Sensitivity of pausing strategies to utterance length: Evidence from a crosslinguistic speech corpus

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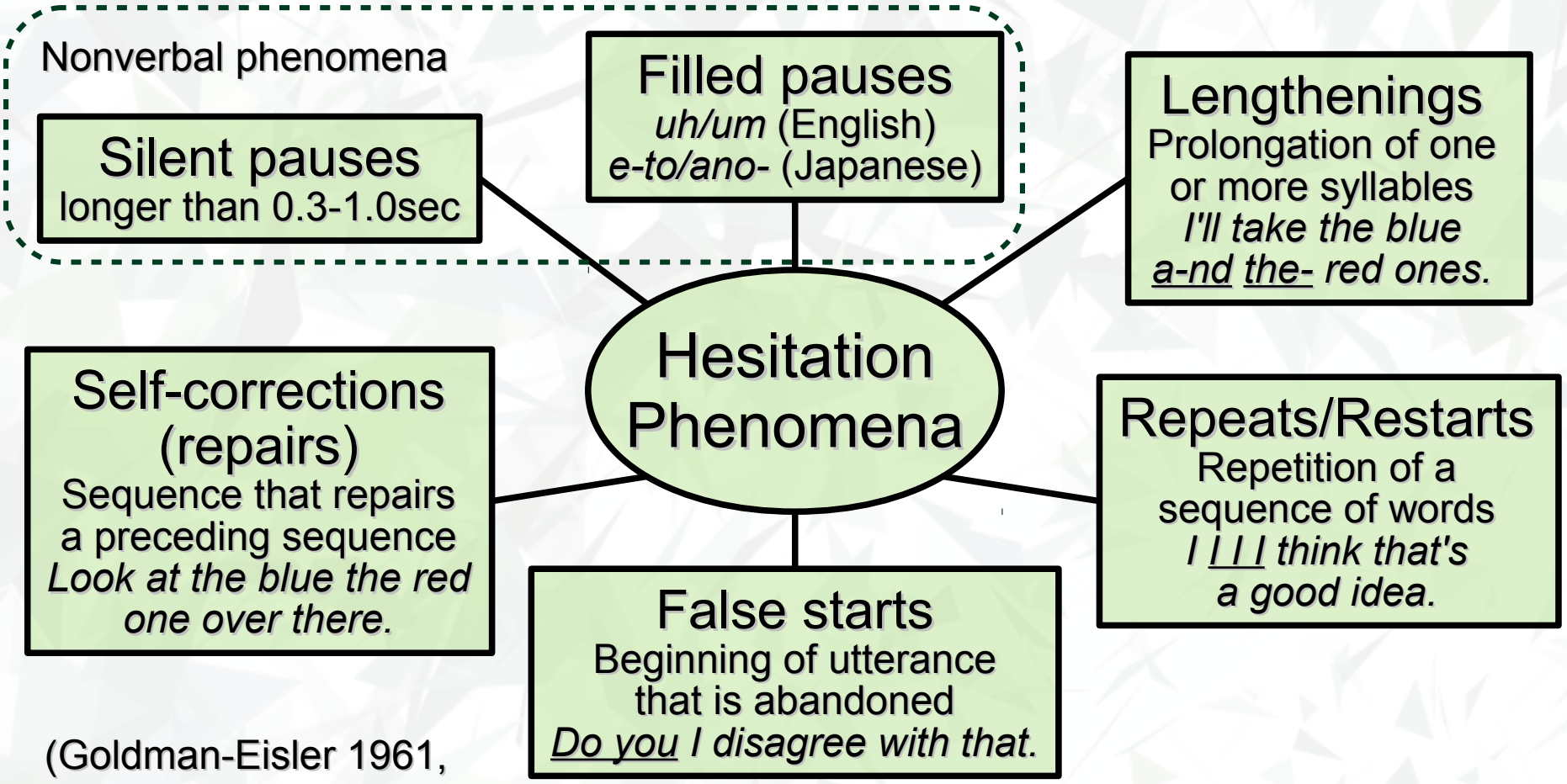
When something goes wrong during spontaneous speech production...



(Goldman-Eisler 1961, Levelt 1983, 1989, Maclay and Osgood 1959, Rochester 1973, inter alia)

Recent work on the distribution of silent and filled pauses

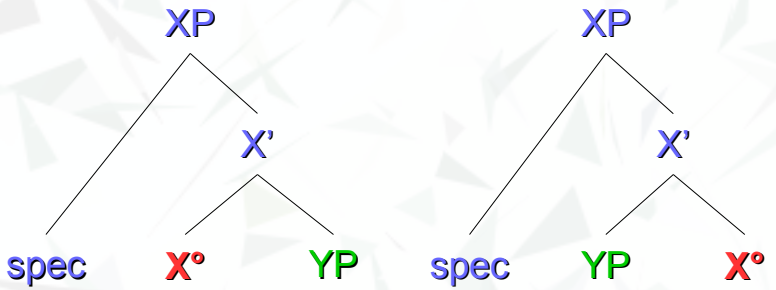
- Campione and Véronis 2005: Examined SPs and FPs in the Spoken French Reference Corpus
  - SPs and FPs overlap to mark syntactic structure
  - FPs (with following SPs) mark non-syntactic interruptions
- Watanabe, et al 2013, 2014, 2015: Examined clause boundary depth and clause length in Japanese
  - SP duration is longer at stronger boundaries and before longer clauses
  - FP duration is not affected
- In short, SP and FP are not simply free alternatives when hesitation is needed.

Open questions

- What are the triggering contexts for SPs and FPs?
- (i.e.,) What constitutes linguistic complexity?
  - Utterance length
  - Clause length
  - Clause depth
  - Other?
- How does this affect L2 versus L1 speech production?

Methodological questions

- Isn't this psycholinguistics? Why corpus linguistics?
  - More and more psycholinguists are finding it useful to evaluate hypotheses through corpus analysis (cf., Yamashita et al 2011)
- Why English and Japanese?
  - Short phrases vs. long phrases (Tanaka et al 2011)
    - English: Short before long
    - Japanese: Long before short
  - Head direction
    - English: head-initial
    - Japanese: head-final



Crosslinguistic Corpus of Hesitation Phenomena

- CCHP (Rose 2013)
- Participants: L2 learners of varying proficiency levels
- Elicitation tasks (both L1 and L2)
  - Spontaneous speech: picture description, topic narrative
  - Reading aloud
- Annotation
  - Transcript with filled pauses
  - Two annotators, one checker
  - Pause info (Quené et al 2011)

```
<UTTERANCE>
 <T>in</T>
 <T>America</T>
 <T FILLED-PAUSE="yes">uh</T>
 <T>there's</T>
 <T>a</T>
 <T FILLED-PAUSE="yes">uh</T>
 <T>very</T>
 <T>famous</T>
 <T FILLED-PAUSE="yes">uh</T>
 <T>and</T>
 <T>loved</T>
 <T FILLED-PAUSE="yes">uh</T>
 <T>basketball</T>
 <RP>
  <O>
   <T>cl#</T>
  </O>
  <T FILLED-PAUSE="yes">uh</T>
  <E>
   <T>association</T>
  </E>
 </RP>
 <T>which</T>
 <T>is</T>
 <T>called</T>
 <T>NBA</T>
 <T>National</T>
 <T>Basketball</T>
 <T>Association</T>
 <T>I</T>
 <T>think</T>
</UTTERANCE>
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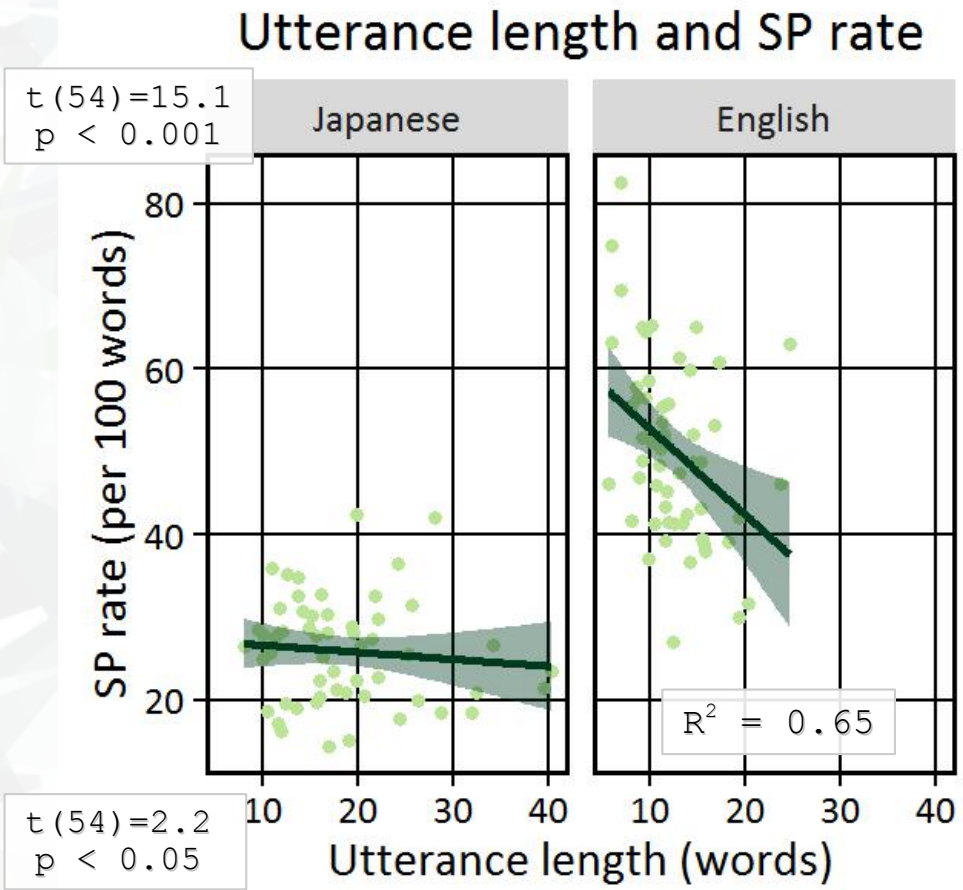
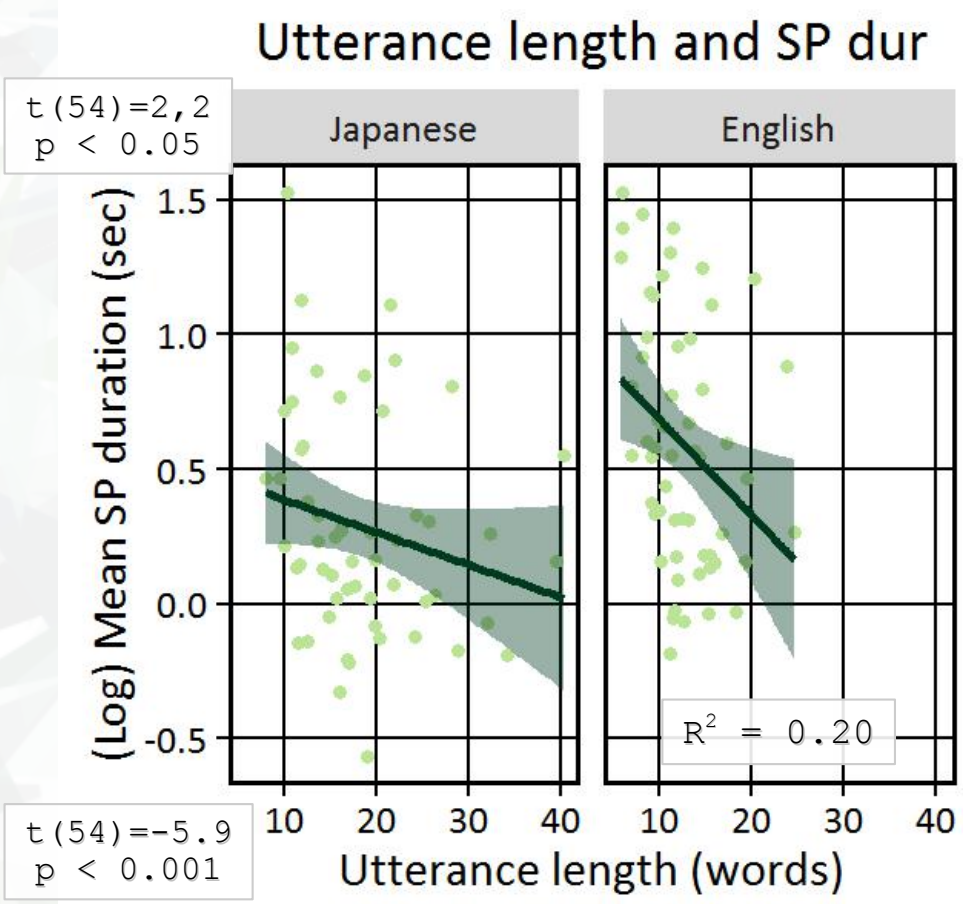
Influence of utterance length in L1 and L2



- Clear difference between Japanese and English speech.
- But,
  - Is utterance length just proxy for L2 proficiency?
  - Perhaps not: alternate model not significant

All stats using lme in R; fixed effects as shown and participants as random effects. T-values for relevant fixed effect(s) and marginal R^2 are shown.

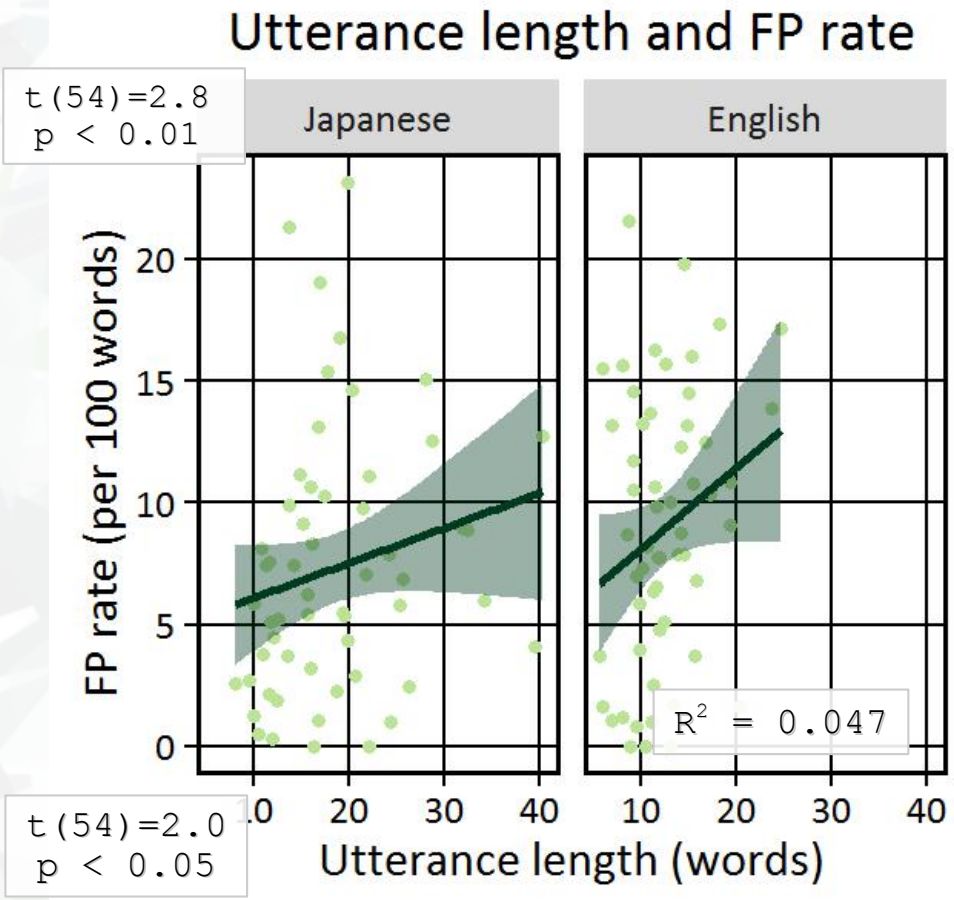
Influence of utterance length in L1 and L2



- In both L1 Japanese and L2 English, the longer the utterance, the shorter the mean silent pause duration.
  - Japanese data contrasts Watanabe et al 2015
  - Is utterance length just proxy for L2 proficiency?
  - Perhaps not: alternate model not significant

All stats using lme in R; fixed effects as shown and participants as random effects. T-values for relevant fixed effect(s) and marginal R^2 are shown.

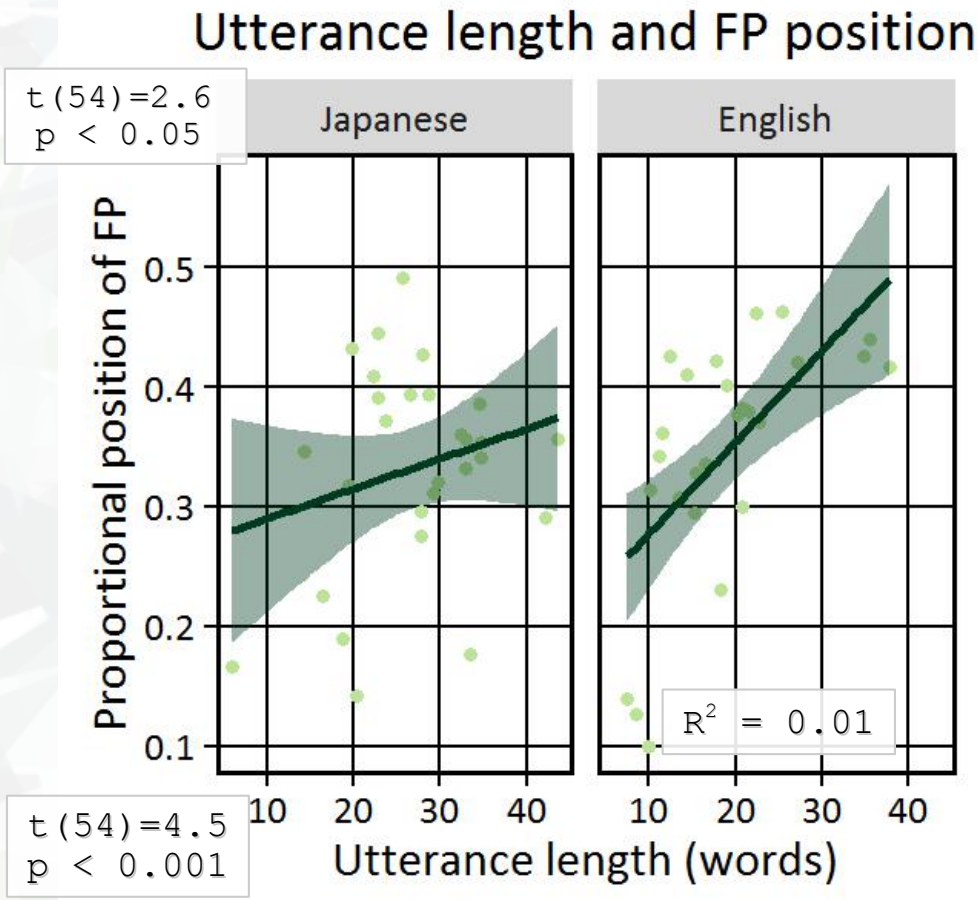
Influence of utterance length in L1 and L2



- In L1 Japanese, speakers' FP rate increases with longer utterances
- This trend is not significant in English.

All stats using lme in R; fixed effects as shown and participants as random effects. T-values for relevant fixed effect(s) and marginal R^2 are shown.

Influence of utterance length in L1 and L2



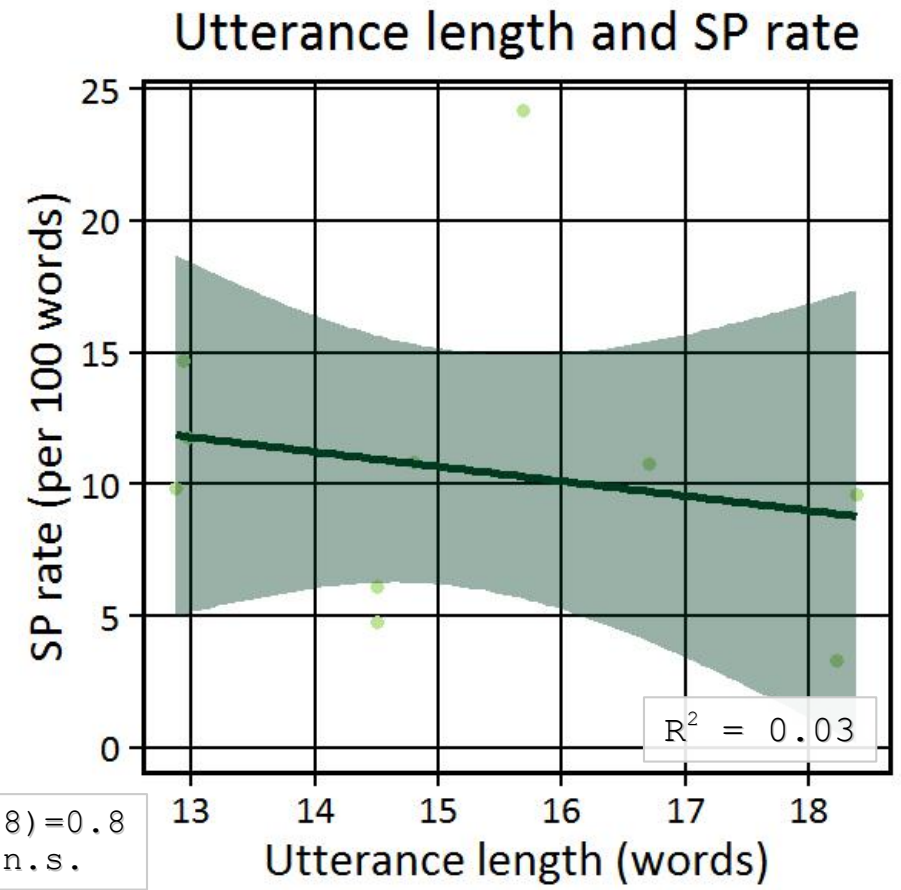
- In both L1 Japanese and L2 English, the longer a speakers' utterance (in words), the later (proportionally) that a FP is used in the utterance.
- This trend is greater in L2 English than in L1 Japanese.

All stats using lme in R; fixed effects as shown and participants as random effects. T-values for relevant fixed effect(s) and marginal R^2 are shown.

Corpus of Oral Presentations in English

- COPE (Watanabe)
  - Complement to the Corpus of Spontaneous Japanese (CSJ: Maekawa 2003)
- Participants: 20 native speakers of English
- Elicitation task: Unscripted monologue
  - Approx. 10 min. oral presentation with 10 min. preparation
- Annotation
  - Transcription with filled pauses
  - Shallow parse (utterance and clause boundaries)

Influence of utterance length in English

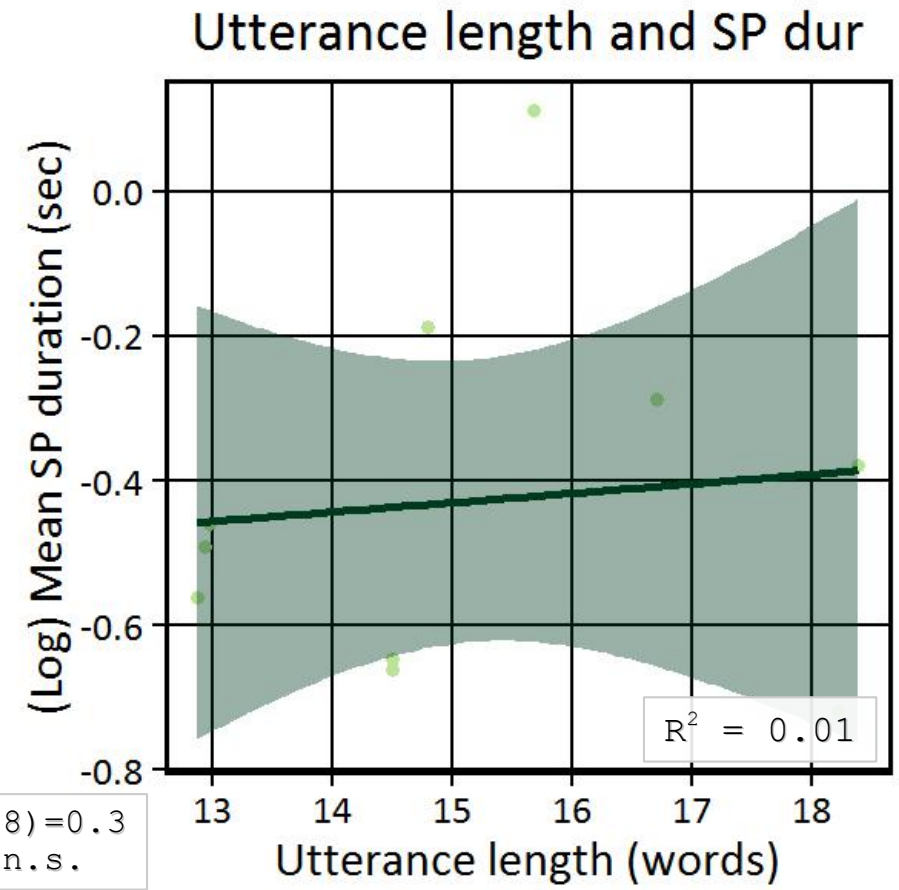


t(8)=0.8
n.s.

- No apparent relationship between utterance length and occurrence of SP.
- (But comparing broad means only)

All stats using lme in R; fixed effects as shown and participants as random effects. T-values for relevant fixed effect(s) and marginal R^2 are shown.

Influence of utterance length in English

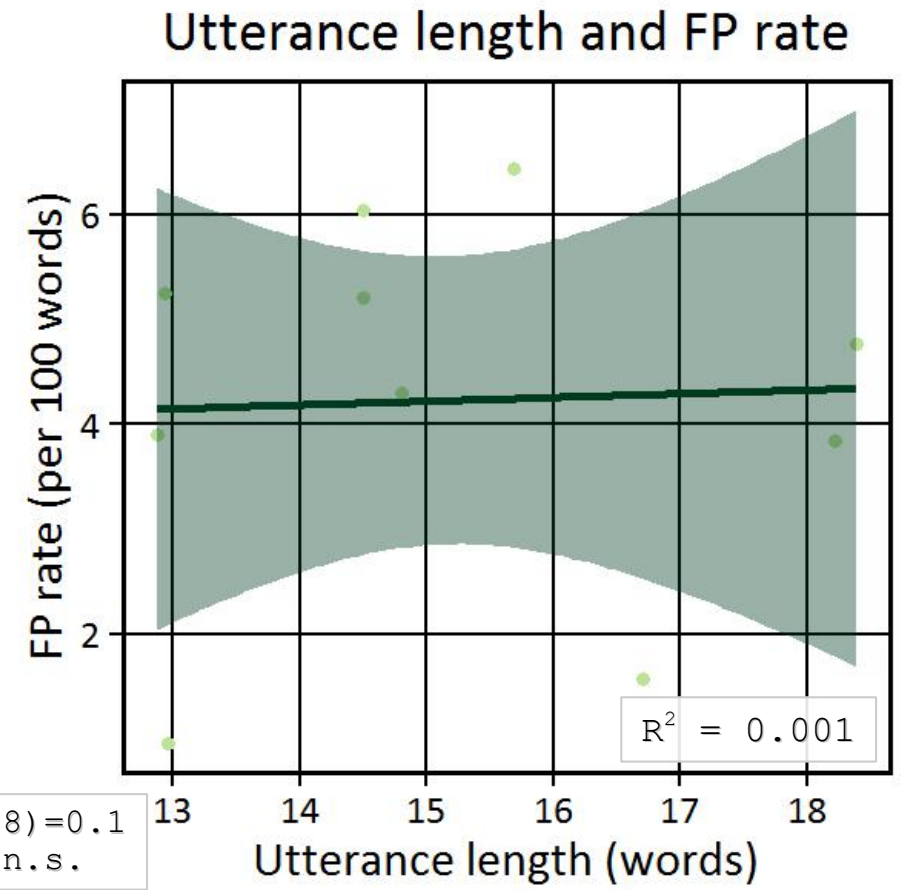


t(8)=0.3
n.s.

- No apparent relationship between utterance length and duration of SP.
- (But comparing broad means only)

All stats using lme in R; fixed effects as shown and participants as random effects. T-values for relevant fixed effect(s) and marginal R^2 are shown.

Influence of utterance length in English

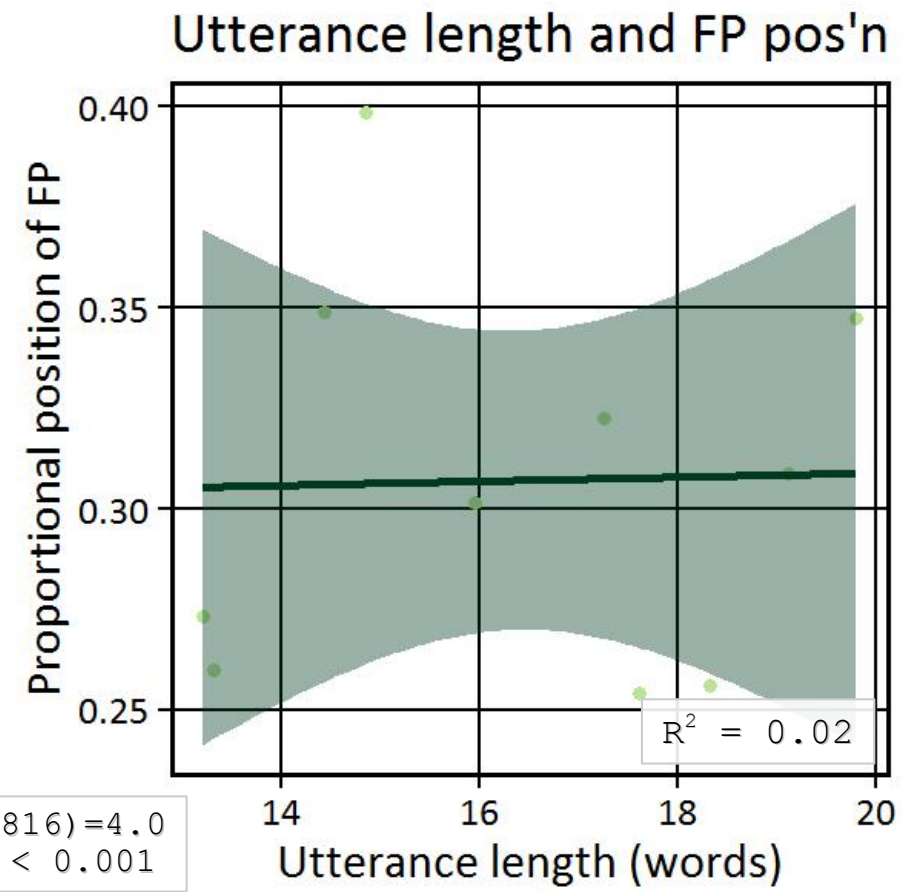


t(8)=0.1
n.s.

- No apparent relationship between utterance length and occurrence of FP.
- (But comparing broad means only)

All stats using lme in R; fixed effects as shown and participants as random effects. T-values for relevant fixed effect(s) and marginal R^2 are shown.

Influence of utterance length in English



t(816)=4.0
p < 0.001

- The longer the utterance, the later the FP will be used.

All stats using lme in R; fixed effects as shown and participants as random effects. T-values for relevant fixed effect(s) and marginal R^2 are shown.

Summary

	SP rate wrt Utterance length	SP dur wrt Utterance length	FP rate wrt Utterance length	FP pos'n wrt Utterance length
L1 English	n.s.	n.s.	n.s.	+
L1 Japanese	n.s.	-	+	+
L2 English	-	-	n.s.	+

As L2 learners become more proficient in the target language, their pausing rates and durations as well as utterance length more closely resemble those of natives. However, the interaction of these features – i.e., their pausing strategies – may still show a very different production profile.

Future work

- Examine FP durations.
- Examine fine-grained placement of SPs.
- Examine influence of clause-related complexity.

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