**Human intracranial recording sequence descriptions**

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| Y:\lcn\projects\Iowa\Newcastle\AGL\_EcoG\saffran’s stimuli for EcoG |  |

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| --- | --- | --- | --- | --- | --- | --- |
| snd 01 | Grammatical5\_novel | A | C | G | F | C |
| snd02 | Grammatical10\_novel | A | D | C | G | F |
| snd 03 | Grammatical\_3 | A | C | F | C | G |
| snd 04 | Grammatical\_8 | A | D | C | F | C |
| snd 05 | Grammatical5\_novel | A | C | G | F | C |
| snd 06 | Grammatical10\_novel | A | D | C | G | F |
| snd 07 | Grammatical\_3 | A | C | F | C | G |
| snd 08 | Grammatical\_8 | A | D | C | F | C |
| snd 09 | Multiviolation\_1 | A | G | F | C | D |
| snd 10 | Multiviolation\_2 | A | C | D | F | C |
| snd 11 | Multiviolation\_3 | A | G | C | F | C |
| snd 12 | Multiviolation\_4 | A | F | C | G | C |
| snd 13 | Single\_Rule\_break\_1 | A | D | F | C | G |
| snd 14 | Single\_Rule\_break\_2 | A | D | G | F | C |
| snd 15 | Single\_Rule\_break\_3 | A | C | F | C | F |
| snd 16 | Single\_Rule\_break\_4 | A | D | C | G | C |

**6 sequence comparisons used in PLOS Biology 2017**

Single violation

1. snd 01/05 (ACGFC) vs snd 14 (ADGFC) : analysis windows start at 1127 ms
2. snd 02/06 (ADCGF) vs and snd 15 (ACFCF) : analysis windows start at 2253 ms
3. snd 03/07 (ACFCG) vs snd 13 (ADFCG) : analysis windows start at 1127 ms
4. snd 4/08 (ADCFC) vs snd 16 (ADCGC) : analysis windows start at 2253 ms

Multi violation

1. snd 01/05 (ACGFC) vs snd 9 (AGFCD) : analysis windows start at 1127 ms for and 01/05 (grammatical) and 563 ms for snd 9 (ungrammatical)
2. snd 03/07 (ACFCG) vs snd 12 (AFCGC) : analysis windows start at 1127 ms for and 03/07 (grammatical) and 563 ms for snd 12 (ungrammatical)

Size of analysis window = 1126 ms

Note: The analysis window was further shifted by 150 ms for LFP

**Durations of the five elements:** **Y:\lcn\projects\yuki\Stimli\Saffran\_stim\_electrophys\elements\**

|  |  |  |
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| Speech |  | Duration (s) |
| A | YAG | 0.41374 |
| C | KEM | 0.41306 |
| D | LEK | 0.41396 |
| G | PAV | 0.41365 |
| F | RAP | 0.41347 |
|  | Average | 0.413576 |
|  | SD | 0.00030243 |

**Exposure sequence:**

Inter element interval: 150 ms

Inter sequence interval: 2.15s (307L SOA: mean 4.82s, std=0.4892, 316R: mean 5.3212, std=0.4903)

Exposure time: <~10 minutes

Total: 112 trials (normal exposure experiment was set as 14 trials per sequence x 8 sequences = 112 trials)

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|  |  |  |  |  |  |  |  |
| **Familiar** | Onset | Start 2nd | Start 3rd | Start 4th | Start 5th | Start 6th | Duration (ms) |
| 2 | A | C | F | C |  |  | 2103 |
| 3 | A | C | F | C | G |  | 2267 |
| 4 | A | C | G | F |  |  | 2104 |
| 6 | A | C | G | F | C | G | 3230 |
| 7 | A | D | C | F |  |  | 2104 |
| 8 | A | D | C | F | C |  | 2267 |
| 9 | A | D | C | F | C | G | 3230 |
| 11 | A | D | C | G | F | C | 3230 |

**Testing sequence:**

Total: 160 trials

Inter element interval: 150 ms

Inter sequence interval: mean 2.41 s (SOA mean=5.0738s) for 307L, 2.46 s for E316 (SOA mean=5.1201s) Experiment duration: <~14 minutes

**8 violation sequences (10 times per sequence)**

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| --- | --- | --- | --- | --- | --- | --- |
| **Single-violation** |  | | | |  |  |
|  |  |  |  |  |  | Duration (ms) |
|  | Onset | Start 2nd | Start 3rd | Start 4th | Start 5th |  |
| Single\_Rule\_break\_1 | A | D | F | C | G | 2665 |
| Single\_Rule\_break\_2 | A | D | G | F | C | 2665 |
| Single\_Rule\_break\_3 | A | C | F | C | F | 2665 |
| Single\_Rule\_break\_4 | A | D | C | G | C | 2665 |
|  |  |  |  |  |  |  |
| **Multiple-violation** |  | | | |  |  |
|  |  |  |  |  |  |  |
|  | Onset | Start 2nd | Start 3rd | Start 4th | Start 5th |  |
| Multiviolation\_1 | A | G | F | C | D | 2665 |
| Multiviolation\_2 | A | C | D | F | C | 2665 |
| Multiviolation\_3 | A | G | C | F | C | 2665 |
| Multiviolation\_4 | A | F | C | G | C | 2665 |

4 consistent sequences (20 times per sequence)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Correct |  |  |  |  |  |  |
|  | Onset | Start 2nd | Start 3rd | Start 4th | Start 5th |  |
| Grammatical\_3 | A | C | F | C | G | 2665 |
| Grammatical5\_novel | A | C | G | F | C | 2665 |
| Grammatical10\_novel | A | D | C | G | F | 2665 |
| Grammatical\_8 | A | D | C | F | C | 2665 |