

Some observations about Filled Pauses in English: A Multifaceted Approach

Ralph L. Rose
<rose@waseda.jp>
Waseda University

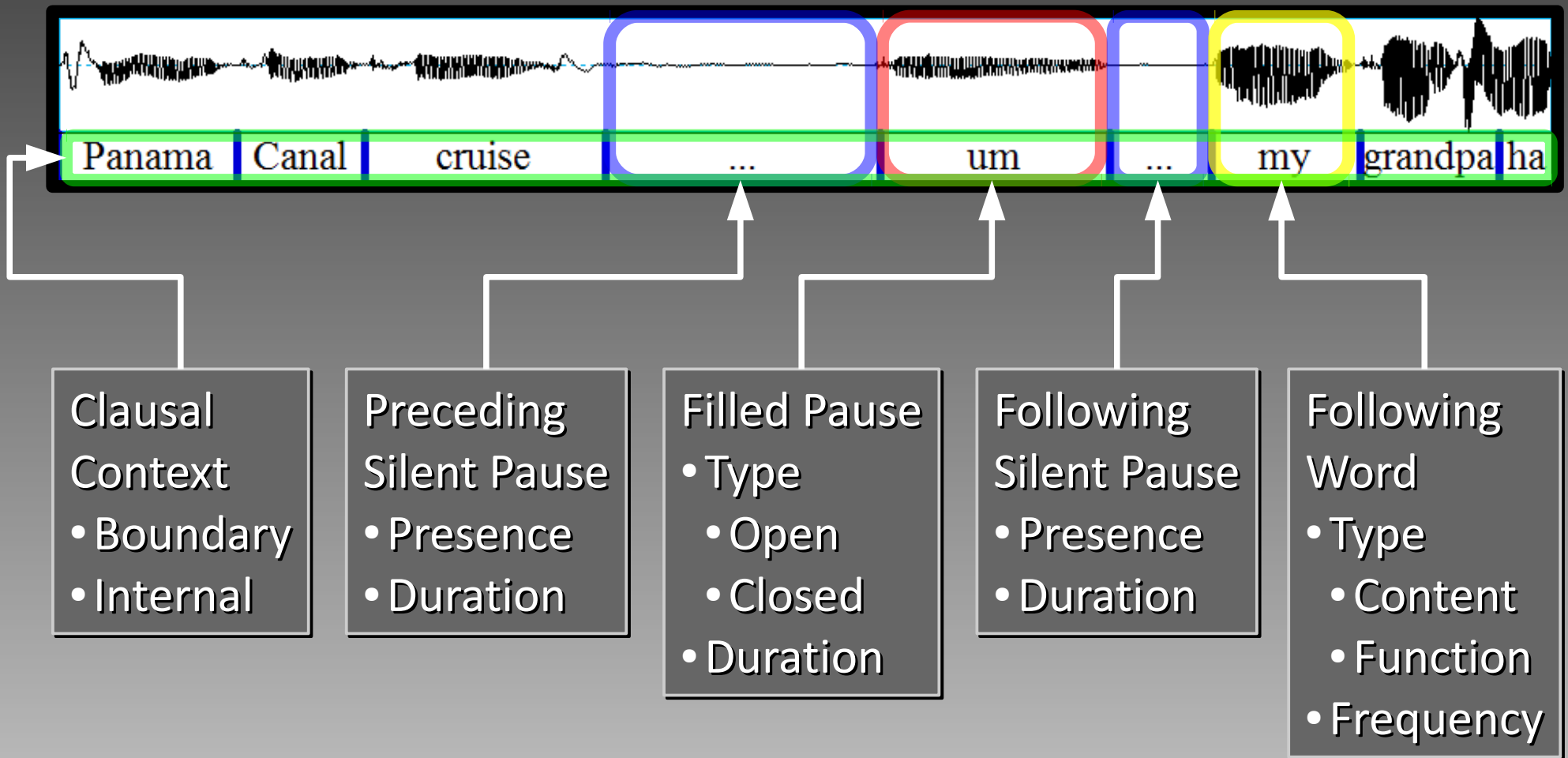


Overview



- Background
 - Research on English filled pauses
 - The problem of *uh* and *um*
- Corpus results
 - Monologue vs. Conversation
 - Santa Barbara Corpus & Corpus of Oral Presentations in English
 - Speech vs. Writing
 - Switchboard & Blogs
 - L2 English vs. L1 Japanese
 - Crosslinguistic Corpus of Hesitation Phenomena
- Summary and other observations

FP environment and parameters



English FP Research



- FPs are more likely at major vs. minor discourse boundaries (Swerts 1998, Rose 1998)
- FPs are more frequent before content word than function words (Maclay and Osgood 1959)
- *Ums* and *Uhs* don't have the same distribution (Smith and Clark 1993)
- FPs are related to following silent pauses (Rose 2009), but less so to preceding silent pauses (Benus 2009).

The problem of *uh* and *um*



- Why does English have two FPs?
 - Open: *uh, er* /ə(:)/
 - Closed: *um, erm* /ə(:)m/
- Filler-as-word hypothesis (Clark and Fox Tree 2002, <http://languagelog.idc.upenn.edu/nll/?p=15718>)
 - Fillers are interjections.
 - FP marks expectation of a delay in speech production.
 - Open FP → minor delay
 - Closed FP → major delay
- Evidence is mixed
 - For: Smith and Clark 1993, Kendall 2013
 - Against: O'Connell and Kowal 2005, Corley and Stewart 2008

Corpus Results 1



- Santa Barbara Corpus (SBC: Du Bois et al)
 - Free conversation
 - 60 recordings x 15-30 mins each
 - Sample
 - 7 recordings (165 mins, 17 speakers)
 - 149 FPs
- Corpus of Oral Presentations in English (COPE: M. Watanabe)
 - Unscripted monologue
 - 20 recordings x 10-15 mins each
 - Sample
 - First two minutes of each of 10 recordings
 - 163 FPs

Sample fillers (SBC/COPE)



• SBC

43.66 44.20 but I mean,
44.20 44.92 I'm not like,
44.92 47.60 (H) .. <@ I'm no=t uh= @>,
47.60 48.00 @
48.00 48.96 (H) I don't know how to say it.

604.35 605.55 [Have you heard] these figures.
605.55 606.05 that like=,
606.05 606.45 um,
606.45 609.22 ... it's something like forty
percent of males,
609.22 610.53 in .. the Bay Area,
610.53 612.00 are supposed [to be infected]?

418.69 419.39 PETE:Where were they fishing.
419.39 420.14 .. Like in lakes,
420.14 420.39 or,
420.39 420.84 MARILYN: .. [Um=,
420.41 420.86 PETE: [rivers,
420.86 421.30 MARILYN: I think,

• COPE

my name is *** ***, and my title is most memorable moments in, uh my life. so definitely, uh one of my most memorable moments in life was, um when me and my family went on our panama canal cruise.

it's just something that's stayed with me uh for a while, and I still remember a lot of it vividly. um so it all began um when I was about sixteen years old and I realized I needed to start thinking about and start planning my eagle scout project in order to attain the rank of eagle in boy scouts.

last year I took a trip to new york with several friends of mine. we drove from orange, california to new york new york uh in about two weeks, uh stopping in michigan, utah, uh nevada, arizona, colorado, wyoming, bunch of different states.

Predictions (SBC/COPE)



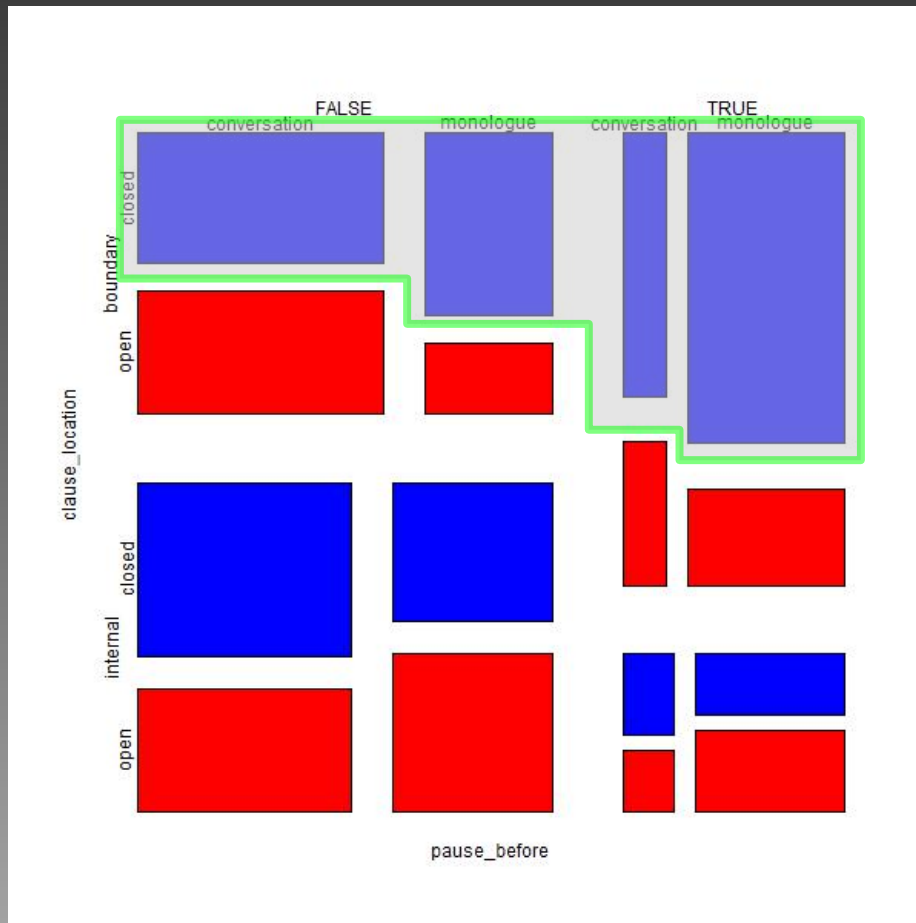
- Direct
 - More silent pauses after closed than open FPs
 - Longer delay (FPs + pauses) with closed FPs
- Indirect
 - (Given slower lexical access for low-frequency than high-frequency words; cf., Segalowitz and Lane 2000)
 - More closed FPs before lower-frequency than higher-frequency words
 - More closed FPs before content words than function words

Preceding pause (SBC/COPE)



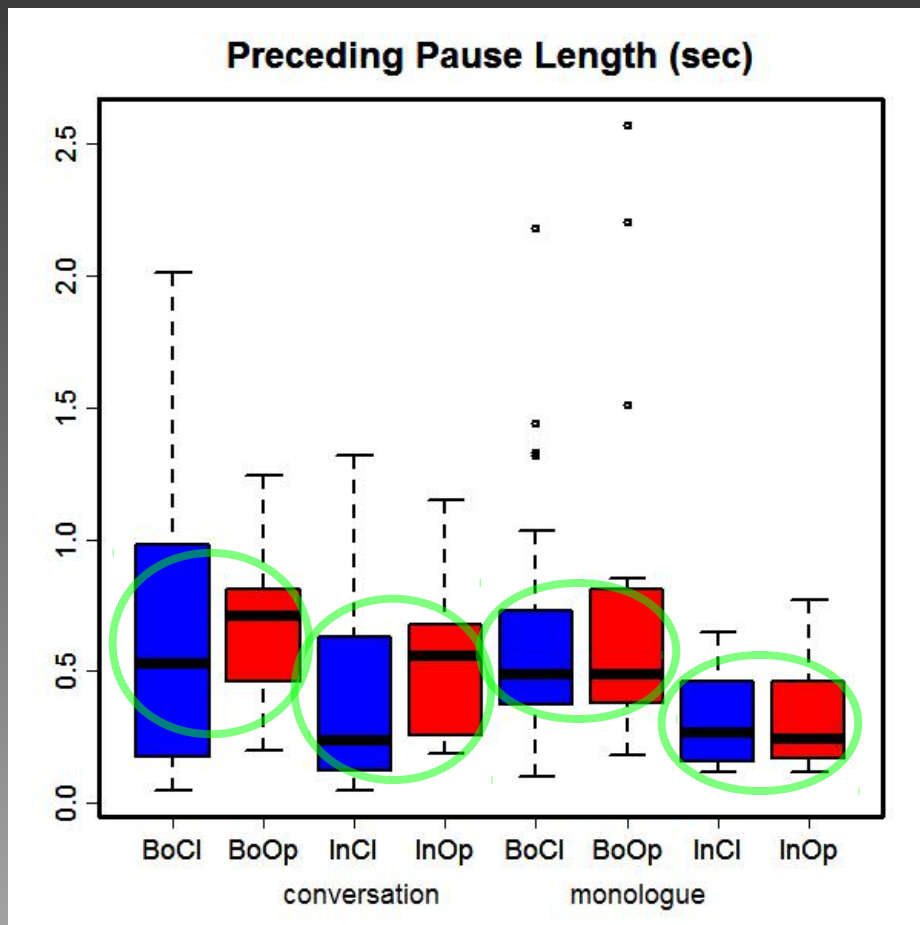
- Question: Given a FP, can we predict whether it is open or closed?

- If clause boundary location, closed FP is more likely.
- Preceding pause and speech type don't matter.



	Estimate	z value	Pr(> z)
(Intercept)	-0.4445	-2.074	0.0381 *
pause_beforeTRUE	-0.2696	-0.974	0.3301
speechmonologue	-0.1436	-0.572	0.5672
clause_locationinternal	0.4822	1.990	0.0466 *

Preceding pause length (SBC/COPE)



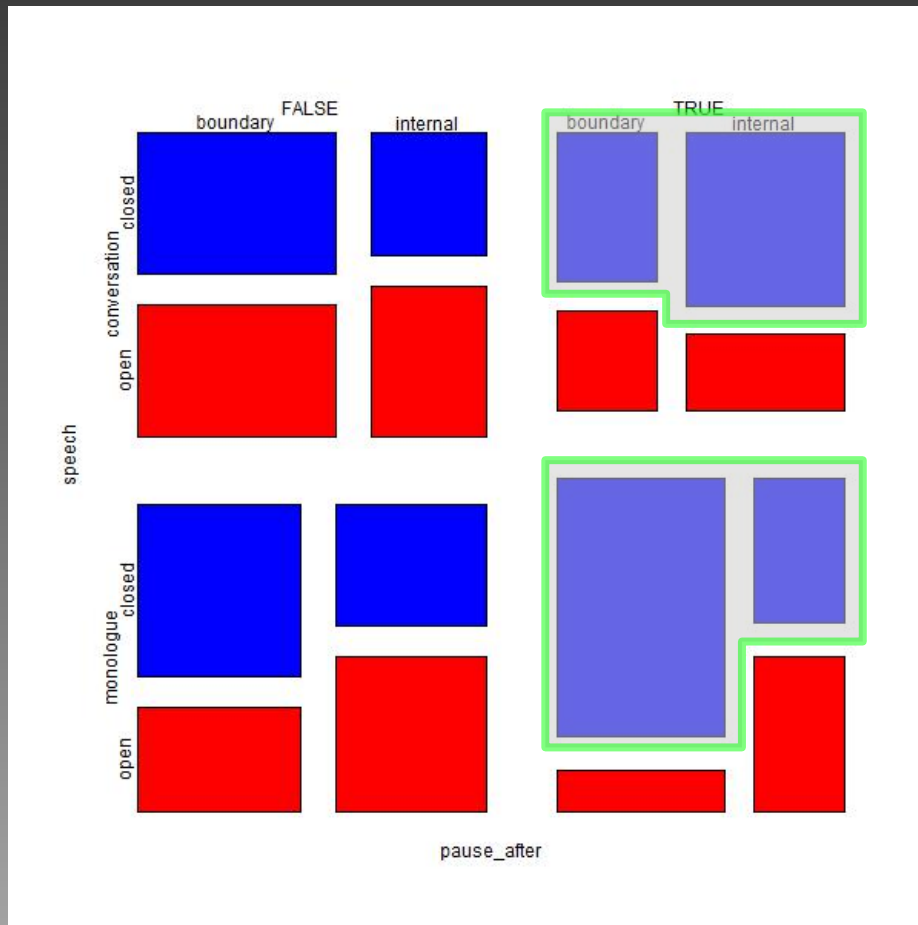
- Boundary FPs are preceded by longer pauses.
- FP type and speech type don't matter.

	Df	F value	Pr(>F)	
clause_location	1	16.5648	7.491e-05	***
type	1	1.3728	0.2431	
speech	1	1.4371	0.2325	
clause_location:type	1	0.4464	0.5050	
clause_location:speech	1	0.4511	0.5028	
type:speech	1	0.0970	0.7559	
clause_location:type:speech	1	0.9800	0.3237	

Following pause (SBC/COPE)

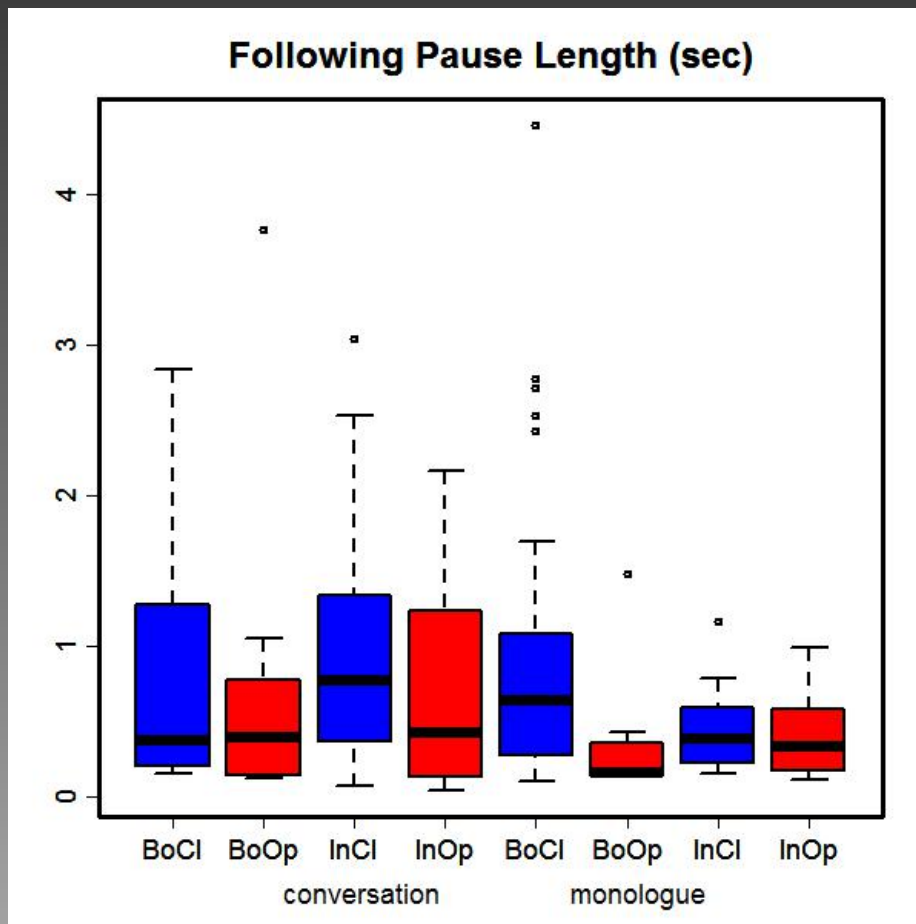


- Question: Given a FP, what is the probability that it is followed by a pause?
 - If closed FP, following pause is more likely
 - Clause location and speech type don't matter.



	Estimate	z value	Pr(> z)	
(Intercept)	-0.67130	-2.809	0.00497	**
Speechmonologue	0.05885	0.228	0.81984	
clause_locationinternal	0.33798	1.290	0.19694	
typeopen	-1.15395	-4.015	5.94e-05	***

Following pause length (SBC/COPE)



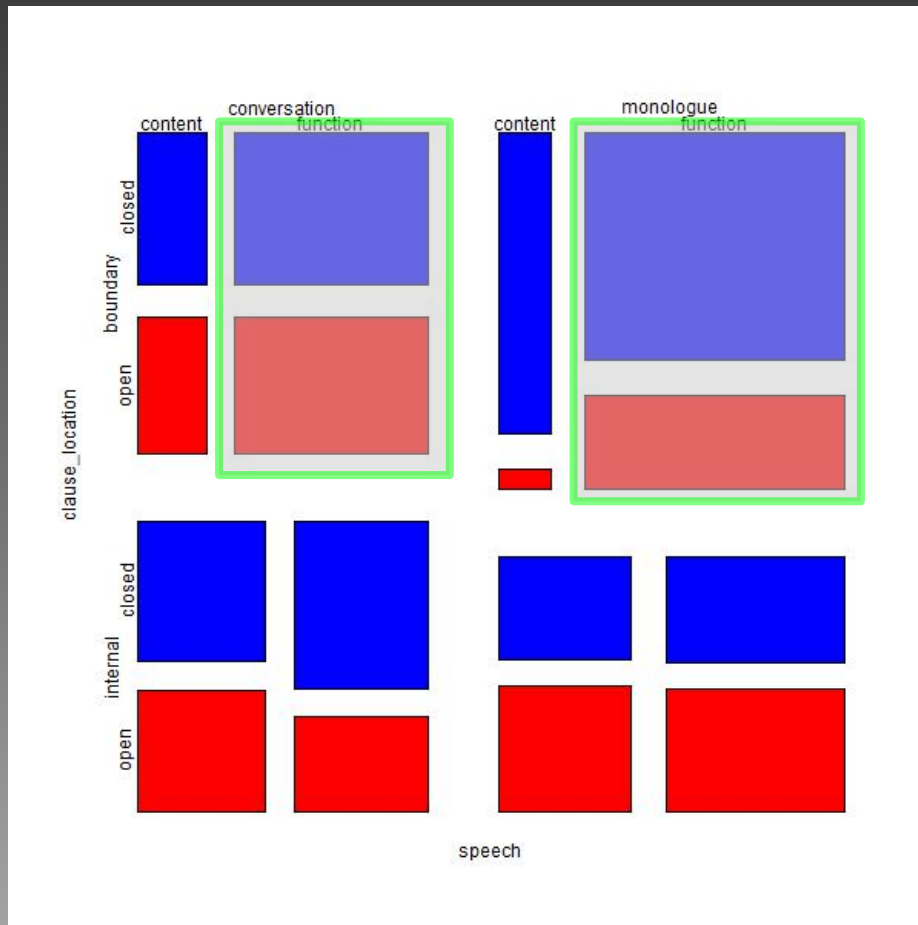
- Marginal trend: Closed FPs are followed by longer pauses.
- Speech type and clause location don't matter.

	Df	F value	Pr(>F)
clause_location	1	1.3917	0.24023
type	1	3.1891	0.07641
speech	1	2.2097	0.13951
clause_location:type	1	0.4928	0.48390
clause_location:speech	1	1.8072	0.18114
type:speech	1	0.1287	0.72031
clause_location:type:speech	1	0.9441	0.33299

Next word type (SBC/COPE)

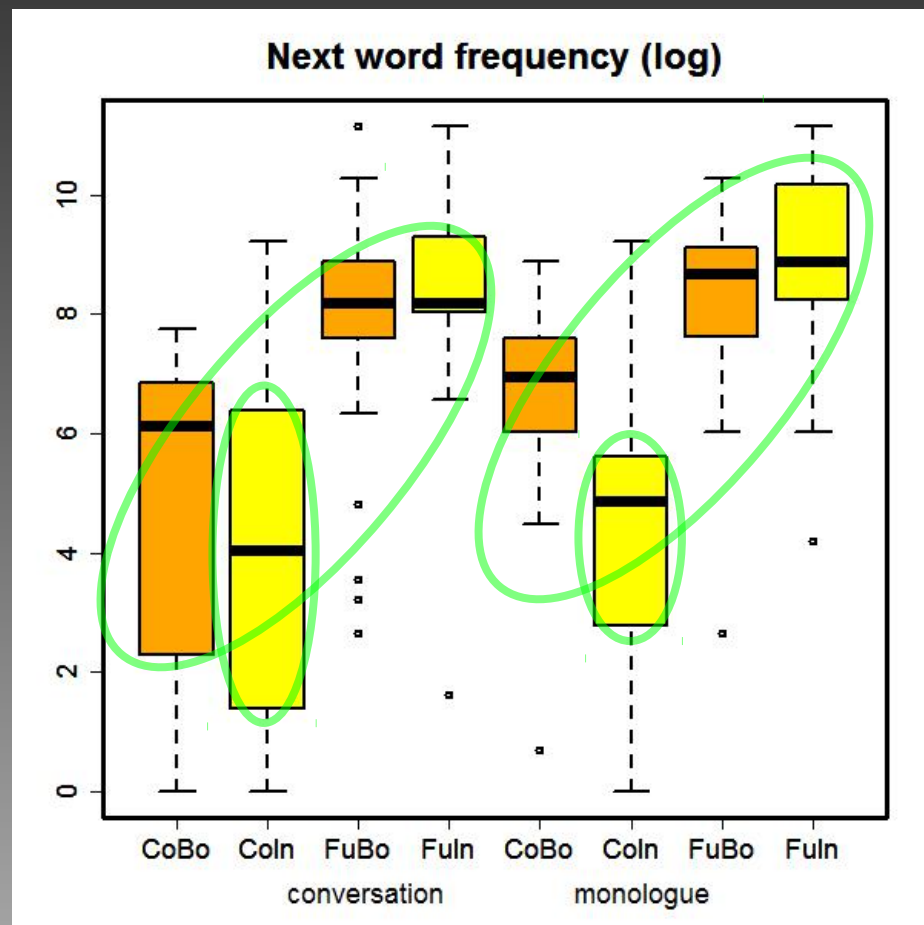


- Question: Given a FP, what is the probability that the following word is a function word?
 - If location is clause boundary, more likely that following word is function word.
 - FP type and speech type don't matter.



	Estimate	z	value	Pr(> z)
(Intercept)	1.09121	4.336	1.45e-05	***
clause_locationinternal	-1.15420	-4.423	9.71e-06	***
typeopen	0.04769	0.181	0.856	
speechmonologue	0.40601	1.573	0.116	

Next word frequency (SBC/COPE)



- Frequency of word following FP is lower for clause-internal content words.
- Frequency of word following FP is higher in monologue
- Interestingly, frequency of content words is lower with *open* FPs ($p=0.025$).

	Df	F value	Pr(>F)	
speech	1	17.304	4.2e-05	***
next_word	1	236.640	<2.2e-16	***
clause_location	1	0.022	0.88078	
speech:next_word	1	1.589	0.20853	
speech:clause_location	1	0.219	0.64026	
next_word:clause_location	1	13.498	0.00028	***
speech:next_word:clause_location	1	1.413	0.23556	

Corpus Results 2



- Blog FPs (Rose 2011)
 - Top 100 blog posts (from Wikio/ebuzzing)
 - Searched daily for FPs over 3-month period
 - 723 sentences
- Switchboard (Godfrey and Holliman 1993)
 - Two-party telephone conversations
 - 2,400 recordings x various lengths
 - Sample
 - Transcripts from Open ANC (American National Corpus)
 - Distributed sample of 723 utterances with FP

Sample fillers (SW/BLOG)



• Blog FPs

- **Um**, didn't Congressman Weiner make his vows before Bill Clinton?
- **Um**, Mr. President, that 's the wrong network.
- I, **uh**, I would have done the coffee thing.
- So, **uh**, when are they going to start focusing on that
- Jann Wenner's famous pub has gone, **um**, gaga for Gaga.
- We'll be sure to stop by and steal ... **er** ... take some pictures.
- His newest book, called Tomatoland, is about ... **er** ... the tomato.
- It's like Cosmo, but ... **uh**, for guys.

• Switchboard

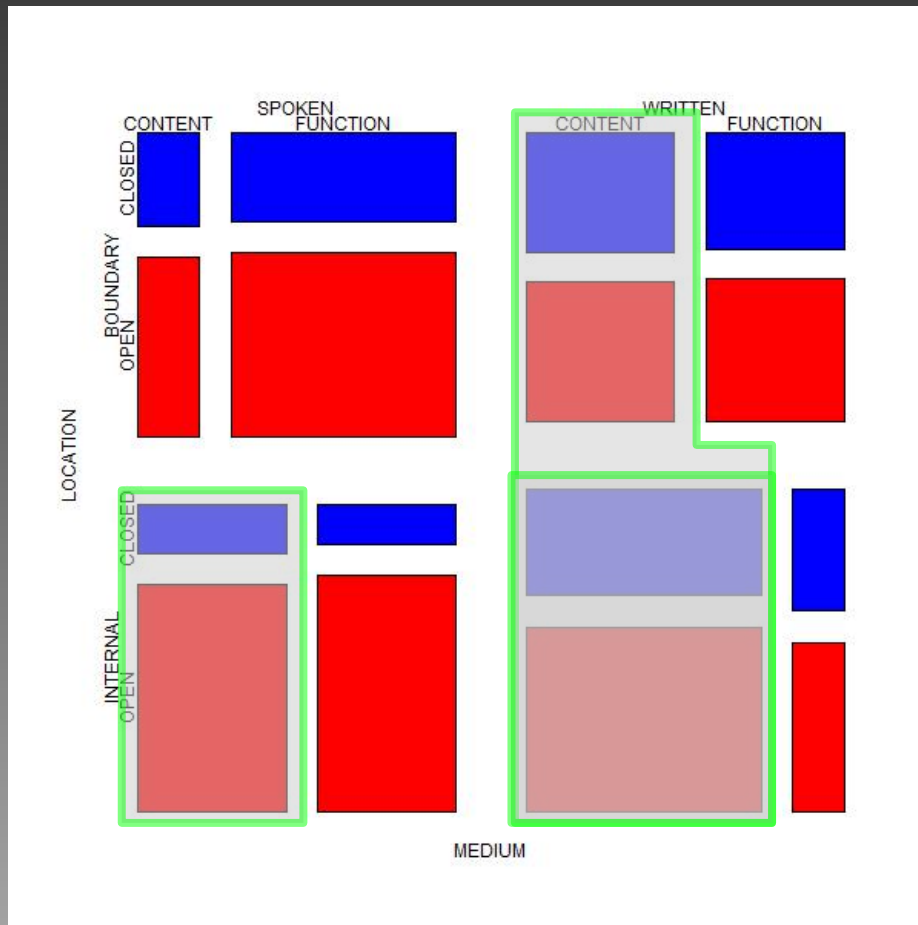
- And, **uh**, now he 's in NC State penitentiary.
- **uh** well i work as a temporary in the Speech Lab
- **Uh**, but before that she was in the country,
- So, I think, **uh**, we should be doing OK in about 10 years
- no, but I remember it, like, **um**, most of my memories of, of, childhood
- so i imagine we will be **uh** shifting over to that service.
- we're in **uh** as i said a small town in Indiana and it
- well i 'm **uh** an engineer so i 'm heartedly in favor of this

Predictions (SW/BLOG)



- More closed FPs before content words than function words
- More closed FPs before lower-frequency than higher-frequency words.

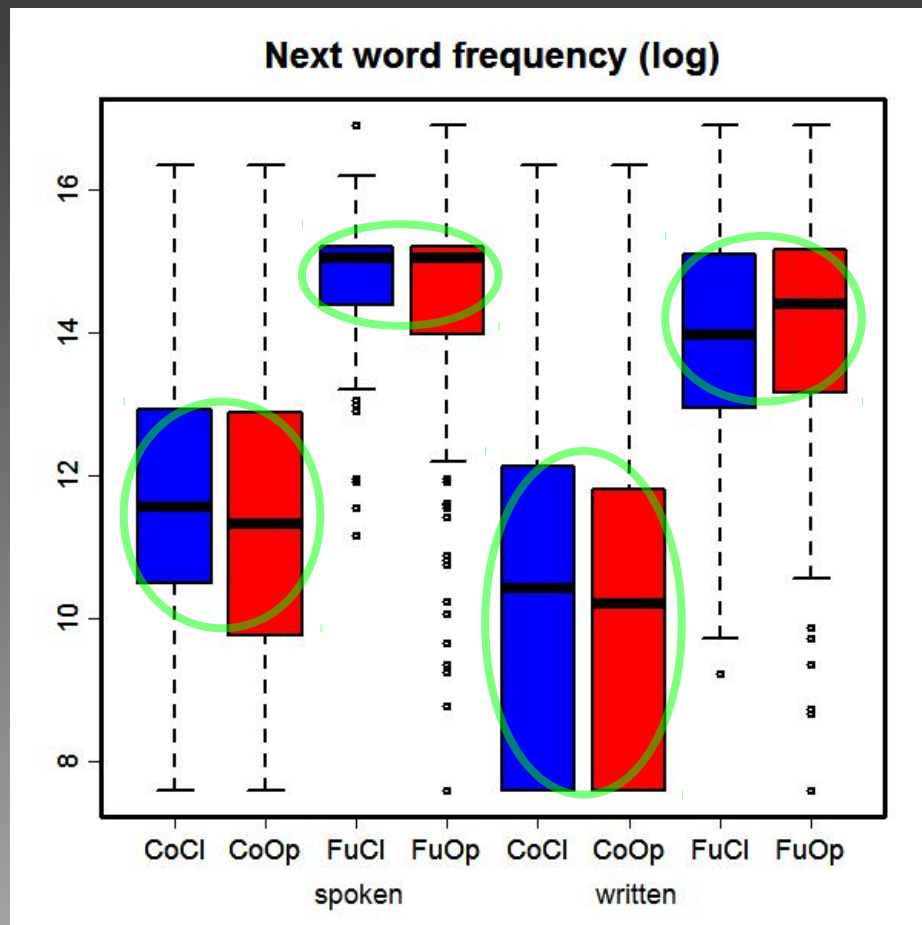
Next word type (SW/BLOG)



- Question: Given a FP, what is the probability that the following word is a content word?
 - If clause-internal, more likely to be a content word.
 - If written medium, more likely to be a content word.
- FP type doesn't matter.
 - Not consistent with FaWH.

	Estimate	z value	Pr(> z)	
(Intercept)	1.27859	9.134	<2e-16	***
LOCATIONINTERNAL	-1.40301	-11.697	<2e-16	***
FPTYPEOPEN	0.03129	0.243	0.808	
MEDIUMWRITTEN	-1.38837	-11.500	<2e-16	***

Next word frequency (SW/BLOG)



- Frequency of following word is lower in written medium.
- FP type doesn't matter.
 - Not consistent with FaWH

	Df	F value	Pr(>F)	
NEXTWORDTYPE	1	1297.3725	< 2.2e-16	***
FPTYPE	1	0.3015	0.5831	
MEDIUM	1	61.7129	7.696e-15	***
NEXTWORDTYPE:FPTYPE	1	1.0417	0.3076	
NEXTWORDTYPE:MEDIUM	1	1.7551	0.1854	
FPTYPE:MEDIUM	1	0.1167	0.7326	
NEXTWORDTYPE:FPTYPE:MEDIUM	1	0.2414	0.6233	

Corpus Results 3



- Crosslinguistic Corpus of Hesitation Phenomena (Rose, 2013)
 - Elicited speech of 45 speakers
 - Speech: Read, Spontaneous
 - Language: Japanese L1, English L2
 - Total: ~11 hours
 - Sample
 - 36 speakers x ~15 mins per speaker

Sample fillers (CCHP)



• CCHP L1

- 電車がホームに着いて男性が **えー** 電車の中に入り混んだ。
- **えー** テレビは **えー** テレビ局で **えー** カメラを使ってビデオカメラを使って撮影したものを **えー**
- 厳しい顔つきをした受付のおばあさんが **えー** 虫歯で来た患者に何か話している。
- **えー** テレビって何かって言うとき **えー** **んー** **まー** 画面がねあるんですよ。
- **えー** と一枚目が **えー** 一人が三人写っていて **で** 少し年上の人に **えー** 子供二人が話し掛けられて少し困っている。
- **でー** **あー** **まー** テレビのメーカーも日本にもいくつかあるし海外の **えー** と家電メーカーも色々作って国内に入って来たりしてます...
- **えー** 母親は **えー** スカートを はいています。

• CCHP L2

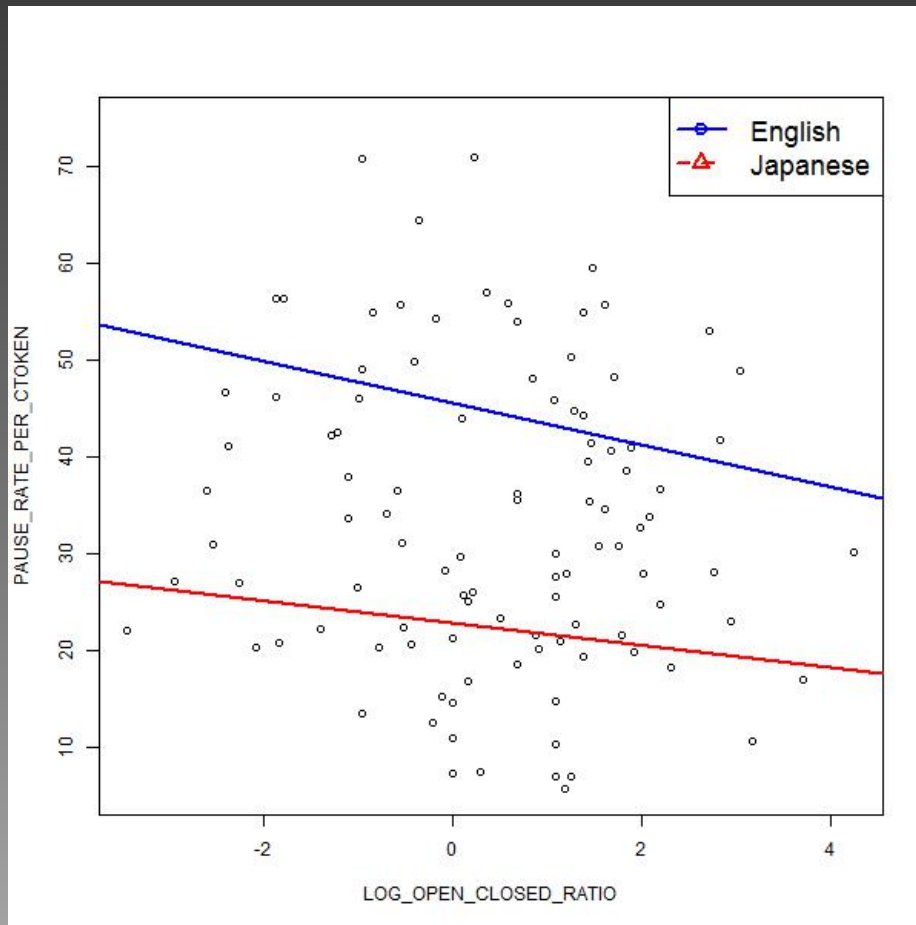
- a man picked up her bag so she was **uh** she she looks very happy.
- a man **uh** called another man to his office.
- we had passed such a place on the road and had stocked up with some thing **uh** some things that can't be bought in town.
- and **e-** a man whose hair is black is **e-** showed showed his bag.
- **uh** in basketball game **uh** one ball and two basket is are used.
- and **uh** it's often said that **uh** pe# people say table tennis isn't so hard isn't so hard sports.
- there are four peoples **uh** on in the restaurant ...

Predictions (CCHP)



- More SPs with more closed FPs in English
- Longer SP duration with more closed FPs in English

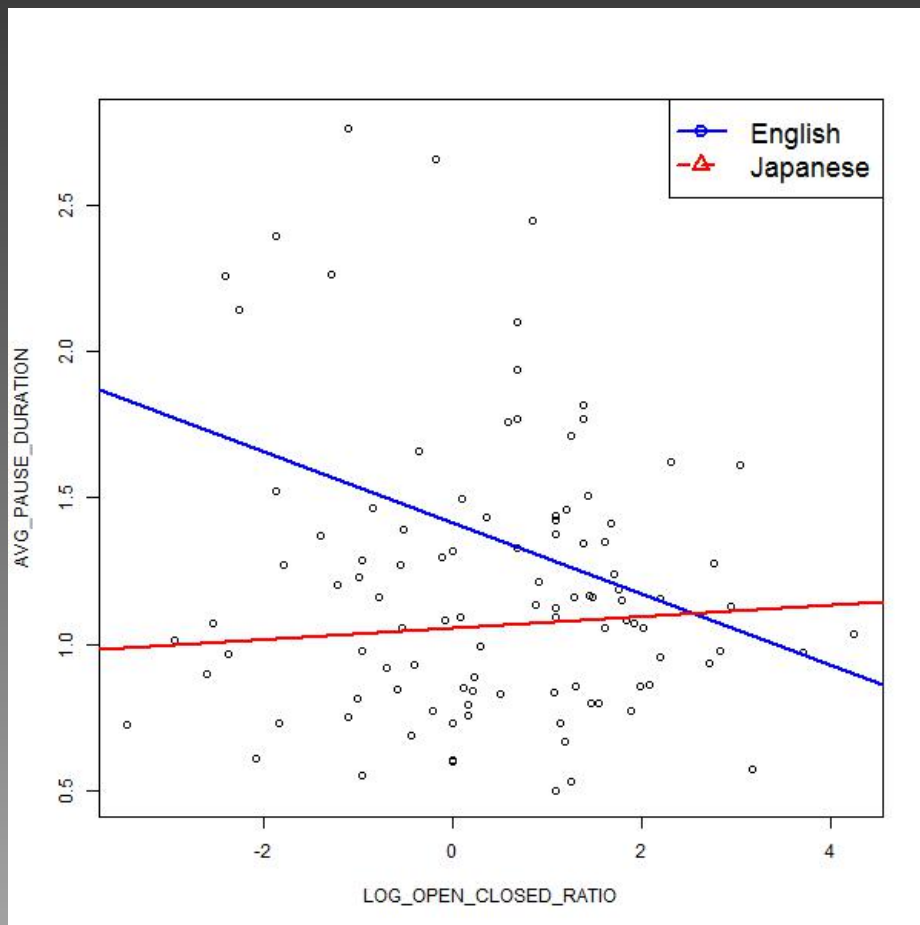
Silent Pause frequency (CCHP)



- Silent pauses are more frequent in L2 than in L1.
- Relative use of open/closed FPs doesn't matter.

	Df	F value	Pr(>F)
LOG_OPEN_CLOSED_RATIO	1	1.957	0.165
LANGUAGE	1	113.303	<2e-16 ***
LOG_OPEN_CLOSED_RATIO:LANGUAGE	1	0.531	0.468

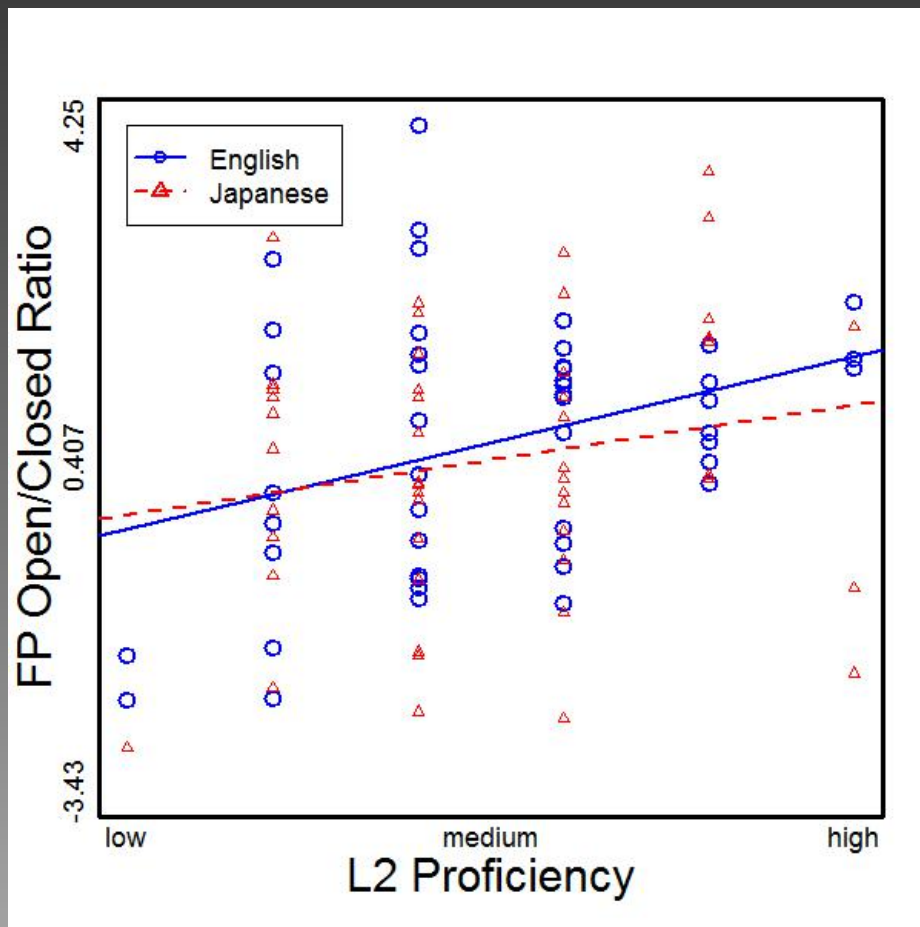
SP duration (CCHP)



- In L1 (Japanese), there is no connection between open/closed ratio and pause duration.
- In L2 (English), more closed FPs means longer pause duration.
 - Consistent with FaWH, though not direct confirmation.

	Df	F value	Pr(>F)
LOG_OPEN_CLOSED_RATIO	1	1.345	0.248943
LANGUAGE	1	11.535	0.000984 ***
LOG_OPEN_CLOSED_RATIO:LANGUAGE	1	6.113	0.015125 *

O/C FP Ratio and L2 Proficiency (CCHP)



- Higher L2 proficiency speakers show a higher open/closed ratio than lower proficiency speakers
 - Higher proficiency speakers have fewer expectations of major delay?

	Df	F value	Pr(>F)
L2_PROFICIENCY	1	7.148	0.00879 **
LANGUAGE	1	0.456	0.50086
L2_PROFICIENCY:LANGUAGE	1	0.344	0.55888

Summary



- Some corpus results support FaWH
 - Closed FPs correspond with signs of major delay
 - Increased occurrence of following SPs
- Some corpus results inconsistent with FaWH
 - Weak indicator of following SP length
 - High-frequency function words follow boundary FPs.
 - Low frequency content words follow internal open FPs.
 - Open/closed distinction not salient enough to yield written evidence.

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