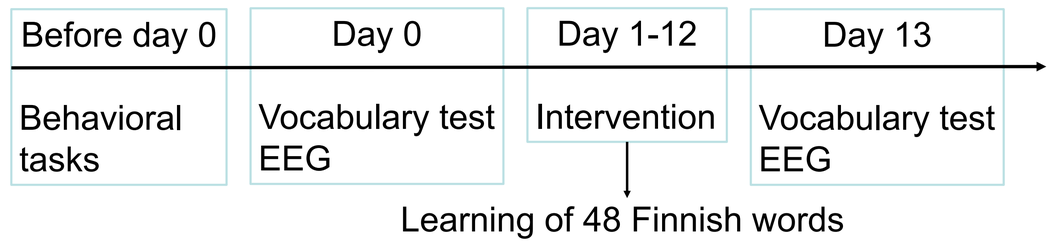
Neuronal correlate of automatic and fast categorization of newly acquired second language words

Introduction

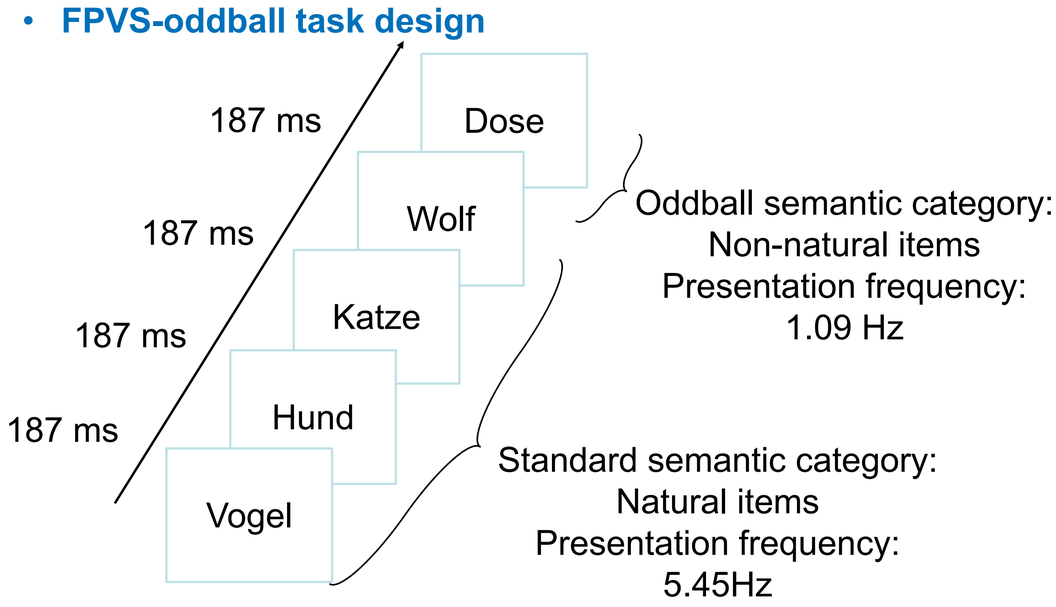
- **Long-term declarative memory:** Semantic memory is essential to store knowledge about the world and to determine how to interact with one's environment.
- **Second language acquisition (SLA):** Language goes beyond simple perceptual processing and can be used to determine how memory varies with level of abstraction.
- **Fast Periodic Visual Stimulation (FPVS)-oddball paradigm:** A valid and highly sensitive assessment of long-term declarative memory of newly acquired language.

Methods

- **Intervention plan**

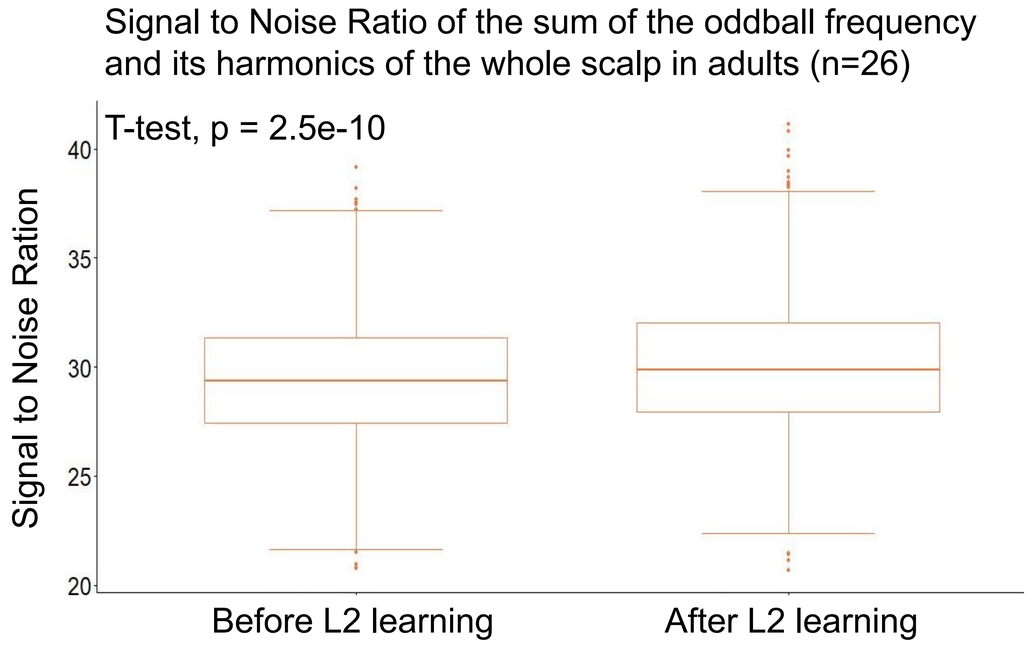


- **FPVS-oddball task design**



Results

After two weeks of L2 learning, there was a significant increase of the scalp average signal-to-noise ratio of the sum of the baseline corrected amplitudes of the oddball frequency and its harmonics, i.e., $Fodd^{1}$= 1.087 Hz, $Fodd^{2}$ = 2.174 Hz, $Fodd^{3}$= 3.262 Hz, … $Fodd^{29}$= 39.138 Hz, excluded the frequencies and harmonics that are common with the standard frequency, i.e., $Fstand^{1}$= 5.436 Hz, … $Fstand^{7}$= 38.052 Hz (M = 1.23 SD = 0.45), compared to before L2 learning (M = 1.05, SD = 0.19), t(1637) = 6.26, p < .001.



Conclusion

We can assess long-term declarative memory of a newly acquired language with the FPVS-oddball paradigm.

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