

## Supplemental Digital Content 2

### Speech Auditory Brainstem Responses: Effects of Background, Stimulus Duration, Consonant-Vowel, and Number of Epochs

#### Section 1: Detection of Speech-ABR Peaks

**Table 1.** Peaks that were missing in each participant's speech-ABRs in quiet (Q) and in noise (N) to all stimuli.

Shaded cells indicate no peaks were missing

| Participant | 40ms [da] |      | 50ms stimuli |      |      |   |      |      | 170ms stimuli |      |      |   |
|-------------|-----------|------|--------------|------|------|---|------|------|---------------|------|------|---|
|             |           |      | [ba]         |      | [da] |   | [ga] |      | [ba]          | [da] | [ga] |   |
|             | Q         | N    | Q            | N    | Q    | N | Q    | N    | Q             | Q    | N    | Q |
| 1           |           | D, F |              |      |      |   |      |      |               |      |      |   |
| 2           |           |      |              | O    |      |   |      |      |               |      | V    |   |
| 3           |           | D    |              | V, O |      |   | V    | V, A |               |      | V    |   |
| 4           |           |      |              | V    |      |   |      | V    |               |      |      |   |
| 5           |           |      |              | E    |      |   |      | V    |               |      | V, A |   |
| 6           |           | F    |              |      |      |   |      |      |               |      | V    |   |
| 7           |           |      | O            | O    |      | V |      | D    |               |      |      |   |
| 8           |           |      |              |      |      |   |      |      |               |      |      |   |
| 9           | F         | F    |              |      |      |   |      |      |               |      |      |   |
| 10          |           | F    |              |      |      | V |      | V    | V             | V    | V    | V |
| 11          | F         |      |              |      |      |   | D    | D    |               |      |      |   |
| 12          |           |      | O            | O    |      |   |      |      |               |      |      |   |

## Section 2: Speech-ABR Mean (SD) Peak Latencies and Amplitudes

**Table 2.** Mean and SD speech-ABR peak latency values (corrected for insert tube length) in quiet and in noise to the three [da] durations.

| 40ms [da] |       |      | 50ms [da] |      |       |      | 170ms [da] |      |       |      |       |      |
|-----------|-------|------|-----------|------|-------|------|------------|------|-------|------|-------|------|
| Quiet     |       |      | Noise     |      | Quiet |      | Noise      |      | Quiet |      | Noise |      |
| Peak      | Mean  | SD   | Mean      | SD   | Mean  | SD   | Mean       | SD   | Mean  | SD   | Mean  | SD   |
| V         | 7.15  | 0.26 | 7.73      | 0.48 | 8.28  | 0.43 | 8.81       | 0.30 | 8.47  | 0.41 | 9.15  | 0.31 |
| A         | 8.31  | 0.77 | 8.84      | 0.52 | 10.65 | 0.74 | 11.08      | 0.61 | 11.26 | 0.67 | 11.85 | 0.86 |
| D         | 23.46 | 0.94 | 24.10     | 1.22 | 24.67 | 0.56 | 26.18      | 1.65 | 25.68 | 1.64 | 26.33 | 1.47 |
| E         | 32.23 | 0.77 | 32.34     | 0.73 | 33.80 | 1.53 | 35.23      | 1.67 | 35.36 | 1.48 | 35.97 | 1.44 |
| F         | 41.00 | 1.50 | 41.87     | 2.14 | 44.44 | 0.86 | 46.29      | 1.76 | 45.65 | 1.75 | 46.53 | 1.67 |
| O         | 48.68 | 0.38 | 48.96     | 0.45 | 55.44 | 1.79 | 56.45      | 1.37 | 55.78 | 1.68 | 57.39 | 2.15 |

**Table 3.** Mean and SD speech-ABRs peak latency values (corrected for insert tube length) to the 50ms [ba] and [ga] in quiet and in noise, and to the 170ms [ba] and [ga] in quiet.

| 50ms [ba] |       |      |       |      | 170ms [ba] |      | 50ms [ga] |      |       |      | 170ms [ga] |      |
|-----------|-------|------|-------|------|------------|------|-----------|------|-------|------|------------|------|
| Quiet     |       |      | Noise |      | Quiet      |      | Quiet     |      | Noise |      | Quiet      |      |
| Peak      | Mean  | SD   | Mean  | SD   | Mean       | SD   | Mean      | SD   | Mean  | SD   | Mean       | SD   |
| V         | 8.20  | 0.46 | 8.91  | 0.46 | 8.80       | 0.42 | 8.39      | 0.49 | 8.94  | 0.70 | 8.68       | 0.44 |
| A         | 10.42 | 0.75 | 11.16 | 0.59 | 11.55      | 0.81 | 10.96     | 0.65 | 11.39 | 0.74 | 11.00      | 0.81 |
| D         | 25.41 | 1.91 | 26.96 | 1.91 | 25.91      | 0.73 | 24.26     | 1.59 | 26.03 | 1.43 | 25.15      | 1.02 |
| E         | 34.77 | 3.25 | 36.50 | 4.82 | 35.32      | 1.24 | 33.96     | 0.90 | 34.45 | 1.14 | 35.17      | 1.70 |
| F         | 44.84 | 3.33 | 46.47 | 3.63 | 46.10      | 0.95 | 44.54     | 0.76 | 45.19 | 0.92 | 45.22      | 0.75 |
| O         | 55.18 | 1.40 | 57.17 | 1.78 | 55.43      | 1.17 | 55.40     | 1.73 | 55.84 | 1.62 | 55.45      | 1.52 |

**Table 4.** Mean and SD speech-ABR peak amplitude values in quiet and in noise to the three [da] durations.

| 40ms [da] |      |      | 50ms [da] |      |       |      | 170ms [da] |      |       |      |       |      |
|-----------|------|------|-----------|------|-------|------|------------|------|-------|------|-------|------|
| Quiet     |      |      | Noise     |      | Quiet |      | Noise      |      | Quiet |      | Noise |      |
| Peak      | Mean | SD   | Mean      | SD   | Mean  | SD   | Mean       | SD   | Mean  | SD   | Mean  | SD   |
| VA        | 0.32 | 0.11 | 0.18      | 0.06 | 0.25  | 0.09 | 0.14       | 0.05 | 0.23  | 0.09 | 0.11  | 0.05 |
| D         | 0.31 | 0.15 | 0.20      | 0.18 | 0.28  | 0.10 | 0.22       | 0.09 | 0.34  | 0.12 | 0.23  | 0.07 |
| E         | 0.34 | 0.11 | 0.21      | 0.06 | 0.28  | 0.07 | 0.19       | 0.07 | 0.36  | 0.10 | 0.21  | 0.07 |
| F         | 0.23 | 0.10 | 0.16      | 0.13 | 0.42  | 0.10 | 0.34       | 0.09 | 0.47  | 0.16 | 0.30  | 0.06 |
| O         | 0.32 | 0.09 | 0.27      | 0.09 | 0.24  | 0.10 | 0.21       | 0.08 | 0.26  | 0.07 | 0.23  | 0.09 |

**Table 5.** Mean and SD speech-ABR peak amplitude values to the 50ms [ba] and [ga] in quiet and in noise, and to the 170ms [ba] and [ga] in quiet.

| 50ms [ba] |      |      |       |      | 170ms [ba] |      | 50ms [ga] |      |       |      | 170ms [ga] |      |
|-----------|------|------|-------|------|------------|------|-----------|------|-------|------|------------|------|
| Quiet     |      |      | Noise |      | Quiet      |      | Quiet     |      | Noise |      | Quiet      |      |
| Peak      | Mean | SD   | Mean  | SD   | Mean       | SD   | Mean      | SD   | Mean  | SD   | Mean       | SD   |
| VA        | 0.24 | 0.07 | 0.14  | 0.04 | 0.23       | 0.08 | 0.24      | 0.07 | 0.14  | 0.06 | 0.22       | 0.07 |
| D         | 0.25 | 0.09 | 0.18  | 0.06 | 0.33       | 0.10 | 0.27      | 0.13 | 0.16  | 0.09 | 0.36       | 0.13 |
| E         | 0.36 | 0.25 | 0.17  | 0.10 | 0.38       | 0.09 | 0.34      | 0.11 | 0.20  | 0.08 | 0.38       | 0.10 |
| F         | 0.44 | 0.14 | 0.32  | 0.11 | 0.55       | 0.22 | 0.41      | 0.10 | 0.31  | 0.09 | 0.49       | 0.17 |
| O         | 0.24 | 0.10 | 0.17  | 0.14 | 0.30       | 0.10 | 0.27      | 0.07 | 0.31  | 0.16 | 0.27       | 0.09 |

### Section 3: Effects of Background on Speech-ABRs – Post Hoc Pairwise Comparison Results

**Table 6.** Post hoc pairwise comparisons of speech-ABR peak latencies comparing the two backgrounds: quiet (Q) versus noise (N) per stimulus duration, showing differences in peak latencies in quiet versus in noise (Q minus N), standard error (SE), degrees of freedom (df), *t* ratio, and bonferroni corrected *p* values.

Significant *p* values are shown in **blue**

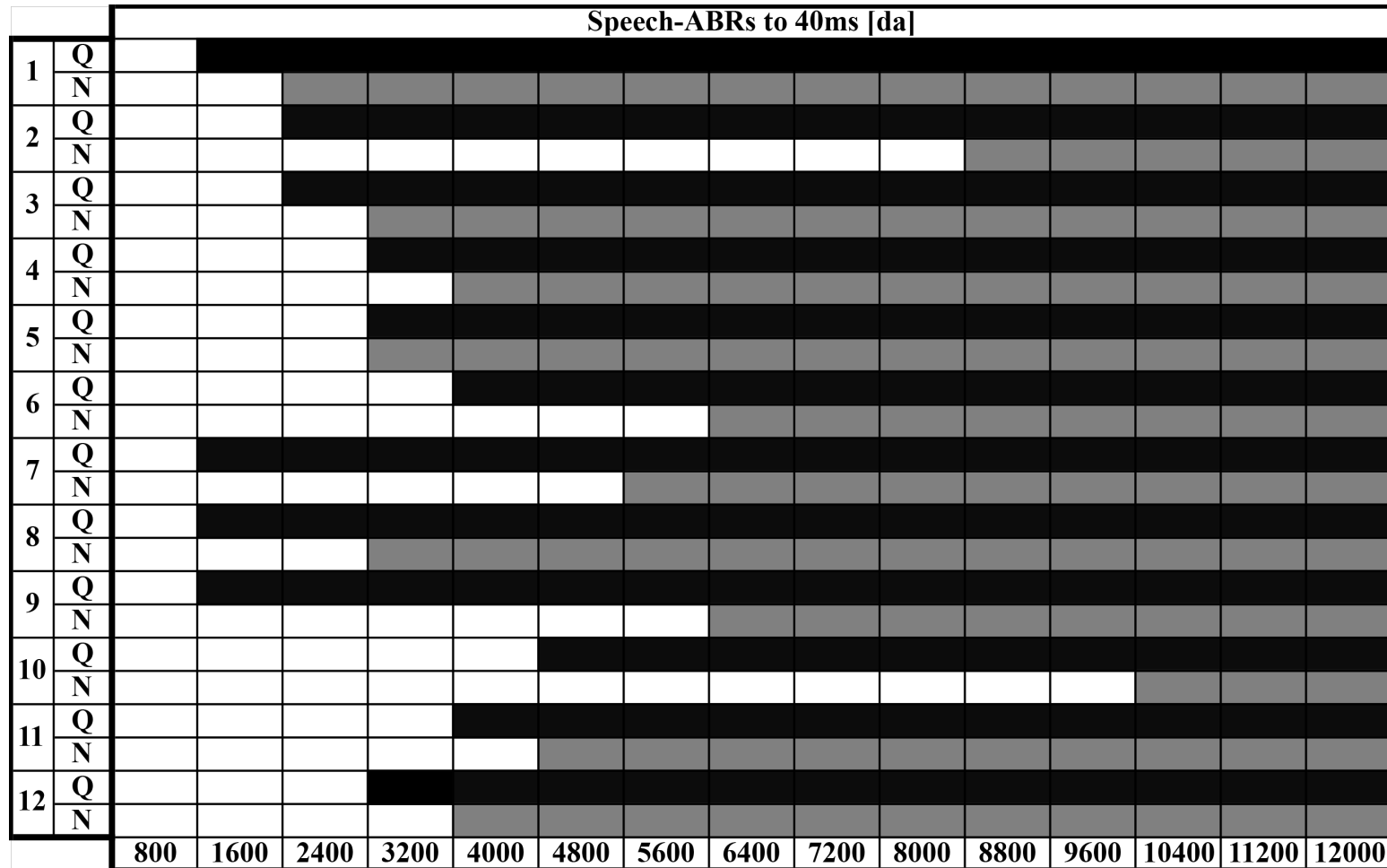
|          | Stimulus duration: 40ms |      |        |                |               | Stimulus duration: 50ms |      |        |                |               | Stimulus duration: 170ms |      |        |                |               |
|----------|-------------------------|------|--------|----------------|---------------|-------------------------|------|--------|----------------|---------------|--------------------------|------|--------|----------------|---------------|
| Peak     | Q – N (ms)              | SE   | df     | <i>t</i> ratio | <i>p</i>      | Q – N (ms)              | SE   | df     | <i>t</i> ratio | <i>p</i>      | Q – N (ms)               | SE   | df     | <i>t</i> ratio | <i>p</i>      |
| <b>V</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                    | 0.10 | 796.07 | -9.42          | <b>0.0054</b> |
| <b>A</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                    | 0.10 | 796.07 | -9.42          | <b>0.0054</b> |
| <b>D</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                    | 0.10 | 796.07 | -9.42          | <b>0.0054</b> |
| <b>E</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                    | 0.10 | 796.07 | -9.42          | <b>0.0054</b> |
| <b>F</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                    | 0.10 | 796.07 | -9.42          | <b>0.0054</b> |
| <b>O</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                   | 0.10 | 796.07 | -9.42          | <b>0.0054</b> | -0.91                    | 0.10 | 796.07 | -9.42          | <b>0.0054</b> |

**Table 7.** Post hoc pairwise comparisons of Speech-ABR peak amplitudes comparing the two backgrounds: quiet (Q) versus noise (N) per stimulus duration, showing differences in peak amplitudes in quiet versus in noise (Q minus N), standard error (SE), degrees of freedom (df), *t* ratio, and bonferroni corrected *p* values.

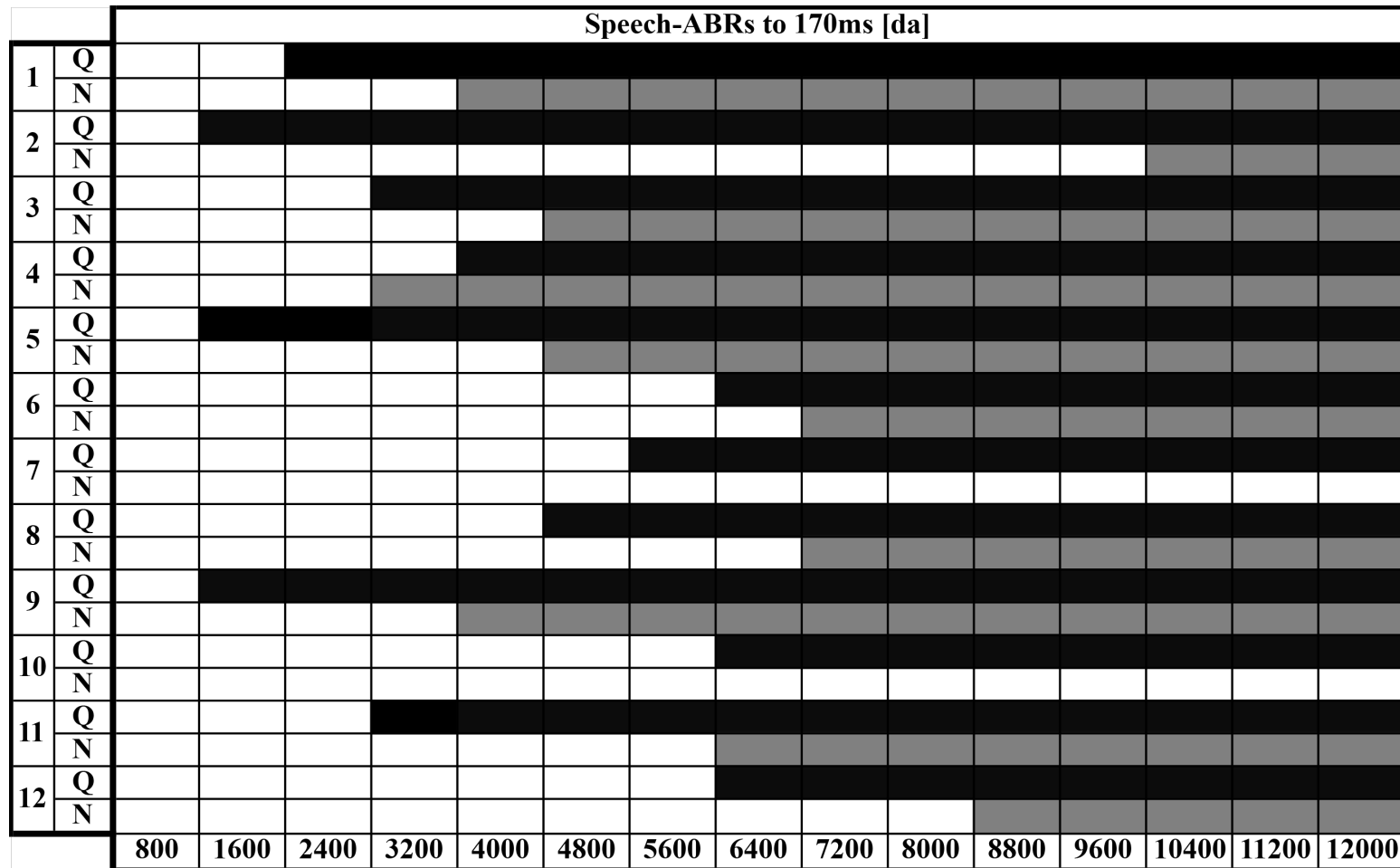
Significant *p* values are shown in **blue**

|           | Stimulus duration: 40ms |      |     |                |               | Stimulus duration: 50ms |      |     |                |               | Stimulus duration: 170ms |      |     |                |               |
|-----------|-------------------------|------|-----|----------------|---------------|-------------------------|------|-----|----------------|---------------|--------------------------|------|-----|----------------|---------------|
| Peak      | Q – N (μV)              | SE   | df  | <i>t</i> ratio | <i>p</i>      | Q – N (μV)              | SE   | df  | <i>t</i> ratio | <i>p</i>      | Q – N (μV)               | SE   | df  | <i>t</i> ratio | <i>p</i>      |
| <b>VA</b> | 0.11                    | 0.02 | 687 | 5.06           | <b>0.0045</b> | 0.10                    | 0.02 | 687 | 5.73           | <b>0.0045</b> | 0.14                     | 0.02 | 687 | 7.21           | <b>0.0045</b> |
| <b>D</b>  | 0.09                    | 0.02 | 687 | 4.19           | <b>0.0045</b> | 0.08                    | 0.02 | 687 | 4.62           | <b>0.0045</b> | 0.12                     | 0.02 | 687 | 6.24           | <b>0.0045</b> |
| <b>E</b>  | 0.14                    | 0.02 | 687 | 6.47           | <b>0.0045</b> | 0.13                    | 0.02 | 687 | 7.54           | <b>0.0045</b> | 0.17                     | 0.02 | 687 | 8.78           | <b>0.0045</b> |
| <b>F</b>  | 0.12                    | 0.02 | 687 | 5.68           | <b>0.0045</b> | 0.11                    | 0.02 | 687 | 6.53           | <b>0.0045</b> | 0.15                     | 0.02 | 687 | 7.91           | <b>0.0045</b> |
| <b>O</b>  | 0.03                    | 0.02 | 687 | 1.34           | 0.1823        | 0.02                    | 0.02 | 687 | 0.98           | 0.3263        | 0.06                     | 0.02 | 687 | 3.07           | 0.1035        |

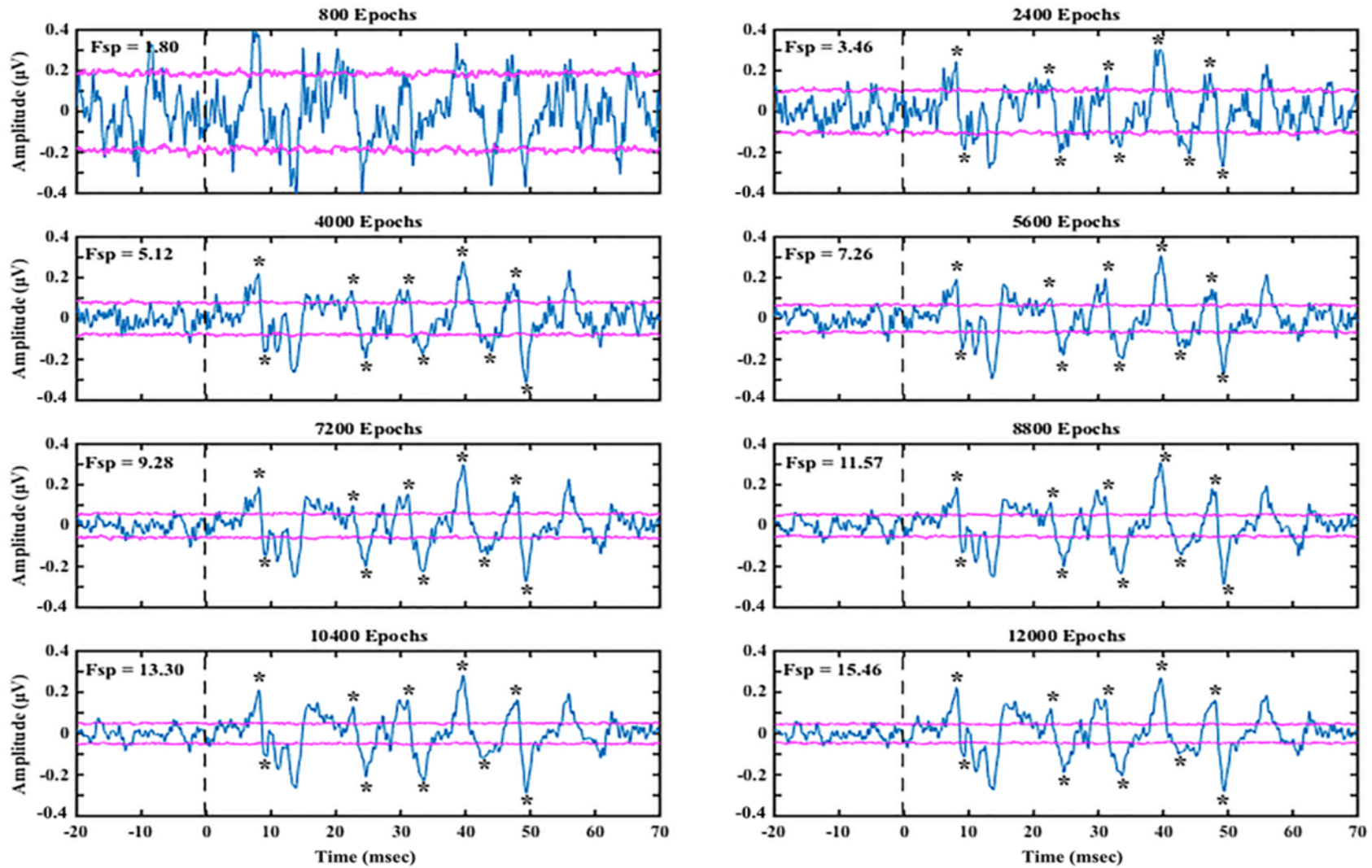
#### Section 4: Bootstrap Results and Examples



**Fig. 1.** Speech-ABRs to the 40ms [da] in quiet (black) and noise (grey) at 15 iterations per participant: shaded cells indicate that  $F_{SP} \geq 3.1$  and all peaks that were detected at 12000 epochs were detected with 95% confidence via bootstrap. White cells indicate that not all peaks were detected with 95% confidence via bootstrap.

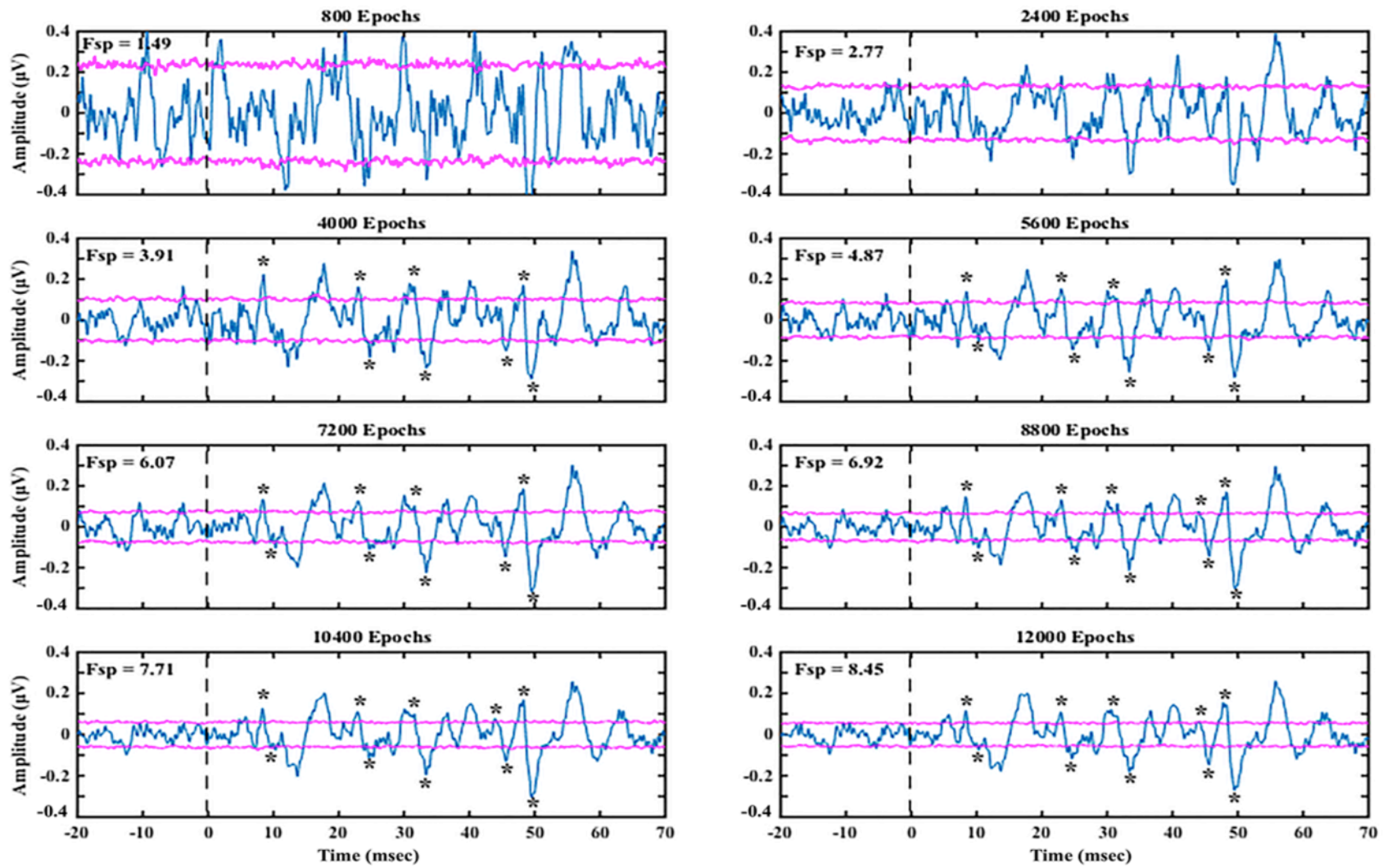


**Fig. 2.** Speech-ABRs to the 170ms [da] in quiet (black) and noise (grey) at 15 iterations per participant: shaded cells indicate that  $F_{SP} \geq 3.1$  and all peaks that were detected at 12000 epochs were be detected with 95% confidence via bootstrap. White cells indicate that not all peaks were detected with 95% confidence via bootstrap.

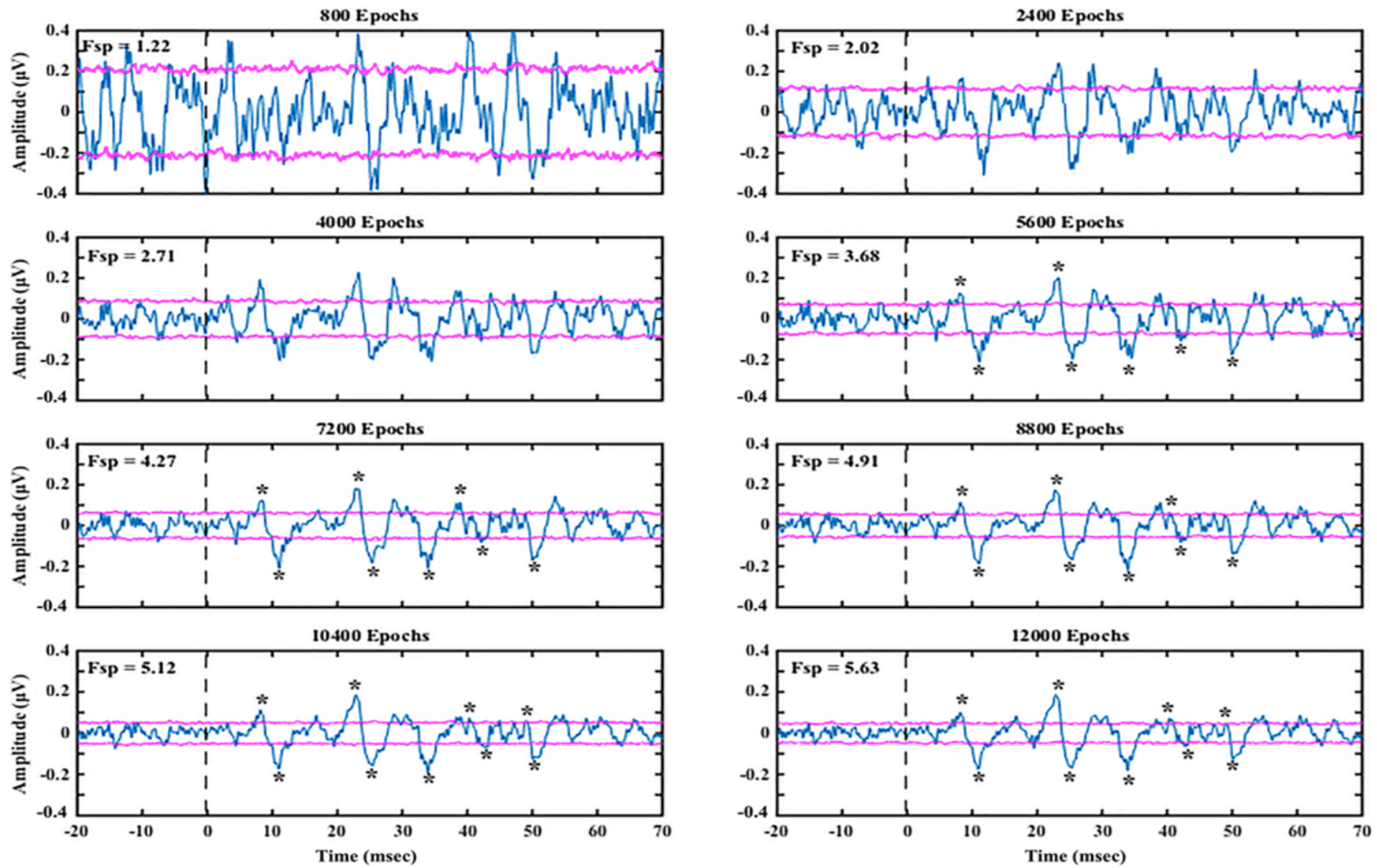


**Fig. 3.** Speech-ABRs with pre-stimulus baseline to the 40ms [da] in quiet at 8 iterations from a participant (5) with better responses. Peaks that were detected with 95% confidence once  $F_{SP}$  reached  $\geq 3.1$  are marked with a ‘\*’.

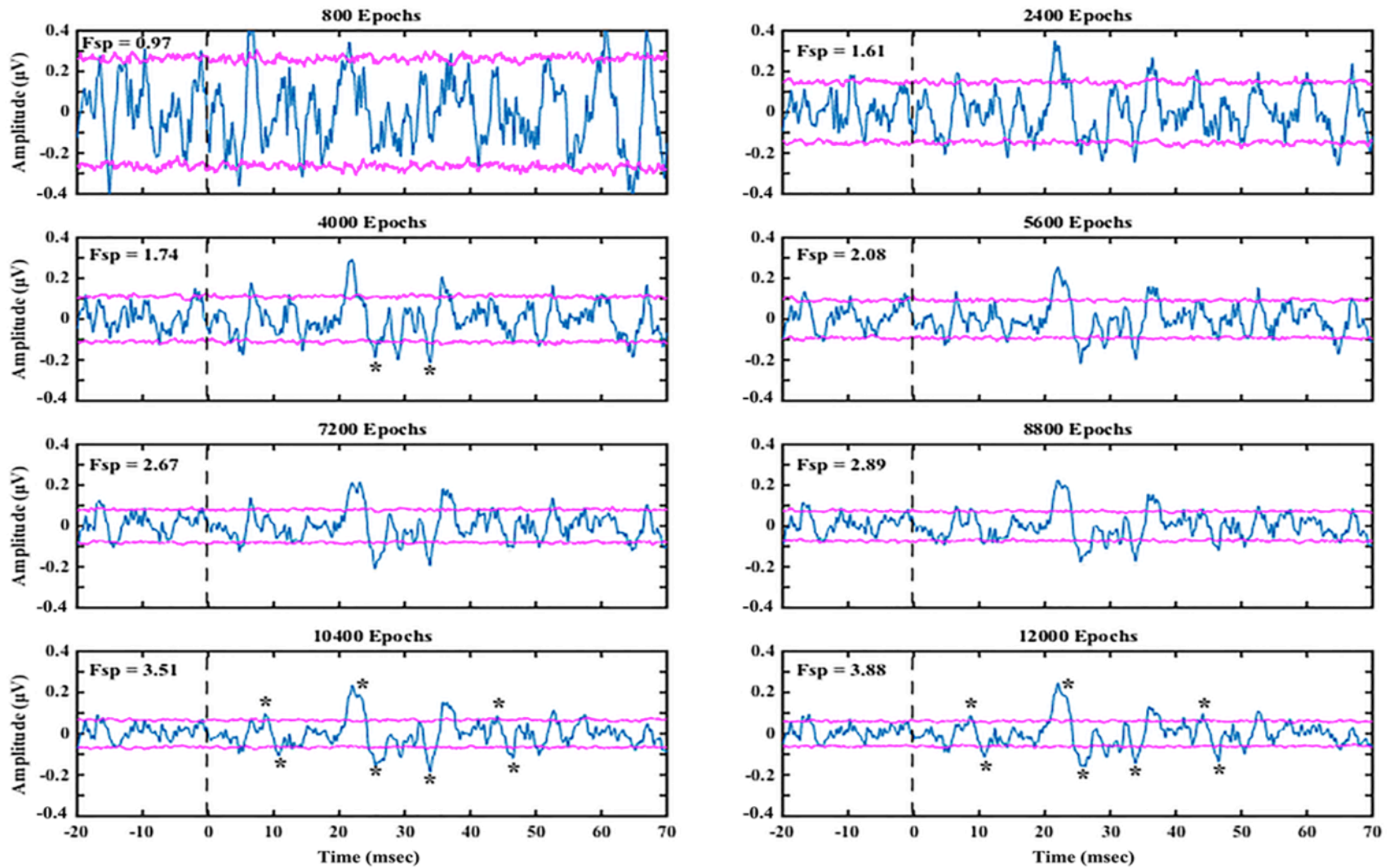




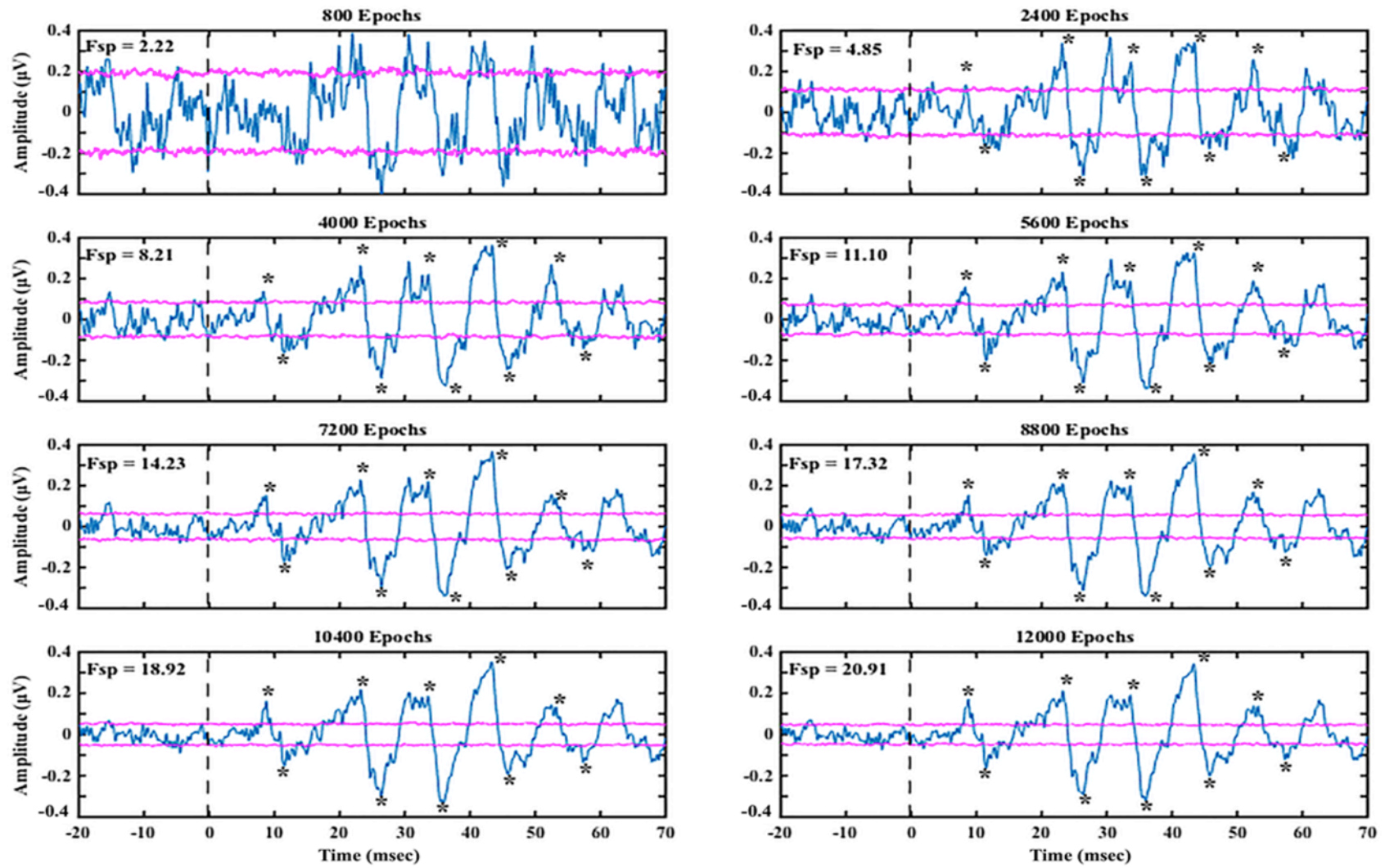
**Fig. 4.** Speech-ABRs with pre-stimulus baseline to the 40ms [da] in noise at 8 iterations from a participant (5) with better responses. Peaks that were detected with 95% confidence once  $F_{sp}$  reached  $\geq 3.1$  are marked with a '\*'.



**Fig. 5.** Speech-ABRs with pre-stimulus baseline to the 40ms [da] in quiet at 8 iterations from a participant (10) with poorer responses. Peaks that were detected with 95% confidence once  $F_{SP}$  reached  $\geq 3.1$  are marked with a '\*'.

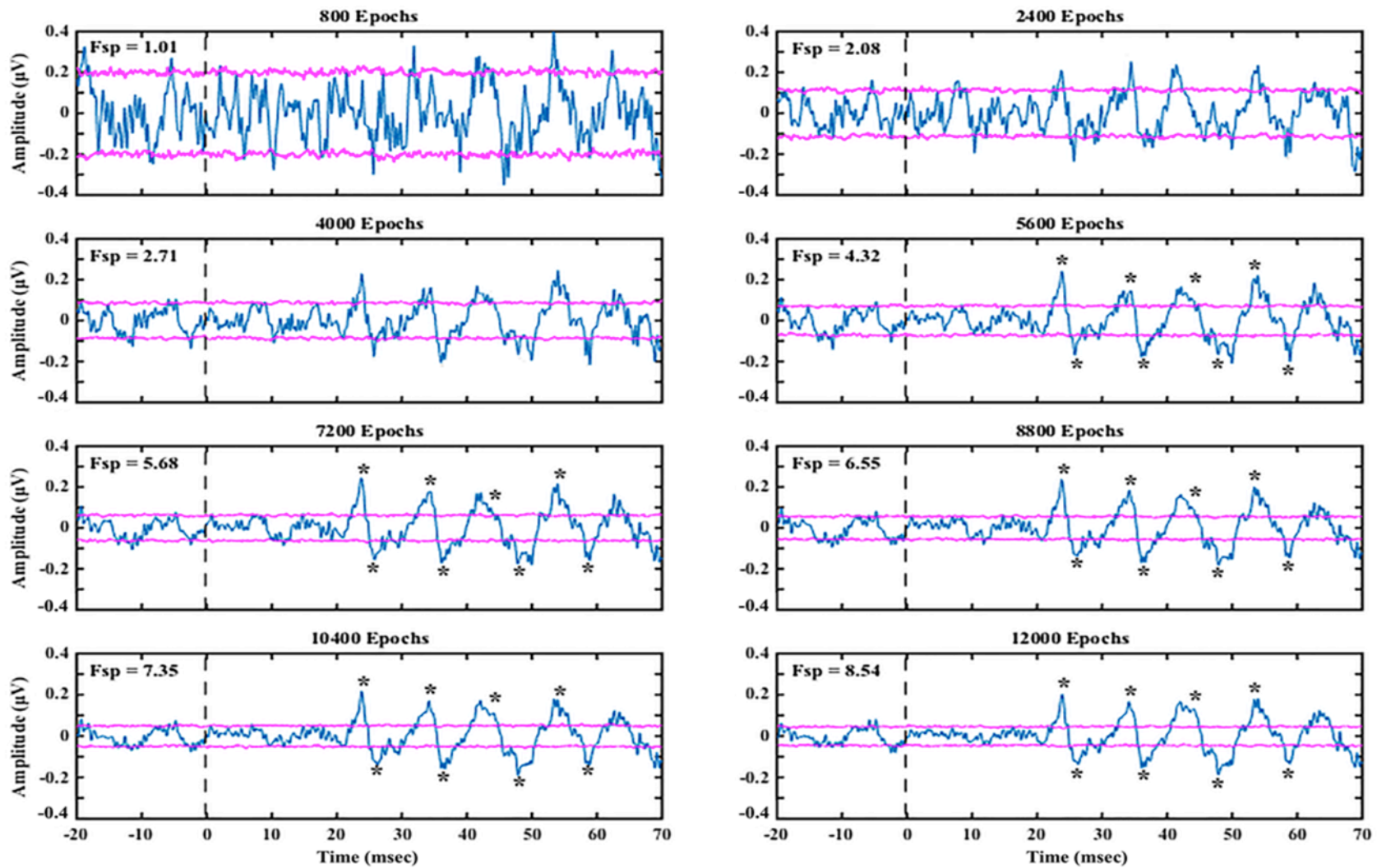


**Fig. 6.** Speech-ABRs with pre-stimulus baseline to the 40ms [da] in noise at 8 iterations from a participant (10) with poorer responses. Peaks that were detected with 95% confidence once  $F_{SP}$  reached  $\geq 3.1$  are marked with a '\*'.

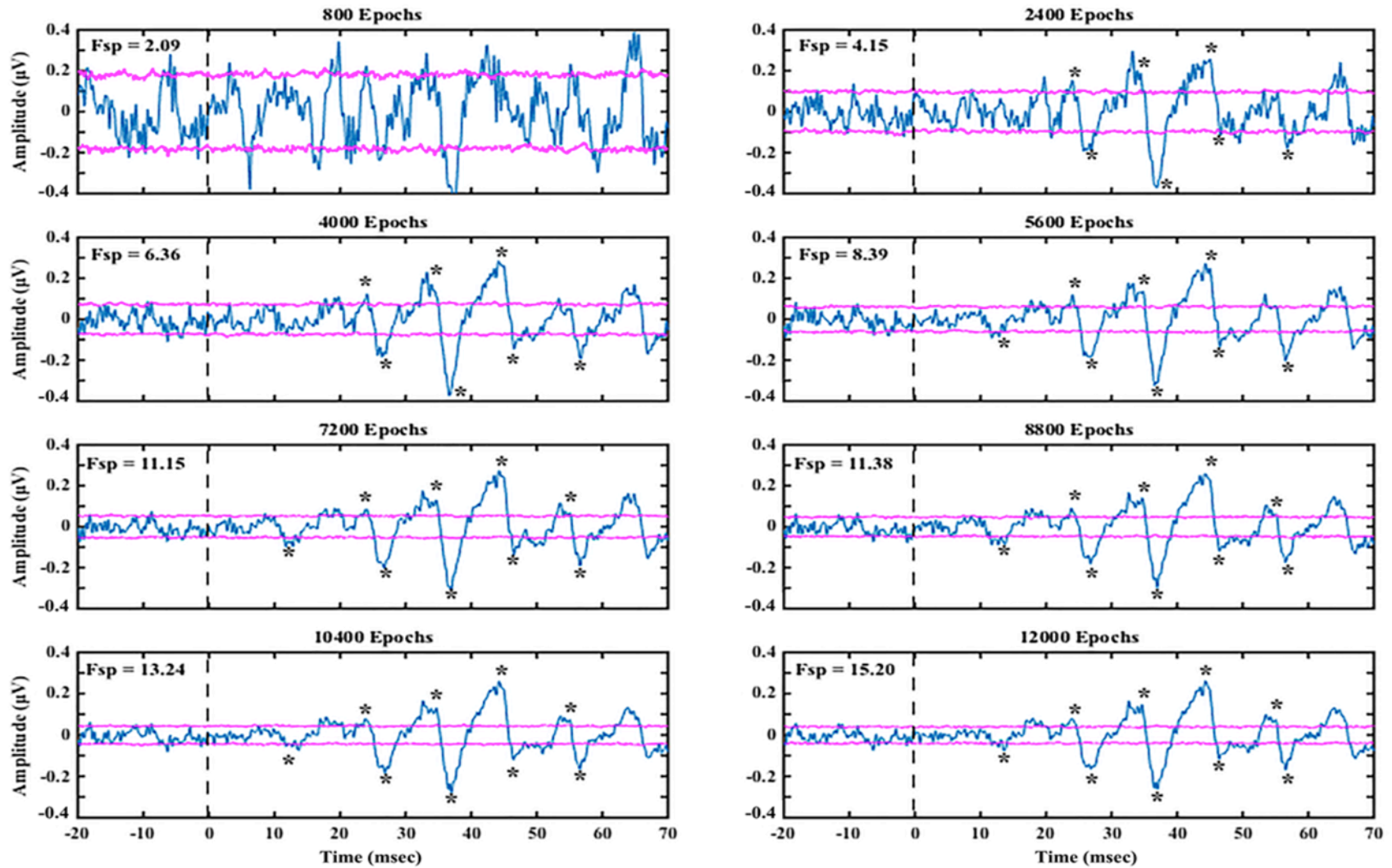


**Fig. 7.** Speech-ABRs with pre-stimulus baseline to the 170ms [da] in quiet at 8 iterations from a participant (5) with better responses. Peaks that were detected with 95% confidence once  $F_{SP}$  reached  $\geq 3.1$  are marked with a '\*'.

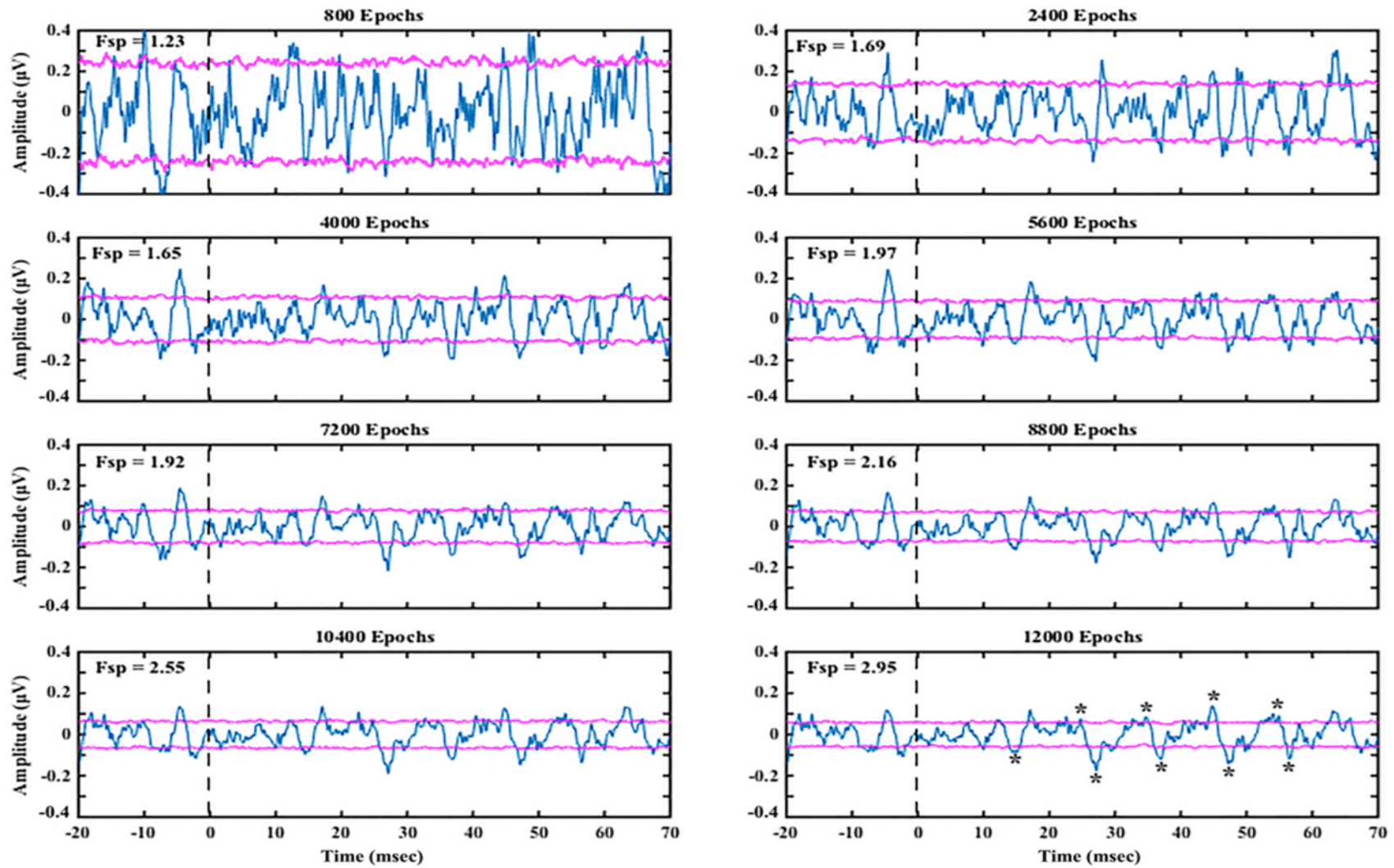




**Fig. 8.** Speech-ABRs with pre-stimulus baseline to the 170ms [da] in noise at 8 iterations from a participant (5) with better responses. Peaks that were detected with 95% confidence once  $F_{SP}$  reached  $\geq 3.1$  are marked with a ‘\*’.



**Fig. 9.** Speech-ABRs with pre-stimulus baseline to the 170ms [da] in quiet at 8 iterations from a participant (10) with poorer responses. Peaks that were detected with 95% confidence once  $F_{SP}$  reached  $\geq 3.1$  are marked with a ‘\*’.



**Fig. 10.** Speech-ABRs with pre-stimulus baseline to the 170ms [da] in noise at 8 iterations from a participant (10) with poorer responses.  $F_{SP}$  did not reach 3.1 in this participant to the 170ms [da] in noise, therefore peaks that were detected with 95% confidence are only marked with a '\*' at 12000 epochs.

## Section 5: F<sub>SP</sub> Values And Number of Epochs

**Table 8.** Number of epochs where  $F_{SP} \geq 3.1$  for speech-ABRs to 40ms and 170ms [da] in quiet and in noise (per participant),  $F_{SP}$  value, difference in number of epochs between quiet and noise (diff).

Blank cells shaded in red indicate that participant speech-ABRs did not reach  $F_{SP} \geq 3.1$ .

|             | 40ms [da]      |                 |                |                 |                | 170ms [da]     |                 |                |                 |                |
|-------------|----------------|-----------------|----------------|-----------------|----------------|----------------|-----------------|----------------|-----------------|----------------|
|             | Quiet          |                 | Noise          |                 | Diff           | Quiet          |                 | Noise          |                 | Diff           |
|             | Epochs         | F <sub>SP</sub> | Epochs         | F <sub>SP</sub> |                | Epochs         | F <sub>SP</sub> | Epochs         | F <sub>SP</sub> |                |
| <b>1</b>    | 1600           | 3.37            | 2400           | 4.46            | 800            | 800            | 4.88            | 1600           | 3.28            | 800            |
| <b>2</b>    | 2400           | 4.72            | 4800           | 3.83            | 2400           | 1600           | 3.40            | 5600           | 3.22            | 4000           |
| <b>3</b>    | 2400           | 4.23            | 3200           | 3.34            | 800            | 3200           | 3.63            | 4000           | 3.23            | 800            |
| <b>4</b>    | 2400           | 4.35            | 2400           | 3.79            | 0              | 1600           | 4.65            | 2400           | 3.88            | 800            |
| <b>5</b>    | 2400           | 3.46            | 3200           | 3.58            | 800            | 1600           | 4.15            | 4800           | 3.50            | 3200           |
| <b>6</b>    | 3200           | 3.50            | 6400           | 3.35            | 3200           | 1600           | 3.41            | 7200           | 3.44            | 5600           |
| <b>7</b>    | 1600           | 3.50            | 5600           | 3.14            | 4000           | 2400           | 3.67            |                |                 |                |
| <b>8</b>    | 1600           | 6.17            | 1600           | 3.90            | 0              | 1600           | 3.19            | 2400           | 3.99            | 800            |
| <b>9</b>    | 1600           | 3.47            | 2400           | 3.13            | 800            | 1600           | 3.25            | 4000           | 3.21            | 2400           |
| <b>10</b>   | 4800           | 3.16            | 9600           | 3.25            | 4800           | 2400           | 4.15            |                |                 |                |
| <b>11</b>   | 3200           | 3.26            | 4800           | 3.42            | 1600           | 3200           | 3.32            | 6400           | 3.27            | 3200           |
| <b>12</b>   | 3200           | 3.54            | 4000           | 3.25            | 800            | 4000           | 3.47            | 8800           | 3.26            | 4800           |
| <b>Mean</b> | <b>2533.33</b> | <b>3.89</b>     | <b>4200</b>    | <b>3.54</b>     | <b>1666.67</b> | <b>2133.33</b> | <b>3.76</b>     | <b>4720</b>    | <b>3.43</b>     | <b>2181.82</b> |
| <b>SD</b>   | <b>954.73</b>  | <b>0.86</b>     | <b>2240.13</b> | <b>0.39</b>     | <b>1580.18</b> | <b>923.76</b>  | <b>0.56</b>     | <b>2307.86</b> | <b>0.28</b>     | <b>2293.39</b> |



**Table 9.** Number of epochs (at or above epochs required for  $F_{SP} \geq 3.1$ ) where peaks were detected with 95% confidence via bootstrap for speech-ABRs to 40ms and 170ms [da] in quiet and in noise (per participant),  $F_{SP}$  values, difference in number of epochs between quiet and noise (diff).

\* A larger number of epochs than required to reach  $F_{SP} > 3.1$  was required to detect all peaks.

Blank cells shaded in red indicate that participant speech-ABRs did not reach  $F_{SP} > 3.1$ .

|             | 40ms [da]      |             |                |             |                | 170ms [da]     |             |                |             |                |
|-------------|----------------|-------------|----------------|-------------|----------------|----------------|-------------|----------------|-------------|----------------|
|             | Quiet          |             | Noise          |             | Diff           | Quiet          |             | Noise          |             | Diff           |
|             | Epochs         | $F_{SP}$    | Epochs         | $F_{SP}$    |                | Epochs         | $F_{SP}$    | Epochs         | $F_{SP}$    |                |
| <b>1</b>    | 1600           | 3.37        | 2400           | 4.46        | 800            | 2400*          | 12.42       | 4000*          | 6.82        | 1600           |
| <b>2</b>    | 2400           | 4.72        | 8800*          | 6.16        | 6400           | 1600           | 3.40        | 10400*         | 4.75        | 8800           |
| <b>3</b>    | 2400           | 4.23        | 3200           | 3.34        | 800            | 3200           | 3.63        | 4800*          | 3.71        | 1600           |
| <b>4</b>    | 3200*          | 5.46        | 4000*          | 5.07        | 800            | 4000*          | 10.34       | 3200*          | 4.84        | -800           |
| <b>5</b>    | 2400           | 4.28        | 3200           | 3.58        | 800            | 1600           | 4.15        | 4800           | 3.5         | 3200           |
| <b>6</b>    | 4000*          | 4.12        | 6400           | 3.35        | 2400           | 6400*          | 11.5        | 7200           | 3.44        | 800            |
| <b>7</b>    | 1600           | 3.50        | 5600           | 3.14        | 4000           | 5600*          | 6.36        |                |             |                |
| <b>8</b>    | 1600           | 6.17        | 3200*          | 5.56        | 1600           | 4800*          | 10.51       | 7200*          | 8.86        | 2400           |
| <b>9</b>    | 1600           | 3.47        | 6400*          | 5.98        | 4800           | 1600           | 3.25        | 4000           | 3.21        | 2400           |
| <b>10</b>   | 4800           | 3.16        | 10400*         | 3.51        | 5600           | 6400*          | 9.73        |                |             |                |
| <b>11</b>   | 4000*          | 3.99        | 4800           | 3.42        | 800            | 3200           | 3.32        | 6400           | 3.27        | 3200           |
| <b>12</b>   | 3200           | 3.54        | 4000           | 3.25        | 800            | 6400*          | 4.66        | 8800           | 3.26        | 2400           |
| <b>Mean</b> | <b>2733.33</b> | <b>4.17</b> | <b>5200.00</b> | <b>4.24</b> | <b>2466.67</b> | <b>3933.33</b> | <b>6.94</b> | <b>7066.67</b> | <b>4.30</b> | <b>3133.33</b> |
| <b>SD</b>   | <b>1103.16</b> | <b>0.91</b> | <b>2448.00</b> | <b>1.15</b> | <b>2142.78</b> | <b>1943.44</b> | <b>3.65</b> | <b>3123.32</b> | <b>1.82</b> | <b>2630.36</b> |

**Table 10.**  $F_{sp}$  values for speech-ABRs to the three [da] durations in quiet and in noise (per participant) at 12000 epochs and ‘no sound’  $F_{sp}$  values (per participant).

$F_{sp}$  values in **red** are those below 3.1

|             | 40ms [da]    |             | 50ms [da]    |             | 170ms [da]  |             | No Sound    |
|-------------|--------------|-------------|--------------|-------------|-------------|-------------|-------------|
|             | Quiet        | Noise       | Quiet        | Noise       | Quiet       | Noise       |             |
| <b>1</b>    | 23.69        | 19.00       | 23.06        | 18.63       | 22.32       | 17.83       | 1.05        |
| <b>2</b>    | 15.84        | 9.15        | 22.41        | 4.47        | 10.74       | 5.09        | 0.66        |
| <b>3</b>    | 16.00        | 9.30        | 8.34         | 13.41       | 8.22        | 11.42       | 0.82        |
| <b>4</b>    | 20.87        | 11.96       | 17.88        | 13.70       | 5.51        | 13.83       | 1.27        |
| <b>5</b>    | 15.46        | 8.45        | 7.86         | 5.58        | 10.94       | 8.54        | 0.70        |
| <b>6</b>    | 10.99        | 5.01        | 13.93        | 5.22        | 7.29        | 5.15        | 1.02        |
| <b>7</b>    | 20.04        | 6.95        | 9.82         | 3.46        | 4.64        | <b>2.96</b> | 0.76        |
| <b>8</b>    | 36.69        | 19.99       | 21.96        | 11.38       | 11.64       | 14.45       | 1.05        |
| <b>9</b>    | 25.71        | 10.04       | 16.67        | 9.62        | 8.48        | 8.81        | 1.46        |
| <b>10</b>   | 5.63         | 3.88        | 6.76         | 4.29        | 6.37        | <b>2.95</b> | 0.72        |
| <b>11</b>   | 11.12        | 5.86        | 3.68         | <b>2.76</b> | 5.45        | 5.34        | 0.87        |
| <b>12</b>   | 12.84        | 8.14        | 9.36         | 4.24        | 3.60        | 4.28        | 1.09        |
| <b>Mean</b> | <b>17.91</b> | <b>9.81</b> | <b>13.48</b> | <b>8.06</b> | <b>8.77</b> | <b>8.39</b> | <b>0.95</b> |
| <b>SD</b>   | <b>8.23</b>  | <b>5.05</b> | <b>6.76</b>  | <b>5.14</b> | <b>4.99</b> | <b>4.97</b> | <b>0.25</b> |

**Table 11.**  $F_{sp}$  values for speech-ABRs (per participant) to the 50ms [ba] and [ga] in quiet and in noise and to the 170ms [ba] and [ga] in quiet at 12000 epochs.

$F_{sp}$  values in **red** are those below 3.1

|             | 50ms [ba]    |             | 170ms [ba]   | 50ms [ga]    |             | 170ms [ga]   |
|-------------|--------------|-------------|--------------|--------------|-------------|--------------|
|             | Quiet        | Noise       | Quiet        | Quiet        | Noise       | Quiet        |
| <b>1</b>    | 50.91        | 24.51       | 48.21        | 18.15        | 8.85        | 29.36        |
| <b>2</b>    | 8.11         | <b>3.06</b> | 29.92        | 5.92         | <b>1.79</b> | 31.24        |
| <b>3</b>    | 11.05        | 3.27        | 16.12        | 4.17         | <b>2.83</b> | 10.82        |
| <b>4</b>    | 8.81         | 7.55        | 28.48        | 11.68        | 10.98       | 25.38        |
| <b>5</b>    | 11.55        | 4.61        | 21.60        | 8.88         | 4.95        | 25.37        |
| <b>6</b>    | 13.47        | 4.31        | 17.36        | 11.90        | 5.09        | 13.90        |
| <b>7</b>    | 9.89         | 7.03        | 12.22        | 10.60        | 3.98        | 15.74        |
| <b>8</b>    | 29.63        | 13.60       | 24.38        | 20.99        | 11.21       | 19.36        |
| <b>9</b>    | 17.48        | 12.44       | 37.67        | 19.73        | 8.78        | 41.69        |
| <b>10</b>   | 7.19         | <b>2.37</b> | 8.52         | 6.77         | 3.56        | 12.66        |
| <b>11</b>   | 6.64         | 4.12        | 6.92         | 5.38         | 3.44        | 7.38         |
| <b>12</b>   | 6.42         | 4.36        | 15.32        | 11.25        | 2.86        | 12.76        |
| <b>Mean</b> | <b>15.10</b> | <b>7.60</b> | <b>22.23</b> | <b>11.29</b> | <b>5.69</b> | <b>20.47</b> |
| <b>SD</b>   | <b>12.99</b> | <b>6.43</b> | <b>12.24</b> | <b>5.67</b>  | <b>3.34</b> | <b>10.20</b> |