ | p value |
|--------------------------|----------|------|----------|---------|
| Intercept                | 0.10     | 0.06 | /        | /       |
| Difference in mean F0    | -0.49    | 0.10 | 23.66    | <0.001  |
| Difference in F0-SD      | 0.54     | 0.09 | 34.44    | <0.001  |
| Difference in Df         | 0.18     | 0.10 | 3.19     | 0.074   |
| Difference in Pf         | -0.06    | 0.08 | 0.54     | 0.461   |
| Difference in HNR        | -0.12    | 0.10 | 1.19     | 0.274   |
| Difference in jitter     | -0.04    | 0.09 | 0.21     | 0.643   |
| Difference in intensity  | 0.17     | 0.07 | 6.94     | 0.008   |

**Interactions with age**

|                          | Estimate | SE   | $\chi^2$ | p value |
|--------------------------|----------|------|----------|---------|
| Difference in F0         | 0.23     | 0.11 | 4.35     | 0.036   |
| Difference in F0-SD      | 0.02     | 0.10 | 0.02     | 0.871   |
| Difference in Df         | 0.19     | 0.12 | 2.70     | 0.100   |
| Difference in Pf         | -0.05    | 0.09 | 0.35     | 0.562   |
| Difference in HNR        | -0.15    | 0.12 | 1.73     | 0.188   |
| Difference in jitter     | 0.10     | 0.10 | 1.04     | 0.308   |
| Difference in intensity  | 0.15     | 0.07 | 4.32     | 0.037   |

**Interactions with ancestry**

|                          | Estimate | SE   | $\chi^2$ | p value |
|--------------------------|----------|------|----------|---------|
| Difference in F0         | 0.04     | 0.22 | 0.03     | 0.861   |
| Difference in F0-SD      | -0.45    | 0.20 | 4.79     | 0.028   |
| Difference in Df         | 0.09     | 0.24 | 0.14     | 0.708   |
| Difference in Pf         | -0.18    | 0.19 | 0.87     | 0.349   |
| Difference in HNR        | 0.03     | 0.21 | 0.02     | 0.875   |
| Difference in jitter     | 0.01     | 0.20 | 0.03     | 0.869   |
| Difference in intensity  | -0.07    | 0.17 | 0.17     | 0.677   |

**Interactions with sexual orientation**

|                          | Estimate | SE   | $\chi^2$ | p value |
|--------------------------|----------|------|----------|---------|
| Difference in F0         | 0.22     | 0.24 | 0.82     | 0.363   |
| Difference in F0-SD      | -0.63    | 0.23 | 7.18     | 0.007   |
| Difference in Df         | -0.09    | 0.25 | 0.12     | 0.720   |
| Difference in Pf         | -0.07    | 0.19 | 0.15     | 0.692   |
| Difference in HNR        | -0.14    | 0.29 | 0.25     | 0.617   |
| Difference in jitter     | 0.17     | 0.25 | 0.46     | 0.494   |
| Difference in intensity  | 0.26     | 0.18 | 2.00     | 0.156   |
5. GLMM without judges who did not report sexual orientation (n = 8)

|                                | Estimate | SE  | $\chi^2$ | p value |
|--------------------------------|----------|-----|----------|---------|
| Intercept                      | 0.10     | 0.06| /        | /       |
| Difference in mean F0          | -0.49    | 0.10| 24.17    | <0.001  |
| Difference in F0-SD            | 0.52     | 0.09| 32.65    | <0.001  |
| Difference in Df               | 0.19     | 0.10| 3.39     | 0.065   |
| Difference in Pf               | -0.05    | 0.08| 0.45     | 0.503   |
| Difference in HNR              | -0.12    | 0.10| 1.39     | 0.236   |
| Difference in jitter           | -0.06    | 0.09| 0.39     | 0.532   |
| Difference in intensity        | 0.17     | 0.07| 6.93     | 0.008   |

**Interactions with age**

|                                | Estimate | SE  | $\chi^2$ | p value |
|--------------------------------|----------|-----|----------|---------|
| Difference in F0               | 0.24     | 0.10| 5.55     | 0.018   |
| Difference in F0-SD            | -0.05    | 0.10| 0.24     | 0.624   |
| Difference in Df               | 0.20     | 0.11| 3.38     | 0.065   |
| Difference in Pf               | -0.05    | 0.08| 0.31     | 0.577   |
| Difference in HNR              | -0.17    | 0.11| 2.34     | 0.125   |
| Difference in jitter           | 0.07     | 0.09| 0.55     | 0.457   |
| Difference in intensity        | 0.15     | 0.07| 5.62     | 0.017   |

**Interactions with ancestry**

|                                | Estimate | SE  | $\chi^2$ | p value |
|--------------------------------|----------|-----|----------|---------|
| Difference in F0               | 0.05     | 0.22| 0.05     | 0.817   |
| Difference in F0-SD            | -0.42    | 0.21| 4.13     | 0.042   |
| Difference in Df               | 0.02     | 0.24| 0.009    | 0.922   |
| Difference in Pf               | -0.15    | 0.19| 0.63     | 0.427   |
| Difference in HNR              | 0.04     | 0.26| 0.02     | 0.875   |
| Difference in jitter           | 0.11     | 0.22| 0.25     | 0.618   |
| Difference in intensity        | -0.05    | 0.17| 0.07     | 0.792   |

**Interactions with sexual orientation**

|                                | Estimate | SE  | $\chi^2$ | p value |
|--------------------------------|----------|-----|----------|---------|
| Difference in F0               | 0.06     | 0.31| 0.04     | 0.836   |
| Difference in F0-SD            | -0.72    | 0.29| 6.08     | 0.013   |
| Difference in Df               | 0.12     | 0.29| 0.18     | 0.671   |
| Difference in Pf               | 0.02     | 0.23| 0.009    | 0.924   |
| Difference in HNR              | -0.65    | 0.38| 2.80     | 0.094   |
| Difference in jitter           | -0.35    | 0.31| 1.28     | 0.257   |
| Difference in intensity        | 0.45     | 0.24| 3.31     | 0.068   |