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Mishearings of Content Words by ESL Learners[1]

■ **Since the introduction of communicative language teaching, many listening materials have focused on the development of top-down listening skills, even though many ESL learners still have difficulty with bottom-up processing. Many of the standard listening materials deal with bottom-up phenomena such as assimilation, deletion, and insertion only for function words; there are no listening materials designed exclusively to train students to listen to content words, though many have variable pronunciations (e.g., *restaurant* > *rest~~a~~rant, suppose* > *s~~u~~ppose*).**

This paper discusses prototypical mishearings of content words by Chinese (Cantonese and Mandarin), Korean, and Vietnamese speakers of English (*n*=18), based on the students' written summaries of a university lecture and their subsequent performance on dictations of the segments that had given them difficulty in writing the summaries. All the mishearings were classified into four categories: (a) the phonological level, (b) the lexical level, (c) the syntactic level, and (d) the schematic level. Moreover, the hearing errors made at the phonological level were subdivided into substitutions, insertions, deletions, misperception of stress, and missegmentation. The paper also discusses what types of mishearings are most common in ESL learners' listening and whether or not the frequency of each category above varies according to different first language backgrounds.

Finally, this study addresses the pedagogical implications of the actual mishearing data from these ESL learners for listening instruction, arguing that ESL/EFL teachers should attend more systematically to bottom-up listening skills to help their learners more accurately process content words.

Although oral proficiency has received recent attention in second and foreign language teaching, not enough research has been done on aural proficiency due to the many complicated psychological processes which listening comprehension entails. But accurate listening comprehension is crucial for achieving effective oral communication. It is generally assumed that the longer learners stay in a country where the target language is spoken, the more their listening ability will automatically develop. In reality this is only a myth. The small scale survey that I conducted with students (*n*=18), enrolled in Advanced English as a Second Language (ESL 33C) at the University of California, Los Angeles (UCLA) in spring quarter, 1995, shows that even if learners have lived in the United States for more than four years, they still feel that they have trouble listening to academic lectures. As Table 1 shows, despite the fact that their average number of years of studying English is 9.03 and the average of length of stay in the U.S. is 4.5 years, as many as 74% of the students sometimes or often encounter difficulty in listening to academic lectures, and only 33% of them report that they can understand more than 80% of all lecture content:

Table 1
ESL Students' Self-Evaluation of Academic Listening Ability

Do you have trouble listening to lectures?	*n* = 18
not at all	1 (5%)
a little	4 (21%)
sometimes	7 (42%)
often	6 (32%)
What amount do you understand?	*n* = 18
0-20%	1 (6%)
20-40%	0 (0%)
40-60%	3 (17%)
60-80%	8 (44%)
80-100%	6 (33%)

Due to the students' subjective judgment and the limited number of subjects, we cannot easily generalize the results; however, this survey makes clear how difficult the acquisition of nativelike listening comprehension ability is.

Background

Recent language teaching methods have motivated me to conduct this mishearing research. Since the introduction of communicative language

teaching and Krashen and Terrell's natural approach (Krashen & Terrell, 1983), top-down listening skills have been the focus; as a result, many classroom activities in advanced academic ESL tend to consist of such holistic skills as note taking, outlining, and summarizing. I do not deny the importance of these activities, but I argue that in second and foreign language teaching, even advanced students may need training in bottom-up listening skills.

Bottom-up listening skills refer to learners' ability to process incoming acoustic signals or to use the phonological code effectively so that they can identify segments or words in a given context (Brown, 1990). Rost (1990) identifies these phonological cues as "phonemic sequencing, metrical distribution (loudness and tempo), tone boundary (pause), and prosodic weighting (stress and intonation)" (p. 35). This process utilizes both linguistic information such as phonetic/phonological, morphological, syntactical, semantic, pragmatic, and discourse information as well as nonlinguistic information. Since this process is complicated, even native speakers who have enough of this kind of information may sometimes experience a communication breakdown because they cannot process incoming sound signals appropriately. For example, in her study, Browman (1980) collected 222 misperceptions by native speakers of English. Garnes and Bond's (1980) data consist of about 900 examples of misperceptions by native speakers that have occurred in conversational speech, while Cutler and Butterfield (1992) examined rhythmic cues to speech segmentation. One of the most interesting misperception examples cited by Celce-Murcia (1980) is a case in which *Quality Inn* was misheard as *Holiday Inn*:

> Charley: Hi, I'm at the Quality Inn near L.A. airport.
> Marianne: The Holiday Inn?
> Charley: No, the Quality Inn. (p. 205)

This miscommunication can be explained in terms of Marianne's mishearing due to the same number of syllables and the same pattern of stress. It may also result from Marianne's greater familiarity with the Holiday Inn than the Quality Inn. In fact, there was also a dialect difference: Charley has the same stressed vowel /ɑ/ in *Holiday* and *Quality* whereas Marianne uses /ɑ/ and /ɔ/ respectively (Celce-Murcia, personal communication, June, 1998).

Given the difficulties that native speakers experience processing incoming speech signals, we can predict that those nonnative speakers who have only a limited number of acoustic signals to use for decoding information must have more serious mishearing problems. For example, nonnative speakers' difficulty in perceiving function words caused by reduced vowels

has been discussed in many introductory textbooks on phonetics/phonology and the teaching of pronunciation (e.g., Avery & Ehrlich, 1992; Celce-Murcia, Brinton, & Goodwin, 1996; Kenworthy, 1987; Ladefoged, 1993). These texts clearly show how each function word is produced in connected speech. Also, this well-documented information is reflected in several ESL pronunciation textbooks dealing exclusively with phenomena related to these function words (e.g., Rost and Stratton's [1978] *Listening in the Real World* and Weinstein's [1982] *Whaddaya Say?*, both of which are designed to teach intermediate or advanced learners the sound changes that occur in normal speech).[2]

The ability to comprehend reduced speech is very helpful for acquiring basic listening skills; however, it does not directly improve overall listening proficiency because function words do not play as crucial a role in constructing the speaker's message as content words. Unfortunately, very little research has been done on the mishearing of content words by nonnative speakers of English. The reality is that we don't yet know to what extent ESL learners have difficulty hearing content words accurately. This paper aims to break new ground by examining how nonnative English speakers process incoming speech produced at a normal rate and by analyzing their mishearings of content words that occur in a university lecture.

Research Questions

Rost (1990) mentions that "most mishearings can be identified as occurring at a segmental level," and can be classified into "deletions, insertions and errors" (p. 52). In addition, although there are some previous studies on mishearings in L1 (Bond & Garnes, 1980; Browman, 1980; Dirven & Oakeshott-Taylor, 1986), no research presents a comprehensive analysis of mishearings by nonnative speakers. Therefore, this paper describes mishearings of content words based on the criteria presented in Rost, focusing on how nonnative speakers mishear content words, whether there are typical patterns of mishearing, and whether there is a difference in the patterns between speakers with different language backgrounds. The research questions addressed are as follows:

1. How do ESL learners mishear the content words occurring in an academic university lecture delivered at a normal rate of speech?
2. Into what types can the mishearings be categorized?
3. What types of mishearings are more likely or less likely to occur in ESL learners' listening?
4. Is there any difference in the frequency of each type of mishearing between speakers of different languages?

Method

Subjects

Chinese, Korean and Vietnamese speakers of English who were enrolled in one section of an advanced multiskills ESL course (ESL 33C, Advanced English as a Second Language) in the ESL Service Courses at UCLA participated in several research sessions. The total number of students was 18: Four each were native speakers of Cantonese Chinese, Mandarin Chinese, and Vietnamese, and 6 were native speakers of Korean. Most of the students had studied English for about 10 years and had been in the U.S. for more than 4 years.

All students enrolled in this course after being placed at this level by taking the UCLA English as a Second Language Placement Examination (ESLPE) or by passing the previous ESL course. All the students who participated in this study also were taking three to four regular university courses at the same time as ESL 33C. Thus, they all had exposure to university lectures in English outside the ESL course.

Data Collection

Data were collected from the students as follows:

1. Students discussed the content of a lecture beforehand so that the difficulty caused by lack of background knowledge could be reduced.
2. The students listened to a 10-minute segment of a videotaped university lecture and wrote a summary of it.
3. Based on the students' summary, a 1 1/2-minute segment they found difficult to understand was selected. Each utterance in the segment was divided into intonation units and edited so that pauses were inserted before and after each intonation unit.
4. The subjects were told to transcribe the taped segment from the lecture. First they listened to the normal text. Then they listened to the edited tape with pauses and transcribed it. Finally, they made corrections while listening to the normal text again.

Materials

The authentic listening segment, a regular part of the curriculum of the ESL course in which the subjects were enrolled, was taken from a videotaped communication studies course offered at UCLA. The content of the lecture segment was the First Amendment and the media, focusing on the individual's right to hold peaceful meetings and a rally in Skokie, Illinois held by the American Nazi Party. The transcript of the lecture segment is found in Appendix A.

Results and Discussion

All the transcriptions obtained from the 18 students were carefully analyzed by identifying mishearings of the content words. The total number of content words misheard in the 1 1/2-minute segment of the lecture amounted to 164 words. How all these data were analyzed and categorized into several types of mishearings is shown below.

Simple Mishearings and Multiple Mishearings

The analysis and categorization of misheard words can be very complicated, since any mishearing may involve more than one factor at the same time. For example, a given mishearing can result from substitution, deletion, and insertion—all at the same time. This caused much difficulty in classifying mishearings into distinct patterns. To simplify the coding procedure, all the mishearings were first divided into two categories: *simple mishearings,* which are caused by only one factor, and *multiple mishearings,* in which more than one factor is involved. For example, when *defending* was said, some subjects heard *depending* by substituting [p] for [f]. This type of mishearing was coded as a simple mishearing. On the other hand, *attitude* was misheard as *add to*, which was caused by the substitution of [d] for the first [t], the deletion of /i/, the deletion of the final [d] , and the missegmentation of one word into two. This example was coded as a multiple mishearing, that is, a mishearing in which more than one factor is involved.

Types of Errors

All the mishearings were subsequently categorized into 12 patterns, each of which is exemplified as follows:

Syllable substitution: *reversal* > *universal*, where one or more than one syllable was substituted for another at one time.

Syllable insertion: *went through* > *to run through*, in which an additional syllable *to* was inserted.

Syllable deletion: *reversal* > **versail*, where one or more than one syllable is deleted.

Segment substitution: *defending* > *depending*, in which [f] was replaced with [p].

Segment insertion: *publicity* > *public city*, where [k] was inserted.[3]

Segment deletion: *playing* > *paying*, in which [l] was deleted.

Same or similar stress: *explicitly* (● ◆ ● ●) > *specifically* (●◆●●●) where a quite different word with a similar stress pattern was heard.

Wrong stress: *ultimately* (◆●●●) > *alternatively* (●◆●●●), in which a stress pattern was misheard or the word *alternatively* may have been stored in the learner's mental lexicon with the same stress pattern as that of *ultimately*.[4]

Missegmentation: *wanted* > *want it*, where segments were misdivided into the wrong number of words; *wanted* was misheard as two words.

Lexical effect: *trying to stop* > *wanted to stop*, in which a lexically appropriate or familiar word was misheard for the original word.

Syntactic effect: *there was even a three hour TV movie* > *They made three hour[s TV] movie*, where the original words were replaced with syntactically appropriate words so that a sentence could make sense.

Schematic effect: *Liberties Union* > *Labo[u]rs Union*, where schematic knowledge familiar to a listener led to the selection of a wrong word.

Observed Mishearings

Appendix B contains a list of the mishearings and the categorization of mishearing, shown according to the language background groups. It is surprising that mishearings of more than 150 content words were obtained in a segment that was only 1 1/2-minutes long. If we included errors in hearing function words, the number would probably triple since more mishearings of the function words were observed. Although it has been generally said that unstressed function words are very difficult for nonnative speakers to identify, the findings of this research indicate that even stressed content words can easily be misidentified. This fact shows that nonnative speakers' listening can be very inaccurate, and the inability to hear content words can lead to wrong schemata and finally to communication breakdown. For example, given that *fear this* or *and peer this* was heard when *appealed this* was said, we can assume serious misunderstanding would occur. This research gives us insight into the fact that nonnative speakers' listening, even for advanced learners, is very much a guessing game based on unreliable incoming speech signals.

Frequencies of Each Type

Though it is difficult to generalize results due to the limited amount of data and the limitation of the subject pool to 18 ESL learners, this research gives valuable insight into the types of mishearings that are likely to occur in advanced ESL learners' academic listening. Table 2 shows the patterns of mishearings of content words by this particular group of nonnative speakers.

Table 2
Patterns of Mishearings of Content Words

	Cantonese		Mandarin		Korean		Vietnamese		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Simple mishearing	24	65	22	59	29	54	22	61	97	59.1
Multiple mishearing	13	35	15	41	25	46	14	39	67	40.9
Total	37	100	37	100	54	100	36	100	164	100.0
Syllable substitution	0	0	1	2	0	0	0	0	1	0.4
Syllable insertion	4	7	2	4	1	1	3	6	10	4.0
Syllable deletion	3	5	6	11	7	8	6	11	22	8.9
Segment substitution	22	40	18	33	25	29	20	37	85	34.3
Segment insertion	5	9	2	4	8	9	2	4	17	6.9
Segment deletion	6	11	3	6	11	13	7	13	27	10.9
Same stress	0	0	5	9	5	6	3	6	13	5.2
Wrong stress	0	0	2	4	2	2	1	2	5	2.0
Missegmentation	8	15	6	11	15	18	6	11	35	14.1
Lexical effect	6	11	7	13	6	7	6	11	25	10.1
Syntactic effect	1	2	0	0	2	2	0	0	3	1.2
Schematic effect	0	0	2	4	3	4	0	0	5	2.0
Total	55	100	54	100	85	100	54	100	248	100.0

First, I will focus on the two main categories of mishearing: simple and multiple mishearing. As Table 2 shows, about 60% of the total mishearings are identified as simple mishearings ($\chi 2 = 5.13$, $df = 1$, $p < .025$): 24 simple mishearings for Cantonese speakers (65% of the total mishearings in this language group); 22 simple mishearings for Mandarin speakers (59% of the total); 29 for Korean speakers (54% of the total); and 22 for Vietnamese speakers (61% of the total). We can therefore conclude that about half of the mishearings can be explained by only one factor.

As for the subcategorization of mishearings, errors at the syllable level are not common, but the results show that of these mishearings, there are more syllable deletions than syllable substitutions or insertions.

In terms of mishearing at the segment level, the frequencies of substitution for each language group are 22 (40%) for Cantonese speakers, 18 (33%) for Mandarin speakers, 25 (29%) for Korean speakers, and 20 (37%) for Vietnamese speakers. As Rost (1990) suggests, segment substitition errors tend to be greater than those involving insertion and deletion, though not significantly different.[5] The large number of mishearings caused by segment substitutions suggests that nonnative speakers' perception of segments is often inaccurate. In contrast, the small number of mishearings which resulted from segment deletion and insertion shows that the learners may be sensitive to the existence of segments.

Another serious problem with mishearing by nonnative speakers is missegmentation: The frequencies of mishearings resulting from missegmentation are 8 (15%), 6 (11%), 15 (18%) and 6 (11%) for Cantonese, Mandarin, Korean and Vietnamese speakers, respectively. This suggests that nonnative speakers have difficulty perceiving slight differences in juncture or word boundaries.

Differences Between Language Backgrounds

Table 2 indicates that there is not a significant difference in the types of mishearings between these four language groups (($\chi 2$ = 30.05, *df* = 33, *p* = .615). For those errors made at the syllable level, deletion is likely to occur in all the languages. This phenomenon can be related to the characteristics of English rhythmic patterns. The deleted syllables (e.g., *appealed this* →*feed it, developed* →*valid*) are not perceptually salient because they are all unstressed. From my own long experience of teaching English to Japanese speakers, it can be observed that ESL learners with syllable-timed language backgrounds tend to mishear unstressed syllables.

As for the frequency of mishearings at the segmental level, substitution is most common in all four language groups, and mishearings of this type total 85 (34%) out of 248. A closer look at some of the segments misheard may reveal first language interference. For example, Koreans, who have no /f/ phoneme, heard /f/ as /p/ (i.e., *defend* as *depend*).

Deletion is the second most common mishearing (27 =11%). Korean speakers have more deletions (11 = 41% out of all the deletions) than any other language group, which may relate to their production of syllable structures in English. Tarone (1987) mentions that Korean speakers depend more on consonant deletion for syllable simplification than Cantonese speakers. Tarone's finding might allow us to explain mishearings in terms of learners' perception and production of syllables.

Pedagogical Implications

Bottom-Up Processing

The findings of this study suggest that nonnative speakers' listening is exactly like a guessing game, based on unreliable incoming speech signals. Some might argue that top-down processing should be given priority over bottom-up processing so that listeners will play this guessing game in an effective way. In a sense, this view is feasible, as Brown (1990) claims:

> Since it is often the case that *there is enough contextual information to allow listeners to guess which word is being used, as long as they are able to identify some parts of the word adequately* [italics added], discrimination between segments is probably no more important than the ability to recognize a word even if it is much reduced in form in the stream of speech. (p. 150)

However, we should note that the amount of contextual information varies from topic to topic. Cummins (1981) proposes that language proficiency can be interpreted in terms of two distinct continua: one continuum, with one extreme characterized as context embedded and the other as context reduced and a second continuum with one extreme characterized as cognitively demanding and the other extreme as cognitively undemanding. Cummins claims that context-reduced language lacks contextual support such that incoming messages must be processed in a purely linguistic way. Moreover, he points out that cognitively demanding language, such as academic lectures, requires intellectual and cognitive involvement on the part of the interlocutors. His theory assures us that since there is not always enough contextual information to allow listeners to process messages in academic lectures, even advanced learners should be trained to pay more attention to bottom-up processing, that is, to phonological cues; otherwise, these learners may be unable to identify information-bearing words adequately.

Some Suggestions

How should we raise students' consciousness of phonological characteristics in fluent speech?

Focus on sound. I suggest that teachers have students listen to one or two short sentences in context, focusing only on sound. We should note that any sentence in connected speech has a lot of fluent speech characteristics such as reduction and elision. This focus on sound will also help students

realize how content words sound in fluent speech (Janet Goodwin, personal communication, February, 1996). For example, the first sentence in the video segment used in this study includes several pronunciation variations of /t/ in content words:

So the problem was that the Jewish community in Skokie, although we understand their sentiment, was moving counter to the Constitution.

	citation form	**fluent speech**	**characteristics**
community	[kəmjunəti]	[kəmjunəɾi]	flapping of [t]
sentiment	[sentɪmənt]	[senɾɪmənt]	flapping of [t] or
		[senɪmənt]	deletion of [t]
		[sẽnɪmənt]	nasalization of preceding vowel
counter	[kaʊntɚ]	[kaʊnɾɚ]	flapping of [t] or
		[kaʊnɚ]	deletion of [t]
		[kaũnɚ]	nasalization of preceding vowel

Getting students to pay attention to the actual pronunciation of each content word will surely raise students' awareness of various phonetic forms of a given word. One of the activities which will work is what I call "dictation in context." The procedure is as follows:

1. Using a tape, have students listen to a sentence in its surrounding context so that those phonological features which appear in it are maintained.
2. Have students write the sentence, including the target phonological feature.
3. Give them a transcript to check whether their dictation is correct, discussing why they made mistakes and explaining the target phonological features (e.g., flapping of [t], deletion of [t]).
4. Have them listen to another sentence and find words with the same phonological features.

Also, teachers can integrate a similar type of exercise into the production phase of the lesson for a pronunciation activity. After going over the four steps above, students can practice producing the target phonological features in controlled, guided, and communicative practice (Celce-Murcia, Brinton, & Goodwin, 1996).

Focus on neighboring sounds. For accurate perception of a sound, we can have students pay attention to its neighboring sounds as well. Browman (1980) suggests that preceding vowels provide a variety of specific cues for final consonants (e.g., vowel lengthening or nasalization). For example, the length of the preceding vowel helps discriminate between *got* and *God* . If the vowel is longer, the following consonant is perceived as a voiced consonant. The nasalization of a vowel is also found in *sentiment* and *counter* in the above-cited sentence from the video segment.

Integrate of bottom-up processing into top-down processing. Dictation exercises have been used mainly to train students in bottom-up skills, but since students tend to attend only to the word or sentence level, they do not utilize enough contextual information while working on dictation. To help students develop top-down processing skills through dictation, teachers should not give students single sentences for dictation, but instead should:

1. ask students to select an appropriate target sentence or phrase (e.g., topic sentences, supporting sentences, or discourse markers),
2. have them write it down while listening to the larger context of the entire paragraph provided using a tape recorder or VCR so that phonological features in fluent speech can be maintained, and
3. check and discuss the phonetic variations as well as the content of the entire listening passage.

Here is an example of an exercise in which students are asked to select the topic sentence from an audio-taped lecture segment.

> Directions:
>
> Listen to the audiotaped introductory segment of the lecture we have seen and select one or more sentences expressing the main idea(s). Write down the sentence exactly as read.
>
> Transcription of the segment students hear:
>
> All right, today we'd like to look at a topic extraordinarily controversial in 1990, maybe it's the start of the 1990s, or maybe it began in late 1989 with the discussion over flag-burning. It's been brought to the forefront with the continuing discussion over pornography. And even today it's still relevant with the discussion of the Robert Robert Maplethorpe pictures, which we've talked

about a little bit and we'll talk about a little bit more, which will be coming to Los Angeles soon, and the entire discussion over the labeling of record albums. This issue of the media and the First Amendment. How much freedom we have. (Cole, 1990, May 29)

(Answer Key): This issue of the media and the First Amendment. How much freedom we have.

The underlined word *Amendment* includes some phonetic variations of vowels and consonants (e.g., the reduction of the first and third vowel, the deletion of [d]), which teachers can have students pay attention to for the discussion on listening. This exercise enables students to improve their selective listening skills (top-down processing) and to focus on the phonological features for dictation (bottom-up skills) at the same time.

Conclusion

This study shows that the 18 nonnative English speakers tend to mishear a large number of content words that are crucial in interpreting incoming messages. These mishearings may lead to more serious communication breakdown than we can imagine. The various mishearings in this study were categorized into several prototypes, mainly in terms of phonetic and phonological characteristics (e.g., segment, syllable, stress and segmentation). The results show that 60% of the mishearings resulted from a single factor rather than from multiple factors. The most frequent cause of mishearing at the segmental level was segment substitution, and the next most frequent was missegmentation; at the syllable level, deletion was frequently observed. Also, findings indicate that there is not a statistically significant difference in the type of mishearings between the students' native languages. Despite a limited amount of data, this may suggest that there may be universal patterns of mishearings, just as universal principles can explain many production errors made by nonnative speakers of English.[6]

There are several inevitable limitations to this research methodology. First, as discussed, most mishearings involve several factors at the same time. Therefore, the mishearings can be analyzed in different ways, and the categories of mishearings presented here are tentative. The example *appealed this* >*fear this* shows how complicated it is to categorize this mishearing into prototypes. The deletion of *a* could be the deletion of a segment or a syllable since one vowel can constitute a syllable. The replacement of [p] with [f] and [l] with [r] and the deletion of [d] are also involved.

Another more complex example concerns the mishearing of *preliminary* as *legitimately*. This error can be considered to be induced by the words having the same stress pattern. But it is impossible to explain why two words with quite different segments are confused. Such a mishearing involves five substitutions: [pr] > [l], [l] > [dʒ], [m] > [t], [n] > [m], and [r] > [tl]. The problem is whether or not we should categorize these various substitutions only into substitutions and why these various substitutions occur simultaneously. If we categorized this mishearing the way I have analyzed it in this research, it would be very difficult to make a systematic categorization for mishearings, and we would end up just describing examples of mishearings. Such examples explain why we cannot easily establish prototypes for mishearings. Clearly, an alternative way of analyzing such errors needs to be developed.

Second, John Field (personal e-mail communication, March 11, 1998) identifies another limitation of mishearing analysis, namely the ways in which mishearing data were collected in previous studies. Specifically, he notes that: (a) there is no record of the utterance that caused mishearing (some of the mishearings may result from variations in production, not perception), (b) there is no record of the relative volume and noise where the mishearing occurred, (c) there is no contextual information that may have caused the listeners' mishearing, and (d) the examples of mishearing were collected from a different range of listeners. The use of a mishearing corpus will not allow us to easily control for these various hidden factors.

Despite its shortcomings and its exploratory nature, this study provides some insight into the teaching of listening comprehension. Until recently, bottom-up listening skills have been overlooked in ESL, but the present study on the mishearing of content words by advanced ESL learners who have been in the U.S. for a long time shows that length of residence cannot guarantee listening competence. It appears that a large number of mishearings occur in content words as well as function words. This result implies that we should spend more time teaching bottom-up listening skills. Students must get used to listening to variations of each content word commonly heard in authentic communication so that they can correctly process as many actual tokens produced by different people in as many different situations as possible.

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Endnotes

[1] This paper was presented at the March 1998 meeting of Teachers of English to Speakers of Other Languages in Seattle.

[2] Though they do not focus exclusively on the sound change in connected speech, Dauer's (1993) *Accurate English* and Grant's (1993) *Well Said* also discuss several phonetic variations in terms of blending and linking (e.g., unreleased stops, resyllabification, palatalization).

[3] This is an example in which missegmentation is also involved.

[4] This example also involves a wrong syllable structure: *ultimately* is a four-syllable word but *alternatively* is a five-syllable word.

[5] With the four language groups collapsed into one, the data show that the frequencies of mishearings significantly differ according to each type ($\chi 2 = 279.71$, $df = 11$, $p < .001$). Also, segment substitution made the largest contribution to the Chi-square value.

[6] Tarone (1987) claims that "the preference for the CV syllable seems…to be a process which operates independently of language transfer" (p. 241).

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Appendix A
Transcript of the Lecture Segment

So the problem was that the Jewish community in Skokie, although we understand their sentiment, was moving counter to the Constitution. And they went to court and they got preliminary restraining orders, or temporary restraining orders stopping the Nazis from marching in Skokie. The Nazis went to higher court and appealed this, and in a strange reversal of positions, the American Civil Liberties Union, much of whose membership is Jewish and counted on the Jewish community for support, went to court defending the right of the Nazis to march in Skokie. And many, many many of their Jewish members, and non-Jewish members quit the ACLU.

Their attitude was: we believe in these freedoms, but to a point. The problem is that point is not explicitly developed in the Constitution. And if you rea—ultimately the Nazis won the right to march in Skokie. It took them about four and a half years. They went through lots of courts. They got more publicity than they ever could have hoped for. There was even a three hour TV movie made out of this called "Skokie," which I think you can rent with Danny Kaye playing one of the leaders of the Jewish community, trying to stop the Nazis from marching. And when they finally got their permission, they didn't even bother marching. By the time they finally had the right, they just canceled the whole rally. They didn't care at that point, they got more than they ever wanted.

Appendix B
Observed Mishearings

Cantonese Speakers

Original Words	Misheard Words	Simple/Multiple	Types of Mishearings
bother marching	border the marching	multiple	substitution insertion
counted on the Jewish	counter the Jewish	multiple	substitution deletion
Danny Kaye	any case	multiple	deletion substitution insertion
march	match	simple	substitution
of positions	opposition	simple	missegmentation
one of the leaders	want the leaders	multiple	missegmentation substitution syllable deletion
positions	position is	simple	missegmentation
rally	reality	multiple	substitution syllable insertion
rent with	ran with	multiple	substitution deletion
sentiment	ceremony of	simple	substitution
went through	run through	simple	substitution
went to court	when to the court	multiple	syllable insertion lexical effect

Mandarin Speakers

Original Words	Misheard Words	Simple/Multiple	Types of Mishearings
and counted	encounter	multiple	substitution missegmentation
called	cold	simple	substitution
defending	to fending	multiple	substitution missegmentation
defending the right	to fight to right	multiple	substitution syllable deletion
Kaye	decay	simple	syllable deletion
marching	march in	multiple	substitution missegmentation
of their	of other	multiple	deletion insertion missegmentation
quit	quick	simple	substitution
reversal	universal	multiple	substitution syllable insertion
sentiment	several men	multiple	substitution deletion wrong stress
wanted	want it	multiple	missegmentation substitution

Korean Speakers

Original Words	Misheard Words	Simple/Multiple	Types of Mishearings
a point	appoint	simple	missegmentation
although	all the we	simple	substitution missegmentation
although we	all we	simple	deletion
appealed this	fear this	multiple	deletion substitution
appealed this	and peer this	multiple	insertion substitution missegmentation
attitude was	add to was	multiple	missegmentation substitution deletion
called "Skokie"	court Skokie	multiple	substitution lexical effect

Korean Speakers (continued)

Original Words	Misheard Words	Simple/Multiple	Types of Mishearings
defending	depending	simple	substitution
explicitly s	pecifically	simple	stress pattern
got	God	simple	substitution
hoped for	hopeful	multiple	insertion deletion missegmentation
publicity	possibilities	multiple	syllable insertion schematic effect
publicity	public city	simple	insertion
quit	cut	multiple	deletion substitution
sentiment	settlement	simple	substitution
settlement	segment	simple	syllable deletion
ultimately	automatically	multiple	substitution insertion wrong stress

Vietnamese Speakers

Original Words	Misheard Words	Simple/Multiple	Types of Mishearings
ACLU	suit you	multiple	syllable deletion substitution
ACLU	sell you	simple	syllable deletion
appealed this	feed it	multiple	syllable deletion substitution deletion
developed	valid	multiple	syllable deletion substitution deletion
marching	margin	simple	substitution
playing	explain	multiple	syllable insertion syllable deletion
preliminary	legitimately	multiple	same stress pattern substitution
rea—ultimately	read it ultimately	simple	syllable insertion
went through	to go to	multiple	lexical effect substitution syllable insertion