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Background

- Pause-internal phonetic particles (PINTs) include silences, inhalation and exhalation noises, filler particles “uh” and “um”, and tongue clicks
- PINTs improve recall in single-sentence laboratory setting experiments [1-3]
- Many studies do not utilize material from a real-world setting and/or focus on smaller contexts (i.e., words or sentences)

Research Questions: Do PINTs improve recall in lectures? Do PINTs affect recall differently for L1 and L2 listeners?

Method

- English-language lectures from Open Yale Courses [4]
- Three versions: original (base), silence, and no PINTs (Fig. 1)
- Half of key information preceded by PINTs material
- 45 L1 English (monolingual) and 45 L1 German participants
- Participants heard 4 lecture segments (3-minutes each)
- Participants answered 2 content-based questions
- Questionnaire after listening section

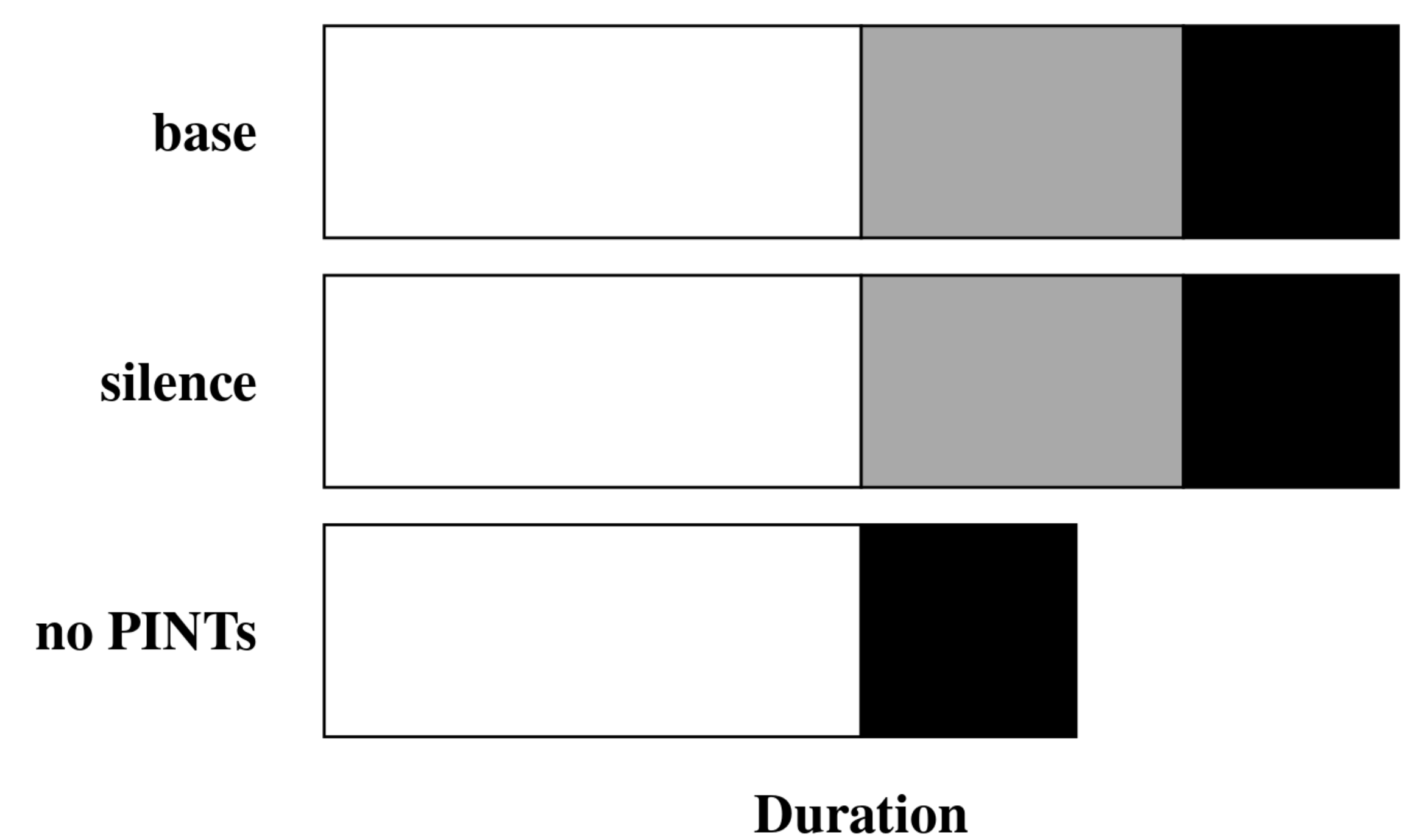


Fig. 1: Schematic for three conditions: speech (white), PINTs (grey), and speech material containing key information (black).

Results

- Participants scored 0-8 (1 point per question) (Fig. 2)
- Omitted no PINTs condition for modeling
- Binomial GLMM model:
 - $glmer(score \sim precede + (1|id), family = binomial)$
- Main effect for preceding PINTs:
 - $Estimate = -0.88, SE = 0.23, z = -3.87, p < 0.001$
- Key information preceded by PINTs lowered score (Fig. 3)
- L1, condition, and questionnaire variables resulted in worse models
- L1 English scored higher on the no PINTs condition, while L1 German scored higher on the original condition

| condition | L1 | mean | sd |
|-----------|----|------|------|
| no PINTs | EN | 6.26 | 1.83 |
| silence | EN | 6.07 | 1.44 |
| original | DE | 6.00 | 1.07 |
| original | EN | 5.88 | 1.92 |
| no PINTs | DE | 5.87 | 1.41 |
| silence | DE | 5.67 | 1.76 |

Fig. 2: Descriptive statistics for the different conditions and L1s.

| preceding PINTs | mean | sd |
|-----------------|------|------|
| no | 0.81 | 0.39 |
| yes | 0.66 | 0.47 |

Fig. 3: Descriptive statistics for by-question score. Wilcoxon rank sum test ($W = 32096, p < 0.001$).

Summary

- Material preceded by PINTs less likely to be recalled
- L1 did not affect recall
- Unable to replicate recall benefit found in single-sentence laboratory settings

References

[1] Fraundorf & Watson (2011). The disfluent discourse: Effects of filled pauses on recall. *Journal of Memory and Language*, vol. 65, no. 2, pp. 161–175. [2] Corley et al. (2007). It's the way that you, er, say it: Hesitations in speech affect language comprehension. *Cognition*, vol. 105, no. 3, pp. 658–668. [3] MacGregor et al. (2010). Listening to the sound of silence: Disfluent silent pauses in speech have consequences for listeners. *Neuropsychologia*, vol. 48, no. 14, pp. 3982–3992. [4] Hammer (2007). Open Yale courses. <https://oyc.yale.edu/>. License: Creative Commons BY-NC-SA.