

A Quantitative Comparison of Disfluencies Types between Native and Non-native English Speakers in Spontaneous Speech¹

By Jeffrey Wu
December 7, 2001

Abstract

Disfluencies, parts of conversation which do not seem to add to the main content of the dialogue, have been studied in vastly different ways in the past few decades. This thesis investigates the occurrence of disfluencies in natural native and non-native English speech, and examines the types of disfluencies used among the two groups of speakers according to 1) the different syntactic positions in which they occur, and 2) the frequency of occurrence of the different types of disfluencies. Non-native and native speakers of English produce disfluencies in every day conversation, and this thesis investigates the hypothesis that it is impossible to distinguish between either group based on numbers and rates of disfluencies simply because all speakers generate comparable numbers of disfluencies of the same types.

The basic method used to substantiate this thesis consists of collecting data through conducting interviews with both non-native and native speakers of English. They participate in conversations ranging in numerous, arbitrary topics, and the data they provide are examined. The frequency of disfluencies are observed, and a few types of disfluency are studied by noting the syntactic properties of these disfluencies that are common to each of the conversations.

¹ I would like to thank Kari Swingle, Ed Kako, and Karla Gilbride for helping me with the process of writing this paper, and getting information for the investigation. I would also like to thank the participants (Yi Max Li, Yijun Crystal Li, Trang Pham, Michael Duffy, Keith Bentrup, and Catherine Clark).

1. Introduction

Disfluencies are not found in formal written language, except as a characterization of normal speech. They occur naturally in spontaneous conversation, and are manifested in utterances such as *um*, *ah*, *er*, or in words that may have concrete semantic content such as *like*, *actually*, *so*, etc. Other disfluencies include hesitations and pauses in speech, word repetition, and constituent stop and restart(constituents may be phrases or simply one word). According to Levelt 1989, these acts occur for many possible reasons. They may occur when a speaker doesn't know what to say next, and must think about the following utterances. They may occur due to a grammatical error that a speaker has caught him/herself on too late. They may occur when a speaker wishes to rephrase an utterance for clarity. Disfluencies are commonly produced by all speakers of any language. They aren't necessarily negative components of speech. As Pawley (2000:171) states, "this name [disfluencies] is unfortunate because it implies that all such incidents are involuntary and disruptive whereas there is reason to think that certain kinds are calculated and enhance the effectiveness of speech."

There has been some work done on disfluencies in the past, but not much has been determined about syntactic properties of disfluencies. This paper examines the possibility of certain specific syntactic qualities specifically among different disfluencies, and looks to both native and non-native speakers for comparison. Speakers are of college-age, and come from a diversity of backgrounds. They are all students of Swarthmore College, Swarthmore, PA.

The following section details the types of common disfluencies that occur in spontaneous speech, specifically the ones that are examined in my investigation. Section

3 presents the various works that have been written about disfluencies in the past. This section covers findings of the negative aspects of disfluencies as well as the positive aspects. It also provides information on how anxiety has been found to affect disfluencies, and continues to describe work comparing non-native and native English speech. The investigation begins in section 4 where it is explained how data has been collected in this work to examine the differences in disfluencies between non-native versus native speakers of English at Swarthmore College. Section 5 provides the findings and results. The discussion of the major findings is presented in section 6. Problems with the analysis are also examined. Lastly, concluding remarks are found in section 7.

2 Types of disfluencies

There are several different types of disfluencies. filled pauses, unfilled pauses, hesitations, and repairs are the ones this paper will focus on. The next few sections will define and examine these different disfluencies. The descriptions and definitions are combinations of descriptions from several different sources including Schiffren 1987 and Riggenbach 2000.

2.1 Unfilled pauses

Unfilled pauses are simply periods of silence within spontaneous speech. Many pauses are not counted as disfluencies due to the fact that they occur naturally as a result of conversation flow. However, other pauses are disfluent because they occur in the middle of phrases and words. These pauses can be recognized as disfluencies because they confuse the listener or rather do not promote any comprehension or perhaps seem

out of place. The utterances in (1) show pauses in the form of "[]" which are disfluent whereas the data in (2) show pauses which this paper does not consider as disfluencies because they occur between conversational segments, which are generally clauses, and seem to occur naturally among the speaker's thought processes.

- (1) a. The [] man was odd
- b. The man [] was odd
- c. The man was [] odd
- d. The man was odd and [] he was snobby
- (2) a. [] The man was odd
- b. The man was odd [] and he was snobby

2.2 Filled pauses

Filled pauses are any utterance that do not flow within the context of the conversation. The *ums*, *uhs*, *hmms* of spontaneous conversation are included in this set along with *like*, *yeah*, and *well* in certain environments. (3) shows examples of the non-word disfluencies. (4) shows the usage of words as disfluencies.

- (3) a. He was um sitting in the corner.
- b. Uh, that was weird.
- c. Where is er the screw?
- (4) a. She was sitting like on the bridge.
- b. She was well only a baby.
- c. I wonder if yeah she thinks about me.

The fact that the disfluencies above are indeed disfluencies can be tested by removing them from the sentences and reading them. Since there is no major difference in the information passed to the listener, it can be assumed that the words that have been removed are disfluencies which do not add any semantic content to the point at hand.

There are many times when words that are considered disfluencies are used in a non-disfluent context .

- (5) a. The man was like "hey, don't blame me."
 b. Bats are like rats with wings.
 c. I dunno why he said that.
 d. Yeah, that's bizarre.

In (5a) and (5b), *like* is used in contexts where the semantic meaning comes from the actual lexical item. This is unlike *like* used in (4a) where it is used as a filler between utterances. This can be seen clearly by noting that the sentence makes complete sense when the *like* is removed in (4a), but doesn't make sense when it is removed from (5a). The *like* in (5b) can be replaced with a synonymous *similar to* to show how it is used in the sentence. (5c) and (5d) also show the words relating to the main theme of the sentence as opposed to (4b) and (4c). The *yeah* in (5c) shows agreement with the previous statement, and the *I dunno* in (5d) shows that the speaker is confused or has no idea about what is going on in the following spoken clause.

2.3 Units of ritualized speech

(6) shows units of ritualized speech(URSs), words and phrases that are repeated often, which are also considered disfluencies in this paper in certain speech environments. These sequences of words occur frequently together in conversation.

- (6) a. That's kind of strange.
 b. I think, I dunno, that's funny
 c. The word is I mean that she is loopy.

The phrases *kind of*, *I dunno*, and *I mean* are all URSs.

2.4 Repairs

Repairs are found in many different forms in spontaneous speech. The repairs analyzed in this work include repetition, false starts, and grammatical corrections.

2.41 Repetition

Repairs include repetition of exact syllables, words, or phrases. (7) provides examples of this phenomenon.

- (7) a. the, the people
 b. they were having, they were having lunch
 c. have, having

2.42 False starts

False starts are also viewed as repairs. These are due to a decision to rephrase because the speaker believes that the best way to produce the intended meaning was not made to begin with. (8) provides several examples of false starts.

- (8) a. I was coming, no, I was going to their house.
 b. She is one ugl rather unattractive woman.
 c. What are you how are you going to fix this?

2.43 Grammatical corrections

Grammatical corrections are also included as repairs as shown in (9)

- (9) a. his, her dog wants a cookie.
 b. this these stories are old.
 c. How can could he?

2.5 Hesitations

Hesitations are when words take more than a natural amount of time to produce as shown in (10). The word initial consonants or vowels are either being extended through time or the latter part of the words are produced later than usual. The slowing down of a syllable, in terms of rate of speech, can also be identified as a hesitation.

- (10) hhhhhhhe was go-ing to the p-ark.

2.6 Differences between disfluencies and discourse markers

Discourse markers as defined by Schiffarin 1987 are "sequentially dependent elements which bracket units of talk". Disfluencies could be said to function similarly if they do indeed occur between utterances or clauses in spontaneous speech. How would they be considered different then?

First of all, the types of words that are considered discourse markers and those that are considered disfluencies are not all together the same. Discourse markers include words such as *but, although, well, oh*, etc. They are all words, and always occur in between units of talk. Disfluencies on the other hand, as already established, occur in many other forms. Even with this knowledge, there are still distinguishing factors between the two groups. Discourse markers function as units of cohesion and add structure to discourse. According to Schiffarin 1987, they are used mostly in front of an utterance. They also can contain semantic meaning. Schiffarin (1987) goes into detail about how certain discourse markers have different usages. For example, “well” is a marker of response, whereas “because” is a marker of cause and result. Disfluencies do not have any such regular usage in the contexts where they occur, and could well be removed from the discourse without having any even minor effect on the information being transferred. Therefore the differences between discourse markers and disfluencies are clear, and the disfluencies analyzed below are assuredly not confused with discourse markers.

3. Previous literature

There have been many articles published on disfluencies in the past two decades, not as many books on the subject. They deal with different aspects of disfluencies in speech including the negative versus the positive aspects of disfluencies, the social factors that contribute to disfluent speech, placement of disfluencies, and comparisons of frequency of disfluencies among different groups of people. Below are a few of these works examined briefly.

3.1 Negative aspects of disfluencies

Studies have been done to examine the negative effects of disfluencies in conversation. For example, Brennan 2001 looks at how comprehension is affected due to disfluencies placed in different parts of a set of instructions. Her work shows that there are differences in the degree of listener comprehension due to disfluencies in different syntactic and morphological positions. Disfluencies that occur mid-word, and that are corrected earlier create less comprehension problems than those that occur between words. For example the phrase in (11) causes less confusion than the directions in (12).

- (11) pick up the yel-green box
- (12) pick up the yellow the green box

3.2 Positive aspects of disfluencies

Other works have been written which point out the positive effects of disfluencies. Darot 1983 points out that hesitations and pauses, although they are often seen as manifestations of incompetence, actually serve an important linguistic purpose.

She claims that they provide time to produce “better lexical output, discourse coherence, and message content,” and should be seen as such and not be further stigmatized.

3.3 Syntax

Other works which relate more closely to this thesis deal with the placement of disfluencies within sentences. For example, Howell 2001 discovered that when speakers are conditioned to lessen the number of pauses with their speech, word repetition would occur on function words, and not at all on content words. The sentence in (13) shows what occurs more often than the sentence in (14).

- (13) I was going to the store, and... and, I met Ron.
- (14) I was going going to the store, and I met Ron.

Another work, Pawley 2000, states that “complex clauses(consisting of a matrix plus an embedded clause) will contain more core-internal disfluencies than will independent clauses of similar length. Thus an utterance like that in (15) is expected to have more disfluencies over (16) when spoken.

- (15) Carla, who you um met the other day, was very anxious this morning.
- (16) Carla was anxious this morning. You met her the other day.

Pearl 1980 provides data which gives proof to the claim that complexity affects the amount of disfluencies, at least in nonstuttering preschool children. This work found that overall, 30 children aged 3 and 4 produced many more disfluencies when trying to repeat the examiner on passive sentences than on active sentences.

3.4 Comparisons

There are articles that have been written which have studied the disfluencies among certain groups of people, whether they be a certain age, a specific gender, or native/non-native speakers of the language. Duchin 1986 compares the disfluency and rate characteristics between young adult, middle-aged, and older males. This study did not find differences in levels of disfluencies among each group. However another similar study by Yairi in 1972 found a significant difference in number of disfluencies between the age groups studied. Instead of using middle aged males, preschool children were studied, and no distinction was made in regards to gender. The results showed that the older participants and preschool children had much greater amounts of disfluencies than the young adult group. These differences might have been due to the specific ages of the speakers in each study as well as the fact that different sexes were examined. Even with these features in mind, it is clear that much more work must be done on disfluencies to discover any conclusive properties.

3.5 Anxiety

Another apparent conflict in study results occurred with respect to the effects of anxiety and levels of disfluencies. One study, Lalljee 1975, looks at disfluencies or what he called Units of Ritualized Speech(URSs). The URSs are disfluencies that are words and phrases that are repeated often such as I mean, in fact, sort of, etc. The interviews that were carried out supported the claim that the usage of these words and phrases increases with speaker anxiety. However, another study, Broen 1972, supports the opposite hypothesis that disfluencies occur more in situations of less anxiety. The

interviews conducted in each work were different in setup. Broen 1972 provided different rooms for the speakers. One room consisted of them sitting alone; the other consisted of them speaking to an audience through a TV camera and lights. The TV situation was assumed to be that which the speaker viewed as more important. The results showed that the speakers “were most disfluent in those situations they rated as least important”. This conclusion is clearly different from the conclusion of the other work. At this point, it seems that there are many different factors influencing the production rates of disfluencies. This information is very important to the setup of my own interviews. These factors must all be similar so as to not create major flaws in comparison. However, a question exists as to how these factors are to be controlled for.

3.6 Non-native vs. native speakers

The articles which relate most closely to this paper investigates fluency among non-native versus native speakers of English. These works are what I will attempt to build on in my analysis.

Riggenbach 1991 analyzes the speech of fluent and non-fluent non-native English speakers in hopes of finding specific features of fluent non-native speech. The work finds a few different properties of fluent speakers versus non-fluent speakers. Non-fluent speakers chunk disfluencies together more often and produce pauses which occur in many places other than in between clauses. However quantitative analysis does not show any significant differences in terms of the number of repairs and hesitations found among fluent and non-fluent speakers.

Butler-Wall 1986 examines the differences in frequency of disfluencies between native and non-native discourse through interviews with non-native speaker and native speaker dyads. Her study involved many more participants than Riggenbach 1991, using 24 college students versus the 6 in the other study. However, the results also show no significant distinctions in frequency of disfluencies among the different groups of speakers. I attempt to further the arguments found in the works of Riggenbach 1991 and Butler-Wall 1986 by showing that there are no significant differences in the number of disfluencies found between non-native and native English speakers, but also that there are no major differences in the general ratio of the different types of disfluencies between the two groups. Also, by examining the syntactic properties of the disfluencies found in the speech of the native speakers, and comparing them to the speech of the non-native speakers, I hope to show that the usage of disfluencies among the non-native speakers is no different syntactically speaking.

4. The investigation

4.1 Research questions

Data is collected to examine the differences in disfluencies between non-native and native speaker of English, and to examine the syntactic properties of specific disfluencies found among all speakers. The specific questions addressed are as follows:

- i. Are there differences with respect to the frequency of disfluencies used between non-native and native speakers of English?

- ii. Are the frequencies of the different types of disfluencies found in non-native English speech proportional to the ones found in native English speech? If not, how are the numbers different? Are certain types of disfluencies used more frequently than others with respect to the two groups?
- iii. Where, syntactically, do disfluencies occur most frequently in native speech? How does non-native speech compare?

4.2 Hypothesis

I hope to show that there are no generalized differences between the two groups with respect to frequency of disfluencies used. In other words, I expect that there are no common features that pertain to each group in terms of the how often disfluencies are found. I also expect to find that the proportion of each type of disfluency found in each group are similar. For instance, I do not expect to find that the amount of repairs which compose a certain percentage of disfluencies found in native speech differs significantly to the percentage in non-native speech. In terms of syntactic properties, I hypothesize that native speakers and non-native speakers place their disfluencies in similar syntactic positions, which are before phrases .

4.3 Interview set-up

Six people are interviewed in total. The interviews are conducted on both non-native and native speakers, students and alum of Swarthmore College; Three interviewees are native speakers of English and three interviews are non-native speakers. Interviews consist of either one or two interviewees, and the duration of the interviews range

between 20 and 60 minutes. A ten minute portion taken from the latter part of these interviews are then transcribed fully with all disfluencies noted including pauses, hesitations, and word restarts. The latter part of the interviews are examined instead of the other parts because I assume that this is when the interviewees are most comfortable and relaxed.

The topics of the interview vary greatly. There is no intended focus for the interviews except to have the speakers converse in the way they feel most comfortable. Topics range from current events and politics, to life at Swarthmore, to personal aspirations and opinions on life. A warm up session five to ten minutes is conducted to allow the speakers to become more comfortable with the interview setup, and with the other participant if present. This warm up period is not transcribed, as the focus of the interviews is to record naturally occurring conversation, not interview dialogue riddled with anxiety. However, it is impossible to control for anxiety levels. Some people are more anxious than others, and having a microphone around notably makes some people nervous.

4.4 Participants

There are six participants in total. Their names have not been changed, and their permission is given before they are interviewed. Their ages range from eighteen to twenty three. Their native countries include China, Vietnam, and the United States.

Max is a 21 year old student who has come to Swarthmore from Shanghai to study. He has only been in the states for 2 months before his interview. He has made trips to the United States in the past. He plans on staying in the country until he finishes

graduate school. He started learning English in grade school. He maintains contact with his Chinese friends and family daily.

Crystal is an 18 year old student from Shanghai. This is her first time in the United States, and she has only been here for 2 months. She also plans to stay in the country for 8 years and then return to Shanghai. She started learning English in grade school. Her family and friends are communicated with daily either through the phone or email.

Trang is a 23 year old Vietnamese alumna. She graduated from Swarthmore College in the class of 2001. She double majored in Political Science and Economics, and minored in English. She immigrated from Vietnam to Reading, Pennsylvania when she was four years old . She started learning English in kindergarten, and is now fluent in both English and Vietnamese. She still converses with her family in Vietnamese, although code switching occurs frequently in conversations with her brother.

Mike is a 22 year old alum. He has lived in the United States all of his life. He graduated from Swarthmore College with a major in Music. He currently works at WaWa, Inc while he composes music.

Keith is 22 years old and is also a member of Swarthmore College Class of 2001 where he majored in Biochemistry. He was born in Nashville, Tennessee, and currently lives in Wallingford, Pennsylvania where he runs his own computer consulting business. Trang is one of his two roommates.

Cat is a 19 year old student of Swarthmore College. She was born in Utah, and has lived in several areas in the United States. She is currently a sophomore at

Swarthmore and has not decided her major yet. She has been dating Keith for approximately one year.

4.5 Analysis

The recordings of the interviews are transcribed fully including pauses, hesitations, and partial words. Although it is not possible to be positive of what the speakers are attempting to say in terms of partial words, the interviews are transcribed as accurately as humanly possible. Pauses of less than 1.0 seconds in length are omitted unless they have disfluent properties, meaning they occur mid-utterance or detract from the conversation. This process is subjective and therefore may have flaws which are hopefully minimal.

The total number of words, not including disfluencies, are counted for each interview segment. Then the number of disfluencies are divided by the total number of words in the dialogue to determine the disfluency rate for each speaker. All disfluencies are examined more thoroughly as well, and similarities and dissimilarities are noted. The syntactic position of each disfluency, whether they are simple utterances, words, or pauses, are observed and logged. Any striking syntactic properties of all disfluencies are analyzed. The section below shows the results and significance of these results.

There are some cases where disfluencies occur within disfluencies. (16) shows such a case.

(17) I I think, I thought

The repeated "I" occurs in the corrected NP "I think". In these cases where there are clusters of disfluencies, each disfluency is counted separately even though another

study might consider the cluster as one total disfluency. Thus the example in (16) would have a total of 2 disfluencies, one from the repeated “I”, and one from the repaired “I think”.

The fluency of each participant can be analyzed in several ways for the comparison of disfluencies between nonnative and native speakers. The average lengths of fluent speech runs can be calculated. This is done by adding up all the words that occur together without the appearance of any disfluencies. The total number of words is then divided by the number of fluent speech runs found, and this number is the average length of fluent speech segments for the speaker. I opted not to do this not only because it takes a lot of effort, but also because it wouldn’t provide any information about the disfluencies at all.

Another way of determining fluency is by examining the frequency of filled pauses and unfilled pauses separately and together. This also allows us to note any similarities of usage between the unfilled and filled pauses.

The rate of speech for each speaker is not calculated because it was decided that this time consuming task does not seem to add any definitive information about disfluencies.

5. Results

The full transcriptions of the interviews are given in the Appendix. The table in (18) shows the number of disfluencies found for each speaker.

(18) Disfluencies found.

DISFLUENCIES	NONNATIVE SPEAKERS			NATIVE SPEAKERS		
	Crystal	Max	Trang	Mike	Keith	Cat
Total Disfluencies	169	65	88	172	44	29
Unfilled Pauses	18	6	31	15	7	8
Hesitations	0	0	2	6	0	0
Filled Pauses	105	28	33	100	16	9
URSs	28	0	11	12	4	4
Repairs	18	31	11	39	17	8
Total Words(W)	620	368	863	580	376	771
Total D /Total W (% Disfluencies)	27.26	17.66	10.20	29.67	11.70	3.76

The table provided in (19) breaks down the total disfluencies according to the percentages used of each type.

(19) Each disfluency type's percentages

DISFLUENCIES	NONNATIVE SPEAKERS			NATIVE SPEAKERS		
	Crystal	Max	Trang	Mike	Keith	Cat
Unfilled Pauses	10.7	9.2	35.2	8.7	15.9	27.6
Hesitations	0.0	0	2.3	3.5	0.0	0.0
Filled Pauses	62.1	43.1	37.5	58.1	36.4	31.0
URSs	16.6	0.0	12.5	7.0	9.1	13.8
Repairs	10.7	47.7	12.5	22.7	38.6	27.6

The table in (20) shows each disfluency and how often they occur in each different syntactic positions in the interviews.

(Note: L = Crystal Li, M = Max Li, P = Trang Pham, D = Mike Duffy, B = Keith Bentrup, C = Cat Clark. The first three columns contain the non-native speaker results whereas the last three columns contain the native speaker results.)

(20) Disfluencies divided into categories of syntactic position

Disfluency	Preceding NP						
Speaker	L	M	P	D	B	C	Total
Uh,um,etc	2	4	7	14	8	5	40
Like	24	0	1	8	2	2	36
I mean	6	0	1	2	0	0	9
Kind of	4	0	0	0	0	0	4
Disfluency	Preceding VP						
Speaker	L	M	P	D	B	C	Total
Uh,um,etc	0	0	1	2	1	0	4
Like	7	0	0	10	0	0	17
I mean	1	0	0	0	0	0	1
Kind of	4	0	1	0	2	0	7
Disfluency	Preceding AP						
Speaker	L	M	P	D	B	C	Total
Uh,um,etc	0	0	2	0	0	0	2
Like	1	0	0	3	0	0	4
I mean	0	0	0	0	0	0	0
Kind of	0	0	0	0	0	1	1
Disfluency	Preceding PP						
Speaker	L	M	P	D	B	C	Total
Uh,um,etc	1	1	1	0	0	0	3
Like	6	1	0	0	0	0	6
I mean	1	0	0	0	0	0	1
Kind of	1	0	0	0	0	0	1
Disfluency	At the end of an utterance						
Speaker	L	M	P	D	B	C	Total
Uh,um,etc	2	0	3	1	2	2	10
Like	3	0	0	1	0	0	4
I mean	1	0	0	0	0	0	1
Kind of	0	0	0	0	0	0	0
Disfluency	TOTAL in conversation						
Speaker	L	M	P	D	B	C	Total
Uh,um,etc	5	5	14	17	11	7	59
Like	51	1	1	22	2	2	83
I mean	10	0	1	2	0	0	13
Kind of	9	0	1	0	2	1	13

6. Discussion of the results

6.1 Problems with the results

There are many reasons for why the results might be skewed in some way. After reviewing the aspects of the interview process, several possible problems have been detected. First of all, although I tried to get the interviewees as comfortable as possible, some of the speakers may have been more comfortable than others simply due to my relationship with them and the environment of the interview.

6.1.1 Interpersonal relationships

I was familiar with all the speakers before the interviews took place. However, I have a closer friendship with Trang, Mike, Keith and Cat than Max and Crystal considering the length of time I have known each of them. The fact that the above four are closer to my age and class year than Max and Crystal, also may have an effect on how comfortable the speakers were with me as their interviewer. Being in college, and America for that matter for only a few months may have been more intimidating for them than I perceived as problematic.

Another issue in terms of interpersonal relationships is the fact that Crystal and Max are more acquaintances with each other than friends. This is unlike the other interview pair who have an intimate relationship with each other. It's generally accepted that people who know each other well tend to communicate better than people who aren't as comfortable or familiar with each other. Then there's the fact that Mike and Trang were interviewed alone which placed more pressure on them to speak then if they had a

partner interviewee to communicate with, bounce ideas off of, or even have some downtime between periods of talking.

6.12 Environment

The interview settings also could have major repercussions. Crystal and Max, the two Chinese speakers, were interviewed on an open, but isolated area of McCabe Library at Swarthmore College, while Mike was interviewed in my dorm room, and Trang and Keith were interviewed in their apartment in Wallingford. Cat was also interviewed in Keith's bedroom which she is comfortable and quite familiar with.

I assume that Cat, Keith, and Trang were in the most convenient and comfortable location for their interviews, while Mike was less comfortable, being in a relaxed, but non-possessional territory. Crystal and Max were probably in the least comfortable location unless of course they view the library as a home(which could possibly be the case at Swarthmore).

Also, all interviewees held a microphone during their interviews except for Keith and Cat. I used a different recording instrument which was placed in between them during their interview. The microphone probably added more tension to the interviews.

It was apparent during the interviews that the non-native speakers all took the interviews more seriously than the native speakers. The native speakers seemed very relaxed during the process, and viewed it as a fun experience, whereas I subjectively saw the non-native speakers as feeling more tense and eager to “do well”.

6.13 The possible effects.

All these factors could possibly have an impact on the results. However, I do not feel that any of these factors should have a serious effect on the types of disfluencies the speakers normally use, and how they use them. The frequency of disfluencies might have changed due to the anxiety, but as noted from the previous literature such as Lalljee 1975 and Broen 1972, it is not certain whether these levels increase or decrease due to anxiety. Therefore, I plan to continue with my discussion disregarding these factors, and their possible erroneous effects.

6.2 Discussion of Disfluency Rates

An examination of the tables (18) and (19) show that there are no significantly discernable differences between the native and non-native speakers. All of the speakers display disfluencies within their speech, and with only one exception have over a 10% disfluency rate in their interviews. Cat is the exception with a rate of only 3.76% disfluencies. However, if we compare the individual speakers, we see that Mike, who is a native speaker of English produced the greatest percentage of disfluencies at 29.67%. Crystal, one of the non-native speakers has a comparable amount at 27.26% which is a little lower, but not by much. Trang, a non-native speaker and Keith, a native speaker have quite similar disfluency rates at 10.20% and 11.70% respectively. The fact that Max, a non-native speaker has a medium level disfluency rate of 17.66, and Cat has a very low disfluency rate, pulls the results towards viewing the native speakers as overall having a lesser frequency of disfluencies within their speech than non-native speakers.

However, the data varies so greatly, that it is impossible to state that one group clearly uses less disfluencies than the other group.

In looking at the specific types of disfluencies, it is clear that most of the disfluencies which occur are either filled pauses or repairs. Hesitations are minimal, and pauses and URSs provide a small proportion of the disfluencies found.

Max has the greatest percentage usage of repairs. Crystal uses the greatest amount of URSs and filled pauses. Mike shows the greatest use of hesitations, and Trang is shown to use the most amount of unfilled pauses. It is interesting to note that the non-native speakers fulfill the greatest usage of each type of disfluency except for the hesitations. What does this say about non-native usage of disfluencies versus native usage? It seems as if the native speakers vary their usage of disfluencies whereas non-native speakers tend to have a disproportionate amount of certain disfluencies of one type as opposed to another. However, this is difficult to say considering the small amount of data due to the number of participants in this investigation. Even harder to figure out is why the proportions fall as they do. I will not delve further into this issue seemingly complex as it is.

6.3 Discussion of Syntactic Properties

The results for the syntactic analysis of the disfluencies are a little more interesting and conclusive than what has been found in terms of disfluency rates. Almost all of the disfluencies occurred between phrases. The data below all come from the transcriptions of the interviews, which can be found in the appendices. (21) through (24)

show the usage of the disfluency *like* preceding different phrase... a noun phrase in (21), a verb phrase in (22), an adjectival phrase in (23), and a prepositional phrase in (24).

- (21) I wanna pursue like graduate studies here.
- (22) I like spend an hour and a half everyday writing emails with my friends.
- (23) It's like so convenient.
- (24) Sometime like during big vacations

The same situation occurs for all the other disfluencies, although some disfluencies such as the URS *you know* occur frequently at the end of utterances instead of preceding phrases. (25) shows this case from Trang's interview.

- (25) It's not really as bad as before you know?

The only places where disfluencies did not precede a phrase were when the speaker was interrupted by another speaker, which I counted as being an end of an utterance. It is highly interesting to note that spoken disfluencies(as opposed to pauses) never occurred in the interviews between determiners and nouns, maintaining the feature that disfluencies precede phrases and do not occur in the middle of phrases. Although it seems intuitively naturally for someone to utter something like (26), it does not occur often enough to be recorded in the interview sessions for 6 different individuals.

- (26) The um birds flew over the house.

All the speakers, both non-native and native shared the feature of placing their disfluencies in similar places preceding phrases.

8. Conclusion

The investigation of the frequency of disfluencies in non-native and native speakers has shown that there are no clear demarcations between the two groups. If we view each of the individuals who were interviewed as typical non-native and native speakers, and the frequency of their disfluencies as representative of the entire population of non-native and native speakers, it would be apparent that there are no features that one group shares which the other group does not. Each individual produced markedly different frequencies of disfluencies and had different proportions of each disfluency type. Therefore, no significant distinction can be determined between the groups.

Syntactically speaking, the groups shared the common feature of producing disfluencies in the beginning of phrases whether they are noun phrases, verb phrases, prepositional phrases, etc. This commonality was only disturbed when the speakers were interrupted, which points to some general pattern of placement of disfluencies in spontaneous speech.

Many possible reasons for why disfluencies occur in specific positions are available. It may be due to the internal thought processes of the speaker before the words are spoken, or how it makes sense to break up parts of discourse into separate units at the exact time of utterance. The enumerations of the possible frameworks, however, are not within the scope of this paper.

It might seem odd that non-native speakers of English have similar frequencies of disfluencies as native speakers. However, I should note that none of the non-native speakers were in the process of learning the language at either a beginning level or intermediate level. All of them were quite comfortable with using the language, so there

was no issue of processing time, whereas in other cases where the non-native speakers might be at a beginning learning level, more significant differences might have been found.

As a final note, a fascinating work, Cargile 1997, examines how non-native accents may hamper the comprehension of the listeners due to the attitude of the listener. The fact that my investigation as well as other works reviewed above, Butler-Walls 1986 and Riggenbach 1991, on non-native and native speaker have shown that there are no significant differences in frequency of disfluencies between the two groups add strength to Cargile's claim that the issue of disfluency among non-native speakers is not the reason why listener comprehension is lower, but rather because the listener fails to put as much effort into the comprehension task as he/she would if the speaker did not have an accent. At least it can be said that frequencies of disfluencies among non-native speakers do not play a factor in causing lower listener comprehension.

Appendix A

(Note: disfluencies found have been underlined. They are linked to other non-disfluent words in order to make the process of word counting less difficult. The names of the participants are used in the transcriptions. However, I have changed the names of anyone referred to by the participants.)

Transcription of interview with Yi Max Li '05 and Yijun Crystal Li '05:

F: UhI wanna pursuelike graduate studies here[] and after that I prefer to work in Shanghai cuz I really like the city and the environmentyouknow? wellit's kindofstill blossoming cuz the city is progressing andthat you are progressing[] I feel that US is kindofin a boosting environment which iskindof Imeaninspiring.[]cuz here everything is so developed it'slike[]yeah.

M: wellI don't know ...so

F: And close to home

M: I also go to graduate school butwhenIcome, When I go back, []I'm not sure I will work in Shanghai all the times. ifI don't think it's very good for a person to always stay in one cityfor, during their whole life.

F: Wellit's for guysyouknow?likeWell there's a kindofAsianChinese saying that good guys shouldliketravel Imeanwelltheycanthey shouldlike establish their own business or Imeanfutureorwhatever, but forlike girls they tend to stay close to home.

F: That is true. Wellfor me it's a good thing. I definitely wannalike be. Cuz[] we arelike the only childright andlike I definitely wanna stay close to my parentsandlike

M: I'm also concerned about my family, I wish I could stay close to them but [I just mean
[you cannot always... you can[] move out and living out of shanghai for sometimes and
then go back and then move

F: But like for me like 8 years is quite I mean a long time to be away from home and, I
guess there should be enough time for me to kind of get used to the language and get used
to like independence totally independence life so I think that's probably enough for me
I mean yeah cause it is adventurous to come here well[] yeah[] um hum

M: umit's not a good for this old people to move to a new place

F: wellfor them like . . . yeah

M: they have the friends. china is different from united states. here I have oneone
relatives they just moved from Boston to Houston . . . but like in china it's different

F: yeahit's like families are kinda far apart so like [] we are very traditional and like on
those festivals we have[]well it's a kinda tradition to get together [] so it wouldn't[]it
wouldn't be convenient if like my parents and I just lived far apart and whatever

M: young people willwill move for the job. Just like in Shanghai there's a lot of people
from outside of the province and but um the familytheir parents will move to Shanghai

F: wellactually a problem is uhnow like people from other areas are kind of flooding into
Shanghai seeking for like job opportunities butseldom I mean shangh--[] native Shanghai
people kind of go outside I mean to other places

F: well, yeah it is.

nono actually. cause it's like, well[]I keep track of like[] things going on like back at home
everyday, so its I don't feel too like I'm too separated and then I like spend like an hour and
a half everyday writing emails with my friends and family and[] in other way, it like I stay

in my Chinese world forlike one hour and a half everyday so I don't think that I'll be too
I mean changedtoo much too dramatical.

M: the way we think really different from the people who always in China. that's
whyI should I decide to come back I just wanted new[] eye-opener.

F: yeahummhmm

F: whoa! . . . about what?

M: about sports.

F: what?

M: the sports

F: are you talking aboutlike the world cup? It's very important issue. 2002 Japan and
Korea.

M: yeah because they the first

F: i mean it's different issue

M: the world cup is soccer.

F: yeah, in Japan and Korea. it's jointly hosted by the two country. actuallyI am not
butlike[] I do care. wellI care forlike

M: that's the only newsshe can []she can grab from the web

F: no it is not butlike this year cause oflike very inspiringlike the Chinese soccer teamlike
enter the world cupyou know they've never done that before and they've beenlike
competing there over and over again forlike . . . 44 years

M: CacanyourecognizealltheCan you recognize all the players on the team?

F: I cannot recognize the player. I only care for the results. well it is game

M: sheonlyshe don't care about the game. she only care about the result

F: welltometh--allwell to me all American people look the same.

M: actuallyhere one thing I cannot stand is justI cannot watch the soccer game. there's no TV program about soccer

F: yeah it'slike everybody

M: uhehtomethetoseetheto see the results is not enough. Iit doesn't mean anything. I want to se-wa-watch the game. even the team loselost, I will be satisfied ifIif I watch the game. butESPN reports soccer gamebuttheyit'snotinthetheirown

F: yeah it'slikeuh, we have so many televised live matcheslike about this goinglike in Europe, soit'salittlebitImeanhereIthought before I came here I thought that US would be thelike center oflike information and communication and that actually the case here Imeanin Swarthmore is that it is comparatively closed environment. andthen you can seldom keep track of what's going on. wellI miss city life.

M: I think you wouldn'tlikeahifyouwereifyouwouldn'tyoureally

F: wellyeahImean I probablylike wouldn't like the environment but I do misslike city life.

M: That's because you are foreigner. youare grow up in city

F: IliveinI live in downtown area [] in Shanghai so it'slike so convenient andlike 9 0'clock 10 o'clock it's the time when nightlife begins and here it'slike five o'clock and everything is closed. wellit'slike you can go shopping you can gotolikeyeah go to movies

M: aaaand the stores close at ten

F: ten or ten thirty and sometimeslike during big vacations they kindofstay up tilllike eleven thirty.

M: they will go to cafeand

F: yeah. never been there. I've never been abroad before I came here yeah. I mean yeah.

M: but you can't you haven't been to Virginia or no I'm I've visited I've been San Francisco.

uh yeah I think San San Francisco is um better than Philadelphia.

F: well San Francisco coco is kind of I mean people from everywhere it's like small world and I heard that you don't even have to use well yeah.

M: but you know all the Chinese and actually um I think um I decide to go to San Francisco before I went to Swarthmore because I want to practice my English. I think I have five days to practice my English but actually I speak Shanghainese for all the times in San Francisco. um yeah and all the TV program

F: 30% I guess even a larger proportion. [] it's like [] I heard that native Americans are sort of like minorities there.

Appendix B

Transcription of interview with Michael Duffy '01:

yeahI dunno if you really want that on tape.

yeahhe answered the door and uhhe was in umarghI can't not think about it.

okhe was in[]see now I'mholdingthemikeI'm hold the mike, and it's getting me[]alright.

yeahhe came to the door, and he was wearing a towel, and his hair was wet,

so itseemedlike, I thought he had just gotten out of the shower. naturally, souh, I was

justlikeumwhatareyouyou knowareyou what's going on. he's like ohyouknow, Jeff and

Trang went to Jeff' suhyouknow we'll meet you there in a few minutes.

wellyeahsee my first thought was hewaslikehe he was sortof giving this smile and he was

like yeah we'll luhwe'll meet you guys there in a little bit. and I thought h-by we, at first

Ithought he meant him and Pedro. so I didn't uhmake the connection. if I had known he

had meant him and cat I would have pretty much immediately realized what was going

on, but like I thought he meant like him and Pedro, so I was standing there like an

idiot.like going likeohohthey want me to go over thereandthen and then you guys will llike

come over and meet us? I don't get itok and you're in the shower? alrightandthenlike, but

hekeptsaynghe kept saying yeahyouknow we'll meet you later. and so I was like wait a

minute, are he and Pedro messing around or something? and thenI then I realized ohcat

must be over yeahyeah.

yeahyeahI read all fouractuallyyeah

na, the four, thetheIIIlikelikethe first one was pretty good and IreallyI reallylike the fourth

one a lot. yeahlikethethe fourth onelike I waslike really gettinglike wrapped up in

itlikeuhIitwaslikelike had my heartlike racing andstu- well notlike racing like reallylike
racing the other week but_[yeah it waslike really good stuff
butaIIdunno I dunno know if it'slike gonna bring back traumaticuhtraumaticwhatever[]
butit's notlike the movie really got me _[worked upright. but maybe justlike being
reminded of the whole experience_[no,uhIthinkit'sbeinguhrightIdunnoIdunnowhatuh[]
Idunnowhat[]trig[]seethedoctor saidI haven't seen the psychiatrist yet so I'd be interested
in seeing what he saysbut the doctor said youknowwhat thtriggers it and what causes it
could be like[]completely subconscious andlike[]Imean there wasn't anything that I was
immediately aware of that was causing it. yeahwellImeanI think that maybe there was a
build of anxiety due to my sssmessed up schedule. or youknowbeing not seeingehyeah
it'sIdunno it's just a real different lifestyleandmaybethatwas[]yeah the summer was
stilllike wild and crazycolllikeImean cuzlikeIIworked I worked in the day and I worked
with_[all the people that I was hangin out with soit'slike it wasareal a real social
environment and we would always get together at night and party and stuffso, _[but now
it'slike youknow[]sleep during the day work at night never really see friends except for
on my days off sokindof it's arealreal real sschange. yeahit really does suck, that's why
I'm quitting. yeahIII thinkIyouknowassoo as soon as possible if I get settled in another
job andduhandandeverything I think I'll also wanna move into an apartment too.
yeahehhthat'snot[] that may not happen II the person I was gonna live with I haven't
really heard from them soumI'mwait I'm gonna wait maybe another week or two to see
about that and then I'll probably just go ahead and start looking for apartments around
here. I also nohI dunno who else is looking for apartments I know Armani was looking
for Trang has an apartment. really? I could take Trang's spot. Ierare Pedro and Keith

looking foruh a third person? 266 that's not bad, especially since it's a nice space and all
[]quality apartment why? uhyeah no.

Appendix C

Transcription of interview with Trang Pham '01

umit means thatI suppose when I had signed my contract to work with Accenture
attheendof[]lording during last year i wasi was[] told that my job would start intheat the end of
august andtheni[] and later then i was told that it would start in november and now it's
kindofpushed back to july 2002 and so that means for the while I'm a college graduated
bum.

umi 've been spending a lot of time with my boyfriend. umalso hanging out with my
friends a lot. catching up on reading i said i'd always do but never did, mostlyyouknow
readings that were assigned in my college classes umand looking for a job in a nonprofit
organization. and probably taking classes next semester too, business school courses in
philadelphia at wharton.

umwelli thought youknowit wouldn't be a bad idea in the long run because i'm thinking of
going and getting my mba and if i choose to go into the corporate world it'll certainly be a
plus. if i choose not to go into the corporate world and go to likethe nonprofit world, it'll
still be a plus umbecause business school apparently now hais very much geared towards
people going into the pri-i mean public sector alsomyeah.

In []the short run or the long run?

unprobably. i think so. i'd like to youknowhead an organization or be a major player in
a very important organization

well[], that's why i'm making my money now. no seriouslyum i think some nonprofit
[]positions pay well too and it just depends on what you do and where you go and[] i
assume that if i choose to take a position that isn't paying too well, it'll have other

benefits, and at the very least[] i'll have a little bit[] of money stashed away from the time that i was a consultant andstuff.

right now i'm living in wallingford, it's right next to swarthmore and i'm in an apartment with two of my friendsum next[] year ah starting probably in[] february or so i'mpro-i'm trying to move into philadelphia ummand maybe just get a roo-uman apartment with one roommate and then i'll start my job in the summer and probably work there for at least a year inin the philadelphia area and[] perhaps they'll assign me to some crazy project in france or hawaii or something. we hope.

oh, i really liked life during swarthmore, i think i'm ready to be out of swarthmore and i'mmy life after swarthmore right now is very chill, and i think it's probably mostly[] just because[hes]youknow i don't have any pressing or urgent need to[hes]work or to[hes] do anything in particular umeverything that i'm interested in doing i am doing now, and[] i'm being paid not to work so....

well, i think the last movie i saw was that really bad one fro-um by jet li and i was all excited to see the jet li movie unfortunately it wasn't one of his best. the plot was a little thin umthe action fighting was great it was justsortoflikeayouknowst-aone of those nintendo games and i wasn't really[]imean it was very lighthearted and[] didn't require too much thinking.

i have been watching sex and the city a lot. it's because my roommate keith has been downloading a lot of the episodes off from morpheusumandyeah. it's really fun wellthey're cute characters they dress well they're[] talking about topics that are relevant to[]youknow everyday life or at least ourmy personal life. they're not always things[] that i would agree with but at least they're being brought forth. wellsex is an important part of

everybody's life more or less [u]um you know there are things it's nice to see[] comments that my friends would make being made on tv and it's it's much more real than a lot of[] characters []that were written in the past about women, youknowcarrie and her friends are going through a lot of the same choices that my friends have been going through or are going through um and it's just nice to see those issues being discussed in a public forum i could tell you about the movie that i []am being forced to see tonight. harry potter. so apparently my friend duffy really wants to see harry potter because he's read all the books, me on the other hand i've read none of them and while i would like to read[] some of the books, and also probably see the movie in the far future, i'm told it's a much better movie being seen after the book was read, so i probably won't understand it very much but being a good friend who's promised to go, i suppose i have to. i should. it's well i don't physically have to but i promised to

the roommate situation sucks! well, it's not really as bad as before um []youknow i'm living with two roommates and we have different ideas on what[] cleanliness should be and how much we can share. it was sortofstupid because in the beginning we had decided thatwe were none of that we were not going to share our food or share[]youknow the[] grocery bill or anything like that and[] apparently some people have decided they can still sample[] and that that's ok.

Appendix D

Transcription of interview with Keith Bentrup '01 and Catherine Clark '04:

F: yeah, i watched that french movie amele

M: i saw shallow hal

F: fuck you

M: it was ok. i feel prompted[] to tell you more. wellwell now

F: why don't you wanna hear about the movie i watched?

M: nobody likes the french

F: fine, nobody likes you.

F: no i don't wanna tell you about it, ask him about the movie he saw.

M: it was the farrelly brothers, and uhit was kindacurious how they were doing it because
uhso you know the premise right?

F: wait you get all that from the title.

M: he's hypnotized by uhanthony robbins[] to uhsee the inner beautyum anduh he starts.
right, so when he starts seeing this[]this one woman, he perceives her tobeliketo look like
gweneth paltrow although she's really[] not and unattractive. rightso at the end of the
movie, heuhhe's un[]hypnotized and uhso you'rerekindof wonderinglike uh oh how is he
going to perceive. no it's curious becausesothey normally show her as cameron diaz and
so

F: gweneth paltrow!

M: whatever.

F: he said that, he called me, he's like i saw this great movie[] with cameron diaz in it

M: they're the same person.

F: and i was like isn't gweneth paltrow in that movie and he kept calling her cameron diaz

M: whatever they're the exact same person.

F: no gweneth paltrow has more class.

M: cameron diaz has much more pep.

F: you just like her cuz she's shorter

M: how do you know she's shorter?

M: so anyways, you're you're kindof wondering if.

M: oh you don't wanna know the ending?

F: are you really gonna see it?

M: it's worth watching as long as you don't pay full price.

F: like you did?

M: well, we didn't want to wait in line for [l] to get tickets and apparently
they're still ticket checking uh they're now checking for child's tickets.

F: how did you hear that, who told you that?

M: uh pedro he said he said that they were checking

F: wha-what happened?

M: i don't know what happened.

F: well apparently he wasn't arrested so

M: well apparently not but like i dunno, maybe he went back and they made him buy some
more.

F: you don't wanna hear about my movie. i don't wanna talk about it.

F: no, i saw it at home, umi know it's playing in philly, it's not playing out here. it's about this[] french girl[]um who is very antisocial. likeshe has this weird family it's kindofweird.

F: uhit's the guy who did delicatessen, delicatessen i don't know how to say it umand some other movies some pretty likefamous movies for a french directoryyouknowum.

M: who wrote the script?

F: i have no idea. it was good. it was funny.

F: that's because i'm in a bad mood cuz he hates me. he started tickling me and then he wouldn't stop and then he sat on me. i couldn't breathe i almost died

M: i sat on you? i don't think i sat on you.

F: you laid on me and it was practically the same thing. but ii coulda died.

M: so what upset you? the fact that you almost died?

F: no when i was a child my cat sat on me once and i got very scared cuz you reminded me of my cat

M: you have chocolate.

F: it's not chocolate, i'mnotasl-i'm not sloppy

F: we haven't broken up for a long time

M: yeah

F: it's better than pedro and suzy cuz we only fake break up they actually break up

F: that means we could be having even better sex? is that possible? we should ask pedro about that. no, well i say hi. he says hi. it's all good.

M: well.

F: there's the facilitator of this fabulous reconciliation.

M: what have i done? i haven't really done anything.

F: yeah that's why.

F: did you hear duffy might move in? when trang moves out, wait is trang really moving out?

F: where is she moving to?

M: the ville? why?

F: that's pathetic.

F: there's that advertisement on the board []by ted goundie's office. have you seen that?
there's an advertisement for a-someone to share an apartment with next semesterand then
but then keep the lease over the summer. i'm sure she could find someone to take it over
the summer

M: wait so what's the difference between the ville and here?

M: so then ok why are why are you trying to convince her to live at...

F: so then why doesn't she just stay here? does she not like you guys? it is pretty
uncleanly. i think i'm gonna stop showering in your bathroom. it's kind of gross. the floor
of your shower is gross. i'm not cleaning your apartment for you.

M: cat sheds.

F: i always shed

M: you're so messy.

F: it's just a small pile. look at your mess.

M: wait, what about that girl at that pub night?

F: when did you hook up with a girl at pub night keith?

M: oh boy.

F: is this the story i've already heard. well i dunno, it depends on what story it is.

whichwhat year is it? bc? then i've heard that story.

M: what about that time with jeff? recently, two months ago.

F: i never hooked up with jeff. that was his little brother. i did not. your little brother doesn't talk to me.

M: jeffandijeff and i went out to pub night.

F: who did he talk to? did he talk to rugby girls? i don't like rugby girls theythey tend to grab his -----.

F: my friend mark madehisgirlfriend-the only way he would have sex with his girlfriend was if she promised that she wouldn't have an abortion if she got pregnant. this is mark ro-. no he doesn't believe in abortion. this is matt rothko who went home over break and smoked opium for two days with his friends.

F: (on abortion) well, i've had four.

M: i've had three.

F: it was a little uncomfortable, but yeah it went pretty well.

F: uhseventh. it's illegal in most states but my life was in danger all four times.

F: i like odd numbers. because[] seven[] uhone month i didn't know. seven's the next number that's all straight lines.

M: all straight lines?

F: i think they're luckier.

F: that'snot-in my book, seven's straight. cuz i don't want people to think i'm gay by having an abortion on the 3rd or the 5th. cuz they're not straight.

F: i'm very homophobic.

M: uhit's an issue between us

F: he's gay. but at least we can agree on things like attractive guys[] who we'd cheat on the other person with

M: ireally-i really don't find guys attractive necessarily. i really feel like i'ma-a lesbian trapped in a man's body. therefore i'm attracted to women.

F: that's so overdone. that line has been used so many times. you're so unoriginal.

F: would you find it cheating if i[] started seeing another woman?

M: could i watch?

F: maybe. how much money could we get?

M: none.

F: then no.

M: what if i slept with another woman

F: that would be cheating

M: oh.

F: do you remember the time you had-uh that rugby girl massage your -----? that was cheating.

M: no it wasn't cuz it'snot-it's not intentional. i-i would call it massaging so much as grabbing.

F: it was unintentional.

M: this was[] the girl that-that mike hooked up with[] that night.

Bibliography

- Brennan, Susan E. and Michael F. Schober. 2001. How listeners compensate for disfluencies in spontaneous speech. *Journal of Memory and Language* 44: 274-296.
- Broen, Patricia A. and Gerald M. Siegel. 1972. Variations in normal speech disfluencies. *Language and Speech* 15: 219-231.
- Butler-Wall, Brita-Anne. 1986. The frequency and function of disfluencies in native and non-native conversational discourse. Doctoral Dissertation, University of California, Los Angeles, CA.
- Cargile, Aaron Castelan and Howard Giles. 1997. Understanding language attitudes: exploring listener affect and identity. *Language & Communication* 17: 195-217.
- Christenfeld, Nicholas and Stanley Schachter. 1991. Filled pauses and gestures: it's not coincidence. *Journal of Psycholinguistic Research* 20: 1-10.
- Clark, Herbert H. and Thomas Wasow. 1998. Repeating words in spontaneous speech. *Cognitive Psychology* 37: 201-242.
- Darot, Mireille and Monique Lebre-Peytard. 1983. Oral: les hesitations. *Le Francais dans le Monde* 23:102-104.
- Howell, Peter, and Stevie Sackin. 2001. Function word repetitions emerge when speakers are operantly conditioned to reduce frequency of silent pauses. *Journal of Psycholinguistic Research* 30: 457-474.
- Lalljee, Mansur and Mark Cook. 1975. Anxiety and ritualized speech. *The British Journal of Psychology* 66: 299-306.
- Levelt, Willem J. M. 1989. *Speaking*. Cambridge, Mass.: MIT Press.
- Pawley, Andrew and Frances Hodgetts Syder. 2000. The one-clause-at-a-time hypothesis. *Perspectives on Fluency*: 163-199.
- Pearl, Susan Zuckerman and John E. Bernthal. 1980. The effect of grammatical complexity upon disfluency behavior of nonstuttering preschool children. *Journal of Fluency Disorders* 5: 55-68.
- Riggenbach, Heidi. 1991. Toward an understanding of fluency: a microanalysis of nonnative speaker conversations. *Discourse Processes* 14: 423-441.
- Schiffrin, Deborah. 1987. *Discourse Markers*. Cambridge, England: Cambridge University Press.

Yairi, Ehud and Noel F. Clifton. 1972. Disfluent speech behavior of preschool children, high school seniors, and geriatric persons. *Journal of Speech and Hearing Research* 15: 714-719.