

An Evaluation of Hesitation Phenomena as Measures of Second Language Proficiency and Fluency

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Overview

- Hesitation phenomena
 - Overview
 - HP in L2 speech
- Views of Fluency
- Crosslinguistic Corpus of Hesitation Phenomena
 - Description
 - Results
- Implications and Applications
- Accessing the CCHP

Overview of types of HP

- Long investigative history
 - Goldman-Eisler 1961, Levelt 1989, Maclay and Osgood 1959, Rochester 1973, inter alia
- Types
 - Silent pauses (SP): longer than 0.3-1.0 sec
 - Filled pauses (FP): *uh/um* in English, *e-to/ano-* in Japanese
 - Lengthenings: prolongation of one or more syllables
 - Repeats/restarts: repetition of a sequence of words
 - False starts: beginning of an utterance that is abandoned
 - Self-corrections: a sequence of words that repairs an immediately preceding sequence
 - Lexical fillers: various fixed expressions used as hesitation devices

HP in L2 production

- Findings (Cucchiari et al 2010, Kormos and Dénes 2004, Riazantseva 2001, Rieger 2003, Tavakoli 2011, Trofimovich and Baker 2006, 2007, Wu 2008)
 - SP duration and rate: higher proficiency → shorter and fewer silent pauses
 - FP rate: higher proficiency → fewer filled pauses
 - Distribution: low and high proficiency speakers show different distribution of HP use
 - Differences between read and spontaneous speech
- Related
 - Speech rate: higher proficiency → faster rate
 - Mean length of runs: higher proficiency → longer runs

HP in L2 production

- As a whole, work has been quite comprehensive.
- However, individual works are limited in that many do not take individual variation into account (cf., de Leeuw 2007).
 - Exception: Derwing et al (2009) observed that both speech rate and pause rate in L1 and L2 production are correlated.
- My current research is a partial attempt to address this issue.

Fluency

- Segalowitz (2010) taxonomy of fluency types
 - Cognitive fluency (in speech planning)
 - Utterance fluency (in speech production/articulation)
 - Perceived fluency (from listener's perspective)
- De Jong et al (Forthcoming) investigated relationship between cognitive fluency and utterance fluency.
- De Jong and Perfetti (2011) – Nation's (1989) 4/3/2 technique leads to improved utterance fluency in short and long term.

Research Questions

- What is the developmental trajectory of HP use in L2?
- What is the relationship between hesitation patterns in L1 and L2 speech?
- What relationships are there between utterance fluency (i.e., measures of HP) in L2 speech and perceived fluency ratings or more general L2 proficiency?

Crosslinguistic Corpus of Hesitation Phenomena – pilot (CCHPp)

- Participants: L2 learners of varying proficiency levels
- Elicitation tasks
 - Spontaneous speech: picture description, topic narrative
 - Reading aloud
 - Performed in both L1 and L2
- Demographic information: age, gender, L2 proficiency (self-reported TOEIC score)
- Annotation
 - Transcripts, HP, word & pause intervals
 - Two annotators, one checker
- Native English speaker (N=16) ratings of fluency for L2 speech

CCHPp Results: Basic Statistics

- Participants: 10 Japanese L1, English L2 speakers
- Fully annotated parts of corpus
 - 7,237 tokens (words)
 - 71.7 minutes
- Spontaneous speech
 - 4,191 tokens
 - 47.7 minutes
- Read speech
 - 3,046 tokens
 - 24.0 minutes
- 1,420 silent pauses
- 456 filled pauses
- 203 self-corrections
- 70 repeats
- 8 false starts

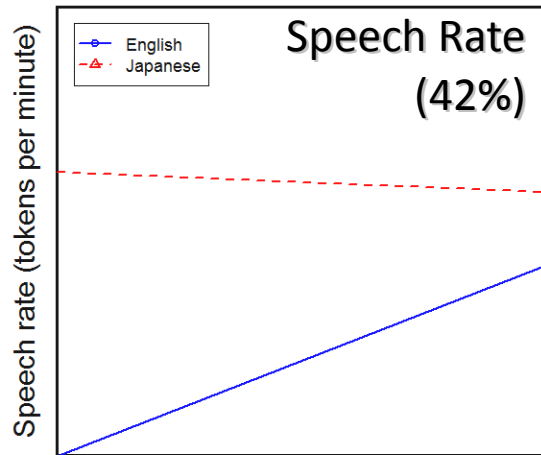
CCHPp Results: Analysis

Factors

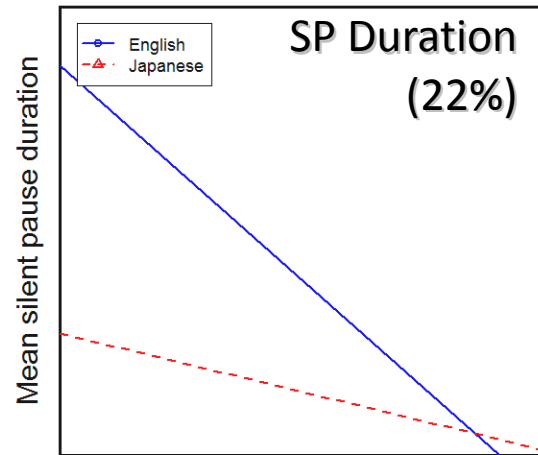
- speech rate
 - mean SP duration
 - SP rate (per 100 tokens)
 - SP rate (per minute)
 - mean FP duration
 - FP rate (per 100 tokens)
 - FP rate (per minute)
 - mean length of runs
- Data collapsed by participant and L1-L2 difference was calculated
 - Factors correlated with:
 - L2 Fluency Rating
 - TOEIC score
 - Stepwise linear regression to find optimal combination of factors
 - Data evaluated by
 - spontaneous speech
 - reading aloud

CCHPp Results: Spontaneous Speech

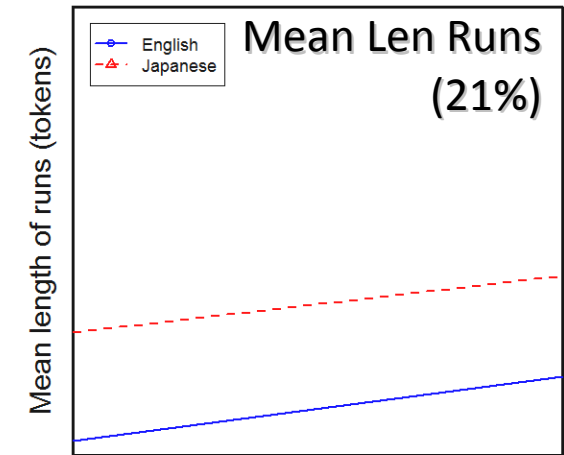
L2 Fluency Ratings ($R^2 = 0.82$)



L2 Fluency Rating

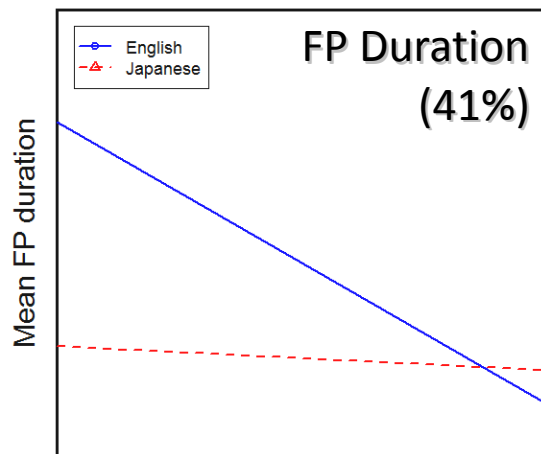


L2 Fluency Rating

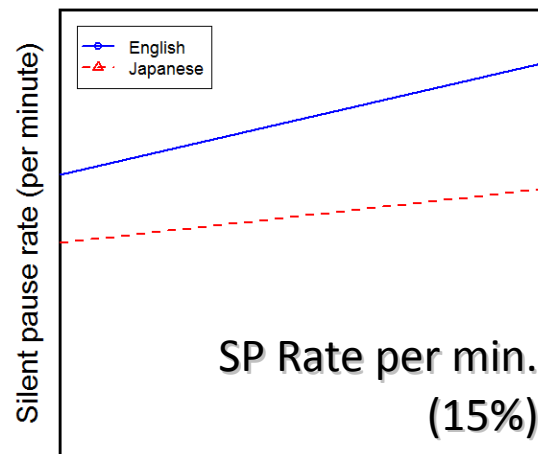


L2 Fluency Rating

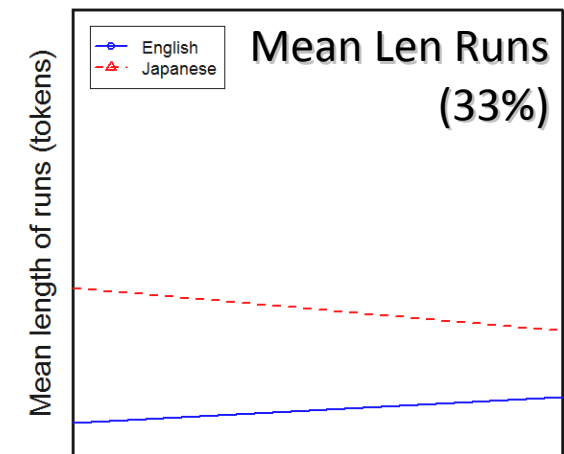
TOEIC Scores ($R^2 = 0.82$)



TOEIC Score



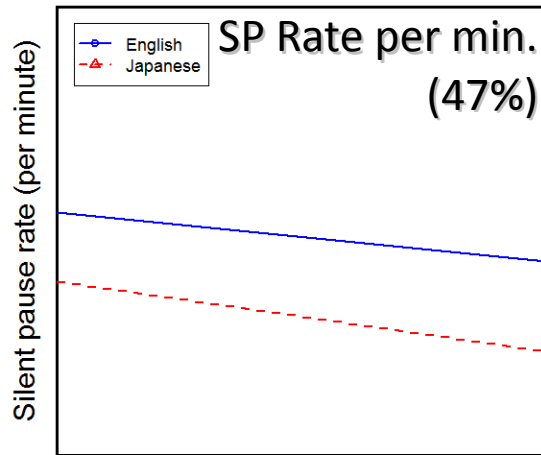
TOEIC Score



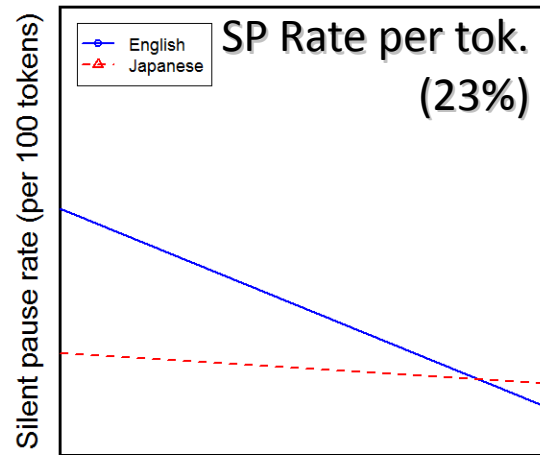
TOEIC Score

CCHPp Results: Reading Aloud

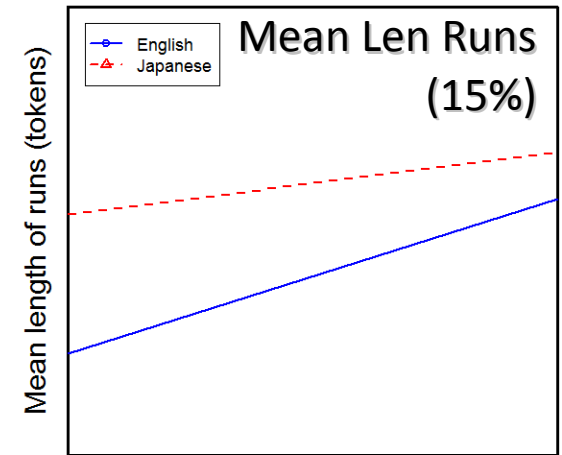
L2 Fluency Ratings ($R^2 = 0.77$)



L2 Fluency Rating

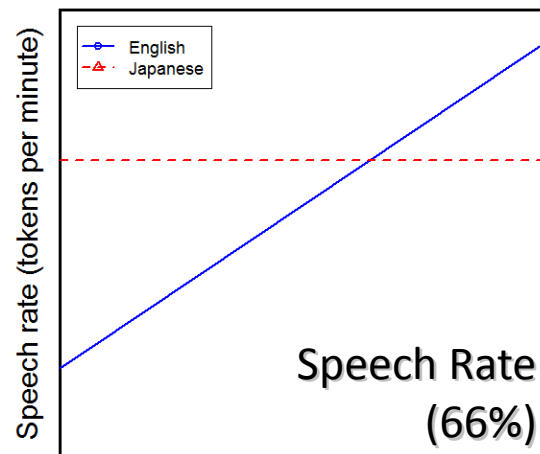


L2 Fluency Rating



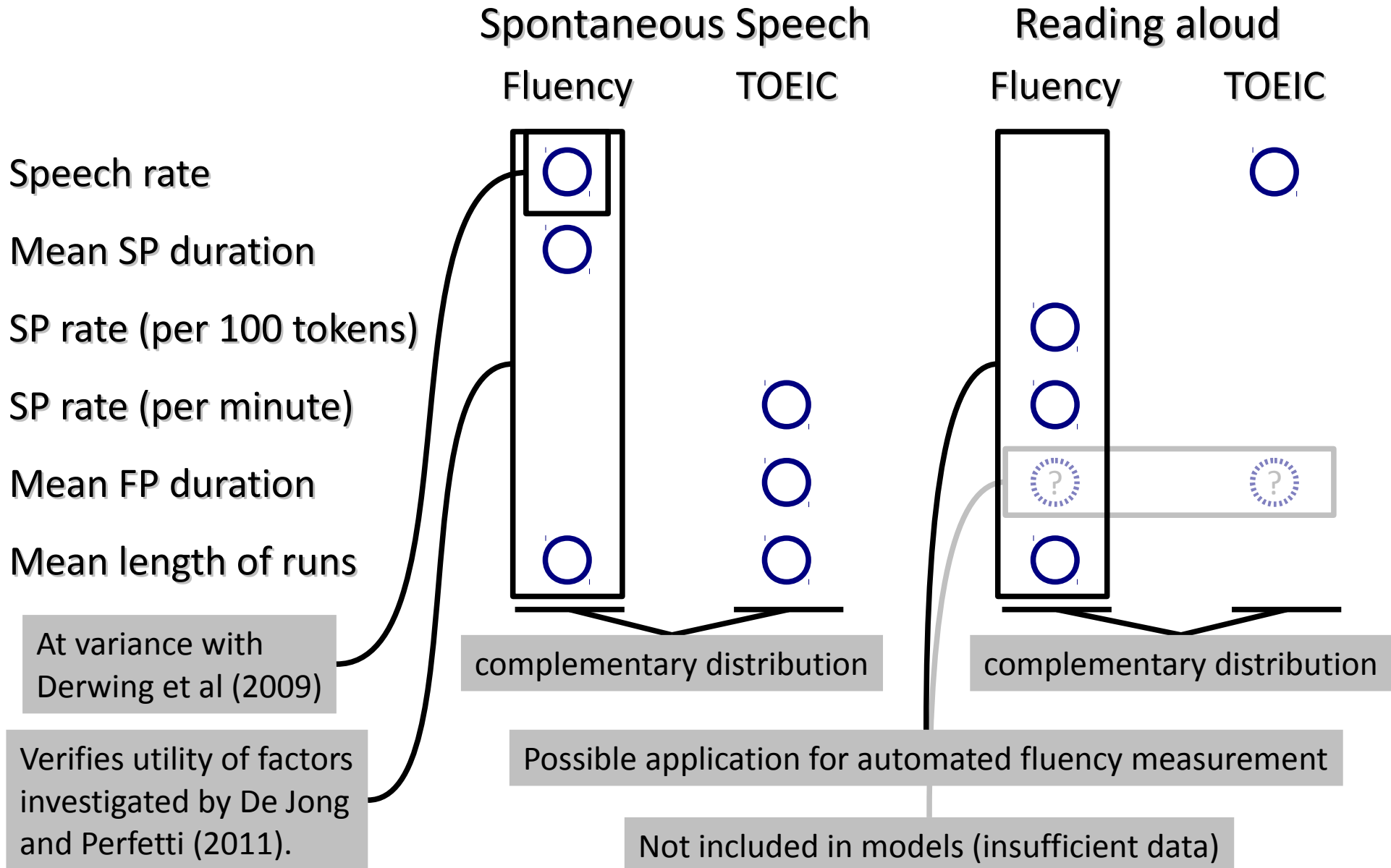
L2 Fluency Rating

TOEIC Scores ($R^2 = 0.61$)



TOEIC Score

CCHPp Results: Summary



Implications and Applications

- L2 oral fluency evaluation should focus on speech rate, SP rate and mean length of runs. Other correlating factors may be due to L1 speech characteristics.
- The 4/3/2 procedure (Nation, 1989)—already shown to effect gains in utterance fluency (De Jong and Perfetti, 2011)—may further effect gains in perceived fluency.
- A reading aloud task might be useful to evaluate fluency (focusing on SP rate and mean length of runs). This would be much easier to process than spontaneous speech.

Summary

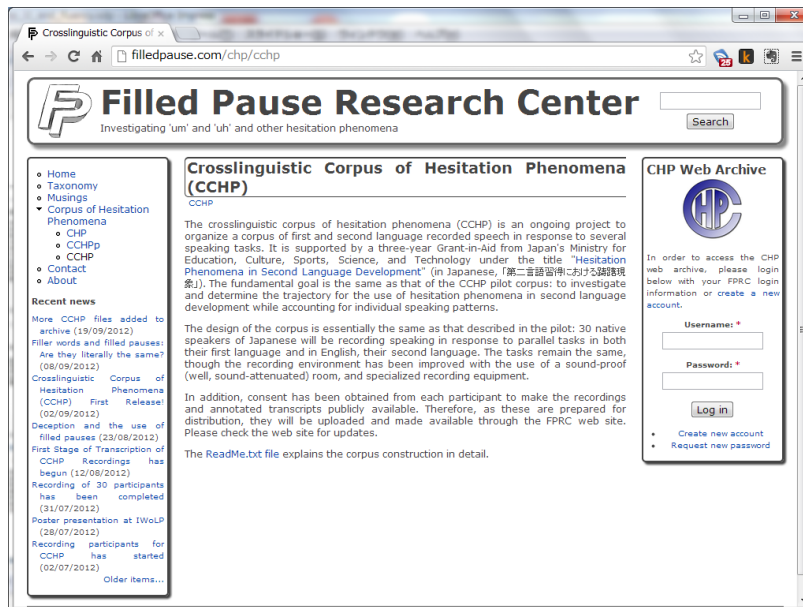
- While much progress has been made on the study of L2 oral fluency, L1 fluency factors have not often been taken into account.
- The Crosslinguistic Corpus of Hesitation Phenomena allows us to account for L1 factors in the study of L2 utterance fluency and perceived fluency.
- Results show that speech rate, silent pause duration and mean length of runs are factors that correlate well with L2 oral fluency, but not with overall L2 proficiency.
- Results suggest different methods for measuring fluency through spontaneous speech or reading aloud tasks.

Further Work

- Repairs
 - Basic features of repairs (length, rate, etc.) did not correlate with oral fluency nor L2 proficiency at all.
 - However, other features might: clause location, linguistic structure of reparandum, type of repair (Levelt 1983, Kormos 1999)
- Filled Pauses
 - Only correlation was FP duration with L2 proficiency.
 - FPs are known to correlate with lexical frequency (Rose 2011) and contextual probability (Beattie and Butterworth 1979).
 - Check: effect of FP features on oral fluency is off-set by contextual lexical properties.

CCHP Public Corpus

- Assembling a larger (N=30), public version of the Crosslinguistic Corpus of Hesitation Phenomena is ongoing.
- When complete, audio files and annotated transcripts will be available for free download.
- Some files are already available for download:
<http://www.filledpause.com/chp/cchp>



The screenshot shows the homepage of the Filled Pause Research Center. The header includes the logo and the text "Investigating 'um' and 'uh' and other hesitation phenomena". A search bar is located in the top right. The main content area is titled "Crosslinguistic Corpus of Hesitation Phenomena (CCHP)" and contains a paragraph describing the project. To the right of this text is a "CCHP Web Archive" section with a login form. The left sidebar contains a navigation menu and a "Recent news" section with several bullet points.

Filled Pause Research Center
Investigating 'um' and 'uh' and other hesitation phenomena

Crosslinguistic Corpus of Hesitation Phenomena (CCHP)

The crosslinguistic corpus of hesitation phenomena (CCHP) is an ongoing project to organize a corpus of first and second language recorded speech in response to several speaking tasks. It is supported by a three-year Grant-in-Aid from Japan's Ministry for Education, Culture, Sports, Science, and Technology under the title "Hesitation Phenomena in Second Language Development" (in Japanese, 第二言語習得における躊躇現象). The fundamental goal is the same as that of the CCHP pilot corpus: to investigate and determine the trajectory for the use of hesitation phenomena in second language development while accounting for individual speaking patterns.

The design of the corpus is essentially the same as that described in the pilot: 30 native speakers of Japanese will be recording speaking in response to parallel tasks in both their first language and in English, their second language. The tasks remain the same, though the recording environment has been improved with the use of a sound-proof (well, sound-attenuated) room, and specialized recording equipment.

In addition, consent has been obtained from each participant to make the recordings and annotated transcripts publicly available. Therefore, as these are prepared for distribution, they will be uploaded and made available through the FRPC web site. Please check the web site for updates.

The ReadMe.txt file explains the corpus construction in detail.

CCHP Web Archive

In order to access the CCHP web archive, please login below with your FRPC login information or create a new account.

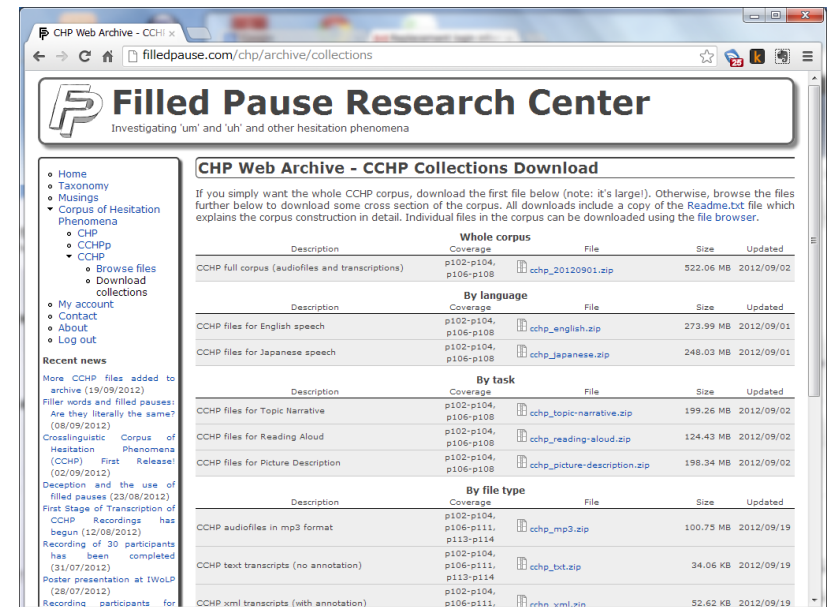
Username: *
Password: *

Log in

- Create new account
- Request new password

Recent news

- More CCHP files added to archive (19/09/2012)
- Filler words and filled pauses: Are they literally the same? (08/09/2012)
- Crosslinguistic Corpus of Hesitation Phenomena (CCHP) First Release! (02/09/2012)
- Deception and the use of filled pauses (23/08/2012)
- First Stage of Transcription of CCHP Recordings has begun (12/08/2012)
- Recording of 30 participants has been completed (31/07/2012)
- Poster presentation at IWOLP (28/07/2012)
- Recording participants for CCHP has started (02/07/2012)
- Older items...



The screenshot shows the "CCHP Collections Download" page. It features a navigation menu on the left and a main content area with a table of download links. The table is organized into sections: "Whole corpus", "By language", "By task", and "By file type". Each section contains a table with columns for Description, Coverage, File, Size, and Updated.

Filled Pause Research Center
Investigating 'um' and 'uh' and other hesitation phenomena

CCHP Web Archive - CCHP Collections Download

If you simply want the whole CCHP corpus, download the first file below (note: it's large!). Otherwise, browse the files further below to download some cross section of the corpus. All downloads include a copy of the ReadMe.txt file which explains the corpus construction in detail. Individual files in the corpus can be downloaded using the file browser.

Description	Coverage	File	Size	Updated
CCHP Full corpus (audiofiles and transcriptions)	p102-p104, p106-p108	cchp_20120901.zip	522.06 MB	2012/09/02

By language

Description	Coverage	File	Size	Updated
CCHP files for English speech	p102-p104, p106-p108	cchp_english.zip	273.99 MB	2012/09/01
CCHP files for Japanese speech	p102-p104, p106-p108	cchp_japanese.zip	248.03 MB	2012/09/01

By task

Description	Coverage	File	Size	Updated
CCHP files for Topic Narrative	p102-p104, p106-p108	cchp_topic-narrative.zip	199.26 MB	2012/09/02
CCHP files for Reading Aloud	p102-p104, p106-p108	cchp_reading-aloud.zip	124.43 MB	2012/09/02
CCHP files for Picture Description	p102-p104, p106-p108	cchp_picture-description.zip	198.34 MB	2012/09/02

By file type

Description	Coverage	File	Size	Updated
CCHP audiofiles in mp3 format	p102-p104, p106-p111, p113-p114	cchp_mp3.zip	100.75 MB	2012/09/19
CCHP text transcripts (no annotation)	p102-p104, p106-p111, p113-p114	cchp_txt.zip	34.06 KB	2012/09/19
CCHP xml transcripts (with annotation)	p102-p104, p106-p111	rnhn_xml.zip	52.62 KB	2012/09/19

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