Some observations about Filled Pauses in English: A Multifaceted Approach

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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
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.ldc.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
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
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.
Preceding pause length (SBC/COPE)

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

|                  | Estimate | Std. Error | Pr(>|z|) |
|------------------|----------|------------|---------|
| (Intercept)      | -0.67130 | -2.809     | 0.00497 ** |
| Speech monologue | 0.05885  | 0.228      | 0.81984 |
| Clause location  | 0.33798  | 1.290      | 0.19694 |
| Type open        | -1.15395 | -4.015     | 5.94e-05 *** |
Following pause length \textit{(SBC/COPE)}

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

\begin{table}[h]
\centering
\begin{tabular}{lcc}
\hline
 & Df & F value & Pr(>F) \\
\hline
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 \\
\hline
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\end{table}
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).

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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 \textit{(SW/BLOG)}

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

<table>
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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
- うー 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 何って 言うと さ 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 人が 三人 写って 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 作ってて 国内 に入って 来たりしています …
- 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 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.

**Table:**

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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.

<table>
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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?

<table>
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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.
References


