SOCIAL FACTORS IN PRONUNCIATION ACQUISITION

PROCEEDINGS OF THE 3RD ANNUAL PRONUNCIATION IN SECOND LANGUAGE LEARNING AND TEACHING CONFERENCE

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ASSESSMENT

EVALUATING INTELLIGIBILITY, COMPREHENSIBILITY AND ACCENTEDNESS

SOCIAL FACTORS IN PRONUNCIATION ACQUISITION

2011 Proceedings Introduction

John Levis & Kimberly LeVelle, Iowa State University

The 3rd Pronunciation in Second Language Learning and Teaching Conference was held on September 16-17, 2011 at Iowa State University. The conference was held in conjunction with the Technology in Second Language Learning and Teaching and Midwest Association of Language Testers Conferences, with pronunciation oriented sessions found at all three conferences. Nearly 100 participants from 12 US states and from 6 foreign countries attended PSLLT, and the conference employed concurrent sessions for the first time with 32 presentations as well as poster sessions.

THE IMPORTANCE OF SOCIAL FACTORS IN PRONUNCIATION ACQUISITION

Adults' acquisition of foreign language pronunciation is marked by a rarity of native-like control. The most common explanation for this is age and the influence of a critical period for language learning in general and for pronunciation in particular (Lenneberg, 1967; Scovel, 2000). While there is little argument about the correlation between age and the ultimate level of pronunciation mastery, there is more dispute about whether age is the cause of incomplete acquisition, with some researchers saying a critical period for phonological acquisition may not exist (Flege, 1995). Indeed, the amount of variation in pronunciation attainment among adult learners, from largely unintelligible to native-like, suggests that age cannot be the only influence on attainment. Instead, other causes such as exposure to the target language and social influences may be central to ultimate attainment. The wide variation in attainment means that we urgently need to better understand the causes of varied pronunciation attainment.

Sociolinguistic research in SLA has documented that social, cultural and psychological factors affect language acquisition. Indeed, there is a growing chorus of scholars interested in how social factors influence the learner's approach to pronunciation, and ultimately, their likelihood of fossilizing (Moyer, 2004; Piller, 2002). Pronunciation attainment as seen in the sociolinguistic paradigm has shown that greater attention needs to be paid to individual differences in phonological attainment, especially in relation to factors such as identity and sense of self in the new language. Some questions that have been explored in relation to social issues include the relationship of learners' own views of their accents and their success in pronunciation attainment, the practical implications of accent and the social impact of accentedness, and how listener perceptions and attitudes toward pronunciation affect learners' social interactions.

Research on social factors' influence on second language pronunciation has appeared under topics such as acculturation (Schumann, 1986), identity (Zuengler, 1988), discrimination (Lippi-Green, 1997; Munro, 2003), ethnic group identification (Gatbonton, Trofimovich & Magid 2005), as well as social variables thought to influence pronunciation acquisition (Miller, 2003), affect beliefs about L2 speakers' intelligibility or speakers' ability to speak the language (e.g.,

Lindemann, 2002; Rubin, 1992), or influence teachers' identities when learning to teach (Golombek & Rehn, 2005). Few of these treatments can be found in books, but rather they appear in a wide variety of journals. A forthcoming book addressing the varied threads is that of Levis and Moyer.

SCHEDULE FOR THE CONFERENCE

The conference provided a forum for exploring pronunciation from a sociolinguistic point of view as well as to examine other areas of applied research into pronunciation.

	Session 1	Session 2
8:45 a.m.	**Introduction**	
9:00 a.m.	*Investigating the Role of Discourse Intonation in Miscommunication in Outsourced Call Center Interactions* **Lucy Pickering (Texas A & M, Commerce), Audrey Roberson (Georgia State University), Eric Friginal (Georgia State University)**	**EMPTY SLOT**
9:40 a.m.	*Discrimination of L2 Spanish contrasts: The role of immersion and instruction* **Marda Rose (Indiana University)**	*Perceptions of friendliness and intelligence in L2 accented speech: The contribution of race independent variables* **Ron Thomson (Brock University), Talia Isaacs (University of Bristol)**
10:10 a.m.	*The Understandability of Chinese with the Removal of Tones* **Quan Zhang (Nanjing University of Science and Technology)**	*Using Learner Recordings in Pronunciation Teaching* **Jennifer Foote (University of Alberta)**
10:40 a.m.	**BREAK**	
11:00 a.m.	*Instruction in L2 French: A Global Analysis of Improvement* **Jessica Sturm (Purdue University)**	*Perceptual Judgments of Accent by Native Speakers and Non-native Speakers of English* **Okim Kang (Northern Arizona University)**
11:30 a.m.	*Spanish native-speaker perception of learner phonology: (Mis)conceptions of accent and intelligibility* **Kara Moranski (Temple University)**	*Teaching segmentals step-by-step: Introducing a pedagogical regimen for /n/ and /l/* **Monica Richards (Iowa State University)**

12:00 p.m.	*English-Spanish bilinguals' attitudes toward L2 pronunciation: Do they identify with native Spanish speakers?* **Tyler Anderson (Mesa State University), Benjamin Souza (Appalachian State University)**	*Teaching pronunciation without using imitation* **Piers Messum, Roslyn Young (United Kingdom)**
12:30 p.m.	*The Effect of Metacognitive Feedback on Second Language Morphophonology* **Marnie Reed (Boston University)**	*Artificial pronunciation models: Reality or the realm of imagination?* **Biljana Cubrovic (University of Belgrade)**
1:00 p.m.	**LUNCH (provided) – in Campanile Room**	
1:30-2:45 p.m.	**Posters (see titles below)**	
3:00 p.m.	*Learner Differences in Strategy Use, Self-Efficacy Beliefs, and Pronunciation Improvement* **Veronica Sardegna (The University of Texas at Austin)**	*Segmental errors in conversational and read speech: A comparison of ESL learners from four language backgrounds* **Taylor Anne Barriuso, John Levis (Iowa State University)**
3:30 p.m.	*The Selling of Accent in Recent U.S. Television Commercials* **Patricia Watts, Amanda Huensch (University of Illinois)**	*Somali Accented Pronunciation of English Lax Vowels* **Ettien Koffi (St. Cloud State University)**
4:00 p.m.	**BREAK**	
4:15 p.m.	*The social impact of pronunciation difficulties: Confidence and willingness to speak* **Beth Zielinski (Macquarie University)**	*A comparative study of the perception of ITAs by native and nonnative undergraduate students* **Edna Lima (Iowa State University)**
6:30-9:00 p.m.	**DINNER (catered)**	

Saturday, September 17

	Session 1	**Session 2**
8:45 a.m.	**Introduction**	
9:00 a.m.	*Evaluating Individual Variability in Foreign Accent Comprehension* **Murray Munro (Simon Fraser University), Tracey Derwing & Amy Holtby (University of Alberta),**	**EMPTY SLOT**
9:30 a.m.	*Analyzing Mutual Comprehensibility Among Non-native Speakers of English: The Effect of Listener First Language Background* **Audrey Roberson (Georgia State University)**	*Bringing pronunciation instruction back into the classroom: An ESL Teachers' pronunciation "toolbox"* **Isabelle Darcy, Doreen Ewert, Xi Chen, Luni Wang, Ryan Lidster (Indiana University)**
10:00 a.m.	**BREAK**	
10:15 a.m.	*Extra-Linguistic Factors in the Teaching and Learning of Pronunciation in an ESL Class* **Joshua Gordon (Indiana University)**	*Teaching Pronunciation with Phonetics in a Beginner French Course: Impact on Production and Perception* **Jessica Miller (University of Wisconsin, Eau Claire)**
10:45 a.m.	*Perception and Awareness of Linking for Non-Native Speakers of English: The Role of Speech Visualization Technology* **Ghinwa Alameen, Iowa State University**	*Native-Speaker Perceptions of L2 Spanish Pronunciation: Implications for Pronunciation Instruction in the L2 Spanish Classroom* **Christina Agostinelli, SUNY Buffalo**
11:30 a.m.	**Plenary Address** *The Power of Prejudice in Accent Perception: Reverse Linguistic Stereotyping and its Impact on Listener Judgments and Decisions* **Donald Rubin (University of Georgia)**	

12:45 p.m.	LUNCH (on your own)	
2:30 p.m.	*Improving speaking fluency for international teaching assistants by increasing input: What role for prosodic contours?* **Greta Gorsuch (Texas Tech University)**	*Transfer of L1 Stress Pattern: Prosodic Acquisition of English by Chinese L2 Learners* **Liyuan Wang (Purdue University)**
3:00 p.m.	*Acquisition of the production of contrastive focus in advanced learners of English* **Greta Muller Levis, John Levis (Iowa State University)**	*Word Segmentation Skills in Adult L2 Spanish Learners* **Danielle Reindl (Purdue University)**
3:30 p.m.	*Analyzing rater bias to validate and revise an ITA performance test* **Dale Griffee and Jeremy Gevara (Texas Tech University)**	*Audio/Video Training: Students' Reactions and Improvement* **Shannon McCrocklin (Iowa State University)**
4:00 p.m.	BREAK	
4:15 p.m.	*Interactive Panel Discussion – The Ethics of Pronunciation Teaching*	
5:00 p.m.	**Closing Address**	
6:30-9:00 p.m.	**DINNER RECEPTION**	

POSTER TITLES

Lingua Franca Core: Material Availability and Teacher Training Issues in English Pronunciation Pedagogy, *Ahmet Dursun*

Does the pursuit of L2 accent equal the loss of L1 identity, *Hui-Hsien Feng*

Beaches and Peaches: Common Pronunciation Errors among L1 Spanish Speakers of English, *Jesse Gleason*

The Functional Load Hypothesis: Exploring the Responses of Listeners for high and low Functional Load Errors of Nonnative Speakers, *Kadir Karakaya*

Designing a website for the teaching of sentence stress, *Lindsey Kurtz*

Is a pause always a sign of disfluency? Refining the rating scales in oral proficiency tests, *Jooyoung Lee*

Building Acceptance in the Institutional Culture: What an online IFLC can do to enhance perceived language barriers, *Stephanie Link*

The Role of Word Stress in English as a Lingua Franca, *Shannon McCrocklin*

Machine generated feedback issues in ASR-based CAPT for L2 learning, *Moonyoung Park*

A Systemic Approach to Teach Word Stress to Francophone Adults Learning ESL, *Diane Poisson*

The relationship between cultural identity and pronunciation of English in an EFL setting, *Elizabeth Pullen*

Common Pronunciation Errors in English Vowels of Mandarin ESL Learners, *Manman Qian*

Instructional effects on the acquisition of Spanish vowels, *Anita Saalfeld*

English Pronunciation of Turkish Students: Attitudes and Awareness, *Aysel Saricaoglu*

Native and nonnative listener perception of degree of foreign accent in Spanish*, Elena Schoonmaker-Gates*

Brazilians' Pronunciation of English, *Jayme Wilken*

The Lingua Franca Core as a Phonological Syllabus, *Teng Xuan*

THE 2011 PSLLT PROCEEDINGS – A SUMMARY

These proceedings include 23 papers in four groups: social influences on pronunciation (plenary plus 6 papers); examinations related to pronunciation instruction (9 papers); assessment (3 papers); and the evaluation of intelligibility, comprehensibility and accentedness (4 papers).

Group 1: Social influences on L2 pronunciation

The theme of the conference was the influence of social factors on pronunciation. In addition to Don Rubin's plenary address (summarized below), there were six papers related to the theme of the conference which were submitted for the proceedings.

Donald Rubin (University of Georgia) gave the plenary address entitled *The Power of Prejudice in Accent Perception: Reverse Linguistic Stereotyping and its Impact on Listener Judgments and Decisions.* In it, he explored a disturbing finding about accented speech: speakers' comprehensibility, likeability, intelligence, and a host of other features are often downgraded by listeners because of the perception of accent based on expectations tied to stereotypes and physical characteristics. Rubin applies the findings from reverse linguistic stereotyping to several areas including education and health care. He also offers several ways forward from the findings of the research, calling upon teachers and researchers to address reverse linguistic stereotyping as a matter of social justice.

In "The social impact of pronunciation difficulties: Confidence and willingness to speak," Beth Zielinski of Macquarie University explored the social impact of pronunciation difficulties by

exploring English learners' perceptions of the impact of their pronunciation on their interactions in English. Using interviews with 26 migrants to Australia, she found that they were overwhelmingly negative about their pronunciation skills. These negative perceptions influenced the amount of English used by some participants, but the effect was not uniform.

Tyler Anderson (Mesa State University) and Benjamin Souza (Appalachian State University) explored how English-Spanish bilinguals identify with speakers of their L2 who show varying degrees of accentedness. Their results are interpreted with reference to issues of identity and degrees of language proficiency.

Veronica Sardegna (University of Texas) examined how improvement in pronunciation (stress and linking) is related to instruction in the use of learning strategies and how their improvement is connected to beliefs about the effectiveness of their own work on pronunciation. Her study suggests that individual learner characteristics can predict pronunciation progress

Edna Lima (Iowa State University) modified the methodology of the Reverse Linguistic Stereotyping paradigm in her examination of how native and nonnative English speakers react to a teaching assistant presented in two guises: an Arabic and a Brazilian speaker of English. Unlike other research in this tradition which used native and nonnative guises, this study found that raters only differed on their evaluation of teaching style, but that accent and comprehensibility ratings did not differ for native or nonnative speakers

Elizabeth Pullen (Bilkent University) looked at how cultural identity and degree of accentedness were connected to attitudes toward pronunciation in an EFL context. Advanced Turkish speakers of English answered questions about cultural identity and their attitudes toward pronunciation. She interprets her results in relation to how changes in pronunciation may be seen as interfering with the learners' identities.

Elena Schoonmaker-Gates (Indiana University), in "Foreign accent perception in L2 Spanish: The role of proficiency and L2 experience," looks at the effects of grammatical proficiency, study abroad experience, and pronunciation instruction experience on the perception of degree of foreign accent. She finds that nonnative listeners' ratings of foreign accent in Spanish varied as a result of all three factors, suggesting that nonnative speakers of a language are not consistent in their evaluation of foreign accent.

Group 2: Pronunciation instruction

Nine papers present studies analyzing methods of teaching pronunciation including best practices, feedback from students and teachers, and success from the use of particular methods.

Isabelle Darcy (Indiana University), Doreen Ewert (University of San Francisco), and Ryan Lidster (Indiana University) describe the development of a pronunciation curriculum in an intensive English program. IEPs seem to be a perfect laboratory for pronunciation, both by itself and integrated with other skills, but pronunciation is often treated in an ad hoc manner in IEPs. In their curriculum, pronunciation is fully integrated into the institutional learning outcomes across all levels of proficiency, with the intent of providing teachers with a pronunciation teaching toolbox they can confidently use.

Jessica Miller (University of Wisconsin Eau Claire) looked at how instruction on sound discrimination influences French learners' ability to discriminate between common French sound contrasts. She looks at the impact of two teaching methods, a phonetic approach and a key word approach. Learners were given both treatments in different orders. Both instructional orders led

to improvement, but only those learners who received instruction in the phonetic approach first improved significantly. The study also found that learners found explicit instruction valuable.

Greta Muller Levis and John Levis (Iowa State University) examined whether instruction in contrastive focus leads to improved production of contrastive focus for international teaching assistants. The TAs all showed improvement in a reading task, and overall the performance improvement from pretest to posttest was significant. Contrastive focus is presented as a learnable facet of pronunciation.

Joshua Gordon (Indiana University) qualitatively examined the effectiveness of an ESL pronunciation class according to the teacher's and students' perspectives. He found that the teacher and students had different and sometimes contradictory expectations. He also discovered an undercurrent of socio-psychological aspects that affected the success of the teaching and learning.

Christina Agostinelli (State University of New York at Buffalo) reviewed research about what NSs and Spanish instructors pay attention to while listening to L2 Spanish, focusing on the findings that pronunciation has a greater potential for causing misunderstandings than more commonly taught areas such as grammar. She suggests applications to the teaching of Spanish.

Piers Messum (Pronunciation Science Ltd, London, UK) proposes an approach to teaching pronunciation without a central role for imitation, a strong departure from most approaches to pronunciation teaching. Messum argues that the weak results of teaching by imitation are based on wrong beliefs about how pronunciation learning actually occurs. He reviews findings questioning the assumptions behind imitation approaches and proposes an alternative approach based on the principles of Caleb Gattegno (creator of the Silent Way).

Monica Richards (Iowa State University) examines /l/-/n/ confusion among a variety of Chinese. This contrast, while as troubling to intelligibility as the commonly researched confusion between /l/ and /r/, is far less well-known and is almost completely un-researched. Even though there is evidence that /l/-/n/ leads to significant loss of intelligibility, the need for descriptive research is pressing. Richards sets forth ideas for such descriptive study into the /l/-/n/ contrast.

Marnie Reed (Boston University) studied how teaching can help change explicit knowledge of pronunciation to implicit knowledge and how this ultimately affects intelligibility and the social evaluation of speech. She uses the findings to suggest instructional features that are needed to help bridge the gap between knowledge of the rules of pronunciation in controlled speech and making those rules automatic in spontaneous speech.

Shannon McCrocklin (Iowa State University) looked at the effect of audio and video input on the learning of a common vowel confusion in English learners, that of /i/-/ɪ/. Starting from the hypothesis that video input should be more effective because it provides both visual and auditory modes of input, McCrocklin examines how well learners of English improve in their ability to hear the contrasting sounds. No difference was found for improvement in the two input conditions, but video input was evaluated more favorably.

Group 3: Assessment

The next section includes three papers related to diagnosing and assessing pronunciation. These two related but distinct issues ask very different types of questions. Diagnosing pronunciation usually is pedagogically oriented while assessment is testing-oriented. Diagnosis identifies key

features that need remediation, while assessment looks at pronunciation in relation to its effect on spoken proficiency.

John Levis and Taylor Anne Barriuso (Iowa State University) examined how segmental pronunciation errors differ in reading aloud and free speech for speakers from four language backgrounds: Chinese, Korean, Malay and Spanish. They found that consonant errors did not differ based on the speaking task, but that vowel errors in reading aloud were much more common than in free speech. They suggest that type of speaking task affects the errors made and that English spelling is a greater factor for the pronunciation of vowels than for consonants.

Dale Griffee and Jeremy Gevara (Texas Tech University) analyzed the item bias of a spoken proficiency test for international teaching assistants. The scores for ten test criteria from passing and failing groups were examined. Their results showed that two criteria did not distinguish between high achieving and low achieving test-takers. They suggest reasons for the ineffectiveness of the two criteria.

Jesse Gleason (Iowa State University) used a descriptive study to see if errors commonly attributed to Spanish speakers of English actually occur when students read aloud and speak in English. She looks at /p/ versus /b/ in a word-initial position, /i/ and /ɪ/, /ɔ/ versus /ow/, and the final voicing distinction between /t/ and /d/. Her results showed that only the /i/ versus /ɪ/ and the final voicing distinction between /t/ and /d/ were difficult for her speakers.

Group 4: Evaluating intelligibility, comprehensibility and accentedness

The last section includes four papers that address questions related to the key pronunciation constructs of intelligibility, comprehensibility and accentedness.

Ettien Koffi (St. Cloud State University) approaches intelligibility judgments for English vowels from an instrumental approach rather than from an approach using listener perceptions. Examining the acoustic vowel space of 10 Somali speakers and comparing their lax vowels with those of General American English, Koffi quantitatively predicts which lax vowels are most likely to cause intelligibility challenges when these Somalis speak English.

Murray Munro (Simon Fraser University), Tracey Derwing and Amy Holtby (University of Alberta), in "Evaluating individual variability in foreign accent comprehension," looked at how people vary in their ability to understand foreign-accented speech. They describe a pilot tool for assessing listeners' comprehension abilities depending on age and L1 background. Both age and proficiency were found to affect comprehension.

Audrey Roberson (Georgia State University) examined how native and nonnative speakers from various L1 backgrounds rated NNS speech samples for comprehensibility. She found a significant effect for listener L1 background in comprehensibility ratings of several speakers. The results are discussed in light of previous findings related to the acoustic quality of utterances and interlanguage intelligibility benefits. The paper concludes that the relationship between L1 background and comprehensibility among NNS of English remains complicated and needs further exploration.

Shannon McCrocklin (Iowa State University) critiques an element of Jennifer Jenkins' Lingua Franca Core, the importance of word stress. Word stress is not considered part of the core by Jenkins for three reasons: because it does not pose intelligibility issues, because it is too complex to be teachable, and because its patterns are variable among native English dialects. McCrocklin

argues that each of these reasons is flawed and that each argument can be seen as equally compelling for word stress to be considered a core feature.

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THE POWER OF PREJUDICE IN ACCENT PERCEPTION: REVERSE LINGUISTIC STEREOTYPING AND ITS IMPACT ON LISTENER JUDGMENTS AND DECISIONS

Donald Rubin, University of Georgia

Pronunciation is not merely accoustics; it has an active social life. Linguistic stereotyping is a robust mechanism of social judgment whereby listeners ascribe a myriad of traits to speakers based often on only very thin samples of pronunciation. The converse social judgmental process is "reverse linguistic stereotyping," whereby listeners ascribe pronunciation characteristics to speech samples based on cues about speakers' social identities. In reverse linguistic stereotyping, listeners "hear" the pronunciation they expect to hear, sometimes with little regard to the actual properties of the acoustic signal. Much of the research on reverse linguistic stereotyping applies to educational settings. Over two decades of research document that mainstream college students often expect international teaching assistants to speak with incomprehensible accents. Therefore when an international identity is ascribed to a voice with patently standard North American pronunciation, students rate the pronunciation as nonstandard and evince comprehension decrements. Another arena in which mainstream speakers have consequential interactions with Outer and Expanding circle World Englishes speakers is healthcare. The broader significance of research on reverse linguistic stereotyping includes at the the following four recommendations: (1) *Keep research practices simple and replicate, replicate.* (2) *Pronunciation rating is susceptible to error.* (3) *Train listeners, not just speakers.* (4) *Preserve social justice as the core.*

Telling a Story About Listener Prejudice

In an intellectual climate marked by the polarized camps of hyperscientism and antiscientism, it is well to remember that no single research study– no matter what its methodology– is built to "prove" anything. Rather, the point of empirical research is to tell a coherent story (Abelson, 1995), and most compelling stories are built of multiple, inter-linked episodes. That is to say, scientific knowing is an accretive process. The story of how listener expectations affect those listeners' perceptions of speaker accent is thus informed by multiple studies (see reviews in Kang & Rubin, 2009; Rubin, 2002), some more engrossing than others. It is the consistency of evidence across those multiple studies that might convince an interested educator, employer, or policy maker that any assessment of a speaker's speech performance could very well reflect nearly as much about the listener as about the speaker.

We routinely rely on judgments of oral language to make high-stakes decisions (Lippi-Green, 2012). In a court of law, for example, jurors' assessments of a witness' credibility

can be affected by perceived speech dysfluencies and by perceived degree of "accentedness" (Frumkin, 2007). Several nations now utilize "shiboleth tests" to determine who shall be permitted to dwell within their borders (McNamara & Shohamy, 2008). For even the most experienced international medical graduate, license to practice medicine in the United States depends on the Spoken English Proficiency rating of a simulated patient (Boulet, Van Zanten, McKinley, & Gary, 2001). Admission to graduate study for nonnative speakers of English (NNSs) demands a high score on a standardized measure of speaking proficiency such as the iBT TOEFL speaking section. And of course informal, on-the-spot, and largely nonconscious speech judgments are embedded in every-day social impressions.

Listener Expectations and Language Perception

Notwithstanding society's reliance on speech assessments, it should come as no surprise to discover that such perceptions are highly susceptible to the listener's own expectations of what she is about to hear. The very process of listening is wired in that way. Sensory systems are not just efferent, but also afferent. Our brains actively "tune" our ears to selectively attend and identify sounds that make sense to hear in particular situations (Gibson, 1966).   Identifying phonemes in speech is very much a matter of creating or at least completing sound formant vectors by inserting information which is actually missing in the accoustical signal (Liberman, Cooper, Shankweiler, & Studdert-Kennedy, 1967). In short, perceiving speech is a constructivist process (von Glasersfeld, 1995) in which individual listeners impose patterning based on serial probabilities about what sounds make sense for them to hear.

Classic linguistic stereotyping – in which listeners made assumptions and judgments about speakers based on those speakers' language varieties– is well explored in research on language and social psychology (see reviews in Bradac, Cargile, & Hallett, 2001; Fuertes, Gottdiener, Martin, Gilbert, & Giles, 2011). As originally explicated by Lambert and colleagues in the 1960's (Lambert, Hodgson, Gardner, & Fillenbaum, 1960), the Linguistic Stereotype Hypothesis asserts that speech style is a powerful emblem of social identity. Listeners naturally attribute social identity to speakers, and then judge those speakers in accordance with their stereotypes of the speaker's putative social group. As listeners, we make many judgments about speakers depending on how they pronounce words and phrases. A wide variety of studies have shown that linguistic stereotyping is common, and that listeners consistently make decisions about speakers that on the surface seem only marginally linked to the way that they speak. Speech-linked stereotypes include judgments about speakers' ethnicity, social status, enthusiasm, confidence, intelligence, academic success, and even their physical height.

Reverse Linguistic Stereotyping

Reverse linguistic stereotyping (RLS) is the complementary process: listeners attribute a speech style to a speaker based not on what they hear, but on what they believe is the speaker's social identity (Kang & Rubin, 2009; see also Lindemann, 2002; Niedzielski, 1999). If I am told that I am about to hear a speaker of Nigerian English, I am likely to perceive at least traces of Nigerian accent in that speaker's oral performance. Individuals vary in their proclivity to engage in RLS. A high-RLS person will be especially error-prone in judging a NNS accent. Perhaps less well-known is the tendency of listeners to

suffer deficits of listening comprehension based on reverse linguistic stereotyping, that is, to anticipate that they will understand less well based on beliefs about a speaker's national or ethnic identity.

The research methodology we have been using to unwind the story of RLS builds on the matched guise techniques developed by early researchers in language and attitude (e.g., Lambert et al., 1960) The goal of the matched guise technique is to eliminate effects on speech perception due to idiosyncratic differences in voice quality and style among speakers. For example, a speaker with less "vocal fry" is likely to elicit higher impressions on psychosocial scales than will someone with a more gravelly voice (Zuckerman & Miyake, 1993). But these individual differences in vocal quality are of little importance to sociolinguistics. So in matched guise experiments, a single speaker produces stimulus speech samples in two contrasting language varieties. The RLS technique is even simpler. In most of the studies, a speaker (usually a speaker of mainstream North American English) produces a single speech sample. The very same speech sample is presented to different groups of listeners, but with varying national/ethnic identity ascribed to the speaker by means of photos and simulated dossiers. In this research method, when a listener finds Speaker A less socially attractive or less comprehensible than Speaker B, the explanation can only lie in the listener's own proclivity to RLS, for the listener is actually hearing the very same speech sample.

The series of studies conducted via this method have indeed confirmed RLS as a factor in social judgment. Most of these studies have focused on US undergraduates perceptions of international teaching assistants (ITAs). For example, in an as-yet unpublished study, ITA race (white, black, or Asian– ascribed via photographs) was crossed with ITA nationality (US or international). Thus the ascribed ITA identities were African American, Asian American, Euro American, Nigerian, Chinese, and Danish. In each case, the actual speech sample was produced by a speaker of mainstream North American English. Listeners were US undergraduates. Results indicated that rated ITA accentedness was a function of perceived physical attractiveness (accounting for 17% of variance in accent ratings) and nationality (6% of variance). Race did not account for any signficant variance. Similarly, nationality accounted for 8% of the variance in comprehension scores (equivalent to an 11% decrement in comprehension scores when students were lead to believe that the speaker was an ITA). However once again, these results found no significant effect for race on the comprehension measure.

The story of RLS extends beyond educational settings however. One study in this series explored the RLS phenomenon in business (manager-employee relations; Rubin, Ainsworth, Cho, Turk, & Winn, 1999) and another examined health care (HIV-prevention counseling; Rubin, Healy, Zath, Gardiner, & Moore, 1997). Most recently we have been examining the role of RLS in a grossly understudied context that constitutes one of the most common and yet fraught settings for cross-cultural contact in the US: interactions between older adults who are speakers of North American Englishes and their international health care aides (HCAs), many of whom are NNSs or speakers of nonmainstream Englishes (Duff, Wong & Early, 2002). The health care workforce in the US has been enriched over the last several decades by an infusion of international migrants and sojourners. More than one of four physicians in the US was educated overseas (Castillo-Page, 2010), and an estimated 15% of all health care workers are

internationals (Clearfield & Batalova, 2007). In light of increasing coverage by international HCAs and consistent expressions of dissatisfaction with the quality of their care, it is important to try to understand how much of that negative reaction might be attributable to RLS.

In an as-yet unpublished study conducted with colleagues Valerie Coles, Joshua Barnett, and Sarah Mink Tuck, older adults heard the very same North American mainstream English speech issue from a HCA depicted in a video recorded interaction with a patient. In one case, however, they were lead to believe that the HCA was a native Spanish speaker of Mexican origin. In the other condition, the HCA was identified as an Anglo native speaker of English. Results indicated that manipulating the HCA's attributed linguistic and cultural identity did indeed exert a powerful impact on listeners' judgments, with effect sizes on psychosocial impression variables generally exceeding .30.

Most notably, even though the voice they heard was identical, participants judged the Anglo guise HCA to sound more like an "American accent." In general, this HCA's language skills were seen to interfere with comprehension less than was the case for the Mexican guise. In this respect, the findings of the present study parallel those found in earlier research on RLS in the classroom. The present study, however, failed to establish the hypothesized effect of HCA ethnicity/language background on comprehension of a health message (about eye health).

Significance of RLS Research

Beyond its intrinsic interest for the social psychology of language, what is the broader significance of RLS research? Several domains suggest themselves.

1. *Keep research practices simple and replicate, replicate.* One not insignificant "lesson learned" from this program of research on RLS concerns how empirical research tells a story (Abelson, 1995). Our research methods could hardly be simpler: one speech recording, two photographs. Sometimes a simple research design is the most compelling. Also, RLS research is convincing because it constitutes an accumulation from not just one study, nor just two, but from 10 or so related episodes. In most of these studies the dramatic finding about decrements in comprehension has been replicated. Lay as well as academic audiences have found that story memorable.

2. *Pronunciation rating is susceptible to error.* For accent and pronunciation assessment programs, RLS research reminds us that short of computer-assisted acoustical analysis, any measures of accentedness based on listener ratings – no matter how "expert" or "trained" those listeners– inevitably reflects the listener's expectation-driven construction how well the speaker speaks. (Incidentally, it is worth bearing in mind that RLS works in two directions; distorted expectations of NNS speech performance can be positive as well as negative. Thus, those of us who spend a great deal of our time interacting with NNSs as colleagues or students may be liable to exercise rather lenient criteria for what is comprehensible and what is not, relative to criteria utilized by a preponderance of speakers of the mainstream variety.)

3. *Train listeners, not just speakers.* RLS research enjoins us to acknowledge that listeners as well as speakers share the onus for "accent reduction." No amount of speech

training or therapy will erase the effects of RLS. Mainstream listeners will continue to "hear" the vestiges of NNS accent that they expect to hear. It is only when mainstream listeners are trained to recognize and countervail against their proclivity to RLS that pronunciation training can protect NNS speakers from being judged negatively. The cynical might say that RLS limits the efficacy of pronunciation training.

4. *Preserve social justice as the core.* RLS research ensconces social justice considerations at the heart of pronunciation research and teaching. Why, after all, do we participate in this pronunciation industry? Certainly we hope to enhance inter-group communication by improving intelligibility across varieties of a language and between NNSs and mainstream speakers. But RLS research has shown us that even comprehension is in part a function of the listener's social prejudices. In the end, we pursue pronunciation research and teaching, with the ultimate goal of mitigating (if not erasing) negative prejudices that arise simply because certain speakers' talk mark them as the "other."

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THE SOCIAL IMPACT OF PRONUNCIATION DIFFICULTIES: CONFIDENCE AND WILLINGNESS TO SPEAK

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In this paper I focus on the social impact of pronunciation difficulties by exploring English learners' perceptions of the impact of their pronunciation on their interactions in English and investigating how these perceptions relate to the extent to which they speak English in their everyday lives. I draw on interview data collected from 26 participants who were part of a larger longitudinal study in the Australian context that followed the progress of migrants as they studied English in the Adult Migrant English Program (AMEP), and then continued on to study or work in the community. As a group, the participants (14 beginner and 12 intermediate level learners) were overwhelmingly negative about their pronunciation skills and most indicated that they felt their pronunciation affected their ability to be understood when they spoke English. Although negative perceptions about pronunciation influenced English use for some participants, other factors seemed to be involved for others, and the relationship between perceptions about pronunciation skills and the extent of English use is somewhat unclear from the findings presented here.

INTRODUCTION

Being able to interact and communicate comfortably and effectively in spoken English is of considerable importance for adult migrants settling in English-speaking countries, and an inability to do so may limit their educational, career and social opportunities (Derwing, Thomson, & Munro, 2006; Schellenberg & Maheux, 2007, Yates, 2011). Migrants themselves have indicated that developing speaking skills (Yates, 2010) and being able to pronounce English well (Derwing, 2003) is very important to them. Yet it seems that being able to speak with pronunciation that allows them to be understood by a range of people in a variety of different situations might be a particular stumbling block for many migrants learning English. Derwing et al. (2006) followed the progress of 40 migrants over a 10 month period as they attended beginner level English classes in Canada, and found that even after 10 months of full time English lessons, the majority of the participants were dissatisfied with their pronunciation skills. Zielinski (2010) found that developing pronunciation skills was also challenging for many migrants learning English in the Australian context. She reported that over half (54%) of the participants in a longitudinal study of migrants attending English classes in the AMEP expressed negative perceptions about their pronunciation skills.

Research by Derwing and Rossiter (2002) highlights the impact of pronunciation difficulties on communication. They interviewed 100 migrants attending full time intermediate level classes in an ESL program in Canada, and found that over half (55%) reported that pronunciation problems contributed to difficulties they had when communicating in English, and 42% reported that pronunciation problems were the main cause of these difficulties. Such perceptions about the impact of pronunciation difficulties on interactions in spoken English have the potential to undermine confidence and willingness to speak, and ultimately to affect the amount of English spoken in everyday life.

MacIntyre, Clement, Dörnyei, and Noels (1998) in their Willingness to Communicate (WTC) model surmise that a range of potential influences can undermine a person's willingness to

speak at any one time in a particular situation (see also Derwing, Munro & Thomson, 2008 for a description of WTC model). However, they argue that the most immediate determinants are the desire to communicate with a specific person and self-confidence in the ability to communicate effectively at a particular time. The aim of this study was to investigate the latter by exploring migrants' perceptions of the impact of their pronunciation skills on their ability to communicate effectively in English, and to see how these perceptions are related to the extent to which they speak English in their everyday lives. The following research questions were addressed:

1. What are the participants' perceptions of the impact of pronunciation difficulties on their interactions in spoken English?

2. How do these perceptions relate to their reports of how much they speak English in their everyday lives?

METHOD

Data collection and analysis

The data analysed here were drawn from interviews conducted as part of a larger longitudinal study that followed the progress of 152 adult migrants from 53 different language backgrounds over a 12 month period as they studied English in the AMEP, and then continued on to study or work in the community (see Yates, 2010) [1]. The participants were interviewed four times during the course of the study, and on each occasion were asked about their use of English.

Interviews were recorded and transcribed and then coded using NVivo8[2]. Comments related to the impact of pronunciation skills on interactions in English were coded as either positive or negative in the following way:

Positive comments included comments that indicated that pronunciation was not a problem for them and did not impact on them being understood when they spoke English, or that they were aware of their pronunciation difficulties but these did not have an impact on their interactions in spoken English.

Negative comments included comments that indicated they were not happy with their pronunciation or that they found pronunciation difficult AND this had a negative impact on their interactions in spoken English.

Participants

Because of the way the interviews were conducted, not all participants were asked directly about their pronunciation skills, so this topic was not discussed in some interviews. Similarly, there was variation amongst interviewers as to how information about the participants' use of English was collected. The 26 participants included in the present analysis were those who had commented on the impact of their pronunciation on their interactions in English *and* who had also indicated at some stage in the interview the percentage of time they spoke English, as opposed to other languages, in their everyday lives. Information about the percentage of time English was spoken was either: (a) represented in the data by a pie chart drawn by the

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[2] NVivo8 is research software that assists in the coding and classification of qualitative data.

participant (see Figure 1), or (2) provided by the participant at some stage during the interview without a pie chart being drawn. There were 14 beginner and 12 intermediate level[3] learners, most were female (21 female and 5 male), and there were 11 language backgrounds represented: Mandarin (n = 9), Arabic (n = 3), Vietnamese (n = 3), Korean (n = 3), Japanese (n = 2), and one each for Cantonese, Susu, Chin Haka, Spanish, Somali and Thai.
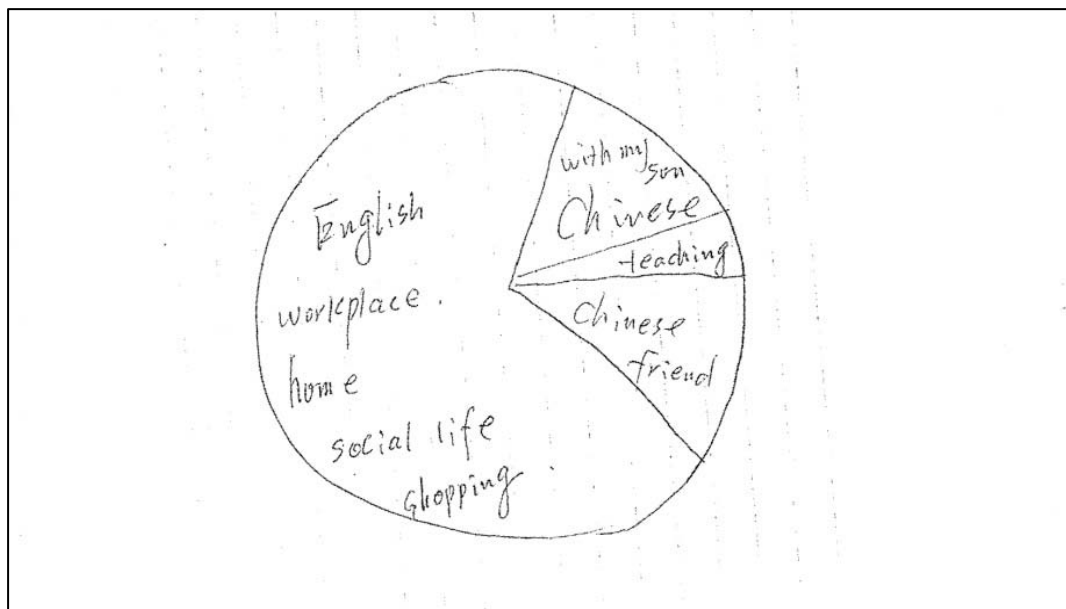
Figure 1. Example of a participant's report of how much English is spoken in everyday life

Note: Percentage values were sometimes written on the diagram itself, but if not, only those where these were clarified in the interview were included in the analysis. In this case, the participant indicated in the interview that she spoke English about 75% of the time.

RESULTS

Impact of pronunciation difficulties on interactions in spoken English

The group as a whole were more negative than positive about the impact of their pronunciation on their interactions in spoken English. Negative comments were made by 24 of the 26 participants (92.3%) while positive ones were made by only 7 (26.9%)[4]. Furthermore, as can be seen from Figure 2, the tendency to make negative comments was similar for both beginner and intermediate level learners. Only 28.6 % (n = 4) of beginners and 25.0% (n = 3) of intermediate level learners made positive comments while all but one participant in each group made negative comments (beginners: 92.9%; n = 13; intermediate: 91.7%, n = 11).

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[3] According to the curriculum framework used by the AMEP – Certificates in Spoken and Written English (CSWE) - the beginner level learners were CSWE I level and the intermediate level learners were CSWE III.
[4] These percentages do not add to 100% because some participants commented on their pronunciation in more than one interview. Their comments were not always the same across the different interviews, so some participants had both positive and negative comments included in the analysis.
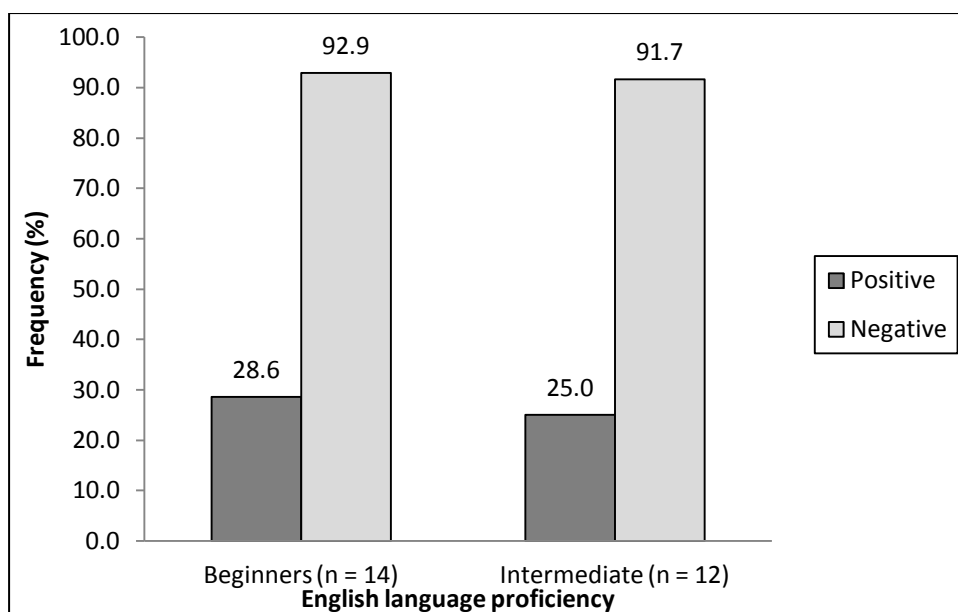
Figure 2. Comments about the impact of pronunciation on interactions in spoken English
Note: Percentages do not add to 100%. See footnote 4.

The most commonly perceived negative impact of pronunciation difficulties was difficulty being understood; this was the case for 20 (83.3%) of the 24 participants who commented negatively. Furthermore, as shown in Figure 3, both beginner and intermediate level participants who commented negatively felt they were hard to understand, with over 80% of the participants in each group feeling this way (beginners: 84.6%, n = 11; intermediate: 81.8%, n = 9). From Figure 3 we can also see that it was only beginners who indicated that that their pronunciation difficulties affected their confidence to speak (23.1%, n = 3).
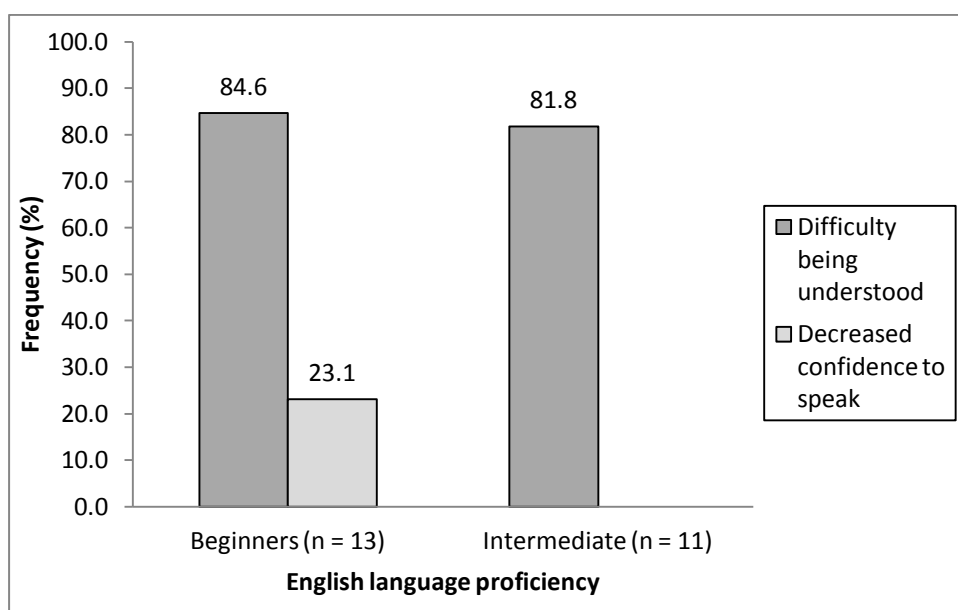
Figure 3. Comments about the negative impact of pronunciation on interactions in spoken English
Note: Percentages do not add to 100% for the beginners group because one participant included both categories in her comments.

However, three intermediate level learners did mention that their pronunciation difficulties had a negative impact in other ways; one mentioned a decreased ability to have a conversation, another decreased confidence in the ability to learn, and a third, being laughed at by her husband.

Impact of pronunciation difficulties on the extent to which English is spoken in everyday life

The extent to which the group as a whole spoke English in their everyday lives ranged from speaking no English at all to speaking English 90% of the time. Furthermore, there was a wide range of English use regardless of whether the participants were positive or negative about their pronunciation: a range of 25-80% for those who were positive and 0-90% for those who were negative. The average extent to which English was used, however, was a little less for those who were negative (negative: average 45.4% vs. positive: average 51.4%).

In Figure 4 we can see that there were some differences between the beginner and intermediate level learners regarding the relationship between perceptions and English use. As was the case with the group as a whole, beginner level learners with negative perceptions about their pronunciation, on average, spoke English a little less than those with positive perceptions (negative: average 31.2%; positive: average 37.5%). However, for intermediate level learners it was the other way around; those with negative perceptions spoke English a little *more* than their more positive counterparts (negative: average 62.3% vs. positive: average 51.7%). Furthermore, from Figure 4 we can also see that the group who spoke English most were the intermediate level learners with negative perceptions about their pronunciation (average 62.3%).
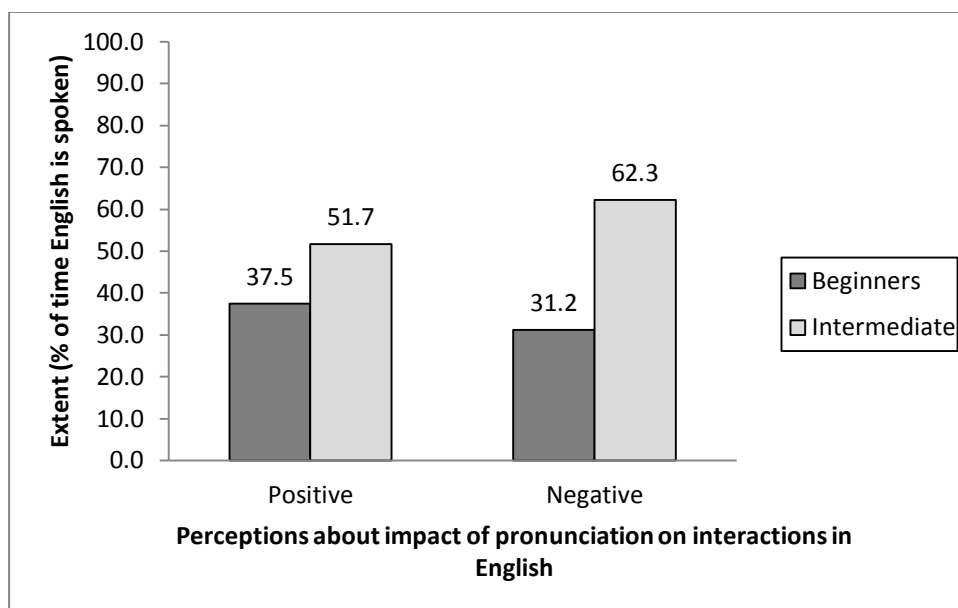
Figure 4. Average extent to which English is spoken in everyday life

Figure 4 also shows that beginner level learners spoke English less than intermediate learners regardless of their perceptions about their pronunciation, and that the group who spoke English the least were the beginner level learners with negative perceptions about their pronunciation (average 31.2%). Within this group of beginner level learners, those who indicated that their pronunciation difficulties affected their ability to be understood (n = 11) spoke English on average only 34.1% of the time, while those who felt their pronunciation affected their confidence to speak (n = 3) used English even less; their English use ranged from 0%-30% with an average of 18.3%. Comments made by two of these participants

indicated that their confidence had been affected by bad experiences where someone had laughed at their pronunciation. One added that she was now afraid to speak because she was worried that she would make mistakes and people would not be able to understand her, and the other commented that she was now embarrassed to speak. The third commented that she was scared of making mistakes with her pronunciation so avoided speaking English altogether.

As noted above, there was a wide range of English use amongst participants regardless of their perceptions about their pronunciation: a range 25-80% for those with positive perceptions and 0-90% for those with negative ones. A snapshot of the participants at the extremes of these ranges suggests that opportunity or need to speak English might either exacerbate or override perceptions about pronunciation depending on individual circumstances. The participant with negative perceptions who reported speaking no English at all was a beginner level learner who commented through an interpreter that she avoided speaking English because she was afraid her pronunciation was not right. However, this avoidance may have been exacerbated by her lack of opportunity to speak English. She was a young Vietnamese woman in her early twenties who, other than attending the AMEP classes, had very little contact with anyone outside the family home; her husband brought her to class and her father-in-law picked her up afterwards. In contrast, the two participants who reported speaking English 90% of the time, despite negative perceptions about their pronunciation, did not have the option to avoid speaking English. Both intermediate level learners, one was a Thai woman in her thirties who had no choice but to speak English. She was married to an Australian and had no contact with Thai speakers where she lived. The other was a Korean woman in her early thirties who was also married to an Australian and working in an English speaking environment, and although she saw her pronunciation as sometimes problematic, she had to speak English most of the time.

Similarly, of those participants with positive perceptions about their pronunciation, the one who reported speaking English 25% of the time had less opportunity or need to speak English than the one who reported speaking English 80% of the time. Both were beginner level learners, but the one who spoke English less was a male in his thirties from Lebanon whose first language was Arabic. He was quite happy with his English pronunciation and quite confident that most people could understand him. However, his English use was limited because his wife spoke Arabic and he worked in an Arabic speaking environment. The participant who reported speaking English more was a young man in his early twenties from Guinea. He too was happy with his pronunciation, but in contrast to the other participant, he was married to an Australian and worked in local schools and community facilities, so had no choice but to speak English in his day to day life.

DISCUSSION

In this study I aimed to explore English learners' perceptions about the effect of their pronunciation skills on their interactions in English, and look at how these perceptions influence the extent to which they spoke English in their everyday lives. The group as a whole were overwhelmingly more negative than positive about their pronunciation skills, and most felt that pronunciation difficulties affected their ability to be understood when they spoke English. This was the case for both beginner and intermediate level learners. These findings are consistent with the findings reported by Derwing et al., (2006) who found that the majority of their beginner level participants were dissatisfied with their pronunciation skills after attending English lessons for 10 months. They are also consistent with the findings reported by Derwing and Rossiter (2002) who found that the majority of their

intermediate level participants reported that pronunciation difficulties contributed to difficulties they had when communicating in English.

The nature of the relationship between perceptions about pronunciation skills and the extent to which participants use English in everyday life is, however, somewhat unclear from the present findings. However, there are a number of important findings worthy of mention. Firstly, participants reported a wide range of English use whether they had positive of negative perceptions about their pronunciation. A preliminary examination of individual participants suggests that other factors may be at play, and that opportunity or need to speak English may exacerbate or override concerns about pronunciation and its effect on interactions. Derwing et al. (2008) utilised MacIntyre et al.'s (1998) WTC framework to explore the variables that influenced their participants' perceptions of their opportunities to communicate in English. They found that a range of MacIntyre et al.'s variables influenced these perceptions for different participants, including personality, intergroup climate, communicative competence, intergroup attitudes, social situation, self confidence and motivation. The present study, however, did not allow for such an analysis.

Another important finding relates to the group of participants who reported speaking English the least, the beginner level learners with negative perceptions about their pronunciation. For many of these participants, perceptions about their pronunciation may not have been the major factor influencing their use of English. However, for some, bad experiences where someone had laughed at their pronunciation had seriously affected their confidence to speak. If pronunciation difficulties lead to such a loss of confidence to interact in spoken English, it is likely that these participants will have limited opportunities for practice, which in turn can impact their further language development, and ultimately affect many aspects of their lives as noted by Derwing et al. (2006), Schellenberg & Maheux (2007) and Yates (2011).

Implications for further research

Questions raised by the present findings have implications for further research. Firstly, although negative perceptions about pronunciation seemed to affect beginner level learners' use of English, they did not seem to have the same effect on intermediate learners. In fact, the group that used English the most were intermediate level learners with negative perceptions about their pronunciation. Preliminary analysis suggests that other factors such as opportunity or need to speak English might play an important role with some participants, but further investigation is needed to identify these factors and understand how they interact with perceptions about pronunciation to influence English use.

Further research is also needed into the expectations and awareness of pronunciation at different proficiency levels. The findings of the present study indicate that the both beginner and intermediate level participants were overwhelmingly negative about their pronunciation skills, but we need further information about what it is they were concerned about. We also need to know whether these concerns change as learners become more proficient speakers of English. For instance, concern about pronunciation difficulties might be a natural part of learning to speak English at different stages, or there might be some learners or groups of learners where pronunciation is more of an issue, where concern about pronunciation and not being understood affects their confidence or prevents them from speaking.

Implications for the classroom

The present findings highlight the importance of teaching pronunciation from the very beginning. Most of the beginner level participants in the present study were negative about their pronunciation skills and felt they were difficult to understand when they spoke English. Some had lost their confidence to speak because of bad experiences. It is therefore of utmost

importance that these concerns are addressed in the classroom and explicit instruction for pronunciation skills and improved comprehensibility is a normal and necessary part of learning English. The findings also highlight the importance of pronunciation instruction for learners at higher levels of proficiency. Intermediate level participants with negative perceptions about their pronunciation were the group in the present study that used English the most in their everyday lives. Even though they felt that their pronunciation made them difficult to understand, many had no choice but to speak English in their workplace, in their community and in their family. Pronunciation instruction is essential for such learners, not only to improve their comprehensibility but also to maintain their confidence to speak English and to feel that they can be understood easily when they do so. It is also important for those higher level learners who do not use much English in their everyday lives, to boost their confidence by providing opportunities to develop and practice their pronunciation skills in a safe environment.

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ENGLISH-SPANISH BILINGUALS' ATTITUDES TOWARD L2 PRONUNCIATION: DO THEY IDENTIFY WITH NATIVE SPANISH SPEAKERS?

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This study investigates the perceptions of English-influenced pronunciation of Spanish in order to determine how factors such as second language proficiency and identity influence these attitudes. To answer these research questions a modified matched-guise technique was created, with stimuli consisting of seven recordings of the introduction to the fairytale *Little Red Riding Hood* in English and Spanish. Analyses of the data reveal that the English-Spanish bilingual participants, when asked whether or not the person in the speech sample was like them, did not identify with the poor English sample, the native Spanish sample, or with the poor Spanish sample. As expected, participants identified strongly with the native English sample and only somewhat identified with the non-native Spanish with English aspiration and the non-native Spanish samples. Interestingly, the participants were evenly divided when responding to the Spanish with English interference sample; roughly half identified with this sample while the other half did not. As hypothesized, more proficient bilinguals were capable of making more fine-tuned distinctions between the samples, indicating that they are indeed more aware of the subtle differences in English-influenced Spanish pronunciation.

INTRODUCTION

One of the most notable aspects of non-native speech is the absence of native-like pronunciation of the target language. An L2 learner can enjoy nearly perfect morphological and syntactic structures in the L2, even approaching native-like abilities, and yet have deficiencies in phonetics and phonology.

If accented speech is so noticeable, why does it routinely receive so little attention in the L2-learning classroom? One study found that intermediate-level Spanish instructors rated correct pronunciation the tenth (of 14) most-important classroom goal (Harlow & Muyskens, 1994). Research suggests (Bosch & Sebastián-Gallés, 2001) that infants begin learning the L1 with the basic properties of sound (i.e., phonemes). However, the typical L2 classroom does not use a similar starting point.

Many researchers have investigated the factors that contribute to perceptions of foreign-accent in L2 speech. Studies suggest that some of the contributing elements include musical ability, careful versus spontaneous speech, as well as who rated the speech samples (Suter, 1976). Other factors include motivation, social acceptance and social distance, personality variables, gender, oral and auditory capacities as well as other contextual constraints, including sociolinguistic determinants, stylistic determinants, and discourse determinants (cf. Piske, Mackay & Flege,

2001). These same authors determined that of all the constraints claimed to have affected degree of L2 foreign accent, the following had received the most attention in the literature: age of L2 learning, length of residence, gender, formal instruction, motivation, language learning aptitude, and language use.

These studies have provided important information regarding the factors that influence L2 foreign accentedness. Nonetheless, one criticism of these studies is that their investigations centered on the reasons learners have foreign accents without even verifying if learners know the difference between native-like pronunciation and foreign-accented speech. It might prove equally fruitful to begin by asking whether our learners even know what the end-goal of their L2 pronunciation acquisition is, and (perhaps more importantly), whether they care.

English-influenced pronunciation

English speakers learning Spanish face a host of challenges mastering native Spanish-like pronunciation. For example, English has an aspirated ("pie" > [pʰaj]) and unaspirated ("spy" > [spaj]) allophonic variation of the voiceless stops /p,t,k/, while Spanish has only the unaspirated[1] phonemes /p,t,k/; "*pie*" (foot) > [pje]. Hence, English speakers learning Spanish often have longer-than-prescribed aspiration durations when producing /p,t,k/ sounds in Spanish (Teschner 1999).

English-influenced pronunciation in L2 Spanish also typically includes challenges with trilled [r], the intervocalic voiced fricatives [β,δ,γ], word-final laterals [l], and diphthongs within- and between-words (Díaz-Campos 2004, Lord 2005), among other challenges.

Language Attitudes

One way to determine if observers are aware of language variation is by investigating how they react toward language variation. While it is a strongly-held tenet that all language varieties are linguistically equal, it is similarly true that all linguistic varieties trigger beliefs regarding a speaker and his/her group identity, which can lead to assumptions about their attributes (cf. Garrett, Coupland & Williams, 2003). These reactions toward linguistic forms are known in the literature as language attitudes. While no single definition exists for language attitudes, in the present study we will define it broadly as both the way in which observers react toward language varieties and language users (cf. Grosjean, 1982; Lambert, Hodgson, Gardner & Fillenbaum, 1960). In order to investigate these attitudes, this study will implement a modified matched-guise technique (see Anderson, 2006 and Garrett et al., 2003 for an in-depth look at the matched-guise technique).

Attitudes toward L2 pronunciation

Much of the previous research dealing with attitudes toward L2 pronunciation simply investigated second language learners' attitudes toward only two levels of pronunciation: native versus non-native (cf. Dalton-Puffer, Kaltenboeck & Smit, 1997). Similarly, much of the existing research on this topic includes how native speakers react toward L2 speech, failing to look at how L2 learners perceive their peers' pronunciation (cf. Moyer, 2007). In this research, we incorporate more subtle differences in L2 influenced pronunciation by L2 learners themselves.

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[1] Although categorized phonologically as unaspirated, voiceless stops, small durations of aspiration are not uncommon at the phonetic level.

Present Study

In endeavoring to examine bilinguals' perceptions of nuanced L2 pronunciation and their evaluation of the second language learners themselves, a study was designed to address the two interrelated research questions:

1. Do Spanish L2 speakers of different proficiencies identify more with native Spanish speakers, or with novice Spanish speakers?

2. Do these evaluations change based on proficiency in the L2?

METHODOLOGY

Participants.

English- Spanish bilinguals of differing proficiencies at the university level were recruited for participation in this study. A total of 94 subjects were included for analysis. Participants were recruited from classes of all levels of Spanish, from first year to graduate level; however class enrollment was not tracked. The responses of 75 females and 19 males were included in this study. Of these 11 had taken less than one semester of Spanish, 12 had taken one year, 26 had completed between two and four years and 30 had studied Spanish for more than four years; 15 participants did not provide information regarding duration of study in Spanish.

Procedures and materials.

Participants were asked to complete a 45-minute survey housed on www.surveymonkey.com. A three-part battery was designed for the purpose of this study: seven speech samples, a language history questionnaire, and a language attitudes survey. All materials (recordings excluded) were available in English. Participants first completed the language history questionnaire followed by the completion of the language attitudes surveys.

Language history questionnaire.

The first part of our study consisted of the completion of a language history questionnaire, which elicited personal information (e.g. place of birth, gender) as well as language use patterns, and language proficiency in English and Spanish. Based on their self-reported abilities, subjects were assigned to one of three groups representing a level of proficiency: Low (N=34), Mid (N=38), and High (N=22).

Speech samples.

The stimuli for the matched-guise survey consisted of seven total recordings, each from one of three speakers reading the introduction to the fairytale *Little Red Riding Hood* in English or Spanish. The readers were all female. Speaker one was a balanced bilingual, who grew up with both Spanish and English in her home, and is also a trained linguist. Speaker two is an English dominant bilingual, having learned Spanish in her early adult life; she too has had ample training in Spanish-English phonetics and phonology. The third speaker is an English monolingual speaker who has had little exposure to the Spanish language.

1) Speech samples

1. Native English (labeled *English Native*)

2. Bad English pronunciation, with common Spanish pronunciation interference (labeled *English-bad*)

3. Native Spanish

4. Near native Spanish, few pronunciation errors (labeled *Spanish few pronunciation*)

5. Non-Native Spanish with English Aspiration (labeled *Non-native with aspiration*)

6. Bad Spanish, with additional common English pronunciation interference (labeled *Spanish more errors*)

7. Novice Spanish, with extreme pronunciation errors (labeled *Spanish extreme errors*)

The first English text was recorded by the English dominant bilingual in her native English, and the second text was recorded by the balanced bilingual, who was asked to record the sample using common Spanish pronunciation interference in her English. The third sample was also recorded by the balanced bilingual, who produced a native Spanish recording. These recordings were followed by samples four through seven, which represent a continuum of non-native Spanish pronunciation, beginning with a near-native sample down to novice Spanish. Samples four and five were produced by our English-dominant bilingual, with sample four being a near-native sample; sample five was a similar recording, but this time the speaker was asked to insert /ptk/ aspiration in her speech. The sixth recording was produced by our balanced bilingual, who created a Spanish sample with common English interference (discussed above). The final recording was also done in Spanish, but this time was produced by the English monolingual, and consisted of strongly noticeable errors in her Spanish pronunciation.

Language attitudes surveys.

Upon completion of the language history questionnaire, subjects participated in the matched-guise survey. After listening to one of the recordings, the subjects were asked to give their first impressions of the reader, followed by questions regarding the reader's intelligibility and whether they felt that the readers were native speakers of Spanish or English. This was followed by the adjectival scales presented in Figure 1. After completing this task for the first speaker, the survey was repeated for the remaining six recordings.

33. On a scale of 1 to 6, rate the individual

I think this person is...

	1 Strongly Agree	2	3	4	5	6 Strongly DISAGREE
Prestigious-Sounding	○	○	○	○	○	○
Uneducated	○	○	○	○	○	○
Friendly	○	○	○	○	○	○
Poor	○	○	○	○	○	○
Well-Spoken	○	○	○	○	○	○
Unpleasant	○	○	○	○	○	○

Figure 1. Scales used in the modified matched-guise.

After listening to all seven samples and completing the corresponding matched-guise surveys, the subjects were presented with a direct survey which included questions regarding the importance of good pronunciation in Spanish, how the subjects felt that a second language learner could improve his or her pronunciation, and whether or not they identified themselves with a good Spanish accent.

For the purpose of the current analysis, we will only report on two of the questions: "This person is a lot like me" and "This person is a native speaker of Spanish", with 1 being strongly agree and 6 strongly disagree.

Hypotheses

With the above research questions in mind, the following specific outcomes are anticipated:

a. A hierarchy of identification will exist among bilinguals for diverse types of L2 influenced pronunciation, with native pronunciation eliciting the most positive identification and highly influenced pronunciation the least positive; with near native pronunciation being more favorably evaluated than near-native pronunciation with aspiration, which will be more favorably evaluated than non-native pronunciation with common English-influenced interference.

b. Differential identifications will surface based on judges' proficiency, with the more proficient bilinguals being more capable of making more fine-grained distinctions among the speech samples.

RESULTS AND DISCUSSION

Identification.

From prior research (Anderson & Souza, 2009) we are aware that our subjects 1) want to have a native-like accent, 2) are able to distinguish between nuanced differences in the speech samples, and 3) that their ability to distinguish the differences is influenced by proficiency in the L2. But how do these speakers identify with the various levels of Spanish interference? In order to determine this, we present the results from the analysis of the data solicited from the survey question "I think this person is a lot like me".
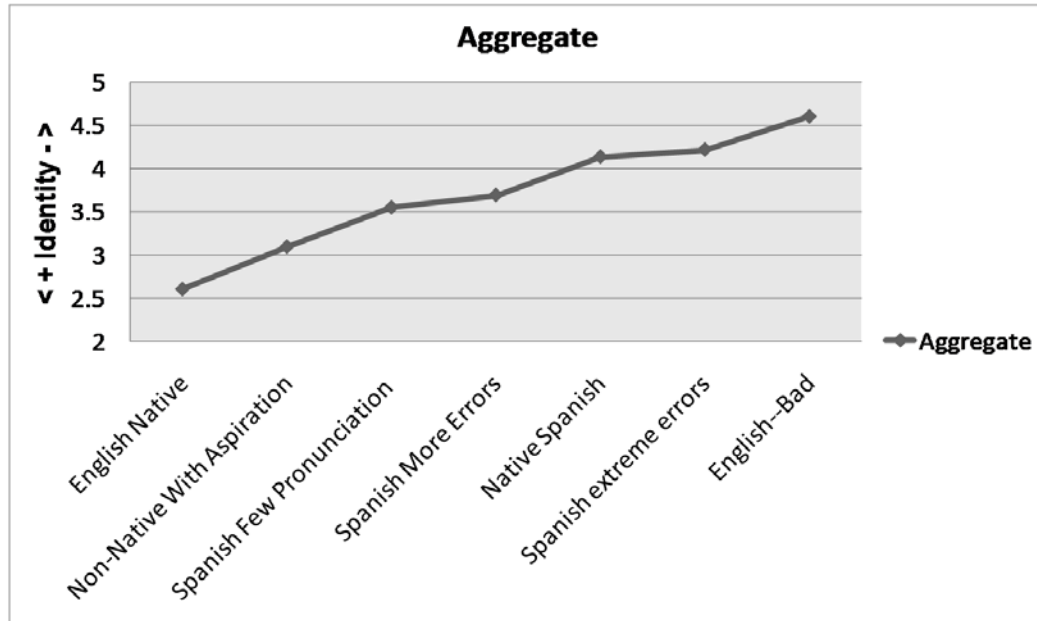
Figure 2. Trends of identification to sound samples (lower number = a greater identification of the sample).

From the results presented in Figure 2, we note that on the aggregate, our participants identified most with the native English sample, and least with the highly influenced English sample. From this we can determine that our subjects are identifying most with their L1 and least with the non-native version of their L1. But what happens with the L2 samples? Interestingly, they identify least with the sample of the highly influenced Spanish and the Native Spanish sample. Statistically these two responses are not significantly different. From this we can deduce that they do not self-evaluate as native-like speakers, nor do they see themselves as poor Spanish speakers.

How, then, is this identification influenced by their proficiency? One of the most salient differences between the groups is how they identified with the highly influenced Spanish sample. As seen in Figure 3 the High proficiency group least identified with this sample, while the other two groups identified least with other samples (i.e. Bad English). Interestingly, for the Low group, the highly influenced sample was in the middle of their continuum, perhaps indicating indifference toward this sample.
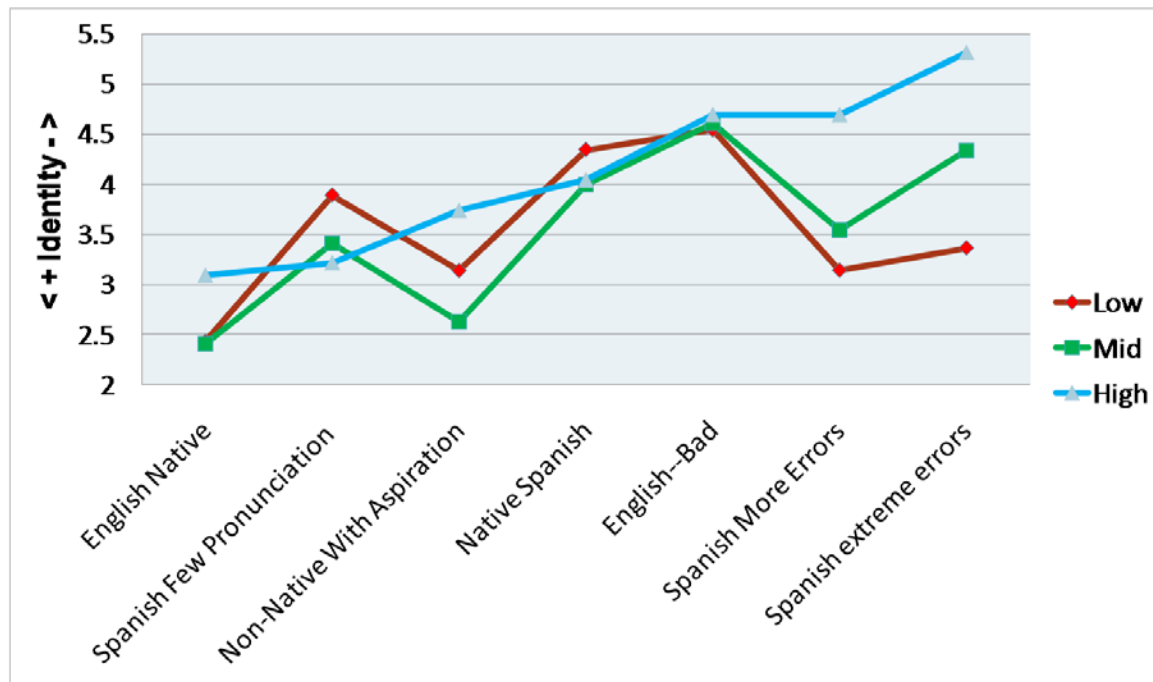
Figure 3. Trends of identification to sound samples, separated by proficiency (lower number = a greater identification with the sample).

The participants' identification with the native-Spanish sample is of interest. In Figure 3, Mid and High participants identified with this sample at precisely the same level, while Low group members diverged somewhat away from identifying with the native-Spanish sample. Further, the Mid group seems to identify the most with the sample containing aspiration, while the High group identifies the least with this sample. This is to be anticipated, as we would expect the High group to be more attuned to such highly-nuanced English-influenced Spanish. Finally, we see that the High group identifies the most with the near-native Spanish sample, followed by the Mid and then the Low groups. Statistically, there is a significant effect between Spanish ability and the speech sample. The High group differed significantly from both the Mid and Low groups ($p < .05$), but the Mid and Low did not differ significantly from each other ($p = .9999$).

In Table 1, we see the trends of identification with the speakers of each speech sample. All groups identified most with the Native English sample, the participants' native language. However, how they identified with the other samples differs greatly. The High group shows what could be considered an ideal continuum of good to bad Spanish, with the Native-Spanish sample (our control) being right in the middle. They show the ability to distinguish between good and bad Spanish in a very consistent manner, and identify more with the near-native samples than they do with both samples of the highly influenced Spanish. This group did not identify with the extreme errors, which was expected. But they also did not self-identify with the Native Spanish sample. This is somewhat surprising, but one possible explanation is that they know that their Spanish is better than other learners' Spanish, but they are also conscious of the fact that they don't sound like native Spanish speakers.

On the other extreme, the Low group identified most with the English-influenced Spanish, and least with the native-like Spanish. We infer that they realize their Spanish is not near the target pronunciation or fluency that they hear in the native and native-like samples, and thus fail to identify with that speaker. In fact, they more closely identified with the samples that include English-influenced pronunciation; the good pronunciations of Spanish are actually lower on the scale than those with aspiration.

Table 1

Summary of identification trends, divided by proficiency

High	Mid	Low
English Native	English Native	English Native
Spanish Few Pronunciation	Non-Native With Aspiration	Non-Native With Aspiration
Non-Native With Aspiration	Spanish Few Pronunciation	Spanish More errors
Native Spanish	Spanish More errors	Spanish Extreme Errors
English Bad	Native Spanish	Spanish Few Pronunciation
Spanish More errors	Spanish Extreme Errors	Native Spanish
Spanish Extreme Errors	English Bad	English Bad

The results further suggest that participants in the Mid group were not making as fine-grained distinctions as the High group. Although they failed to distinguish between the near-native and aspiration sample, they nonetheless showed a trend of decreasing identity from good to bad Spanish, with the extreme errors being furthest on the Spanish continuum.

Identifying native language of speech sample.

From this and prior research we know that these judges are capable of distinguishing between differing levels of L2 interference. But the question remains of whether they are able to identify native and non-native speakers of Spanish. The findings presented in this section are based on the response to the statement "This person is a native speaker of Spanish".

As seen in Figure 4, on the aggregate, there was a statistically significant difference between all speech samples ($p < .05$), except the following: Bad English and Native Spanish ($p = .9999$), Non-Native Spanish with Aspiration and English Native ($p = .118$), and Spanish extreme errors and Spanish More Errors ($p = .9999$). In other words, on the aggregate they were fairly successful at distinguishing whether a person was a native speaker of Spanish or not.
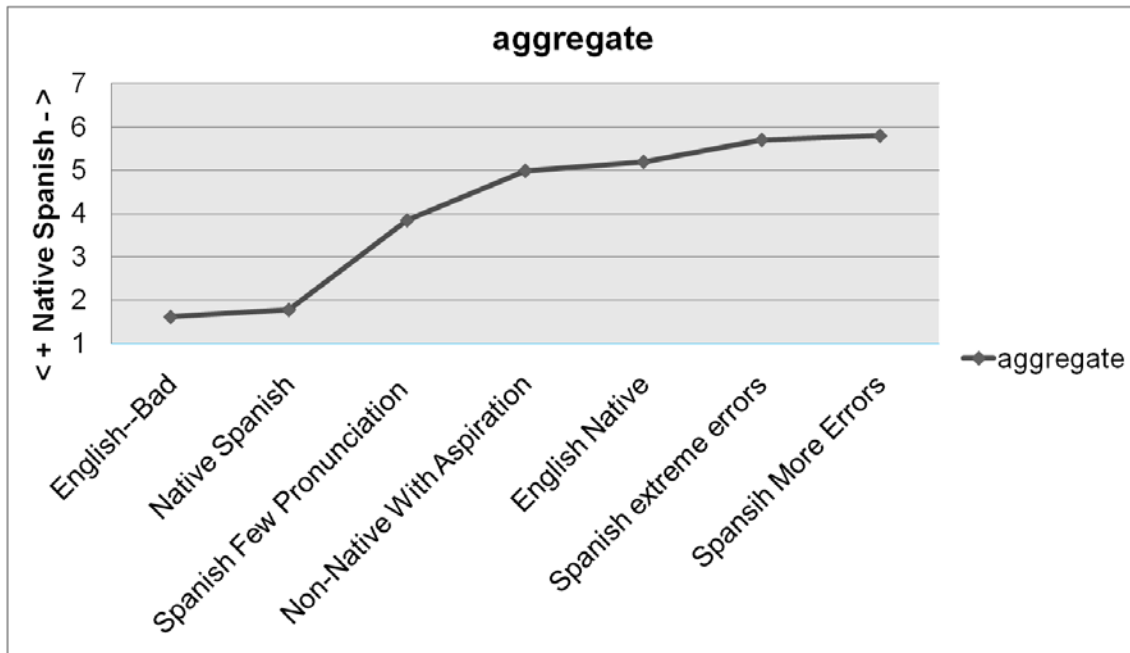
Figure 4. Identification of native Spanish speakers.

Taking proficiency levels into consideration, we see that the High proficiency group was much more capable of determining that the near-native speaker was not a native speaker of Spanish. In Figure 5, all the trends are the same (all of them attributed 'nativeness' in the same way), but the High group seems to be able to make more fine-tuned distinctions between samples. Statistically, the difference in evaluations between the High and the Low groups were significant ($p < .05$).
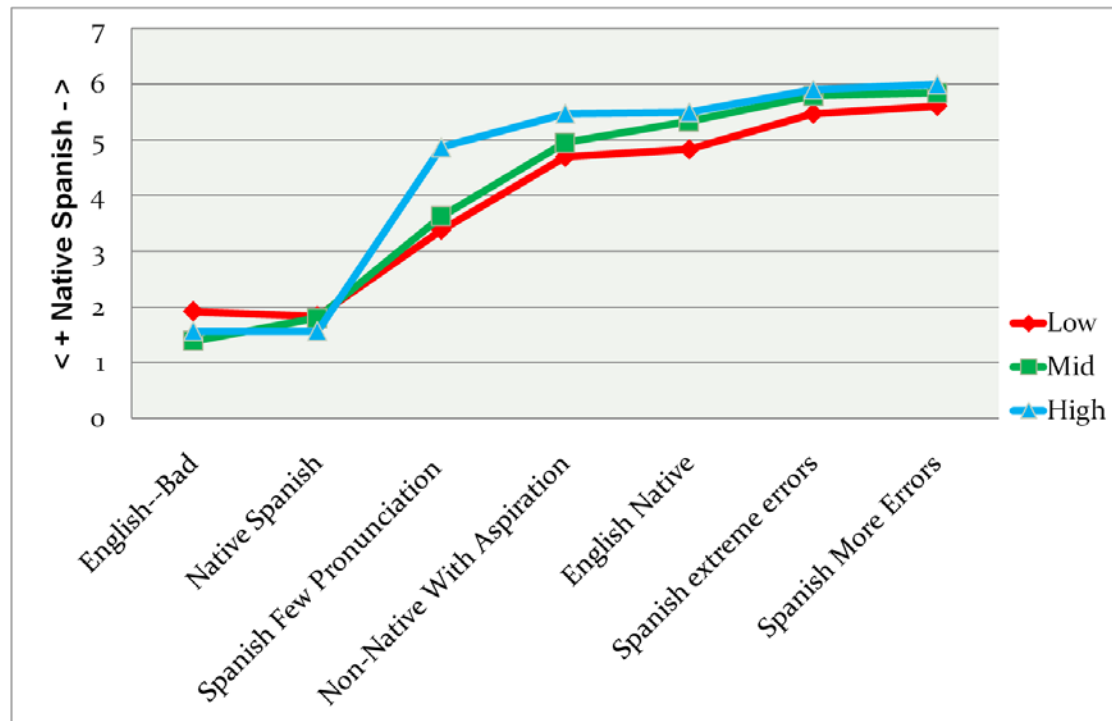
Figure 5. Identification of native Spanish speakers, divided by proficiency

CONCLUSION

The data indicate that on the aggregate our Spanish L2 speakers identified more with the native-like Spanish varieties of the language and less with the L2-influenced samples. We believe this suggests that our participants do want to develop good pronunciation in Spanish. The data also indicate that proficiency greatly influences both ability to identify native language as well as how subjects identify with the speech samples.

Additional questions arise based on the results of the current research. What causes this greater identification and greater ability to recognize a speaker's L1? One possible cause—and perhaps the most logical—is that greater proficiency in the L2 leads to a greater ability to recognize phonological aberrancies in the L2 pronunciation. However, perhaps wanting to sound like a native Spanish-speaker likewise has positive outcomes on a L2 learner's ability to have good L2 pronunciation. Similarly, our data have shed light on the idea that identification with the speakers of the target language may amplify their desires to sound like the target language speakers. These and other questions need to be addressed in future research.

Pedagogically, we infer that there is a need to provide opportunities to L2 speakers to connect with L1 speakers of the target language and their cultures. Our belief is that such opportunities will foster a sense of identifying with its speakers, and that greater identification should carry with it a greater desire to acquire a better pronunciation in the L2.

ABOUT THE AUTHORS

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LEARNER DIFFERENCES IN STRATEGY USE, SELF-EFFICACY BELIEFS, AND PRONUNCIATION IMPROVEMENT

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After taking an English pronunciation course that raised ESL students' metacognitive awareness of effective pronunciation strategies for use in covert rehearsal (Dickerson, 1989), the students' (N = 37) long-term progress with English stress and linking, and their strategy use was assessed through: a) a read-aloud test the students performed three times—at the beginning of instruction (T1), at the end of instruction (T2), and again somewhere between five months and 25 months after instruction ended (T3); b) self-report questionnaires the students completed at T3; and c) a pronunciation strategy inventory they also completed at T3. The learners were categorized into groups according to strategy use and practice time reported from T2 to T3, self-efficacy beliefs, and achievement over time. The groups were then classified based on their differences in patterns of development from T2 to T3. The findings suggest that individual learner characteristics are strong predictors of students' progress over time.

INTRODUCTION

This study presents an alternative approach for examining pronunciation learning strategies and their effects on pronunciation improvement. In particular, it seeks to provide further empirical evidence in support of the Covert Rehearsal Model (CRM) proposed by Dickerson in the late 1980s. Under CRM (Dickerson, 1989; 1994):

1. Students are taught explicitly how and when to correct their pronunciation through the use of orthographically motivated rules and pronunciation strategies.
2. Students use prediction, production, and perception strategies consciously during their practice time in class and at home while planning, self-monitoring, and self-evaluating their oral performance.
3. Teachers facilitate learning, strategy and rule use by providing students with instructional materials and resources that they can use as models during practice.

In doing all the above, CRM promotes students' autonomy and self-direction, and empowers them to improve on their own after instruction ends (Sardegna, 2009).

Although in the last decade some researchers have proposed taxonomies for pronunciation learning strategies used by L2 learners (Eckstein, 2007; Osburne, 2003; Pawlak, 2010; Peterson, 1997; Sardegna, 2009), only recently have researchers measured the effectiveness of strategy development through instruction (Ingels, 2011; Sardegna, 2009; 2011). Strategy development has been advocated by Dickerson for three decades now, but his model needs further validation from the field.

This study moves the field forward not only by providing evidence of long-term improvement under CRM, but also by conducting an exploratory study of individual differences in strategy use after students receive instruction under CRM, thereby seeking to determine individual

differences that may account for differential progress over time. The pronunciation features targeted were English stress (both word stress and phrase stress), and linking (i.e., the ability to combine sounds within words and at word boundaries without changing their phonetic qualities, or by inserting a brief /j/ or /w/ sound between the sounds). For a discussion and a list of the strategies taught for improving these features during the course, see Sardegna (2009; 2011).

RELEVANT LITERATURE

Research into strategies for second language learning and language use suggests strategy instruction helps promote effective use of strategies (e.g., Cohen, 1998; Cohen & Macaro, 2007; Oxford, 1996). Yet, while some of these studies have revealed a positive correlation between strategy use and L2 proficiency (e.g., Oxford, Cho, Leung, & Kim, 2004), others have not (e.g., Green & Oxford, 1995). It has been argued that frequency counts may not be the best way to capture the nature of strategy use (Yamamori, Isoda, Hiromori, & Oxford, 2003). Self-reports of frequent use of one strategy do not necessarily mean the strategy is being used effectively; self-reports of low use of one strategy may not be related to the actual effectiveness of that strategy, but simply result from learners' lack of knowledge of the strategy per se. Besides, learners may need to combine different strategies to accomplish a given task, and that combination may be as effective as using just one strategy a lot. In addition, other indices of learners' behaviors, such as their sense of self-efficacy, their efforts at learning, their perceptions of what works for them or for the task at hand, and their motivations to learn, have been found to affect students' selection, combinations, and use of strategies as well as the relative effectiveness of the strategies they employ (Moyer, 1999; Oxford, 2003; Smit 2002). Measurements other than correlations need to be used if we are to capture the flexible nature of strategy use and its relationship to L2 achievement.

Despite pedagogical and theoretical arguments in favor of strategy instruction, little associated empirical research has been conducted in the area of pronunciation. Studies that have looked at pronunciation strategies have mostly investigated learner's choices and use of strategies without prior instruction and have offered taxonomies to describe them (Eckstein, 2007; Osburne, 2003; Peterson, 1997). It is only recently that researchers have measured the effectiveness of strategy development through instruction (Ingels, 2011; Sardegna, 2009; 2011). Both Ingels and Sardegna's studies investigated the efficacy of CRM, but their focus of analysis was different. Ingels argued in favor of using three additional techniques in covert rehearsal: learner use of self-recordings, self-transcription, and annotation of transcriptions. Sardegna offered a comprehensive list of strategies that students use during covert rehearsal and provided evidence on the long-term effectiveness of CRM for improving English stress and linking. Both Ingels and Sardegna have furthered our understanding of CRM and how strategies can be taught and used in the pronunciation class. Yet very little is known about individual factors affecting strategy use and achievement over time.

The present study answers calls for further research on the long-term effectiveness of strategy instruction (Cohen & Macaro, 2007; Rees-Miller, 1993; Rubin, Chamot, Harris, & Anderson, 2007; Sardegna, 2009), and pronunciation instruction (Derwing & Munro, 2005; Sardegna, 2009). It also answers calls for employing a variety of measurements when investigating strategy use (White, Schramm, & Chamot, 2007; Yamamori et al., 2003). In particular, it seeks to identify learner differences in strategy use, self-efficacy beliefs, and pronunciation improvement. The analysis is therefore limited to the following research question:

1. What individual learner differences, if any, affect international graduate students' progress with English stress and linking after they receive instruction following the Covert Rehearsal Model (CRM)?

METHODS

Participants and Teaching Intervention

The participants were 37 international graduate students (15 females and 22 males) that took a one-semester ESL pronunciation course at an American university. Their ages ranged from 22 to 47 years old. Their native languages were Chinese (18), Vietnamese (6), Korean (4), Thai (3), Turkish (3), French (1), Portuguese (1), and Spanish (1). According to their self-reports, some participants took the course on their first semester of graduate studies in the US (N = 20), while others took it in their second semester (N = 8), or between their third and fourth semesters (N = 9). Due to their performance on the university's ESL placement test, 22 of them were required to take the course. The remaining participants took the course for personal reasons.

The course taught students how to use a variety of pronunciation learning strategies to improve their English pronunciation outside of class. It met for fifty minutes three times a week for four months. The materials, activities, and pronunciation rules given to students followed Dickerson's (1989; Hahn & Dickerson, 1999a-b) Covert Rehearsal Model (CRM). The basic premise of the model is that teachers should aim at equipping students with predictive skills, pronunciation rules, and strategies to work on the accuracy of their speech in private. That is, teach students for empowerment (Dickerson, 1994) so that they can self-correct and self-teach.

To improve their oral skills, students could use any combination of strategies, either simultaneously or in sequence, while they worked under each of the six conditions for practice out of class delineated by CRM. [For examples of how these strategies can be combined for improving English stress and linking, see Sardegna, 2009; 2011.] The six conditions delineated by CRM are:

1. Find privacy.
2. Perform aloud.
3. Monitor your performance.
4. Compare the performance with models.
5. Change the performance to match the models.
6. Practice the changed performance aloud until fluent.

During the course, students also received written and oral feedback both during regular classroom activities and in five thirty-minute private meetings with the instructor. Both the training and feedback focused on improving students' most problematic pronunciation features as identified through a test administered at the beginning of the course. The targeted features included segmental, suprasegmental, and connected speech phenomena. This means that apart from English stress varieties and linking types, other features were targeted for instruction.

Measures

To explore individual differences in strategy use, self-efficacy beliefs, and pronunciation improvement, this study employed four measures:

1. Three combined pronunciation accuracy (CPA) scores from a read-aloud test that participants performed three times: at the beginning of instruction (T1), at the end of instruction (T2), and again somewhere between five months and 25 months after instruction ended (T3). A participant's CPA scores were obtained by averaging his or her reading accuracy levels with English stress and with linking at each of the testing times (i.e., at T1, T2, and T3).

2. One engagement score obtained from participants' responses at T3 regarding amount of time spent practicing the strategies plus daily amount of time spent talking to others in English from T2 to T3.

3. Three strategy scores (prediction scores, production scores, and prediction scores) obtained from participants' responses to a pronunciation strategy inventory regarding their strategy use from T2 to T3.

4. Participants' answers at T3 to the question "Do you think you have improved"?

The researcher asked students to read aloud a long passage, five dialogs, and a list of 22 words. The test allowed for an objective measure of students' long-term progress with the rules and strategies they learned during the course. It measured progress with many different speech features. This study, however, only reports and analyzes participants' CPA scores (i.e., three averaged scores for linking and English stress obtained at T1, T2, and T3). The experimental design also allowed testing for the effect of time on students' progress. Participants were assigned to three groups according to the time that passed between T2 and T3 (see Table 1), and the groups were tested for significant differences in order to determine if length of time after instruction could be a factor affecting their progress from T2 to T3, and ultimately from T1 to T3. The next section reports the results of this test, and the descriptive statistics, ANOVAs, and pairwise comparisons that were computed to measure participants' improvement from T1 to T3.

Table 1
Months Between Tests for Each Group

Groups	N	Test #1 to Test #2	Test #2 to Test #3	Total
1	9	4 months[a]	5 months	9 months
2	17	4 months	9 months	13 months
3	11	4 months	Over 13 months (13-25 months)	17-29 months

[a] Duration of the pronunciation course.

In addition to analyzing participants' accuracy development with the targeted features, the researcher gathered self-report data regarding participants' practice, strategy use, and self-efficacy beliefs. It was hypothesized that these individual learner differences might help reveal the profile of the participants in this study and, in doing so, help identify the factors that may contribute to greater or lesser improvement over time. These data were gathered at T3 (i.e., between 5 and 25 months after the pronunciation course ended) in order to elicit learner characteristics regarding their practice in covert rehearsal in the intervening months.

First, participants were asked to identify their practice engagement from T2 to T3 in a 5-point Likert Scale with three items: (a) frequency of practice alone (from 1 = "not much" to 5 = "a lot"), (b) frequency of practice with others (from 1 = "not much" to 5 = "a lot"); and (c) average

percentage of daily practice speaking in English with others (1 = 0%-20%, 2 = 30%-40%, 3 = 50%-60%, 4 = 70%-80%, 5 = 90%-100%). Second, participants completed at T3 a strategy inventory that consisted of a 5-point Likert Scale with 24 items. Each of the items described a particular prediction strategy (N = 7), production strategy (N = 10), or perception strategy (N = 7). Participants were asked to identify the frequency of use for each of the strategies by selecting a number from 1 to 5. Frequency counts were then computed and overall mean scores for prediction strategies, production strategies, and perceptions strategies were obtained for each participant. Finally, to measure students' self-efficacy beliefs, participants were prompted to respond to the question *"Do you think you have improved?"* by selecting one of the following choices: (a) *"Yes, I believe I have improved,"* (b) *"I think my pronunciation has stayed the same,"* or (c) *"No, I don't think I have improved."*

This study employed a multivariate statistical procedure called Cluster Analysis to explore individual differences and how these relate to achievement. This procedure attempts to identify relatively homogeneous groups of cases based on selected characteristics, using an algorithm that starts with each case in a separate cluster and combines clusters until only one is left. Although cluster analysis is not widely used in L2 research, some L2 studies (e.g., Kojic-Sabo & Lightbown, 1999; Rysiewicz, 2008; Yamamori et al., 2003) have employed this procedure for the purpose of profiling learners on the basis of certain variables.

Participants in this study were clustered on the basis of six variables: T1 CPA scores, T2 CPA scores, T3 CPA scores, engagement scores, prediction strategy scores, and production strategy scores. These scores were standardized before computation because the measures had differing score ranges. The Furthest-Neighbor approach with the squared Euclidean distance technique was chosen for cluster analysis because this procedure links objects in a cluster at some maximum distance or by minimum similarity. That is, at each stage of the agglomeration, the two clusters with the smallest maximum distance (most similar) are combined (Hair & Black, 2000). The number of meaningful clusters was decided by considering large changes in clustering distances and characteristics of the resulting clusters.

Perception strategies were not computed in the cluster analysis for two reasons:

1. Students reported assigning high scores for some perception strategies both for "listening for pleasure" and for "listening attentively to improve perception/comprehension," which made it impossible to determine their use during covert rehearsal with a focus on form.
2. The mean scores for these strategies were usually rather high for all participants so it was believed that computing them in the clusters might obscure the overall pattern.

After the clustering process, mean scores for perception strategies were added to the resulting clusters in order to complete the learners' profile. Due to the reasons just explained, however, the perception strategy scores reported in the analysis should be taken with caution. Finally, cross-tabulations were computed to measure the association between participants' self-efficacy beliefs (Zimmerman, 2000) and the learner groupings identified through cluster analysis.

RESULTS AND ANALYSIS

Before computing overall group progress from T1 to T3, the researcher investigated the effect of the variable "length of time from T2 to T3" by comparing progress from T2 to T3 on the three groups of participants that purposely varied in the length of time that passed between their T2 and T3 tests (see Table 1). If this variable affected T2-T3 progress significantly, then progress in

the three groups from T1 to T3 would have to be analyzed separately in order to avoid confounding that variable with other variables contributing to change.

To detect the significance of "length of time from T2 to T3" on T2-T3 progress, a Fixed Effects Model was computed with one factor—group (which tested for "length of time from T2 to T3"), and two covariates—T1-T2 progress with CPA scores, and pronunciation strategy practice. The model revealed that T1-T2 progress (that is, progress during instruction) affected scores from T2 to T3 significantly [$F(2,32) = 20,366$, $p = 0.000$], but length of time between T2 and T3 did not [$F(2,32) = 1.076$, $p = 0.353$]. These results corroborated previous research findings that investigated the effects of these variables on pronunciation improvement (Sardegna, 2009; 2011). As length of time after instruction did not affect students' scores, tests of individual differences were performed for the whole group regardless of differences in time from T2 to T3.

To test for individual differences, six learner variables were cluster-analyzed in this study: T1 CPA scores, T2 CPA scores, T3 CPA scores, engagement scores, prediction strategy scores, and production strategy scores. T1 CPA scores were included in the computation because the Fixed Effects test revealed their relationship with progress from T2 to T3 was significant. Table 2 provides the mean percentage scores, standard deviations, and observed maximum and minimum scores for the clustered variables.

Table 2
Descriptive Statistics for the Clustered Variables

Variable	*N*	*M*	*SD*	Minimum	Maximum
T1 CPA	37	57.39	7.879	39	73.5
T2 CPA	37	81.95	6.636	72	95.67
T3 CPAA	37	73.95	8.151	52.83	86.83
Engagement	37	2.32	1.132	1	5
Prediction	37	2.69	0.894	1	4.29
Production	37	2.52	0.827	1.10	4

A repeated measures ANOVA was used to examine the overall time effect on participants' performance from T1 to T3. The results revealed that participants' CPA scores differed significantly over time: *df-within* = 2; *df-error* = 72; *F* = 264.157; *p* = 0.000 < .01. Pairwise comparisons indicated that students' scores for all the pairs changed significantly (*p* = 0.000 < 0.01). Participants significantly improved (+24.56 percent) their CPA scores from T1 to T2, and although their scores decreased a little (-7.99 percent) by T3, there is still a distinct change (+16.56 percent) from T1 to T3 in students' performance.

With the aid of the Dendogram obtained from the Cluster Analysis, participants can be categorized in groups. The Dendogram is a graphic representation showing the steps involved in the clustering process (see Figure 1). Based on the approach chosen for the analysis (in this case, the Furthest-Neighbor approach with the squared Euclidean distance), an algorithm combines clusters starting from individual cases until only one cluster or group is left. The fundamental structure represented in the cluster solution should be examined from a conceptual perspective to decide a meaningful number of clusters and whether small number clusters represent a valid structural component in the sample (Hair & Black, 2000).

A close inspection at the Dendogram obtained with the clustered variables revealed seven categories, but only six meaningful groupings. Cases 20, 22, 25, and 36 (represented at the bottom of the Dendogram) were identified as two distinct groups because these participants differed slightly in their reported use of strategies. However, after considering the characteristics of the seven resulting clusters, these four participants shared a characteristic that distinguished them from all the other participants (i.e., they exhibited the highest initial CPA scores) and, therefore, it was more meaningful to keep them all together in one group.
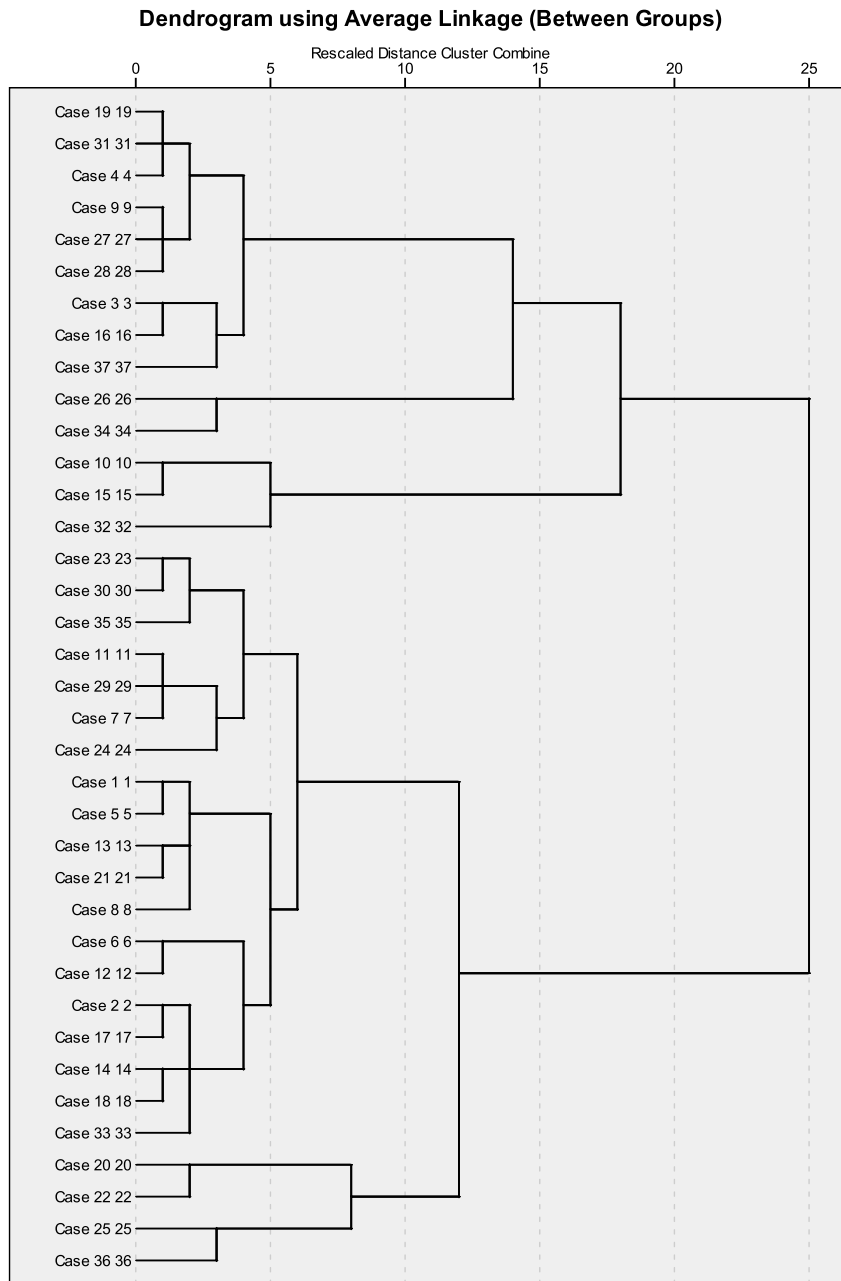
Figure 1. Dendogram using average linkage.

Each group was then labeled according to its characteristics. Table 3 provides the cluster group number and initial level grouping, the number of participants, and the label assigned to each group based on its profiling characteristics. It also details the variables that characterize the profiles: CPA mean scores for the three tests, including percentages of improvement (in parentheses), and the mean scores for engagement and the three strategy types (prediction, production, and perception).

Table 3
Participants' Profiles

Group	N	LABEL	T1 CPA	T2 CPA	T3 CPA	Eng.	Pred.	Prod.	Perc.
1 Mid	12	CONSISTENTS	59.57	83.97 (24.4)+	76.47 (-7.5)++ (16.9)+++	2.00 (M)*	2.99 (M)	2.73 (M)	3.35 (MH)
2 Mid	9	UNMOTIVATED	57.93	80.83 (22.9)+	72.26 (-8.57)++ (14.3)+++	1.33 (ML)	1.73 (ML)	1.68 (ML)	2.46 (M)
3 Mid	7	HARDWORKERS	57.14	78.81 (21.7)+	75.12 (-3.7)++ (18)+++	2.86 (M)	3.633 (MH)	3.375 (MH)	3.45 (MH)
4 High	4	OVERACHIEVERS	68.29	93.46 (25.2)+	84.46 (-9)++ (16.2)+++	3.5 (MH)	3.07 (MH)	2.35 (M)	3.04 (MH)
5 Low	3	MISUSERS	41.44	72.33 (30.9)+	54.61 (-17.7)++ (13.2)+++	2.00 (M)	2.62 (M)	3.13 (MH)	4.24 (H)
6 Low	2	SOCIALS	44.84	77.25 (32.4)+	70.34 (-7)++ (25.5)+++	5.00 (H)	1.79 (ML)	1.6 (ML)	2.71 (M)
Total	37		57.39	81.95 (24.6)+	73.95 (-8)++ (16.6)+++	2.32 (M)	2.70 (M)	2.52 (M)	3.15 (MH)

+ T1-T2 improvement. ++ T2-T3 improvement. +++T1-T3 (i.e., duration of the study) improvement.

*Denotes frequency: L (low use) = 0-1; ML (mid-low use) = 1-2; M (mid use) = 2-3; MH (mid-high use) = 3-4; and H (high use) = 4-5.

If we only consider T1 CPA and T2 CPA mean scores, there are three main groups:

a. High-level Group (Group 4; N = 4). These students exhibited a high initial accuracy level (68 percent), and an overall improvement to 93 percent after instruction.

b. Mid-level Group consisting of Group 1 (N = 12), Group 2 (N = 9), and Group 3 (N = 7). These students exhibited a mid-initial accuracy level (57-59 percent), and an overall improvement of 22-24.5 percent after instruction.

    c. Low-Level Group consisting of Group 5 (N = 3) and Group 6 (N = 2). These students exhibited a low initial accuracy level (41-45 percent), an overall improvement of 31-32.5 percent after instruction.

Arguably, the differences in percentages of improvement during the course between the low and the higher level groups may be attributed to the fact that low level students had more room to improve than the higher level students (also noted by Dickerson, 2002; Sardegna, 2009). Percentages of improvement after the course ended, i.e., from T2 to T3, differed not only between the three main groups (high, mid, and low), but also within both the mid and low level groups, thereby forming the six meaningful clusters shown on Table 3.

According to the characteristic profiles of the groupings revealed through the clustering process, the resulting six groups were labeled: the Consistents, the Unmotivated, the Hardworkers, the Overachievers, the Misusers, and the Socials. A description of the characteristics that motivated the group labels follows.

The Consistents: Group 1 (N = 12) has the largest number of participants and its mean scores in all measures strongly reflect the group trend for all 37 participants (compare Group 1 mean scores with Total under Table 3): around a 24.5 percent increase in accuracy during the course, around an 8 percent decrease in accuracy after the course ended, medium reported use of perception strategies, production strategies, and engagement practice, and a mid-high score for perception strategies. Because this group's progress seems the most "consistent" with the overall group trend, it was labeled "the Consistents."

The Hardworkers. Group 3 (N = 7) started a bit lower in accuracy than the Consistents, and even achieved a lower increase during the course (22 percent as opposed to the 24.5 percent increase obtained by the Consistents). In fact, by T2 the Consistents scored 5.15 percent above this group. Yet, by T3 this difference was only of 1.28 percent. This group was labeled the Hardworkers because they were the group with the least drop in accuracy from T2 and T3 and, coincidentally, the group that reported higher level use for all strategy types. It is hypothesized that their use of strategies (mid-high level use for all types) and their engagement (mid level) may have facilitated maintenance, or little decrease in accuracy, for all the participants in this group after the course ended. Overall, the group mean decreased only 3.7 percent from T2 to T3, achieving a long-term progress of almost 22 percent.

The Unmotivated: Group 2 (N = 9) obtained lower T3 CPA scores (72 percent) than both the Consistents (76 percent) and the Hardworkers (75 percent) despite having an initial level similar to the Hardworkers and a large increase in accuracy from T1 to T2 (almost 23 percent). This difference in long-term progress seems to be associated with their reported lower use of pronunciation strategies, and their mid-low engagement scores. The reasons for these low scores are uncertain. A number of possible explanations are: (a) no interest in improving further or on committing time and effort to improve further; (b) no time to practice due to a busy schedule; (c) interest in focusing practice on other pronunciation features (such as sounds) or other language skills (such as writing), and/or (d) no opportunities to speak with other people in English. Unfortunately, the strategy inventory did not gather information that would reveal participants' reasons for not practicing much in covert rehearsal so we can only speculate why they did so. Regardless of the reasons, though, this group seemed unmotivated to use the strategies or engage in practice opportunities; thereby it was labeled "the Unmotivated."

Figure 2 shows how the three mid groups compared on their strategy use and engagement, and in relation to the high group—The Overachievers.
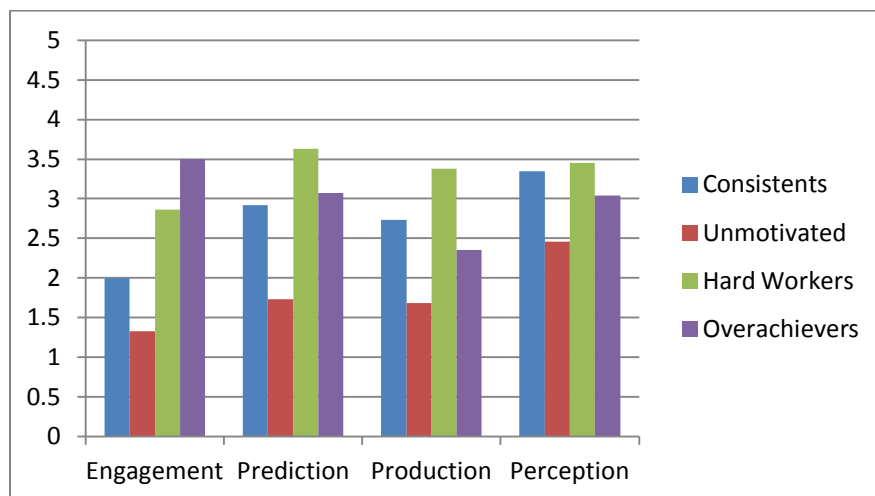
Figure 2. Mean engagement, prediction, production, and perception scores for the mid- and high-level groups from T2 to T3.

The Overachievers: Group 4 (N = 4) consisted of a group of students whose initial accuracy level was already high (68 percent) by comparison with the other groups. Despite their high initial level, these students worked hard during and after the course in an effort to improve further, as demonstrated by their accuracy scores at T2 and T3, and their reported mean scores for strategy practice (most in the mid-high range). Also, this group exhibited a higher index of seeking opportunities to talk in English with others than all the three mid-level groups.

The two low-level groups (Groups 5 and 6) represented a small sample of the population, but it was meaningful to keep them apart because they showed different patterns of behavior from T2 to T3 that may explain their big difference in accuracy at T3. One group was labeled the Socials and the other the Misusers.

The Socials (Group 6, N = 2*)* reported the highest level of engagement (5.00) of all the clustered groups. This score indicated that they practiced in covert rehearsal a lot and engaged in as many opportunities as they could to talk and practice with others in English. They were called the Socials because of their reported engagement with others. Although they reported mid-low scores for strategy types, their high score for engagement in practice also indicates a high score for practice on their own. Perhaps their low scores in strategy types did not capture amount of practice well enough. It is possible that these students had high scores for only a few of the items in the list and not across the board, which may have lowered their strategy count.

The *Misusers* (Group 5, N = 3) started at an initial level similar to the Socials, but their long-term improvement was 12 percent lower than that of the Socials. Group 5 reported mid engagement and mid-use of strategies, with perception strategies being the highest (4.24 percent). Their resulting decrease in accuracy from T2 to T3 (almost 18 percent) may be associated with the fact that these students engaged in many perception activities (e.g., listening to the radio, to the TV, etc.), but most probably did not focus too much on form. Also, lack of improvement may be associated with their being unable to correct themselves well during their practice in private. While this analysis may sound speculative, especially because of the number

of participants involved, it was somewhat validated when a cross tabulation computed between participants' answers to "Do you think you have improved?" and the clustered groups revealed that two of the three students in this group felt they had not improved. They commented that did not feel that they were practicing correctly. This group, therefore, received the label of the Misusers. Figure 3 shows strategy use and engagement scores for the low level groups.
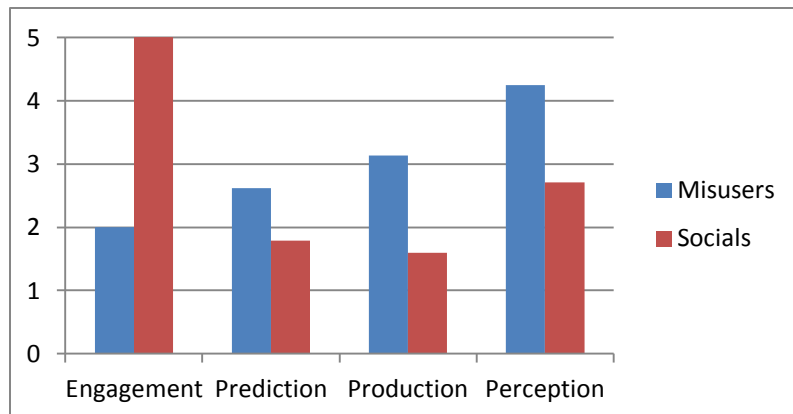
Figure 3. Mean engagement, prediction, production, and perception scores for the low-level groups from T2 to T3.

A cross tabulation between participants answers to "Do you think you have improved?" with the clustered group revealed that the majority of the participants (23 out of 37) believed that they had improved as a result of their work in covert rehearsal from T2 to T3 (see Table 4). It is also interesting to note that most of the students that felt that their pronunciation stayed the same (N = 4) were among the Unmotivated. One can speculate that these students perhaps did not practice much in covert rehearsal after the course because they were already happy with the level they had achieved during the course and may have thought their accuracy would stay the same. In fact, the researcher found that some students in the Unmotivated group were surprised when they received their scores at T3 even when they had reported little practice in the intervening months.

Table 4
Crosstabulation Between Self-Efficacy Answers and Clustered Groups

C#	LABEL	Yes, I believe I have improved	I think my pronunciation has stayed the same	No, I don't think I have improved	Total
1	CONSISTENTS	7	2	3	12
2	UNMOTIVATED	4	4	1	9
3	HARD WORKERS	6	1	0	7
4	OVERACHIEVERS	3	0	1	4
5	MISUSERS	1	0	2	3
6	SOCIALS	2	0	0	2
Total		23	7	7	37

Figure 4 shows CPA accuracy scores for all the clustered groups from T1 to T3. From the figure, we gather that the Overachievers performed above average in all three tests compared to all the other groups, while the Misusers performed below average in all three tests than all the other

groups. Despite an initial level similar to the Misusers, the Socials achieved a much higher overall long-term progress than the Misusers. The Consistents, Unmotivated, and Hardworkers started with a similar initial level, but their progress differed somewhat long-term. Despite these differences, the figure also shows that there is a similar overall trend for all these groups: a decrease in accuracy after instruction. How much students decrease seems to be partially dictated by the individual differences identified in the analysis.
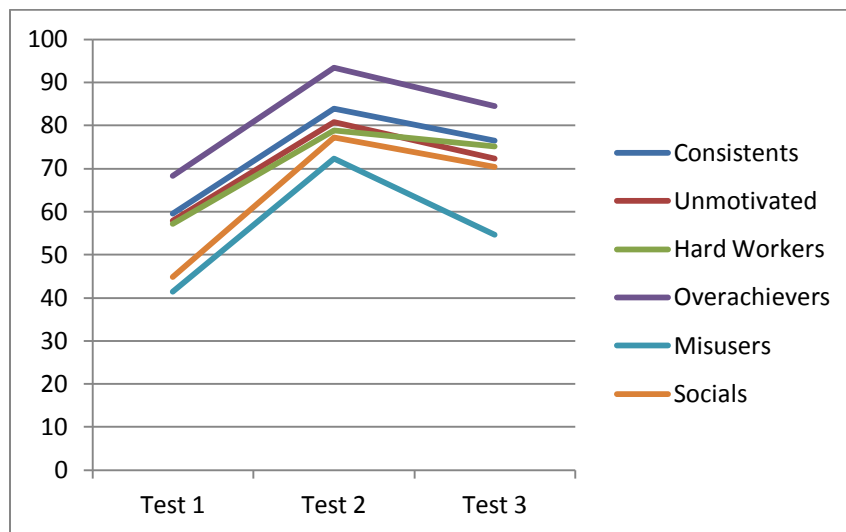
Figure 4. Resulting clusters' progress from T1 to T3.

DISCUSSION

The evidence from participants' CPA mean scores suggests that changes from T1 to T2 may indeed be related to the effect of instruction under CRM. After four months of instruction on and practice with pronunciation learning strategies, students' scores increased significantly (24.6 percent). Backsliding after pronunciation improvement resulting from instruction is to be expected (Beebe, 1988; Sardegna, 2008; 2009; 2011), yet these participants were able to maintain an average improvement of 16.6 percent after the course ended regardless of the amount of time that passed between test #2 and test #3. These findings corroborate other studies' findings regarding the effectiveness of CRM (Ingels, 2011; Sardegna, 2008; 2009; 2011), and of pronunciation instruction in general (Derwing, Munro, & Wiebe, 1998). They also support claims (e.g., Dickerson, 1994) in favor of empowering students with explicit pronunciation rules and strategies. To make a stronger claim on the efficacy of the methodology used, however, this study's findings should be compared to other studies of the same kind utilizing other methodologies or with groups of students receiving no instruction.

The experimental design employed also revealed some valuable information regarding the factors possibly contributing to individual differences after the course ended (i.e., from T2 to T3). It was found that T1-T2 progress was a strong predictor of T2-T3 progress, but length of time between T2 and T3 was not. Participants' self-report data regarding strategy use and engagement shed light on learner differences that might affect progress when students are left to their own devices to work privately on their pronunciation problems. When these variables were clustered with participants' progress from T1 to T3, six groups of learners were identified: the Consistents, the Unmotivated, the Hardworkers, the Overachievers, the Misusers, and the Socials. Each of these groups exhibited individual learner characteristics that helped explain

differences in long-term improvement. However, due to the exploratory nature of the study and the use of self-report accounts of strategy use and engagement, this analysis may not tell the complete story. Other studies using other data sources and employing tests other than Cluster Analysis are needed to provide a more complete picture of the nature of strategy use.

Future studies should be carried out across different types of groups with learners of different L1 backgrounds, ages, and proficiency levels. The students were all college level students with an intermediate level of English. It could be argued that the results of this study can only be generalized to populations of the same kind. Other suggestions for further study may include the effectiveness of strategy use for improving other pronunciation features, such as sounds and intonation, and the use of more delayed tests to measure whether students' accuracy continues to decrease or stabilizes for each of the identified groups as time goes by. This study provides evidence that CRM leads to unconscious use of the features that were being practiced. Other interesting avenues of future research would be to investigate whether the same results would be found for freer speech, or if ratings of students' comprehensibility would show similar improvement.

CONCLUSION

This study presented an alternative approach for examining pronunciation learning strategies and their effects on pronunciation improvement. It also shed some light into instructional and learner factors that may contribute to pronunciation improvement over time. The findings led to a modified view of the nature of pronunciation learning strategies. A picture emerged of what makes students maintain a significant progress with English stress and linking after receiving strategy instruction under CRM. This picture revealed that there is more than one route to success in L2 pronunciation improvement. The analysis showed that a combination of strategies and other factors, such as students' practice engagement, their progress during instruction, and their sense of self-efficacy, affect pronunciation progress over time. As this is an exploratory study and the first of its kind investigating learner profiles with regard to pronunciation strategies and achievement over time, further in-depth investigations are needed to mitigate its limitations and generalize its findings to other populations.

ABOUT THE AUTHOR

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A COMPARATIVE STUDY OF THE PERCEPTION OF ITAS BY NATIVE AND NONNATIVE UNDERGRADUATE STUDENTS

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With the growing number of international teaching assistants (ITAs) at American universities, concerns have increased about the communication between these ITAs and their students (Damron, 2003). Research on native undergraduate students' reactions to ITAs has revealed that even international teaching assistants who have near native-like pronunciation may still be highly stigmatized by North American undergraduates (Rubin, 1992). When it comes to nonnative students' perception of ITAs, however, little research has been done (Lima, 2011). This study investigates the perception of ITAs by native and nonnative undergraduate students with focus on both language and social factors. Eighty-six students, 45 international and 41 Americans, enrolled in cross-cultural first-year composition classes watched a four-minute videotaped lecture under one of two guises related to the nationality of the speaker. The participants then rated the speaker based on six variables: accent, speed, comprehensibility, likeability, teaching ability, and teaching style. This paper discusses how the ratings differ between the two groups depending on what participants are told about the nationality of the speaker. It also looks into the relationship between the ratings for accent and comprehensibility assigned by each group. Findings show that the groups rated the speaker differently only on the variable *teaching style*; also, the attributed nationality of the speaker did not seem to have a large impact on either native or nonnative students' perceptions of the ITA.

INTRODUCTION

"The foreign TA problem" (Bailey, 1984) has been an issue for decades. With the steady increase in the number of international teaching assistants (ITAs) at American universities, "this problem" is likely to become larger. Although native undergraduate students tend to blame ITAs for breakdowns in communication and poor teaching performance, recent research has suggested that the responsibility should not lie only with ITAs but also with students as they should act as "active, responsive, and empathic listeners" (Kang & Rubin, in press).

It is noteworthy that as the number of ITAs increases on American campuses, so does the number of international undergraduate students. According to the *Open Doors* (2011), an annual report published by the Institute of International Education (IIE) with support from the U.S. Department of State's Bureau of Educational and Cultural Affairs, the number of new international students enrolled in American colleges and universities in the academic year 2010/11 was 214,470; Out of this number, 84,543 were undergraduates, 89,505 were graduates, and 40,422 were non-degree students. The total international student enrollment for that academic year was 723,277. Thus, it is not uncommon for ITAs in America to have international undergraduate students in their classes even though native students may comprise the majority of most classes.

Research addressing native undergraduate students' perception of ITAs indicates that these students tend to react negatively to ITAs based on different factors. One of these factors is poor language proficiency or communicative competence (Lindemann, 2002; Rubin & Smith, 1990). However, other studies have shown that other factors may play a large role in American undergraduates' perception of ITAs. Country of origin (Brown, 1992), ethnicity (Rubin, 1992), and stereotypes (Gill, 1994; Kang & Rubin, 2009), for instance, are factors playing a role in this negative perception. Lindemann (2011) claims that "even in the absence of outright negative attitudes, expectations about a speaker may cause a listener to mishear specific details of their accent" (p. 225) and that "stigmatized pronunciations are more likely to be noticed if they are spoken by a stigmatized speaker, such as a non-native speaker of English" (p. 230). As a result, negative attitudes towards a certain group of speakers can play a role in the way ITAs are perceived by native undergraduates (Orth, 1982; Plakans, 1997; Rubin & Smith, 1990).

When it comes to nonnative undergraduate students' perception of ITAs, however, little research has been done. Lima (2011) had 55 international students from 11 different L1 backgrounds rate a lecture and its speaker based on three guises (American TA, Brazilian TA, and Egyptian TA). The eight variables analyzed were accent, speed, comprehensibility, level of interest in the lecture, usefulness of the lecture, likeability of the speaker, teaching ability of the speaker, and teaching style of the speaker. The results showed that the attributed nationality of the speaker only influenced participants in regards to likeability. The supposed Brazilian TA received more positive ratings than did the alleged American and Egyptian TAs. As for accent, results indicated that the actual degree of accentedness that participants perceived in the speaker's speech, not the nationality of the TA, influenced their ratings.

Given the substantial research available on the perception of ITAs by American undergraduate students and the lack of studies focusing on how nonnative students perceive ITAs, this study compares how both groups react to ITAs based on language and social factors. The variables analyzed were *accent*, *speed*, *comprehensibility*, *likeability of the speaker*, *teaching ability of the speaker*, and *teaching style of the speaker*. The first two features are defined as follows. Accent, or foreign-accented speech, "may be defined as non-pathological speech that differs in some noticeable respects from native speaker pronunciation norms" (Munro & Derwing, 1995, p. 290); comprehensibility refers to "listeners' perceptions of difficulty in understanding particular utterances" (Munro & Derwing, 1995, p. 291). In this study, accent and comprehensibility, along with the other four variables, were operationalized through a rating rubric (Post-video Questionnaire, Appendix A). The study seeks to address the following research questions:

1) On which variables, if any, will the two groups rate the speaker differently depending on the attributed nationality of the speaker?
2) What is the relationship between the ratings for *accent* and *comprehensibility* assigned by each group?

METHODS

Participants

The speaker, a female Serbian, was a Ph.D student in an Applied Linguistics and Technology program and a teaching assistant at the time the study was carried out. She was chosen based on three key aspects: 1) her near-native English proficiency; 2) her teaching experience; and 3) her physical characteristics. For the success of the study, it was essential that participants found the information provided to them about the speaker to be believable.

The raters were 86 first-year composition students (53 males, 33 females) enrolled in cross-cultural sections of English 150 (writing foundation for first-year undergraduate students) and English 250 (a writing course for second-year undergraduates). English 150 requires students to apply critical reading and thinking skills to topics of public and cultural relevance. English 250 has the goal to develop students' skills in written, oral, visual, and electronic communication. Both courses require students to show proficiency in written and spoken communication in English at both academic and cultural levels. Out of the 86 participants, 41 were Americans and 45 were international students.

There are three main reasons underlying the choice of participants for this study. First, given that several cross-cultural sections of English 150 and 250 are offered each semester, a sufficiently large number of participants could be recruited to partake in the study. Second, students enrolled in English 150 and 250 come from a wide range of fields of study; thus, they are likely to have had experience with ITAs from various first language and cultural backgrounds and under a variety of contexts (e.g., classrooms, lab sessions, office hours). Finally, the nonnative participants had a fairly high level of English proficiency given the courses they were taking, which are primarily designed for native speakers of English. Consequently, one would expect that these participants would be able to more accurately judge the comprehensibility of ITAs.

The participants were placed in two different treatment groups: a group that rated the speaker based on the information that she was an Egyptian TA and a group that rated the speaker as being a Brazilian TA. Each group was composed of 43 raters from 14 different L1 backgrounds. Given that the collection of data was conducted during regular class periods, it was unfeasible to randomly assign participants to the two treatment groups. Hence, running a comparative analysis of how groups of raters from L1 backgrounds other than English react to ITAs (e.g., native Chinese speakers as compared to native Spanish speakers) was impractical given the uneven distribution of nonnative listeners in the two groups. The demographic data of each group are shown in Table 1.

Table 1.

Demographic data of the two treatment groups

Groups	N	Gender	Average Age	L1
Egyptian TA	43	27 males 16 females	19.3	Arabic (2), Cantonese (1), Chinese (4), Chichewa (1), English (22), Indonesian (2), Korean (1), Malay (6), Spanish (3), Tamil (1)
Brazilian TA	43	26 males 17 females	19.1	Arabic (2), Chinese (10), English (19), Hindi (3), Indonesian (2), Japanese (1), Korean (2), Malay (1), Spanish (1), Taiwanese (1), Urdu (1)

Materials

The data for this study were collected through *Moodle*, a course management system widely used by the English Department. Both the background questionnaire and the post-video questionnaire used in this study were created using the *questionnaire* feature in Moodle.

The demographic data were collected through a background questionnaire; the data elicited from the participants included age, gender, country of origin, native language, educational background, spoken languages other than English, major, length of residence in the U.S., and the number of ITAs that the participants had had class with prior to the time of the study.

The lecture used as stimulus in this study was about four minutes long and focused on "thesis statement," a topic related to the courses (English 150 and 250) that the participants were taking at the time of the study. The lecture was video-recorded, using a Canon XL1 DV Camcorder, to simulate a real classroom environment. The speaker was provided with a lecture script but was asked to apply her teaching style and maintain her usual teaching speed.

After watching the lecture, participants filled out the post-video questionnaire which prompted them to rate the speaker on six variables: accent, speed, and comprehensibility (language factors) likeability, teaching ability, and teaching style (social factors). The scale used (based on Munro & Derwing, 1995) ranged from 1 to 9, with 1 representing positive ratings (e.g., no accent; easy to understand; very likeable) and 9 representing negative ratings (e.g., very strong accent; very difficult to understand; not likeable).

Procedures

The data collection took place over three days, when the English 150 and 250 classes met in a computer lab. Each data collection session lasted an average of 35 minutes. Participants were provided with headphones to avoid noise interference and used individual computers. First, they received step-by-step instructions on how the data collection process would proceed and on how to access the materials in Moodle. Then, they filled out the background questionnaire. After completing the questionnaire, they were given information about the speaker (orally and in written form in Moodle). It was crucial that participants kept the attributed nationality of the speaker (either Egyptian or Brazilian) in mind when watching the lecture and rating the speaker as this study seeks to investigate the influence of the nationality of the TA on native and nonnative undergraduate students. Participants watched the lecture once and proceeded to the post-video questionnaire. Upon completion of the questionnaire, participants were instructed to log out of the Moodle site.

Data Analysis

Research Question 1, which aimed at comparing the ratings assigned by the two groups (i.e. native versus nonnative students), was answered through an ANOVA Type III; the software used was R version 2.13.1. The variables analyzed were accent, speed, comprehensibility, likeability of the speaker, teaching ability of the speaker, and teaching style of the speaker. As for Research Question 2, a Pearson Product-Moment Correlation Coefficient (Pearson's *r*) was computed to assess the relationship between the ratings for *accent* and *comprehensibility* assigned by each group. For both the ANOVA test and Pearson Product Moment Correlation Coefficient, the *p* value was set at .05.

RESULTS

The main purpose of this study was to compare how both native and nonnative undergraduate students perceived ITAs in terms of language and social factors. Thus, this section will focus on the differences and similarities of the ratings assigned to the speaker. The relationship between the variables *accent* and *comprehensibility* is also discussed.

RQ 1: On which variables, if any, will the two groups rate the speaker differently?

In order to interpret the results, it is essential to keep in mind that the scale (Munro & Derwing, 1995) used in the questionnaire ranged from 1 to 9, with lower ratings indicating more positive ratings and higher ratings indicating more negative ratings. For instance, for the variable *teaching style*, the scale ranged from "very engaging" (1) to "not at all engaging" (9). Thus, lower mean scores represent a more positive perception of the ITA.

Table 2 displays the descriptive statistics obtained for the alleged Egyptian TA. The results show that the ratings assigned by native and nonnative undergraduate students were very close. Both groups perceived the supposed Egyptian TA to have a mild accent (4.45 and 4.14, respectively). The standard deviation found for the variable *accent* shows that the ratings assigned by the nonnative undergraduate students (1.93) varied a little more than did the ratings assigned by the native undergraduate group (1.56). However, this variation was not significant.

Table 2.

Descriptive Statistics of the Ratings assigned to the alleged Egyptian TA

Variables	Native		Nonnative	
	M	*SD*	*M*	*SD*
Accent	**4.45**	1.56	**4.14**	1.93
Speed	**2.04**	1.21	**2.23**	1.58
Comprehensibility	**2.59**	1.53	**2.28**	1.27
Likeability	**3.68**	2.14	**4.00**	1.41
Teaching Ability	**4.04**	1.56	**3.76**	1.14
Teaching Style	**6.00**	1.83	**5.04**	1.80

When it comes to likeability of the speaker, the range of ratings assigned by the American students tended to vary more (SD 2.14) than those assigned by the international students (SD 1.41).

As for the Brazilian TA guise, Table 3 shows the same trend found for the Egyptian TA. That is, the ratings did not vary significantly between the two groups. It is noteworthy that the means for accent ratings for the Brazilian TA (4.15 and 4.20) were very similar to the means of the ratings assigned to the Egyptian TA (4.45 and 4.14). Considering that participants rated the same lecture, even though each group received different information about the speaker, it is not surprising that the ratings were similar. Native and nonnative students alike judged the accentedness of the speech to be moderate (average of 4.2 on a 9-point scale).

Table 3.

Descriptive Statistics of the Ratings assigned to the supposed Brazilian TA

Variables	Native		Nonnative	
	M	*SD*	*M*	*SD*
Accent	**4.15**	1.25	**4.20**	1.66
Speed	**2.16**	1.12	**2.54**	1.69
Comprehensibility	**2.53**	1.35	**2.45**	1.84
Likeability	**3.57**	1.71	**3.21**	1.50
Teaching Ability	**4.26**	1.66	**3.54**	1.79
Teaching Style	**5.46**	1.84	**4.25**	1.77

Surprisingly, the ratings for likeability for the Brazilian TA did not vary as much as they did for the Egyptian TA. It can be seen that, comparing the standard deviation for likeability found for the Egyptian TA (2.14 and 1.41) and for the Brazilian TA (1.71 and 1.50) by each group, participants seemed to agree on the likeability factor of the Brazilian TA. However, this finding was not significant.

When it comes to *teaching style*, the means show that both groups rated the speaker more negatively than they did for any other variable. Native undergraduate students assigned more negative ratings to both Egyptian (6.00) and Brazilian TAs (5.46) as compared to nonnative students (5.04 and 4.25). The difference seemed large enough to be statistically significant; hence, an ANOVA type III was conducted for teaching style and for all the other five variables.

As seen in Table 4, the only statistically significant difference was found for the variable teaching style (p= 0.00). The results show that the international students favored the teaching style of the speaker over American students.

Table 4.

ANOVA Type III results for Research Question 1

Variable	*P* value (set at p<.05)
Accent	0.50
Speed	0.59
Comprehensibility	0.31
Likability	0.72
Teaching Ability	0.15
Teaching Style	**0.00***

RQ2: What is the relationship between the ratings for *accent* and *comprehensibility* assigned by each group?

In order to assess the relationship between the variables accent and comprehensibility, a Pearson Product-Moment Correlation Coefficient was computed. Overall, there was a positive correlation between the ratings for accent and comprehensibility assigned by the native students group (r = 0.377, *p* = .001) and by the nonnative students group (r = 0.509, p = .000). The results displayed in Table 5 show a stronger correlation between those two variables for nonnative students (0.509) as compared to the relationship between the accent and comprehensibility ratings assigned by the native students (0.377). Thus, for international students the accent perceived in the speaker's speech had an impact on the perceived comprehensibility of the lecture. As for American students, even though they perceived a mild foreign accent, it did not seem to affect their perception of the comprehensibility of the lecture as much. This finding is in line with previous research on accent and comprehensibility (Derwing & Munro, 1997), which shows that even when accent is perceived as strong, it may not hinder comprehensibility.

Table 5.

Pearson Product-Moment Correlation Coefficients for Research Question 2

	Native students	Nonnative students
Accent and comprehensibility	$r = 0.377$	$r = 0.509$
P value	.001*	.000*

*p<.05

DISCUSSION AND CONCLUSION

Findings in this study show little discrepancy between the perception of ITAs by native and nonnative undergraduate students. Except for the variable *teaching style*, no statistically significant differences were found for the other five variables (accent, speed, comprehensibility, likeability, and teaching ability) investigated in this study. Given that this study did not gather qualitative data to explain why the participants assigned the ratings they did, one can only speculate as to possible reasons for the significant difference found for the variable *teaching style*. One possible factor that may have played a role in the negative perception of the speaker's teaching style by native undergraduate students was the lack of interactivity of the lecture. The speaker delivered a lecture to the camera; faking interaction with absent students is a difficult task. It may be possible that the international students were a little more lenient regarding the teaching style of the speaker because they may have been more focused on trying to comprehend the lecture as English is not their first language.

There is a lack of research focusing on how nonnative undergraduate students react to ITAs regarding language and nonlanguage factors. As mentioned previously, Lima (2011) found that the nationality of the TA does not seem to affect how international students perceive ITAs and that the actual degree of accentedness, not nationality, influence their perception of ITAs. It seemed to also be the case for the native undergraduate students taking part in this study.

It is true that the speaker in this study has a near-native proficiency in English and that the nationalities (Egyptian and Brazilian) chosen for the two guises may not have had as large of an impact on participants as would other nationalities. A possible explanation could be the lack of listener familiarity with the accent of speakers of either nationality or with the cultural background of either country. This lack of familiarity may have led to the absence of preconceptions; consequently, nonlinguistic factors may not have played a significant role in raters' perception of the ITA. Also, this study only gathered quantitative data, which do not allow for a more precise interpretation of why undergraduate students react to ITAs in the way they do.

Another point to be made is that the nonnative students taking part in this study were highly proficient in English as they were enrolled in first-year composition courses. That is to say, compared to a group of participants composed of intensive English program students, for instance, one would expect nonnative students taking English 150 and 250 to be able to provide a more accurate judgment of the comprehensibility of ITAs. Also, this study was conducted at a very diverse university; native and nonnative students alike are often exposed to other languages, cultures, and people. For instance, out of the 86 participants taking part in the study, only 11 had had no contact with ITAs. Fifteen participants had had a class with one ITA, 23 with two ITAs, 15 with three ITAs, 11 with four ITAs, one with 5 ITAs, and 10 participants had had class with more than five ITAs. Figure 1 shows a breakdown of the number of previous ITAs for native and nonnative students. It is possible that being exposed to so many foreign teaching assistants and to international people on and off campus on a regular basis led to a higher tolerance to foreign-accented speech and to different teaching styles.
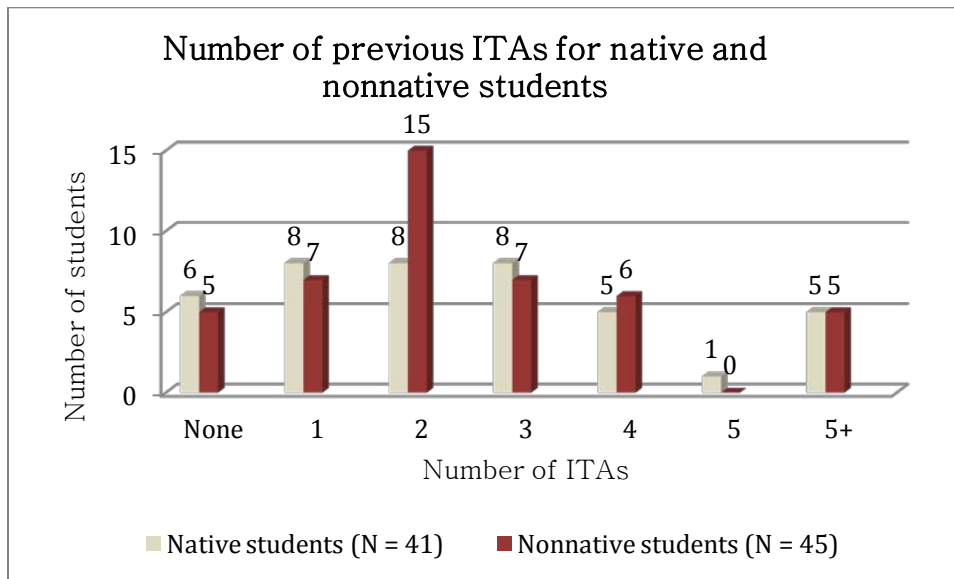
Figure 1. Breakdown of the number of previous ITAs for native and nonnative students

Research available on the perceptions of ITAs by American students has shown that they tend to react negatively to ITAs, even when the ITAs are intelligible and comprehensible; however, many of these studies fail to explain, from the listeners' point of view, the reasons underlying

this negative perception. This study should be replicated with the inclusion of a qualitative component (focus groups) and an assessment component (a listening comprehension test) to gather more concrete evidence as to why native and nonnative undergraduate students react to ITAs in the way they do.

Given that the communication process between ITAs and students is a shared responsibility (Pae, 2001), more recent research needs to be conducted on the perception of ITAs by both native and nonnative undergraduate students. Although "there are numerous instances in which ITAs possess such marginal oral proficiency in English that it undermines their instructional competence" (Kang & Rubin, in press), previous research has revealed that even ITAs that have near-native English proficiency are highly stigmatized. It is then clear that it may be helpful for undergraduate students to be (re)educated so that they be active participants in making the teaching/learning process an easier and more successful task for them as well as for instructors no matter their cultural background, first language or country of origin.

ABOUT THE AUTHOR

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Appendix A. Post-video Questionnaire

Rating the speaker

Now that you have carefully watched and listened to the lecture, please rate the speaker according to the aspects below. Note that the scale ranges from 1 to 9, being 1 positive rating and 9 negative rating.

1. Do you know the speaker from before? Yes or no? If yes, please explain.

2. Accent

No accent	1	2	3	4	5	6	7	8	9	Very strong accent

3. Speed

Appropriate speed	1	2	3	4	5	6	7	8	9	Very fast

4. Comprehensibility

Easy to understand	1	2	3	4	5	6	7	8	9	Very difficult to understand

5. Likeability of the speaker

Very likeable	1	2	3	4	5	6	7	8	9	Not likeable

6. Teaching ability of the speaker

Very good teacher	1	2	3	4	5	6	7	8	9	Not a good teacher

7. Teaching style of the speaker

Very engaging	1	2	3	4	5	6	7	8	9	Not engaging

CULTURAL IDENTITY, PRONUNCIATION AND ATTITUDES OF TURKISH SPEAKERS OF ENGLISH: LANGUAGE IDENTITY IN AN EFL CONTEXT

Elizabeth Pullen, Bilkent University

This study investigates the relationships among cultural identity, the degree of accentedness, and attitudes toward pronunciation of non-native speakers of English in an EFL context. The participants of the study were advanced Turkish speakers of English at two English-medium universities in Ankara, Turkey. The participants responded to a questionnaire about cultural identity, attitudes toward pronunciation, and language background, and provided a pronunciation sample. The analysis of the quantitative data did not reveal a significant relationship between cultural identity and degree of accentedness. However, a significant relationship was found between cultural identity and how important native-like pronunciation of English was perceived to be. It can be concluded, based on the attitudes expressed by the participants, that most did not perceive native-like pronunciation to be a threat to their cultural identity. Individual preferences and goals should therefore be taken into consideration in pronunciation instruction, but it should by no means be neglected on the basis of the claim that trying to change pronunciation is interfering with identity.

The large majority of research on the degree of foreign accent in a second language (L2) has focused on the factors of age, exposure to L2, amount of L1 and L2 use, formal instruction, gender, aptitude, motivation and attitudes. In many of these factors, however, there may be overlapping sociocultural elements. The age factor has historically been connected to the Critical Period Hypothesis, and theories of brain lateralization and loss of plasticity. Ellis (1994), however, suggests that age is a social factor, and that younger speakers are more subject to social pressures from their peer group. He also suggests that younger learners may have less rigidly formed identities. Dornyei (2009) similarly argues that children have a weaker group identity than adults, and this may help them to integrate into and identify with a new language community. Gender is also related to social identity; Ellis attributes the tendency for women to experience greater success in pronunciation attainment to identity factors, stating that "female 'culture' seems to lend itself more readily to dealing with the inherent threat imposed to identity by L2 learning" (1994, p. 204). As regards attitudes, Ellis claims that a learner's attitude will reflect their views both about their own identity, and the culture of the language they are learning. These attitudes in turn will affect their success in learning the target language. Identity is also relevant to the topic of pronunciation instruction; Dalton and Seidlhofer (2001) raise questions about the ethics of seeking to change someone's pronunciation, since pronunciation may be an expression of identity.

Cultural and Language Identity

According to Hall (2003), there are two main perspectives of cultural identity. In the first, cultural identity is defined as "one, shared culture, … which people with a shared history and common ancestry hold in common" (Hall, 2003, p. 234). In this view, the shared history and

cultural codes of a group of people provide a sense of "oneness", a sense of "us" versus "them". The second view of cultural identity more fully acknowledges the complexity of culture, and recognizes that within any group an exact shared experience is not possible. Even within a group sharing many experiences, there are "critical points of deep and significant difference" (Hall, 2003, p. 236). In the present study, this second approach to identity predominates.

The language identity paradigm currently most in vogue is that of *poststructuralism*. According to this paradigm, Pavlenko and Blackledge (2004), define identity as follows:

> We view identities as social, discursive, and narrative options offered by a particular society in a specific time and place to which individuals and groups of individuals appeal in an attempt to self-name, to self-characterize, and to claim social spaces and social prerogatives (p. 19).

Another definition is provided by Block (2007), who defines identities as "socially constructed, self-conscious, ongoing narratives that individuals perform, interpret and project in dress, bodily movements, actions and language" (p. 27). Bausinger (1999) provides yet another definition, stating that,

> We construct our own identities through categories set by others, and moreover, it is in referring to the outside world that the speaker constitutes himself as a subject. Communication is seen as the relational making of signs, the responsive construction of self, and the interdependence of opposites (p. 7).

According to these definitions of identity, the use of language is an essential component in the way an individual presents and views him or herself. Bialystok and Hakuta (1994) assert that who we are is shaped in part by what language we speak. This becomes especially relevant in multilingual contexts. An individual's identity as it is related to language is especially called into question when that individual comes into contact with a new or different language. According to Pavlenko and Blackledge (2004), "identity becomes interesting, relevant, and visible when it is contested or in crisis" (p. 19). Block (2007) claims that this happens especially in the case of "sojourners" and immigrants, that is, for individuals who for one reason or another are immersed in a new culture and language. Block argues that, "in this context, more than other contexts … one's identity and sense of self are put on the line" (p. 5).

Turkish identity.

Turkish speakers of English living in Turkey do not fall into the category of sojourners or immigrants, but it is nevertheless a relevant question whether these speakers face a similar crisis of identity in the process of learning a new language. At this point it is necessary to define Turkish identity, in order to understand ways it may be threatened by the process of learning English. In order to understand the multi-faceted Turkish identity, a glance at Turkish history is required. With the establishment of the Turkish Republic, after the collapse and carving up of the Ottoman Empire, the founders felt that it was necessary to promote a distinct Turkish identity, differentiated from the surrounding regions and populations that had previously been part of the Ottoman Empire. Ataturk, influenced by the writings of Gokalp (1968) upheld the assertion that race was an invalid basis of Turkish identity. In the absence of this unifying factor, others were needed. According to A. Aydingun and I. Aydingun (2004), "in constructing the new Turkish nation-state, the founders of the republic focused on three important elements: secularism, language, and history" (p. 417). However, although this was the avowed basis of the new

national identity, many contradictions in practice and even in rhetoric could be seen at the time. Other authors have suggested additional aspects involved in the construction of Turkish identity, including: religion, ethnocentrism, history and education, motherland, and language (A. Aydingun & Aydingun, 2004; Canefe, 2002; Cayir, 2009).

Identity and Pronunciation Research

Identity research first entered the field of SLA with Lambert's research on American learners of French in Montreal. He theorized that as language learners became more proficient in a second language, their ties with their own linguistic-cultural group could be weakened or felt to be under threat, and that they may feel "chagrin or regret as he loses ties in one group coupled with the fearful anticipation of entering another" (Lambert, Gardner, Barik, & Tunstall, 1963, p. 358). Lambert et al. use the term *anomie* to describe feelings of "social uncertainty or dissatisfaction which characterize the … bilingual or even the serious student of a second language and culture" (p. 359). Next came Guiora, Beit-Hallahmi, Brannon, Dull and Scovel (1972), who claimed that pronunciation is the aspect of language most connected to identity. Guiora et al.'s famous research on the effect of alcohol on pronunciation was intended to test the idea of "ego-permeability"; he claimed his research demonstrated that when ego-boundaries were weakened, pronunciation became more native-like. Next came Schumann, who, in the 1970s, borrowed the idea of ego permeability from Guiora. Schumann developed the Acculturation Model, in which he identified two key categories of social factors to be considered in the acquisition of a second language in a naturalistic setting. The first category is that of social distance, and is related to issues of power dynamics, desire for integration, and cohesiveness. The second category is that of psychological distance and is related to questions of individual motivation and ego permeability (Schumann, 1986). After this early research about identity in SLA, the topic did not get much more attention until fairly recently.

Recent research on identity and pronunciation has focused on language learning in naturalistic settings (e.g. Jiang, Green, Henley, & Masten, 2009; Lybeck, 2002). These studies all found evidence that factors of social and cultural identity influence the degree of foreign accent in the production of an L2. A study by Gatbonton, Trofimovich, and Magid (2005) found that listeners attributed degrees of cultural loyalty to speakers based on their accents. Fewer studies have looked at the role of identity in "the expanding circle" or in foreign language (FL) settings. Some of these (e.g. Borlongan, 2009; Rindal, 2010) have looked at the target variety learners choose to aim for in their pronunciation, in foreign language learning environments and how those choices reflect identity. Others have explored non-native speaking English teachers' attitudes toward their accent as reflections of their identity (Jenkins, 2005; Sifakis & Sougari, 2005) There is, however, a lack of research that directly explores the relationship between cultural identity and degree of foreign accent in a FL learning environment.

RESEARCH QUESTION AND METHODOLOGY

The purpose of this correlation study was to investigate the following question: What are the relationships between cultural identity, the degree of accentedness, and attitudes toward pronunciation of non-native speakers of English in an EFL context?

Participants and Setting

A total of 145 students (73 male and 72 female participants, ages 18 to 25) studying in various departments at two large English-medium universities located in Ankara, Turkey, responded to a

cultural identity and pronunciation attitude questionnaire. Primarily first- and second-year undergraduate students from these universities were used. All participants were within a range of mid- to high-advanced proficiency in English. Thirty-four (15 male, 19 female) students were recruited from the questionnaire pool to be included in the pronunciation assessment portion of the study.

Instruments and Procedure

Questionnaire.

A questionnaire was used to gather data about participants' cultural identity and attitudes toward their own pronunciation of English. The first part of the questionnaire was comprised of questions relating to Turkish cultural identity, and was created by the researcher, based primarily on the elements of Turkish identity discussed briefly in the literature review. However, due to the sensitive nature of the topic in the current context, a few of the areas mentioned in the review of Turkish identity were omitted from the questionnaire; questions related to religion and ethnicity were deemed to be too controversial at the present time in this context. Therefore, sixteen questions based on aspects of Turkish identity such as history, education, language, national loyalty and general culture (media, music, food, and traditions) were included in the questionnaire. Participants indicated how strongly they agreed or disagreed with each statement using a Likert scale of one to five. The responses to the first sixteen questions were averaged and taken to represent cultural identity (CI). The questionnaire was administered in Turkish to ensure participants completely understood the questions. The English translation of the questionnaire can be seen in Appendix A. The cultural identity portion of the questionnaire had a Cronbach's Alpha coefficient of .815. The second part of the questionnaire was taken in part from the Background Information Questionnaire used by Berkil (2008), and asked questions about pronunciation ability, attitude toward pronunciation, thoughts on identity and pronunciation, and language background.

Pronunciation tasks.

Data for the pronunciation variable were gathered using three task types: reading six short sentences, reading a word list, and production of a free-response speech sample. The sentences for the sentence reading task were adapted from those used by Bongaerts, van Summeren, Planken and Schils (1997). Sentences and words were selected to include phonemes that are difficult for Turkish native speakers to pronounce in English, such as /θ/, /ð/, /æ/, /uː/, /v/, /w/, /ɪ/ between s and another consonant, /b/, /d/ and /dʒ/ in final position, and consonant clusters (Thompson, 2001, p. 215-216). The spontaneous speech task was taken from the "guided communication" task used by Moyer (1999, p. 103), which gives the participants a list of topics, of which they choose one to respond to. The three tasks were performed in random order, so as to limit the effect of task order on the pronunciation outcomes.

Pronunciation rating.

Based on the findings of Piske, Mackay and Flege (2001), who found that a nine-point scale is best able to exploit the listeners' full range of sensitivity to foreign accent, a nine-point rater scale was used in the current study. Other studies that have made use of a nine-point scale include those of Flege, Yeni-Komshian, and Liu (1999) and Flege, Birdsong, Bialystok, Mack,

Sung and Tsukada (2006). Five native-speakers of English (three American, two British) rated the speech samples. Each of these raters had been living in Turkey for at least 18 months at the time of the study, and were therefore familiar with Turkish accents. The raters were instructed to score the samples on a scale of one to nine (1-3 = strong accent, 4-6 = intermediate, 7-9 = no accent). The following benchmarks were provided in the scoring instructions: 1 – Very strong foreign accent: definitely not a native speaker of English; 5 – Noticeable foreign accent: probably not a native speaker; 9 – No foreign accent at all: definitely a native speaker of English.

For the rating, the samples were organized according to task, but randomized for order within each task. Within the recorded samples of each task, three native-speaker samples of the same production tasks were interspersed, as a standard for comparison. The five native-speaker judges listened to the whole recording of the word list and sentence list tasks, but listened to four to eight second clips of the free-response task samples. These clips were selected from the recording in order to have the raters score responses containing as few grammatical errors or filler utterances as possible, so as not to unfairly influence the pronunciation rating. In some cases the entire free-response sample was not more than four seconds long, in which case the whole clip was used.

A scale reliability assessment revealed that for Task 1 (reading a word list), Cronbach's Alpha coefficient was .789. Rater C for task 1 was found to be weakly correlated with the other raters. When a reliability analysis was run without Rater C, Cronbach's Alpha coefficient was .845. Due to the relative unreliability of Rater C in Task 1, this rater's scores for Task 1 were not included in the calculation of the average pronunciation score. For Task 2 (reading a list of sentences), Cronbach's Alpha coefficient was .919. For Task 3 (a free response to a prompt), Cronbach's Alpha coefficient was .856; because of this a moderate-to-strong correlation between all raters in Tasks 2 and 3, all were included in the calculation of the average pronunciation score. Pronunciation scores for each participant were therefore the averaged scores of each of the five raters across two tasks and four raters across one task, for a total of fourteen scores per participant.

Data Analysis

Data collected were statistically analyzed using IBM SPSS Statistics 19. The questionnaire was analyzed for reliability (Cronbach's Alpha coefficient of .815), and the responses were analyzed for normality. In order to determine possible confounding factors, both the identity scores and the pronunciation scores were analyzed according to each of the language background and attitude measures. Due to lack of normality (Kolmogorov-Smirnov and Shapiro-Wilk tests), nonparametric independent samples measures (Mann-Whitney) were used when comparing CI scores with the nominal data (residence of more than three months abroad (yes or no), other languages used in the home (yes or no), participation in a pronunciation training course (yes or no), and sex (male or female)). Correlation analyses were performed with the interval data (self-rating of pronunciation, satisfaction with pronunciation, importance of pronouncing English like a native-speaker, and age of onset) using a nonparametric correlation analysis (Kendall's Tau).

Independent samples measures and correlation analyses were repeated using the pronunciation samples provided by the thirty-four students from the larger pool of questionnaire respondents. Kolmogorov-Smirnov and Shapiro-Wilk tests showed the mean pronunciation score data to be normally distributed; therefore, parametric independent samples t-tests were used for these analyses.

After the relationships between the identity scores and pronunciation scores with each of these factors were analyzed, a partial correlation analysis between identity and pronunciation scores was performed, controlling for the age of beginning English study, and residence of three or more months in an English speaking country, the two factors that were found to relate to both identity and pronunciation.

RESULTS AND DISCUSSION

The purpose of this research study was to gain a greater understanding of the relationships between CI, the degree of accentedness, and attitudes toward pronunciation of non-native speakers of English in an EFL context. This concept can be visualized as a triangle (Figure 1), with each point of the triangle impacting the other.
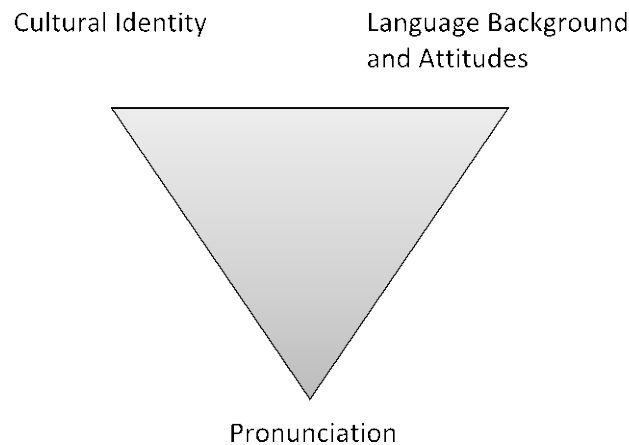
Figure 1. Schematic representation of the elements of the research question.

In order to explore these relationships, the three points of the triangle, each a component of the research question, were compared with each other.

Variables Affecting Cultural Identity

Language background and attitude factors were first analyzed against CI scores. The possible range of CI scores was one to five, with one representing a strong affiliation with Turkish identity, and five representing a weak affiliation ($R = 1.31 - 4.19$). CI scores were calculated to the nearest hundredths decimal place. Only factors that had a significant relationship with CI scores are discussed below.

Other language use in the home.

A Mann-Whitney independent samples test showed that respondents who reported the use of another language besides Turkish in the home (*Mdn = 2.69*, *IQR = 1.38*) had a higher cultural identity score than those who did not (*Mdn = 2.33*, *IQR =.84*, *U = 1054.50*, *p(two-tailed) < .05*), with a small effect size (*r = -.18*). Figure 2 shows the boxplot comparison of those who reported other language use, and those who did not.

Figure 2. Use of a language other than Turkish in the home and cultural identity.

In many definitions of cultural identity, shared language is included as a necessary ingredient of a common culture (cf. Bausinger, 1999; Block, 2007; Pavlenko & Blackledge, 2004). In the present study, it is interesting to note that there was a significantly *higher* average cultural identity score among those who reported use of a language other than Turkish in the home than those who did not. One possible explanation for this relates to the idea commonly taught in the Turkish national curriculum, that national unity depends on the homogeneity of the population (Canefe, 2002; Cayir, 2009). In most cases, those reporting language use other than Turkish reported languages such as Laz, Azeri, Kurdish, or other regional dialects or minority languages. If people from these minority groups feel that their cultural loyalty or right to belong is being called into question, they may respond by overemphasizing their cultural identity in other respects, to "prove" that they belong. If, as Giles and Byrne (as cited in Pavlenko & Blackledge, 2004) claim, language is a marker of ethnic identity and group membership, those trying to belong in a group while at the same time using the language of another group, will have to demonstrate their right to belong in other ways.

Pronunciation training.

A Mann-Whitney test revealed that respondents who had received some sort of pronunciation training (*Mdn = 2.13*, *IQR = .75*) had a lower cultural identity score than those who had not (*Mdn = 2.38, IQR =.94*, *U = 560.00*, *p(two-tailed) < .05*), with a small effect size (*r = -.17*). Figure 3 shows the boxplot comparison of those who reported participation in a pronunciation training course and those who did not.
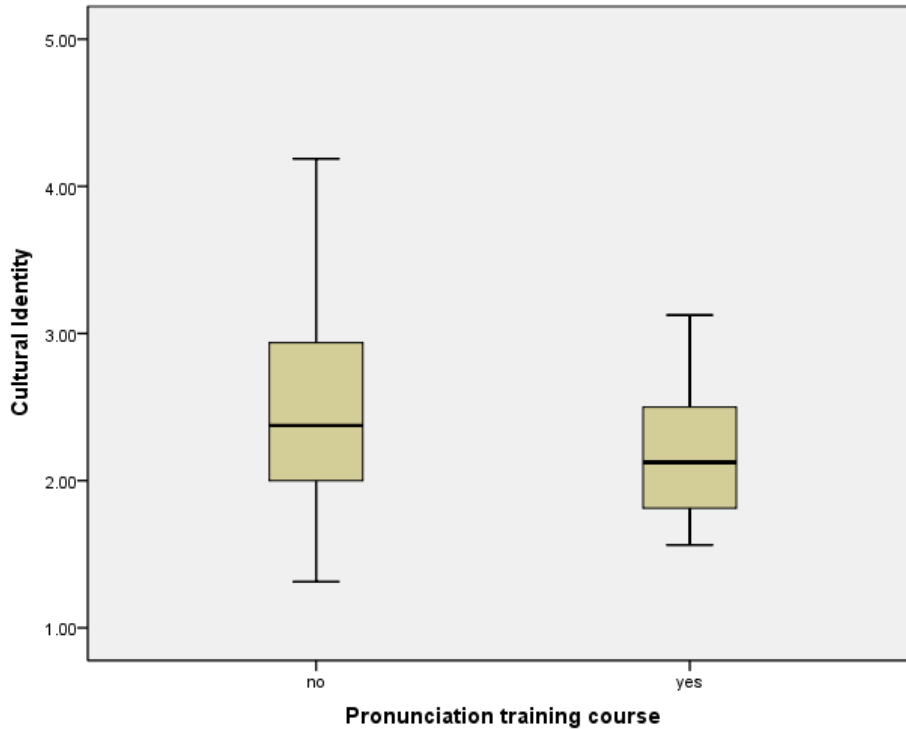
Figure 3. Participation in a pronunciation training course and cultural identity

Some researchers have expressed concern that to try to change an individual's pronunciation is to tamper with their identity (cf. Jenkins, 2005; Porter & Garvin, as cited in Munro & Derwing, 1995). An initial conclusion, based on the findings that those who reported receiving pronunciation training had significantly lower cultural identity scores, would seem to confirm this. However, it is inappropriate to assume that the lower identity scores were the result of the pronunciation training; it is equally likely that individuals who already identify less strongly with their culture would more highly value native-like pronunciation of English, and would therefore enroll in pronunciation training classes.

An interesting side-note here is the fact that a significant relationship was found between the importance placed on having native-like pronunciation and reported enrollment in pronunciation training classes, only in an unexpected direction; those who reported receiving pronunciation training were significantly *less* likely to find it important to speak English like a native speaker. One reason for this may be that, as a result of the pronunciation training, the goals of the individual changed due to the perceived difficulty of attaining native-like pronunciation, or being exposed to the idea that native-like pronunciation need not be their goal.

Age of beginning English study.

The average age (and also the most frequent age) of beginning English study was 10 years old (34.5%), with a widely varying range (*R = 1 year old to 21 years old*). A weak, negative correlation (Kendal's Tau) was found between cultural identity and the age of beginning English study ($\tau = -.129, p(two\text{-}tailed) < .05$). This suggests that those who begin studying English at a younger age are slightly less likely to have a strong cultural identity. Figure 4 shows the

correlation of age of beginning English study with cultural identity scores.
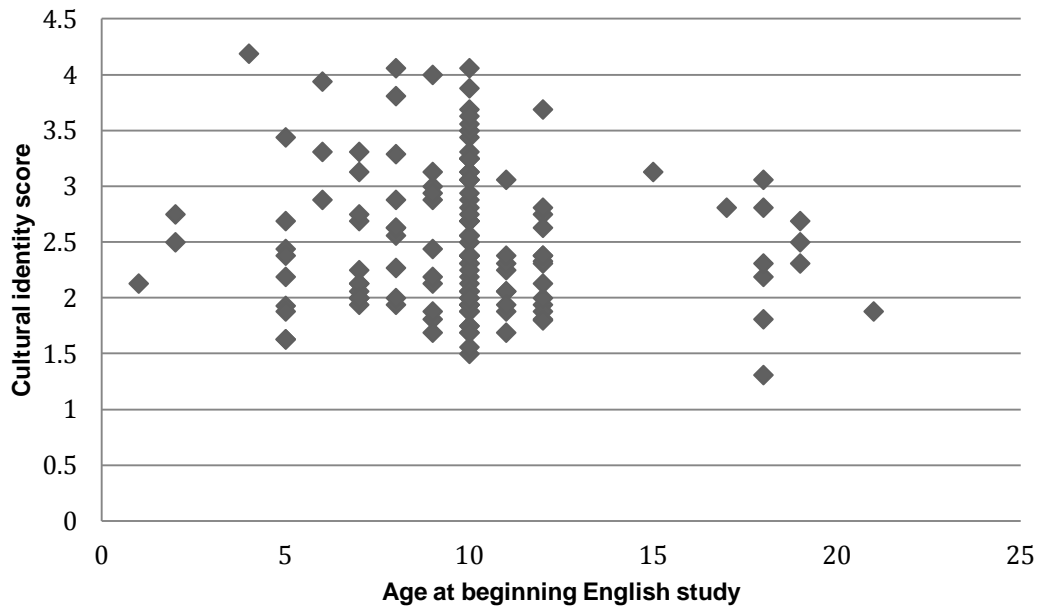
Figure 4. Scatterplot showing correlations of age of beginning English study with cultural identity.

There are at least two possible explanations for this relationship. It has been suggested that children are more easily adaptable to new identities (cf. Guiora et al., 1972; Oyama, 1976). It is possible that when exposed at a young age to a different culture, through the medium of language learning, an individual's identity development incorporates that language and culture into their identity, more so than if exposed at a later age. Another possible explanation is that elite families who may tend to have more expansive cultural views are also the ones who are likely to start their children in foreign language education at a younger age, and therefore the lack of close cultural identification has more to do with family values and views than directly with language learning.

Importance of pronouncing English like a native speaker.

A weak, negative correlation (Kendal's Tau) was also found between cultural identity and the importance placed on pronouncing English like a native speaker ($\tau = -.134, p(two-tailed) < .05$). This finding provides evidence that the value placed on pronunciation of a foreign language is in fact related to identification with the home culture. Those who are strongly affiliated with their culture seem to be less likely to value native-like pronunciation. However, this value does not appear to have any effect on actual pronunciation performance, since no relationship was found between pronunciation scores and perceived importance of having native-like pronunciation. Figure 5 shows the correlation of importance given to native-like pronunciation and cultural identity scores.
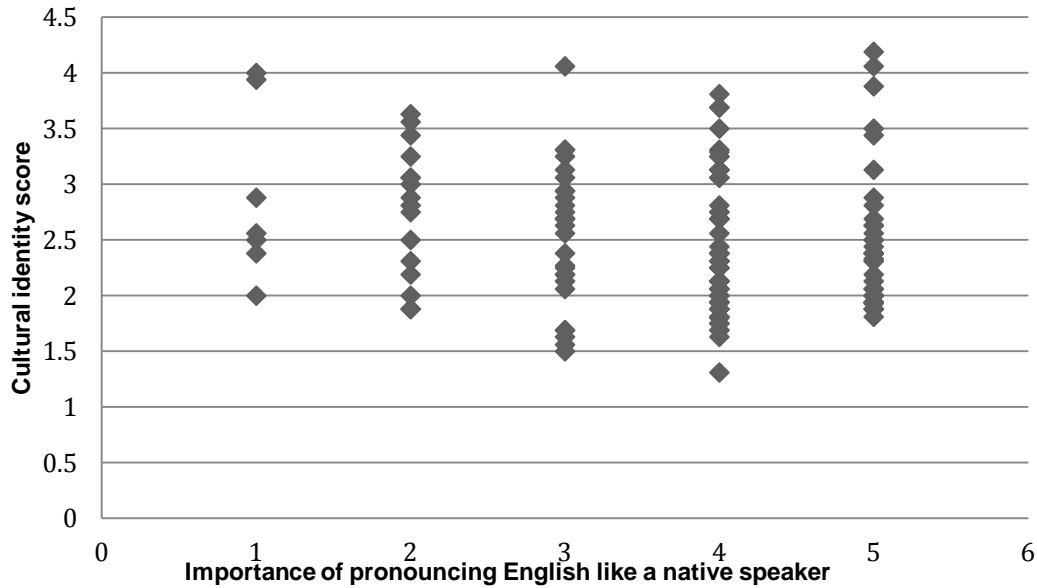
Figure 5. Scatterplot showing correlations between assigned importance of having native-like pronunciation and cultural identity.

Variables Affecting Pronunciation

Language background and attitude factors were next analyzed against pronunciation scores. Possible scores ranged from one to nine, with one representing a "strong foreign accent" and nine representing "native-like" pronunciation ($R = 2.53 – 7.40$). Pronunciation scores were calculated to the nearest hundredths decimal place. Only factors that had a significant relationship with pronunciation scores are discussed below.

Age of beginning English study.

The most commonly accepted predictor of pronunciation ability is the age at which an individual begins learning a foreign language. The majority of studies on pronunciation have been done in ESL settings (Asher & Garcia, 1969; J. Flege et al., 2006, 1999; Oyama, 1976; Piske et al., 2001; Tahta, Wood, & Loewenthal, 1981). All of these studies found that age of immersion or arrival was correlated with pronunciation ability. Though there are obvious differences between the age of immersion and the age of beginning English study (namely, amount and quality of exposure), the findings of the present study similarly found a moderate degree of correlation between the age of beginning and pronunciation accuracy.

Three or more months residence abroad.

A Mann-Whitney independent samples test revealed that, on average, participants who had spent three or more months ($R = 3$ *months to 5 years*) in an English speaking country received higher pronunciation scores (*Mdn = 5.29, IQR = 2.86*) than those who had not (*Mdn = 4.14, IQR = 4.86*). This difference was statistically significant ($U = 46.5$, *p(one-tailed) < .05*) and there was a medium-large effect size ($r = .40$).

The results of the present study seem to support the findings of Asher and Garcia (1969) who found that residence in an English-speaking environment was significantly related to

pronunciation scores. However, the findings of the present study are inconsistent with those of Flege et al. (2006), Moyer (1999) and Tahta et al. (1981b) all of whom found that pronunciation scores did not seem to improve with longer residence in an English speaking country. An important difference, however, between the present study and those mentioned above is that in those three studies, residence abroad was considered in terms of number of years, and it was found that longer residence did not mean less accented pronunciation, whereas in the present study, residence abroad was a yes or no question, rather than a length of duration. According to this classification, it was found that living in an English speaking country for three or more months appears to result in more native-like pronunciation; however, it provides no information as to whether longer residence is correlated with continued improvement in pronunciation. Another caveat with regards to the findings of the current study is the fact that the analysis was based on a small sample of participants who reported living abroad: only eight individuals reported a residence of three or more months in an English speaking country. These results can be considered significant, but should be applied with a measure of circumspection (Heeren & D'Agostino, 1987; Munro, Derwing, & Burgess, 2010; Siegel, 1957)

Pronunciation, satisfaction and importance correlations.

A moderate positive correlation was found between mean pronunciation scores and satisfaction with pronunciation. Interestingly, no significant correlation was found between mean pronunciation scores and self-reported importance of pronouncing English like a native-speaker. Table 1 shows the correlations between mean pronunciation scores, satisfaction with pronunciation, and perceived importance of having native-like pronunciation.

Table 1

Correlation matrix of mean pronunciation scores, satisfaction with pronunciation and importance of pronouncing English like a native speaker

	Pronunciation	Satisfaction	Importance
Pronunciation (τ)	1.00	.347	.099
Sig. (two-tailed)	-	.011	.460
Satisfaction (τ)	.347	1.00	-.040
Sig. (two-tailed)	.011	-	.788
Importance (τ)	.099	-.040	1.00
Sig. (two-tailed)	.460	.788	-

It seems that a belief that native-like pronunciation ought to produce a high level of pronunciation accuracy, but this was not demonstrated. There are two plausible explanations for this. First, an abstract belief in the value of native-like pronunciation may not motivate attainment of such pronunciation, which may be seen as unattainable. Or, the motivation of individuals desiring to attain native-like pronunciation may not be powerful enough to overcome other limitations such as age, native language, or lack of instruction or exposure to native speaker models.

Pronunciation and Identity Correlation

The third and culminating comparison was a correlation analysis between pronunciation and cultural identity scores. Since the age of beginning English study and residence of three or more months in an English speaking country were found to be related to the variable of pronunciation, these two variables were controlled in a partial correlation analysis between cultural identity and pronunciation. This analysis revealed that there was no significant relationship between cultural identity and mean pronunciation scores ($r = .004, p > .9$). This finding suggests that there is not a direct relationship between cultural identity and the pronunciation ability of non-native speakers of English in an EFL context.

CONCLUSION

In this study, it was hypothesized that individuals in an EFL context with a greater degree of identification with their native culture would tend to produce more accented English. This hypothesis was not supported by the results of the study, in that no direct relationship between identity and pronunciation scores was found. However, the relationship found between cultural identity and the perceived importance of native-like pronunciation would seem to indicate at least some degree of connection between identity and a learner's pronunciation. Given this indirect indication of a relationship between identity and pronunciation, more research on this question is warranted.

An important limitation of this study came from the difficulty of broaching the topic of identity in this context, where cultural identity is currently the topic of much debate and disagreement, with strong feelings on all sides. The sensitive nature of the topic limited the types of questions that could be asked, for fear of offending students and sparking conflict. This limitation on the questions permissible may well have resulted in a weaker questionnaire, which was less effective at distinguishing between levels of cultural affiliation. Another result of the sensitive nature of the topic was that the study was limited to only two universities, when ideally it would have included three or four. At one institution, research was denied permission on the grounds of the sensitive nature of the questions, and at another it was seriously stalled and nearly stopped altogether. This most likely limited the range of responses to the cultural identity questions. A broader range of samples might well have led to different results in the relationship between pronunciation and identity.

Consequently, similar studies in other EFL contexts with more cohesive national identities may be able to shed light on the question of a direct relationship between pronunciation and identity. Additionally, it may be that the need to express identity through pronunciation would be more relevant in an ESL context where cultural identity is more under threat, and it would therefore be worthwhile to do a correlation study of this type in an ESL context.

The results of this study revealed that many, though not all, learners view native-like pronunciation as the ideal, and that native-like pronunciation is not perceived by most to be a threat to cultural identity. This being the case, the researcher agrees with Derwing and Munro in "rejecting the idea that pronunciation instruction and identity preservation are mutually exclusive" (2008, p. 487), and recommends that learner goals for pronunciation be taken into consideration. Learners need to be made aware of the available options; whether they wish to aim for native-like pronunciation or simply improved comprehensibility, they ought to be encouraged in their goals and given the resources to attain them. In order to do this, more

research on learner pronunciation goals is needed, to inform pedagogical practices in the area of pronunciation instruction in foreign language settings.

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Appendix A – Cultural Identity Questionnaire, English

Cultural Identity and Pronunciation Questionnaire

Bilkent University, MATEFL

This questionnaire is part of research being done on the relationship between cultural identity and pronunciation. There are two parts to the questionnaire. The purpose of the first part is to gain an understanding of your attitude toward certain aspects of your culture. The second part aims to gather information about your pronunciation of English and your language background. Your responses will be kept confidential, and are of great value to this study, so please be honest.

Informed Consent: I understand that I am answering this questionnaire voluntarily, and that my answers and the information they provide may appear annonymously in a Master's Thesis. I understand that by completing this questionnaire I am giving my permission for my responses to be used in this way.

Signature: _____ Date: _____

Name and Surname: _____

Department: _____

Age: _____   Sex: ☐ M   ☐ F

Part 1 – Identity

Please indicate your opinion on the following statements by choosing the number that corresponds to how strongly you agree or disagree:

		Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
1	I feel privileged to be a citizen of my country	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2	As a citizen, I have a responsibility to improve and advance my nation	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3	Some of the most important figures in world history have come from my nation	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
4	I follow national news very closely	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

		Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
5	Sometimes languages other than my own native tongue are more effective at expressing complex ideas	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
6	It bothers me that some musicians copy other countries' styles in their music	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
7	It is my responsibility to take care of a bereaved neighbor by bringing them food or sitting with them	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
8	I am afraid that if foreign cuisine becomes too common in my country, it will damage our traditional food culture	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
9	I prefer foreign television programs over television programs produced by my own country	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
10	I would gladly give my life to defend my homeland	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

11	You don't have to speak a country's national language to really be a member of that country	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
12	People should be more willing to try food from other cultures	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
13	Shared language is one of the most important factors in the unity of my nation	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
14	It is very important for young people to visit their grandparents or other relatives during holidays	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
15	One of the most important functions of schools is to teach children to be loyal to their nation	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
16	Every political decision in my country should be made in line with the intentions of the nation's founders	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Part 2 – Pronunciation

Please answer the following questions, and explain where necessary.

17	How would you rate your pronunciation of English?				
	Very poor	Poor	Average	Good	Very good
	1	2	3	4	5
	☐	☐	☐	☐	☐

Please explain:

18	How satisfied are you with your pronunciation of English?				
	Very dissatisfied	Somewhat dissatisfied	Neither dissatisfied nor satisfied	Fairly satisfied	Very satisfied
	1	2	3	4	5
	☐	☐	☐	☐	☐

Please explain:

9	How important is it to you to pronounce English like a native speaker?				
	Completely unimportant	Mostly unimportant	Somewhat important	Fairly important	Extremely important
	1	2	3	4	5
	☐	☐	☐	☐	☐

Please explain:

| 20 | Does it matter to you how your peers perceive your pronunciation of English? Why or why not? |

Please explain:

| 21 | Do you feel that your cultural identity affects your pronunciation of English? If so, how? |

Please explain:

| 22 | What languages other than Turkish are spoken in your home? (check all that apply): |

☐ Kirmancı   ☐ Zazaki   ☐ Lazca

☐ Arapça   ☐ Kürtçe   ☐ Other (please specify)

| 23 | At what age did you begin learning English? |

| 24 | Have you traveled or lived in an English-speaking country? ☐ Y ☐ N |

If yes, how long were you there? _____

| 25 | Have you ever taken a pronunciation training course? ☐ Y ☐ N |

If yes, for how long? _____

| 26 | Where did you grow up? (name of the city, town or village): |

| 27 | Where did you go to highschool? (name of the school): |

| 28 | What was your parents' highest level of education? (middleschool, highschool, vocational training (please specify), BA/BS, MA, PhD, other (please specify)): |

Father: _____

Mother: _____

Thank you very much for taking the time to thoughtfully complete this questionnaire. Your answers are valued and your time is appreciated!

If you would be willing to participate in the next stage of this research project, please leave your contact information:

Email address: _____

Appendix B – Pronunciation Speaking Tasks

Task 1

Please read through the following list of sentences one time silently, then read them aloud at a comfortable and natural pace.

1) Arthur will finish his thesis within three weeks.

2) My sister Paula prefers coffee to tea.

3) Mat's flat is absolutely fantastic.

4) You'd better look it up in a cookbook.

5) The keys are in the drawer.

6) Singing is not thought to be a sport.

Task 2

Please read through the following list of words one time silently, then read them aloud at a comfortable and natural pace.

1) day	6) survive
2) pull	7) buy
3) keep	8) weight
4) basic	9) spring
5) bridge	10) often

Task 3

Please respond to ONE of the following items (or you may substitute one of your own). Your response need be only 5–10 sentences (in English).

A. Describe your weekend or your daily routine: what you normally do, when, with whom, for how long, what's interesting about it, etc.

B. Describe an experience you had which was meaningful in your life: Who was involved? How old were you? How did this influence you?

C. Describe a person in your life who means a lot to you: How do you know this person? Why is he/she significant in your life?

D. Describe a problem or challenge you recently faced and how you dealt with it: What steps did you take to solve it? What was the outcome? Who was affected?

E. Discuss an issue or subject matter you are vitally interested in: why is this important for your life? How did you become so interested in it? What has shaped your views and knowledge of the subject?

FOREIGN ACCENT PERCEPTION IN L2 SPANISH: THE ROLE OF PROFICIENCY AND L2 EXPERIENCE

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Previous research on the perception of foreign accent by nonnative listeners generally focused on the perception of very few highly proficient individuals and ESL learners, while fewer studies have reported on the perception of foreign accent by classroom language learners. The present study investigates the effects of grammatical proficiency, study abroad experience, and pronunciation instruction experience on the perception of degree of foreign accent by 160 nonnative listeners who were primarily classroom learners of Spanish. The results show that nonnative listeners' ratings of foreign accent in Spanish varied as a result of proficiency, study abroad, and pronunciation instruction. This line of research is relevant to language teaching because it examines what nonnative listeners at different stages of development perceive as foreign-accented.

INTRODUCTION

The study of the perception of foreign accent has traditionally referred to native speakers listening to nonnative speech and using a scale to report the degree of foreign accent they hear (Albrechtensen, Henriksen, & Faerch, 1980; Anderson-Hseih, Johnson & Koehler, 1992; Derwing & Munro, 1997; Flege & Fletcher, 1992; Piper & Casin, 1988; Southwood & Flege, 1999; Thompson, 1991). Only a handful of studies have included nonnative listeners among their participants, and in most the listeners were either highly proficient learners (Elliott, 1995; Fayer & Krazinski, 1987; Olson & Samuels, 1973) or ESL learners living in the target-language environment (Flege, 1988; Munro, Derwing, & Morton, 2006; Scovel, 1988). A few studies have examined the perception of less proficient classroom learners (Major, 2007; Neufeld, 1980), though further research is necessary to confirm the effects of proficiency and L2 experience on nonnative classroom learners' perception of degree of foreign accent.

Although nonnative listeners have been mostly overlooked in the previous research, examining their perception is crucial because it can reveal perceptual tendencies that teachers and students should be aware of. This line of research is especially relevant for language teachers who are nonnative speakers themselves because it sheds light on differences between their own perception and the perception of their students. If teachers are made aware of these differences it will help them understand what their students hear, which will allow them to provide more effective instruction and feedback in their classes. The importance of perception as a tool for language teaching has been attested by Baker and Trofimovich (2006) and is present in current models of cross-language perception and production like the Speech Learning Model (Flege, 1995; 2003), which stresses the potential relationship between target-like perception and production in the L2.

Several studies of nonnative listeners indicate that experience with the L2 affects listeners' perception of foreign accent. Flege (1988) investigated the effects of length of residence on the perception of degree of foreign accent by native English listeners and ESL learners. In this study, talkers were 37 NSs of Mandarin and Taiwanese learning English and 10 NSs of English. Listeners heard native and nonnative speech and were asked to estimate the degree of foreign

accent of each sentence by moving a lever on a continuum that ranged from 'no foreign accent' to 'strong foreign accent'. Results showed that the nonnative listener group that had lived in the U.S. for five years or more distinguished more between native and nonnative speech in their ratings than listeners who had lived in the U.S. for less than 1 year.

In another study, Major (2007) measured the effects of target language familiarity on foreign accent perception in Portuguese. In this study listeners were NSs of Portuguese and nonnative listeners with or without experience studying Portuguese or traveling to Brazil. Listeners heard native and nonnative Portuguese and rated the speech on a 9-point scale of accentedness. The findings showed that NSs of English who were familiar with Portuguese distinguished more between the native and nonnative speech in their ratings than those without any Portuguese experience. In both Flege (1988) and Major (2007), the more experienced nonnative listeners' ratings were also more native-like in their ratings than the less experienced listeners. Taken together, these results suggest that ESL learners with more L2 experience and nonnative listeners with greater L2 familiarity rate native speech as more authentic and nonnative speech as more foreign-accented than those with less experience. Elaborating on the work of Major (2007), the present study will investigate the effects of two specific types of experience on nonnative listeners' foreign accent perception: duration of study abroad experience and pronunciation instruction experience.

Other investigations of nonnative listeners suggest that nonnative listeners' perception of foreign accent varies with their L2 proficiency. Neufeld (1980) studied the accent detection ability of English speakers with elementary and advanced oral skills in French. Listeners heard recorded passages spoken by native and nonnative speakers of French and were asked to determine whether the speaker was francophone or not francophone. The results revealed that the more proficient nonnative listeners were significantly better at detecting nonnative accents than the less proficient listeners. Although these findings are limited by the fact that oral proficiency was not assessed with any kind of objective test, these findings indicate that nonnative listeners' accent detection may vary as a result of L2 oral proficiency.

Scovel (1988) also investigated the effects of nonnative listeners' proficiency on their accent detection ability, using ESL learners' listening and written test scores as a measure of proficiency. Participants were native English listeners and ESL students from a variety of backgrounds, enrolled in English classes in the U.S. Listeners heard sentences pronounced by native and nonnative speakers of American English and were asked the question "Does the speaker sound like an American?" Results showed a correlation between nonnative listeners' listening and written test scores and their ability to detect native and nonnative American accents accurately. Although this study found results similar to those that Neufeld (1980) found for the effects of oral proficiency, neither examined the effects of grammatical proficiency on listeners' scalar ratings of foreign accent.

The present study adds to the previous work on nonnative listener perception by extending the findings from Scovel (1988) on accent detection by ESL learners to classroom language learners rating specific degree of foreign accent. Although both previous studies found more proficient nonnative listeners to be better at detecting the presence or absence of foreign accent, it is unclear whether more advanced learners also assess degree of foreign accent differently from less proficient individuals. If this were the case then it would indicate perceptual differences that might arise from (lack of) attention to cues and awareness of cross-language differences that

should be further explored. These differences would also be especially relevant to pedagogy and how perception affects language learners' accent production.

In sum, the previous findings from studies that examined the effects of proficiency and L2 experience on nonnative listeners' accent perception suggest that nonnative listeners' who are more proficient are better at detecting foreign accents and that those with more L2 experience distinguish more between native and nonnative speech in their ratings of foreign accent. The present study adds to previous literature by investigating the effects of proficiency on learners' perception of specific degree of foreign accent and by examining the effects of two specific measures of experience on foreign accent perception: study abroad and pronunciation instruction experience.

METHOD

Talkers

The talkers in this study were 2 female native speakers of Spanish from central Spain and 2 female nonnative speakers whose L1 was English. The nonnative speakers were enrolled in intermediate-level Spanish courses in a large Midwestern university in the United States. Both nonnative speakers were rated as having moderate to heavy accents in Spanish by listeners in this study when rated alongside the native speakers and 11 distracter speakers. To encourage listeners to use the full range of the rating scale and to avoid polarization of native and nonnative speaker ratings at opposite ends of the scale, ten of the distracter speakers were L1 English speakers learning Spanish with varying degrees of accent. Listeners' ratings of distracter voices were not analyzed as part of the present study.

Stimuli

Stimuli in this study were 5 practice sentences and 5 experimental sentences, each containing between 7 and 11 syllables. The practice sentences were used in a warm-up activity that was designed to familiarize listeners with the task and the rating scale as well as the range of accents they would hear during the perception activity. All 10 sentences were spoken by the 15 talkers who were recorded in a sound-proof booth using a head-mounted Shure microphone and Cool Edit software. The experimental sentences with their English translation are:

| 1. Él come pavo en su piso. / *He eats turkey in his apartment.* |
| 2. A ti te doy el queso. / *I give you the cheese*. |
| 3. Él puso una flor en tu pelo. / *He put a flower in your hair.* |
| 4. Yo tomé un taxi en Cuba. / *I took a taxi in Cuba.* |
| 5. Él se quiso casar en el polo sur. / *He wanted to get married in the south pole.* |

The stimuli were presented to listeners in pseudo-random order to avoid same-voice repetitions using Praat (Boersma, 2001). Listeners heard and rated the degree of foreign accent of 210 sentences, though 70 were sentences pronounced by distracter voices and 120 were sentences that had been digitally manipulated for analysis as part of a different study. Of interest in the present study are listeners' ratings of the 20 sentences pronounced by the 2 native and 2 nonnative test voices.

Listeners

Listeners in this study were 160 nonnative speakers of Spanish whose L1 was English. Bilingual individuals and those reporting native languages other than English were not included. The nonnative listeners were undergraduate university students enrolled in 4 different levels of Spanish at the time they participated in this study. Forty nonnative listeners from each enrollment level participated. Nonnative listeners completed a grammar test that consisted of 12 multiple-choice items contextualized in a Spanish paragraph used to determine their grammatical proficiency score. As part of the background questionnaire nonnative listeners reported the location, duration (in months), and dates of all study abroad experiences in Spanish-speaking countries. Nonnative listeners' study abroad scores, the number of months each had spent living and studying abroad, ranged from 0 to 24 months, though 114 had never been abroad and only 6 reported spending more than 6 months in Spanish-speaking countries.

On the questionnaire nonnative listeners were also asked to report the number of past and present Spanish instructors who had taught them about Spanish pronunciation and corrected their pronunciation in class. Listeners' pronunciation instruction scores, the number of total instructors they reported who had taught pronunciation, ranged from 0 to 14, though only 13 learners reported more than 7 instructors who taught Spanish pronunciation. Nonnative listeners' mean grammatical proficiency scores, study abroad experience scores, and pronunciation instruction experience scores for each enrollment level are shown in Table 1.

Table 1

Nonnative listeners' mean grammatical proficiency, study abroad, and pronunciation instruction scores by course enrollment

Course enrollment level	Mean grammatical proficiency score	Mean study abroad duration	Mean # of pronunciation instructors
Level 1 (low-intermediate)	4.6	0.02	2.76
Level 2 (intermediate)	6.7	1.02	3.57
Level 3 (high-intermediate)	7.3	1.25	4.55
Level 4 (low-advanced)	8.9	2.42	4.50

Procedure

Listeners completed the 23-item activity and the perceptual task at individual computers in a quiet language laboratory. Each listener was provided a pair of high-quality headphones and was encouraged to take breaks when necessary and to work at their own pace. Participants heard one of the 5 experimental sentences spoken by either one of the 4 native and nonnative speakers or by a distracter speaker. They were given the opportunity to repeat each sentence once before answering the question "How close to native Spanish is the pronunciation of the sentence?" using a 9-point scale that ranged from 'closer to native Spanish' (1) to 'less close to native Spanish' (9). Once participants had made their selection and selected 'OK' they heard the next experimental sentence. After finishing the perception activity listeners completed the background questionnaire and the grammar test.

RESULTS

In order to determine whether grammatical proficiency was a predictor of listener foreign accent ratings, a mixed model ANOVA was performed with native and nonnative speech ratings as the dependent variable and grammatical proficiency score as a fixed covariate. The ANOVA revealed a significant effect of proficiency for both native speech ratings $F(1, 158) = 4.68$, $p<0.05$ and nonnative speech ratings $F(1, 158) = 11.35$, $p<0.05$.
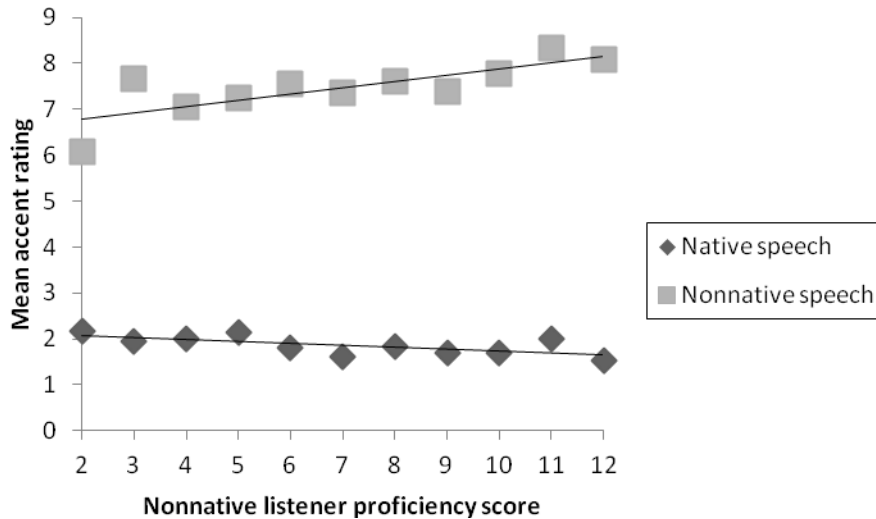
Figure 1. Nonnative listener ratings of native and nonnative speech by proficiency score.

The mean ratings of native and nonnative speech are presented in Figure 1, which also shows the significant linear trend that emerged. With higher proficiency listeners distinguished more between native and nonnative speech in their ratings, rating the pronunciation of nonnative speech as less close to native and the pronunciation of native speech as closer to native than those with lower proficiency did.

In addressing the potential effects of study abroad experience on nonnative listeners' ratings of foreign accent, another mixed model ANOVA was performed with ratings as the dependent variable and listeners' study abroad score as a fixed covariate. This analysis revealed a significant effect of study abroad for nonnative listeners' ratings of nonnative speech $F(1, 158) = 14.43$, $p<0.05$. The linear trend, shown in Figure 2, demonstrates how those with more study abroad experience rated nonnative speech as less close to native than those with less experience abroad did. Put differently, these individuals rated the nonnative speech more harshly than those with limited or no experience with study abroad.
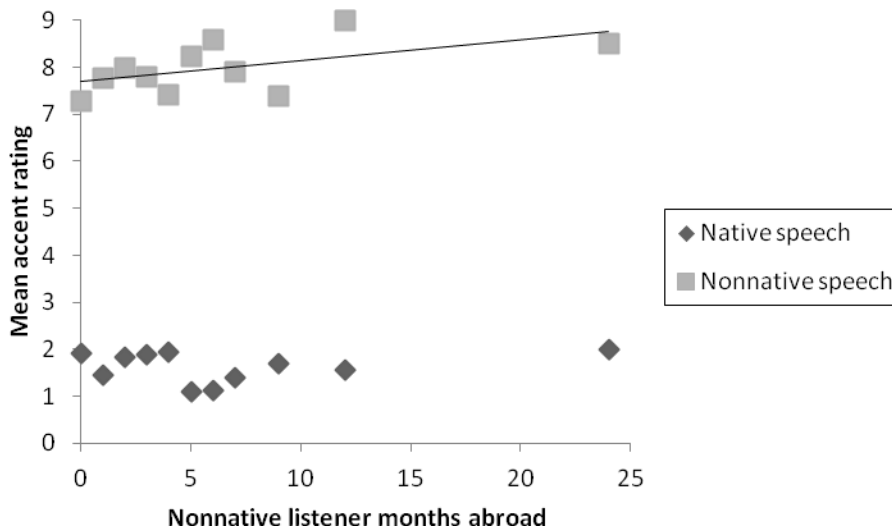
Figure 2. Nonnative listener ratings of native and nonnative speech by study abroad score.

In order to determine the effects of listeners' pronunciation instruction experience on their perception of degree of foreign accent, another mixed model ANOVA was run with rating as the dependent variable and pronunciation instruction score as a fixed covariate. The scores of 10 listeners were excluded from analysis because they had not provided adequate answers on the background questionnaire or had rated native speech ratings exceptionally high (thus claiming that the speech was 'less close to native Spanish') on the rating scale. When the ratings of the remaining 150 nonnative listeners were run, a significant effect of pronunciation instruction experience was found for nonnative listeners' ratings of native speech $F(1, 148) = 4.89$, $p<0.05$. The mean ratings shown in Figure 3 reveal that those with more pronunciation instruction experience, those reporting more instructors who taught pronunciation, rated native speech as closer to native than those with less pronunciation instruction experience.
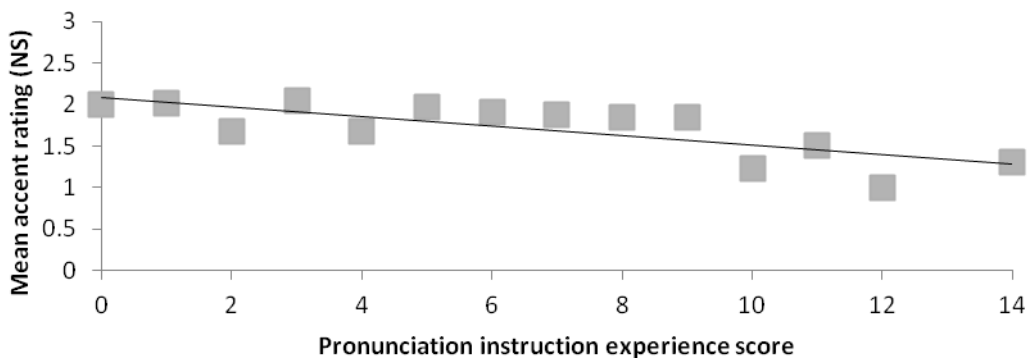
Figure 3. Nonnative listener ratings of native speech by pronunciation instruction experience score.

DISCUSSION AND CONCLUSIONS

The statistical analyses of nonnative listeners' ratings of native and nonnative speech revealed that grammatical proficiency score was a significant predictor of nonnative classroom listeners' ratings. Specifically, listeners who were more proficient distinguished more between native and nonnative speech, rating the pronunciation of the native speech as closer to native and the pronunciation of nonnative speech as less close to native. These findings mirror what was previously found in research on the effects of L2 experience on ESL learners' perception of foreign accent, that more experienced listeners distinguished between native and nonnative speech more than those who had less experience (Flege, 1988). These results also extend previous findings on the effects of L2 proficiency on foreign accent detection, confirming that more advanced learners are not only better at recognizing native and nonnative speech (Neufeld, 1980; Scovel, 1988) but that they also rate degree of foreign accent differently from lower-level learners. This tendency likely reflects the fact that less proficient learners' attentional resources are often allocated toward attending to the linguistic information necessary for comprehension rather than the talker-specific information associated with foreign accent. Because more advanced learners must focus less on the lexical message to understand speech, they may be better equipped to recognize native and nonnative speech.

In addition, the analyses found that listeners with more study abroad experience rated the pronunciation of the nonnative speech as significantly less close to native than those with less experience. Whereas Major (2007) found that individuals with target-language experience distinguished more between native and nonnative speech in their accent ratings than inexperienced individuals, his study did not investigate the effects of degree of experience as the present investigation did. The present findings show that the amount of time classroom learners spend abroad can affect their perception of foreign accent, just as Flege (1988) found for ESL learners living in the target language environment. Neufeld (1980) suggests that nonnative listeners rely on their L2 phonological competence and how the language is "supposed to sound" rather than their L1 knowledge in assessing foreign accent. This hypothesis is supported by the findings that language learners are better at distinguishing native and foreign-accented speech when they are more proficient in the L2 and because nonnative listeners' ratings of foreign accent do not vary as a result of their L1 background (Munro, Derwing, & Morton, 2006). If this account is accurate then it is possible that nonnative listeners with more study abroad experience in the present study rated nonnative speech as significantly less native-like because their experience abroad had added to their L2 phonological competence.

This may also explain the finding that nonnative listeners who had been exposed to more pronunciation instruction in their classes rated the pronunciation of native speech as closer to native than those with less experience. If the additional pronunciation instruction experience added to learners' L2 phonological competence then this may have led them to recognize the authenticity of native speech more readily. This finding suggests that instruction and classroom emphasis on pronunciation influences listeners' perception of foreign accent, just as it has been found to affect foreign accent production (Chela-Flores, 2001; Moyer, 1999; Zampini, 1998a). This result is important for language teachers because it reveals differences between the perception of foreign accent by advanced and lower-level learners. This means that students at different levels may require different feedback of what constitutes a foreign accent and that nonnative speaker instructors need to be aware that their own perception of foreign accent may differ from that of their students.

Accurate perception of the L2 is an integral part of learning to produce target-like L2 speech, and examining what language learners hear as foreign-accented at different stages can shed light on their developing L2 phonological competence. The present study confirms that nonnative classroom listeners' ratings of foreign accent vary as a result of proficiency, study abroad experience, and pronunciation instruction. This is a step toward a better understanding of nonnative listeners' perception of foreign accent, though further investigation is needed to determine the relationship between learners perception and production of accented speech and how this information can best be used to inform pedagogy.

ABOUT THE AUTHOR

Elena Schoonmaker-Gates teaches as Elon University in North Carolina and has a PhD from Indiana University. Her research interests are the perception and production of second language speech, specifically the linguistic cues and listener characteristics that affect the perception of foreign accent by both native and nonnative listeners.

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BRINGING PRONUNCIATION INSTRUCTION BACK INTO THE CLASSROOM: AN ESL TEACHERS' PRONUNCIATION "TOOLBOX"

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Pronunciation is difficult to teach for several reasons. Teachers are often left without clear guidelines and are confronted with contradictory practices for pronunciation instruction. To date, there is no agreed upon system of deciding what to teach, and when and how to do it. Another challenge is the lack of immediate visible results, or a lack of carry-over: very often, students who practice a given pronunciation feature in class do well, but the minute they turn their attention to the message content, the practice effect vanishes. As a result of these difficulties, teaching pronunciation is often secondary, and teachers don't feel comfortable doing it. Yet researchers and teachers alike agree that pronunciation instruction is important and efficient in improving intelligibility and comprehensibility.

In this paper, we describe a new pronunciation curriculum for communication classes currently being designed for an intensive English program. Pronunciation instruction functions as a modular component fully integrated into the institutional learning outcomes across all levels of proficiency, addressing both the lack of carry-over, and the difficulty to teach pronunciation at early levels. Our goal is to provide teachers with enhanced confidence in applying strategies for pronunciation instruction that will contribute to their teaching "toolbox."

INTRODUCTION

Pronunciation is difficult to teach for several reasons. Teachers are often left without clear guidelines and are confronted with contradictory purposes and practices for pronunciation instruction. Indeed, there is no well-established systematic way of deciding what to teach, and when and how to do it (Derwing & Foote, 2011). For example, a common problem is deciding whether to focus on segmentals or on suprasegmentals, and to what extent (Derwing, Munro & Wiebe, 1998; Jenner, 1989; Prator, 1971; Zielinski, 2008). A related challenge is how to address production and perception. While there is ample evidence in the literature that both are necessary in a balanced approach to pronunciation development (e.g. Bradlow, Pisoni, Akahane-Yamada & Tohkura, 1997), the guidelines for teacher training and classroom materials are not well-defined. Another obstacle for teachers is the lack of carry-over of apparent improvement: very often, students who succeed with a given pronunciation feature practiced in controlled contexts lose it when they attend to meaning (Bowen, 1972). A further problem is the general lack of guidance from research in determining level-appropriate pronunciation activity. Only a few researchers, such as Gilbert (2001a; b), Jenner (1989) and Murphy (1991), theorize instructional differences based on proficiency level. In fact, most materials are written for high-level learners. To date, these complexities are part of the lack of adequate language teacher training in pronunciation, with the result that teachers may lack knowledge and confidence. In turn, pronunciation instruction is relegated to the sidelines of the curriculum if attended to at all (Derwing, 2010).

Yet researchers and teachers alike agree that pronunciation instruction is important in improving intelligibility (Derwing et al., 1998; Morley, 1991; Prator, 1971).

As pointed out by Derwing and Munro (2005) and Levis (1999), research can provide some insights into which pronunciation elements impact comprehensibility and foreign accent, and which – by extension – should be the focus of a pronunciation curriculum (Anderson-Hsieh, Johnson, & Koehler, 1992; Koster & Koet, 1993; Munro & Derwing, 1999). For instance, psycholinguistic evidence can provide support for an early focus on consonants over vowels in pronunciation instruction. Across languages, words with more distinct consonants are favored, while vowels tend to lose their distinctiveness more easily (e.g. vowel reduction, vowel harmony; Nespor, Peña & Mehler, 2003). Interestingly, for the recognition of words in running speech or for the acquisition of new words, consonants also play a more important role than vowels (Bonatti, Peña, Nespor & Mehler, 2005; Cutler, Sebastián-Gallés, Soler-Vilageliu & Van Ooijen, 2000; Nazzi & New, 2007) and vowel information appears to constrain lexical selection less tightly than does consonant information. In other words, a mispronounced consonant might be more detrimental to comprehensibility and word recognition than a mispronounced vowel. In the domain of suprasegmentals, psycholinguistic evidence shows that native English listeners make limited use of suprasegmental cues to stress in word recognition (pitch and intensity), and rely more on vowel quality, that is the alternation between reduced and unreduced vowels (Bond & Small, 1983; Cooper, Cutler & Wales, 2002; Fear, Cutler & Butterfield, 1995). Research in spoken word recognition can thus point to what aspects of nonnative speech production should be targeted in order for learners to acquire a pronunciation that is most comprehensible in relation to native speaker processing routines.

Following directly from research findings in first and second language phonological processing, pronunciation difficulties are also in part a result of inaccurate perception of the L2, which is due in part to the influence of the first language phonological system (see Sebastian-Galles, 2005, for a review). For instance, since word pairs such as "light" and "right" may sound the same for Japanese learners of English, word learning is considerably more difficult, and results in problems building appropriate representations for the words in their mental lexicon (Darcy et al., 2012; Ota, Hartsuiker & Haywood. 2009; Pallier, Colomé & Sebastian-Gallés, 2001; Weber & Cutler, 2004). Japanese listeners' inability to reliably distinguish those sounds also strongly increases their difficulty in learning how to articulate them (Goto, 1971; Sheldon & Strange, 1982). However, findings from training studies suggest that perception can be improved through training (e.g. Jamieson & Morosan, 1986; Lively, Pisoni, Yamada, Tohkura & Yamada, 1994; Logan, Lively, & Pisoni, 1991), and training in perception can also improve articulation abilities (Bradlow, Pisoni, Akahane-Yamada & Tohkura, 1997; Rvachew, Nowak & Cloutier, 2004). Pronunciation instruction should as much as possible target both perception and production abilities.

Research also suggests that providing pronunciation instruction early could maximize the benefits of L2 exposure (see Best & Tyler, 2007, for a review) because the bulk of perceptual and phonetic learning in late-onset SLA takes place within the first year of intensive exposure to the L2, implying that pronunciation is most malleable during the first few months. Therefore, for ESL contexts or in an intensive English program, pronunciation instruction is best implemented from the very beginning and should not be reserved for the higher levels.

In terms of implementation of pronunciation instruction, one of the major challenges is to enhance carry-over. Several authors have suggested focusing on meaningful and communicative

activities which are relevant to real life situations as a way to facilitate carry-over (e.g. Bowen, 1972; Celce-Murcia, Brinton, & Goodwin, 1996; Firth, 1987; Morley, 1991). Regardless of level, learners are exposed to all features of English pronunciation simultaneously. Yet it appears that learners at each level benefit from having specific pronunciation priorities (Gilbert, 2001a; Jenner, 1989; Missaglia, 1999). Our expectation for what they should be able to produce and what they should focus on should adapt to the type of structure that would enable that production. For instance, complex sentence stress patterns are not a reasonable goal for a person who struggles to produce complex sentences in the first place.

If and when the priorities of pronunciation instruction are delineated, implementation complexities remain. Although many teachers recognize their lack of knowledge or direction in teaching pronunciation (Derwing & Foote, 2011), evidence from teacher research suggests that changing a teacher's practices, or routinized teaching scripts, is very difficult (Johnson, 1999). Furthermore, the diffusion of innovation literature presents a rather negative history of curricular implementation particularly at the level of sustained classroom practices (Fullan, 2009). Without rigorous and long-term developmental support and training for teachers in situ, the likelihood of teachers theorizing new routines based on new beliefs is slim (Rogan, 2007). A single workshop, presentation, or curricular document will not be sufficient to impact teachers' long-term pronunciation or pedagogical content knowledge. In response to this potential barrier to effective implementation, it is necessary to provide teachers with sufficient on-going support through materials and specific teaching practices that are clearly linked to the overall goals of the curriculum and not too distant from the teachers' current beliefs and practices.

In summary, this review of the literature leads us to propose six principles for designing a pronunciation curriculum, which can be followed in a variety of teaching and learning contexts:

1. Pronunciation elements for instruction are selected based on insights of processing research.
2. Pronunciation instruction incorporates both production and perception.
3. Pronunciation instruction starts in the early levels.
4. Pronunciation instruction is embedded, both within the curriculum as a whole, and within each lesson locally: Pronunciation is not taught separately from, but rather becomes an integral part of, general language instruction.
5. The curricular component is adaptive: there are different selections and priorities for each level.
6. Implementation of a pronunciation curricular component depends on ongoing teacher development.

CONTEXT: THE INTENSIVE ENGLISH PROGRAM AT INDIANA UNIVERSITY

In our own context of teacher training and language learning at Indiana University, we have experienced the many dilemmas of pronunciation instruction mentioned earlier. Although currently students in the MA TESOL program are required to take a course in methodologies for teaching pronunciation, the curriculum of the Intensive English Program (IEP) in the same department does not specifically articulate goals, objectives, and outcomes for pronunciation development. For this reason, efforts have begun to link activity in the MA TESOL program directly to the curriculum of the IEP.

The IEP at Indiana University is a program for pre-matriculated students who range in proficiency from true beginning to low advanced. About two-thirds of the incoming students

plan to enter undergraduate programs and one-third graduate programs. Seven levels of instruction are offered, and students are in class between four and five hours daily. We offer six 7-week sessions per year. Most students enroll in three or four sessions sequentially, and the majority initially tests into Level Four, (low) intermediate, or above. The principal orientation of the instruction targets English for General Academic Purposes. The curriculum is based on specified "Learning Outcomes" (LO) for both Literacy and Oracy. Currently, there are no specific pronunciation outcomes although the successful accomplishment of oracy outcomes necessitates that students be judged as both intelligible and comprehensible. Without specific guidance on how to develop these abilities, pronunciation is addressed haphazardly depending on available textbooks, tasks, and teacher awareness in Levels One through Five. A dedicated pronunciation elective is offered for Level Six or Seven learners, meeting the needs of only a small subset of students.

We next describe the process and product of bringing pronunciation instruction back into our classrooms while enhancing our teachers' pronunciation "toolbox" with knowledge and confidence.

Details of the Curriculum

While the specifics of our "toolbox" may not be generalizable to other programs directly, the principles behind its development are: We emphasize the importance of building on research advances in speech processing for the selection of pronunciation elements (*Principle 1*), and of engaging learners in explicit listening and speaking practice (*Principle 2*) across the levels of proficiency. Further, it is important to address elements of pronunciation from the beginning of instruction (*Principle 3*). The next principle is to implement pronunciation instruction throughout the curriculum, and within each lesson (*Principle 4*). In low-level lessons, instruction is fully embedded (or 'contextualized' maximizing relevance for learners, as in Bowen, 1972), and inseparable from its direct function. In mid-level lessons, instruction still focuses on use within meaning-based activities, but can selectively incorporate awareness raising activities. Only in high-levels does pronunciation start to be taught independently, incorporating more metalinguistic knowledge. The fifth principle is to create activities that are appropriate for specific levels of proficiency (*Principle 5*). Finally, the last principle is to provide ongoing teacher development in pronunciation instruction, linking new practices and understandings to the teachers' previous experience (*Principle 6*).

We now detail what elements are prioritized for three levels of proficiency: low-levels (true beginners to high-beginning), mid-levels (low-intermediate to intermediate), and high-levels (high intermediate to low advanced).

Low-Levels: Survival.

Crucially, instruction at lower levels establishes the foundation upon which other elements build. It is strongly word-based: pronunciation elements are introduced through the specific words in which they occur; sentence-level elements can be introduced as soon as learners have sufficient proficiency to formulate sentences. Metalinguistic descriptions are avoided, as learners do not know the necessary vocabulary to understand metalinguistic descriptions. Each element derives from real-world, survival functions, with the goal being basic intelligibility and negotiation of meaning. Lexical items are introduced with their stress pattern. To a limited extent, phoneme-grapheme correspondences are addressed in order to enable students to spell out words or names for clarification.

At low-levels, the major focus targets the basic phonemic inventory in order for learners to start parsing the speech stream (see Table 1). Segmental features (particularly consonants) that have high impact on intelligibility are prioritized. Others which are said to have less impact (such as clear and dark [l], or [ð]- [θ] which are exchangeable with [s] /[z] without much intelligibility loss on the part of native listeners; Jenkins, 2002) are more peripheral at first, but can be integrated once the most fundamental consonantal contrasts are in place. More research is needed, however, on defining a hierarchy of consonantal contrasts for intelligibility purposes. In the suprasegmental domain, understanding the basic stress timing of English and the rising and falling intonational shapes often associated with declarative and simple interrogative sentences can help shape the discourse and give listeners a basis for repair.

Table 1
Pronunciation Elements for Low-levels

Segmentals	Element of phonics (spelling)
	Practice alphabet; consonants of English
	Vowel length
	Final consonants and clusters
Suprasegmentals	Basic intonation
	Intonation: declarative, question, request vs. apology
	Sensitize to stress-timing; stress perception

Each of these elements can be integrated into the content of communicatively-oriented lessons. When a new word is introduced, relevant pronunciation features will be brought to learners' attention.

Mid-Levels: Clarity and Awareness.

Certain elements might be introduced with metalinguistic speech, but the focus of instruction remains on embedding pronunciation within the function being addressed. That is to say, pronunciation practice should not require the collection of separate materials and example sentences, but rather should derive from the content of normal instruction. One aspect of mid-level instruction is making students *aware* of phonotactics and connected speech phenomena, in order to develop self-monitoring skills (Firth, 1987). During presentations, conversations, and listening activities typical in oral communication classes, the teachers can focus learners' attention on suprasegmental awareness and imitation. Accuracy can be expected when learners focus on the pronunciation form; however, carry-over exercises can be gradually implemented to encourage attention to form when the focus is on meaning.

For mid-levels, the major goal remains the minimization of the negative effects of pronunciation on intelligibility (see Table 2). The basic phonemic inventory is assumed to be in place, possibly with isolated L1-dependent difficulties specific to each learner. At this level, relatively accurate full and reduced vowels are required for ease of comprehension. Stress and intonation play a central role in increasing the ease with which interlocutors can repair segmental errors. Sentence stress and the production and perception of strings of words, or strings of sentences are now the

focus of increasing suprasegmental work. Word-level elements are still important but of less relative weight.

Table 2
Pronunciation Elements for Mid-levels

Segmentals	Elements of phonics
	Tense and Lax vowels
	Final consonants and clusters (review of low-levels)
Suprasegmentals	Word stress
	Sentence stress, Intonation
Phonotactics	Vowel Reduction (Schwa)
	Rhythm
	Linking

High-levels: Accuracy / Attention.

At this level, students have to adjust to academic register for better participation in the academic community. Individual difficulties with specific articulations can be addressed through common resources made available to students outside of class-time or through individual tutoring, but lesson planning proceeds with the assumption that students are aware of the major elements of English pronunciation. Activities that develop vocabulary for the academic register (i.e. debates, presentations, interviews) can be used to develop carry-over through having students pay attention to form while focusing on meaning (Bowen, 1972; Morley, 1991).

At high-levels, the focus is on accuracy even when attention is on meaning (see Table 3). The main goal is now to facilitate and develop carry-over. The emphasis shifts from the amount of speech listeners can understand (intelligibility) to the degree of difficulty in doing so (comprehensibility). The teacher expects a high degree of phonological accuracy even when the focus is not on pronunciation, in order to practice and establish carry-over. It is only in the higher levels that pronunciation instruction can become independent of its function, and can be taught "on its own." This can entail metalinguistic/linguistic terminology, specific descriptions of phonological phenomena, metacognitive awareness, or introducing parts or all of the phonetic alphabet, with the goal of providing students with appropriate tools to analyze, control and monitor their own speech.

Table 3
Pronunciation Elements for High-levels

Segmentals	Vowels (+phonics), or individual needs
Suprasegmentals	Intonation patterns, sentence stress
	Stress
Phonotactics	Linking , phonotactics
	Register awareness

CURRICULUM DEVELOPMENT PROCESS

Teacher Survey

At the beginning of the pronunciation curriculum development process, the teachers in the IEP were surveyed regarding their beliefs and practices of teaching pronunciation (see appendix). The main motivation for the survey was to understand the status of pronunciation instruction in daily practice in the IEP. A related goal was also to include the teachers in the curriculum development process to promote "buy in" for eventual implementation. In total, 14 teachers participated; all were native speakers of English. They reported on average 5.5 years (range: 5 months to 24 years) of teaching experience.

The survey was administered anonymously on a voluntary basis. It consisted of 15 questions in four categories: the importance of pronunciation instruction for student success; what pronunciation elements are central to intelligible pronunciation; the relative importance of instruction on specific elements at different proficiency levels; and, whether and/or how teachers teach pronunciation. The ratings were given on a Likert scale of 1 (very important) to 7 (irrelevant). In regard to the first category, analysis of responses shows that the teachers as a whole consider pronunciation instruction very important if not crucial for the lives of their students across almost all contexts and situations. For communication classes, no respondent gave pronunciation a rating below "very important". For daily life, 92 percent gave a rating of either 1-2 or 3-4 ("important"). Only 8 percent indicated a rating of 5 ("somewhat important"). No rating was below 5. There was no significant correlation between the amount of teaching experience and the importance attributed to pronunciation (Pearson's $r = 0.12$, $p > .6$), suggesting that both experienced and novice teachers converged in their positions.

In the second category, participants were asked to indicate which pronunciation elements they thought were the most important for students to master. Only 13 participants answered this question. There were 10 items to choose from (see Figure 1) and two items marked "other", for which they could indicate non-listed features. The ranking of each item included in the top-five list for each participant was transformed in a point value: items ranked first were given 5 points, those ranked second were given 4 points, third place 3 points, fourth place 2 points, and each item ranked last in the list was given 1 point. The maximum possible weight to be assigned was 65, which would be the maximum point value obtained by an item that has been ranked first by all 13 respondents. The results are presented in Figure 1. There was convergence of opinion around intonation/stress, rhythm, perception ability, clarity of individual sounds (consonants, enunciation), and specific vowels.
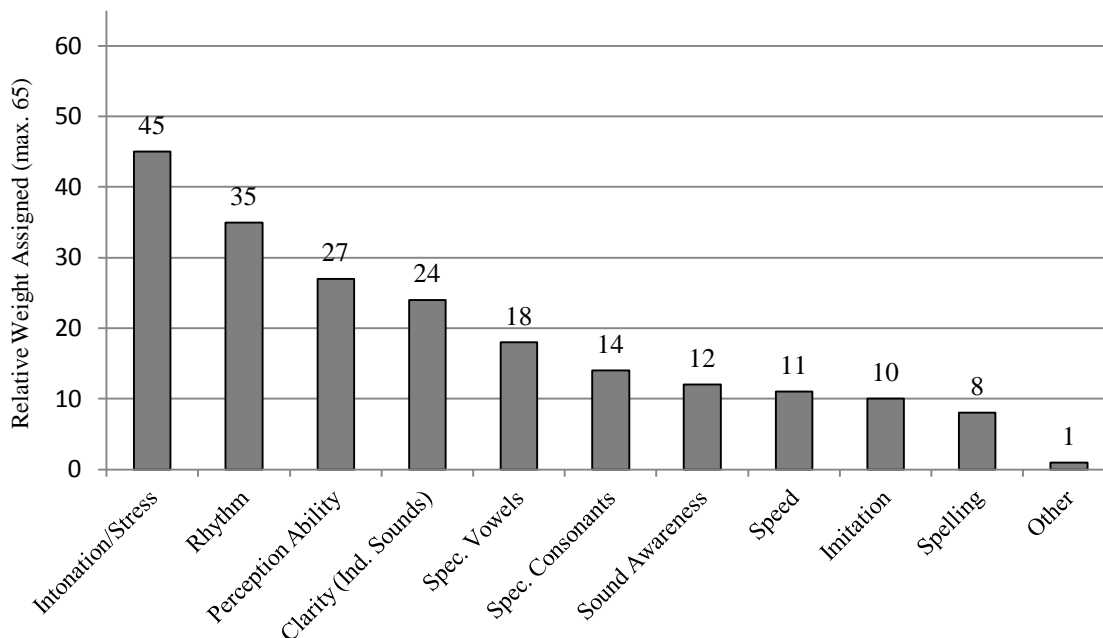
Figure 1. Relative weight assigned to different pronunciation elements by teachers in our survey.

In the third category, participants were asked whether they thought certain pronunciation features should be taught at specific times, for a certain amount of time, or in a particular relationship with each other. The results indicate that teachers believe the amount of instruction on specific features should shift across levels of proficiency. More specifically, while the amount of instruction focusing on segmentals diminishes with increasing proficiency, attention to suprasegmentals increases. In other words, learners with higher levels of proficiency should pay more attention to suprasegmentals relative to segmentals, and this relationship is reversed for learners at lower levels of proficiency. Instruction regarding phonotactics and connected speech was seen as important for attention across all levels of proficiency but never outranked either segmentals or suprasegmentals.

However, in spite of their clear appreciation of the importance of pronunciation instruction and detailed awareness of which features should be addressed, how much, and when they should be addressed across the levels of the program, the majority of the teachers indicated that they did not teach pronunciation at all (71 percent). Some provide a diagnostic task early in the course (28 percent), but only two of them (14 percent) indicated that they also use a post-test with a specific pronunciation rubric for evaluation.

The results clearly showed that teachers find pronunciation instruction difficult to manage: Reasons mentioned in our survey included the amount of time available (43 percent), lack of training (25 percent), and the need for more guidance and institutional support (18 percent). This confirms previous observations (Derwing & Foote, 2011). However, an important outcome of the survey was the teachers' overall consistency in ascribing particular elements to specific levels of instruction and the relative importance among these elements. Although little research has been done on which elements are best addressed at different levels of proficiency, the results of the teachers' survey are strikingly similar to those theorized by Jenner (1989).

Discussion and conclusions

The potential benefits of this curricular component are twofold. Students will learn from the beginning that pronunciation is normal and necessary for intelligibility/comprehensibility; Teachers will incrementally learn more about pronunciation and its instruction. We argue that pronunciation instruction should not be separated from the rest of language instruction and should be a constant and integral part of every lesson, thus addressing teachers' current concern about time limitations.

Of course, several difficulties remain to be addressed. First among them, is the ongoing lack of materials including task-types for specific elements which need to be adaptable to the curricular content already in place. In Celce-Murcia et al. (1996, pp. 52-57), their communicative framework for pronunciation instruction with its sequence of five task-types (1. Description and analysis, 2. Listening discrimination, 3. Controlled practice, 4. Guided practice, 5. Communicative practice) is very well-suited for advanced learners, but some reorganization of these task-types seems necessary for low and mid-level learners. For example, the first two steps require metalinguistic analysis/description of phonological phenomena, a significant stretch for true beginners who cannot yet formulate sentences. Even "learner appropriate" descriptions of articulations will be difficult to adjust to the lowest proficiency levels. It is more likely that only the third step, "controlled practice," is effective from the beginning. Steps 2 and 4 ("listening discrimination" and "guided practice") could be added at the mid-levels, but at high-levels only could all five steps be implemented. Furthermore, the pronunciation elements for each level of proficiency suggested above only *imply* attention to both perception and production, but each of these will need to be operationalized in relation to appropriate task-types.

Another difficulty will be organizing the time to allow for teacher/research collaboration in the ongoing development of these classroom materials. Without teacher involvement in this process, the implementation is less certain. Although all the teachers will not be able to participate in the production of all the materials, early engagement with the principles in developing even a few activities for a single level will substantially increase coherence between teachers, levels, and the outcomes of the program. This too will facilitate pronunciation becoming a normal component of language teaching rather than a separate, disconnected, and sometimes devalued activity for both teachers and learners.

In spite of the necessary training and materials development yet to be done, the principles of this curriculum design project have guided the development of adaptable tasks for some pronunciation elements which are embedded within our curriculum. As we continue this work, understanding gained from further research on pronunciation development and instruction will continue to inform our curricular choices and teaching practices.

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APPENDIX

IRB 1103004925   Pronunciation Survey

GENERAL

- How long have you been teaching in the IEP/ELIP?
- Is English your native language?............ If not, what is your L1?
- What classes have you taught in the last 2 years (e.g. communication (level 2))

TEACHING PRONUNCIATION

1. What level of importance (from 1 to 7) would you assign to pronunciation in the following contexts?

place an "X" below your rating:	very important		important		somewhat important		irrelevant
	1	2	3	4	5	6	7
Reading and Writing:							
Grammar:							
Communication:							
Content-based electives:							
Other classes:							
In daily life:							

Optional comment:...

2. Do you think that a student's pronunciation affects his/her performance in class? Do you encounter most often issues of student comprehension, production, or both?

3. If/When you do address pronunciation, what type of instruction do you typically offer? What specific things are covered? (For example, do you mostly attend to specific sounds, specific words, stress, intonation, flow, linking, etc.) (Please include the level and skill)

4. What difficulties or reservations do you have about instruction in pronunciation?

5. What advice would you give to new teachers about teaching pronunciation?

6. Rank "your top five" out of the following items in terms of what best determines "good English pronunciation" (rank them from 1 to 5)

Speed of speaking		clarity of pronunciation of the individual sounds		correct vowels	
Fluent "English" rhythm (stressed/unstressed, as opposed to choppy)		ability to perceive differences		ability to imitate	
knowledge of English spelling		high awareness about English sounds		other: …………….	
correct intonation and correct stress		R/L or P/B difference (or similar), i.e. consonants		other: …………….	

7. In your experience, what do you think is the most central reason that precludes students from improving in pronunciation? (check all that apply)

a. ❍ not enough time spent on pronunciation in prior classes or prior to their arrival in the US

b. ❍ the exercises we do in class don't work because they are ill-fitted for mixed classrooms

c. ❍ they improve in class, but there's no "carry-over"

d. ❍ not enough practice on their part at home

e. ❍ they are fossilized: there's no way they will improve

f. ❍ they don't care about it / they are not interested in the exercises (no motivation)

g. ❍ Students have a wrong conception of where their difficulties lie (for instance, they think it's about R/L only), so they don't benefit from the exercises.

h. ❍ their native language

i. ❍ English spelling not mastered

j. ❍ they are too old

k. ❍ they do not listen or try to change

l. ❍ they are embarrassed/shy, so they don't speak

m. ❍ don't really want to lose their accent for integrative reasons with peers

n. ❍ they don't speak much outside of class – too few "real" interactions

o. ❍ they don't have many American/native speakers friends

p. ❍ other : _____

7b. What <u>else</u> do you think students could/should do on their own to improve their pronunciation?

8. Do you believe that teachers should address spelling as it relates to pronunciation in English? *In your current practice*, do you often talk about the spelling of a word as it relates (or doesn't) to its pronunciation in your own classes? (Please include level and skill)

9. In your experience, how important is listening comprehension for pronunciation progress?

10. Do you typically establish a diagnosis/evaluation of pronunciation errors for each student? (Of the type *entry* and *exit* diagnosis? Or in other ways?):   *yes*   *no*

    a. If yes, how? If not: do you think it would be important to do?

    b. If yes, does it influence the selection of materials you cover in terms of pronunciation?

    c. What is difficult /challenging about diagnosing or evaluating pronunciation?

    d. Do you formally/systematically evaluate pronunciation difficulties and progress? (if yes, what's your preferred method? examples: audio journal, tabulations of corrections in class, etc)

11. Students sometimes expect to become "native-like" in pronunciation. Do you often have to address this kind of misplaced expectations? Or do you rather encounter the opposite: they don't think intelligibility is important?
12. Do you think using a <u>phonetic alphabet</u> (e.g. IPA) is useful for students?
13. How do you handle the <u>lack of first language-homogeneity</u> in classes, in terms of pronunciation?
14. Have you tried to include <u>real life contexts</u> in class for pronunciation instruction? How did it work out for you?
15. Is there something you would like to do in class (about pronunciation) but can't do (reason)?

If pronunciation were integrated into the curriculum, how would you rank the importance of teaching of the following items on a scale of 1-7, with 1 being very important, and 7 being unimportant?

Items:	For low level students (1-2)	For mid-level students (3-5)	For high level students (6-7)	Additional Comments (Optional)
Articulation of consonants in general				
Specifically: Individual consonants				
Flapping of T and D (The [ɾ] in "wa<u>t</u>er," "bo<u>tt</u>le," etc.)				
Other allophones (Ex: [pʰ] in 'pie' vs. [p] in 'spy')				
Others (please specify: _____)				
Articulation of vowels in general				
Specifically: Individual vowels				
Vowel duration (long/short)				
Tense vowels vs. lax vowels (Ex: beat vs. bit, boot vs. book)				
Schwas and vowel reduction ("c<u>o</u>mmun<u>icatio</u>n")				
Diphthongs / Vowel blends (b<u>oy</u>, b<u>i</u>te, b<u>ou</u>t)				
Others (please specify: _____)				
Suprasegmentals in general				
Specifically: Word stress (*pre*sent vs. pre*sent*)				
Sentence-level focus ("I don't *love* her" vs.				

	"I don't love *her*")				
	Intonation (e.g. questions)				
	Rhythm (stress-timed)				
	Flow / Fluency				
Others (if needed) (please specify: _____)					
Connected speech/phonotactics in general					
Specifically:	Linking (Ex: picked up → like 'pick-tup')				
	Contraction (going to → gonna)				
	Syllable-initial clusters (i.e. <u>pl</u>ay, <u>sp</u>ot, etc.)				
	Syllable-final consonants and clusters (i.e. be<u>t</u>, ki<u>ds</u>, te<u>xt</u>, mo<u>nths</u>, etc.)				
Other issues (please specify: _____)					

TEACHING PRONUNCIATION WITH PHONETICS IN A BEGINNER FRENCH COURSE: IMPACT ON SOUND PERCEPTION

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Recent studies have suggested that L2 learners' pronunciation benefits from explicit instruction. The present exploratory study examines how two different teaching methods impact L2 French learners' sound discrimination skills. One approach employs phonetics and explicit teaching while the other relies on reference words and repeating after the instructor. Results from discrimination tests helped gauge the learners' aural performances. Written surveys addressed the effectiveness of the two teaching methods from the students' perspectives. Qualitative analyses suggested that a majority of students favored explicit instruction. They reported benefitting from using phonetic symbols to compare and contrast French sounds. Quantitative analyses indicated that discrimination improved regardless of the explicit teaching approach but only significantly when the phonetic approach was introduced before the reference approach. Therefore, the phonetic method may have a positive impact in the short term and the reference method in the long term. Combining methods at different stages of the learning process may be the most efficient way to help learners discriminate foreign sounds accurately.

INTRODUCTION

Second languages are taught with the assumed goal of learners eventually using them to communicate. Therefore, communicative situations are typically created within the classroom to prepare students for authentic interactions. In that context, skills like reading/writing and listening/speaking cannot be dissociated; learners read what someone has written, they write what someone will later read, they listen to someone who speaks, and they speak to someone who listens. Consequently, the acquisition of pronunciation seems to be closely tied to that of listening, which is why this study examines them together. Both skills play an important role developing intelligibility, and the ability to listen and to hear different cues in particular contributes to the development of proficiency (Richards, 2008). Darcy, Ewert, Chen, Wang, & Lidster (2011) have found that L2 instructors assign great value to the teaching of pronunciation, even those who report including it sporadically in their classes. Their research underlined obstacles to consistent inclusion of pronunciation instruction linked to lack of training in that area (e.g., not knowing what features to teach and when, not having proper teaching materials, and wondering how to address the link between perception and production).

The tie between perception and production is indeed crucial. The American Council on the Teaching of Foreign Languages (ACTFL) provides national standards (2002) to which most language teachers must adhere in the United States to be certified by the National Council for Accreditation of Teacher Education (NCATE). Those standards include a "Phonology" category with recommendations that clearly connect listening and speaking abilities. In order to meet the ACTFL standards teaching candidates must be able to "identify phonemes and allophones of the target language." They further describe them as understanding "the rules of the sound system of the target language. They diagnose their own target language pronunciation difficulties" (p. 11).

This description lends further support to the idea that pronunciation; listening and speaking cooperate as building blocks towards proficiency.

Teaching candidates who exceed the ACTFL standards are able to "describe the differences between the phonological systems of the target and their native languages" (p. 11). But before being able to describe such differences, learners have to notice them and become aware of linguistic distinctions before they become able to correctly utilize those features to communicate. For example, Schmidt (1990, p. 139) explained that intake, i.e., the fragment of input that is noticed by the learner, is what initiates second language development. Therefore, audio input must first be interpreted correctly to become intake, and only then will learners be able to produce it correctly as oral output. The present study focuses on ways to turn input into intake (the first two steps in this process) through pronunciation and listening activities.

Teaching Pronunciation and Discrimination to Beginners

There are several ways to teach listening discrimination through pronunciation at the beginner level of L2 study. One widely used approach is listening and repeating after the instructor. However, students may not actually notice differences with this technique unless the instructor points them out explicitly. A lesser known technique known as "the silent way" involves no modeling of pronunciation outside of regular conversational input between instructor and students so as to allow learners to discover it on their own (Gattegno, 1962, described in Messum, 2011). This potentially forces learners to pay more attention to available input and to notice differences as they reflect on what the correct output should be. Whatever approach teachers select in beginner courses, it is generally their responsibility to add aural and oral pronunciation instruction to their curriculum as little information is included in published teaching material.

An examination of five textbooks of beginning French, *En Avant* (Anderson, Golato & Blatty, 2012), *Points de Départ* (Scullen, Pons & Valdman, 2012), *Mais oui!* (Thompson & Phillips, 2012), *Contacts* (Valette & Valette, 2009)*, and Paroles* (Magnan, Martin Berg & Berg, 2006) showed that formal discrimination and pronunciation practice is often relegated to workbook exercises completed by learners individually at home or in a language lab and not systematically included within the textbooks. Every book reviewed included some use of the International Phonetic Alphabet (IPA) and some listening prompts to test vocabulary. However, the extent of formal phonemic instruction varied greatly from one book to another. For example, the authors of *Contacts* (Valette & Valette, 2009) state that "Pronunciation helps are provided, as needed" (p. xiv), showing that pronunciation instruction is still not considered to be necessary all the time in a beginner language class. That book includes one small phonetics lesson on the last page of each chapter, no larger than a quarter of the page. The texts *Points de Départ* (Scullen, Pons & Valdman, 2012) and *Mais Oui!* (Thompson & Phillips, 2012) provide the most information on pronunciation and perception with a full page of phonetic explanation and practice early in each chapter. However, none of the books reviewed recycled speaking and listening tips throughout lessons other than in margin notes available only in instructors' editions.

Although including pronunciation instruction has clearly established benefits (Elliott, 2003), it is still too often neglected (Derwing, 2010; Lord, 2010). An email received in March 2012 promoting the latest edition of *Entre Amis* (Oates & Oukada, 2012) demonstrates this oversight: "The seamless articulation of vocabulary, grammar, activities, and cultural content is what makes *Entre Amis* so effective. The new Sixth Edition features greater integration of language and

culture, more listening practice, new active learning exercises on the reading and writing processes, and more." Again, we see a strong focus on grammar and vocabulary with no mention of pronunciation. We are told that the number of listening activities/exercises increased, but it is unclear how or in what way they are linked to the other components and whether or not they were designed to improve perception of sounds at all.

There are usually listening opportunities such as dialogues reviewing grammar or vocabulary in beginner textbooks, but they are rarely linked to specific intelligibility problems that affect L2 perception and pronunciation. For example, French distinguishes plural from singular and masculine from feminine in the pronunciation of articles, not nouns. Thus, the word [mɛʁ] can refer to "la mer" [lamɛʁ] (*the sea*), which is different from "le maire" [ləmɛʁ] (*the mayor*) which is different from "les maires" [lemɛʁ] (*the mayors*), although the pronunciation of the noun itself never changes and only the vowel in the article as well as context would give cues on meaning. During dictation exercises in beginner French courses, I have observed many students unable to correctly spell articles, even when I isolated them and explicitly identified the distinctions to help them notice them. Learners often experience difficulty in mapping pronunciation with the different forms of the articles. How can they subsequently make the distinction in pronunciation themselves if they cannot successfully discriminate them? A connection between perception and pronunciation needs to happen.

Pedagogical Goals

This empirical exploration is driven by pedagogical concerns and motivated by the desire to efficiently integrate discrimination and pronunciation instruction in the L2 beginner curriculum so as to facilitate basic functionality. Teaching pronunciation has perhaps been left aside because of the conviction that perfecting a foreign accent is nearly impossible in adulthood (Saalfeld, 2011) and also because teaching methods are now more focused on communicative practices. Those exercises emphasize general function and task-based practice to the detriment of drills that used to be widely used to teach pronunciation and listening (Richards, 2008). Bringing pronunciation instruction into the communicative language teaching classroom would give beginner learners opportunities to listen and speak right away as well as understand the significance of intelligibility and its connection to functionality when pronunciation is paired with discrimination activities. However obvious the importance of perception and pronunciation may be for a teacher, informal discussions with students suggest that they do not automatically appreciate their significance until their instructor makes them work on them through practice and assessment.

This pilot study looks at two specific ways to establish a relationship between listening and speaking while emphasizing intelligibility. Both approaches let learners discover letter-to-sound correspondences by listening to the instructor pronounce meaningful minimal pairs associated with a grammatical function. Then learners compare them and formulate the rules before addressing them explicitly. The difference is that one technique (henceforth called the reference approach) relies on reference words already familiar to learners and containing target sounds. The other technique (henceforth the phonetic approach) instead draws support from phonetics, "the study of the sounds of speech, their production, combination, description, and representation by written symbols" (Dansereau, 1995, p. 639), by using symbols and articulatory descriptions to contrast minimal pairs.

Research Questions

The reference approach was selected because it seems to be common and is intuitive. Dansereau (1995) recommends focusing on spelling-to-sound correspondences "by the use of orthographic examples" (p. 639) to teach French pronunciation. She proposes the use of phonetic symbols only at advanced levels so that beginners do not feel overwhelmed by additional unfamiliar codes such as the International Phonetic Alphabet (IPA). However, despite Dansereau's reservations, the use of phonetic symbols at beginning levels may actually benefit students who later pursue advanced language studies. This study proposes to gather data to explore the question. In addition, the study of phonetics at more advanced levels has been shown to have a positive impact on the pronunciation of L2 learners in Spanish (Castino, 1996; Lord, 2005), English (Aliaga-García, 2007; Lu, 2002), Arabic (Huthaily, 2008), and has an appeal to beginner students of French who reported finding it helpful (Miller, 2012). It is conceivable that the use of phonetic symbols at beginning levels has a positive effect on perception skills.

Finally, Dansereau herself noted: "Students who are constantly aware of phonetics tend not to develop bad pronunciation habits […] and […] learn not only to pronounce better, but also to listen better. Such students develop better auditory discrimination habits" (1995, p. 640). Therefore, a learner who is made aware of those differences may be more likely to both hear and produce target sounds with accuracy. My research questions are as follows.

1. What kind of impact does the phonetic approach really have on learners' discrimination skills at the beginner level?

2. How does that technique compare with the reference technique?

Research on advanced college-aged learners of Spanish (Rasmussen & Zampini, 2010) suggests that training in phonetics can improve the intelligibility of native speakers for English-speaking learners. What is the situation for French? This study will bring empirical evidence to the table in an attempt to answer such questions at the introductory level.

METHODS

Quantitative and qualitative data were collected in 2010 from college students enrolled in two sections of a French 101 course at a mid-sized liberal arts university in the Midwest.

Participants

While up to 54 students can enroll in French 101 every semester, only a total of 23 who agreed to voluntarily participate in the study were present for all of the experimental treatments: 11 in section one, and 12 in section two. This low study sample is a limitation of this study. The following results therefore reflect trends and cannot be generalized until more data are gathered from a larger population.

Procedure

All learners received pronunciation instruction with the two techniques described above for a total of four formal pronunciation lessons (see Table 1 for details, and Appendices A and B for examples of student worksheets), each lasting approximately 15 minutes. After the lessons, the target sounds were reviewed briefly and informally as they appeared with new vocabulary in subsequent chapters. As researcher and teacher, I controlled the time allotted for the experimental treatment so that all participants would be equally exposed to it. As a teacher, I

made sure to recycle the material when the opportunity arose, making sure to do so in both sections.

Table 1.
Experimental Methods and Data Used in this Study

Participants	23 student volunteers in all
Teaching techniques	phonetic approach (n=12) reference approach (n=11)
Lessons using those techniques	Four 15-minute lessons every two weeks
Written surveys	Two in all: one before and one after all treatments
Discrimination assessment	Five in all: one before, and one after each lesson

During the first half of the semester, section one was introduced to pronunciation lessons 1 and 2 with the phonetic approach and section two with the reference approach. During the last half of the semester, section one was introduced to lessons 3 and 4 with the reference approach, and section two with the phonetic approach (see Table 2 below for details). This design was previously used in Miller's production study (2012) and was created around the perception and production of common minimal pairs following Kelly (2000) and Arteaga (2000) who suggested teaching pronunciation by relying on familiar example words that tend to generate confusion. I also agree with the intelligibility principle described by Hendrickson (1979), Levis (2005), and Derwing (2010): pronunciation errors affecting intelligibility should be prioritized. Thus, high-frequency minimal pairs seemed like a good resource to work on discrimination and pronunciation in an introductory L2 course.

Instruments

To evaluate progress and the impact of each treatment approach, a discrimination assessment was administered as a pre-test (see Appendix C) at the beginning of the semester, and then again after each lesson (for a total of one pre-test and four post-tests). For those tests, students heard words containing target sounds and were asked to circle the matching written form among a choice of three possible answers, most often all minimal pairs. Pre- and post-treatment written surveys contributed to understanding the effectiveness of the two teaching methods from the students' perspectives. Additionally, although not discussed here, one pronunciation question on each of the five in-class exams, three recordings, and a final oral exam weighed heavily on the students' course grades. Those course components not only helped gauge the learners' oral performances but also provided external incentives to pay attention, take good notes, and do well on discrimination tests.

Table 2.
Topics of Each Lesson Plan and Timing of Treatment

	PHONEMES	**GRAPHEMES**	**MINIMAL PAIRS**	**FUNCTION**
LESSON 1	[ɛ̃] vs. [ɑ̃] vs. [õ]	in, ein, ain, un im, eim, aim, um an, en, am, em on, om	vent, vingt vent, vont vingt, vont [*wind, twenty, go*]	To distinguish pronouns and articles such as "un" [*a*], "on" [*we*], and "en" [*some*]
LESSON 2	[s] vs. [z]	ss s (between two vowels and in liaison)	poisson, poison [*fish, poison*]	To work on liaison and distinguish between "ils ont" [*they have*] and "ils sont" [*they are*]
LESSON 3	[y] vs. [u]	u, ou	tu, tout [*you, all*]	To clarify meaning in descriptions, as in "russe" [*Russian*] and "rousse" [*red-haired*]
LESSON 4	[ə] vs. [e]	e	le, les [*the, singular and plural*]	To distinguish singular and plural in articles and prepositions, as in "de" [*of the sing.*] and "des" [*of the plur.*]

RESULTS

Quantitative Findings

Despite a decreased number of errors in both sections from the pre-test to the last discrimination test after lesson 4 (a 46% decrease for section one, and a 40% decrease for section two, shown in Tables 3, 4, and 5), paired samples *t*-tests revealed that the reduction is significant for section one only, i.e. the section that started the semester with phonetic instruction and finished it with the reference approach ($t(10) = 4.82, p < .001$). Furthermore, while both sections made improvements after the first two lessons, comparing the data within each group between the first two lessons shows that this early progress was not statistically significant. Thus, there was only one significant difference in the data comparing within-group progress: section one made significantly fewer errors on the discrimination test from the beginning to the end of the semester. Section two made fewer errors as well, but not statistically significantly so. In other words, while both sections made improvements, only section one's improvement was significant.

Independent samples *t*-tests showed that there were no significant differences between groups at any stage of the semester. Comparing groups immediately after the pre-test, after the first two treatments, or even at the end of the semester when each section had been instructed with both approaches yielded no significant results. That means that the pronunciation teaching techniques

under investigation had an equal effect on the learners' discrimination skills throughout the semester: one group did not perform significantly worse or better than the other.

This quantitative analysis consequently suggested that the sequence in which the pedagogical techniques are introduced to learners is what matters for within-group improvement. The group that received instruction with the phonetic approach first and the reference approach second made significant improvement (as explained above), while the group that was taught with the reference approach first and the phonetic approach second improved, but not significantly. In other words, introducing phonetics and then utilizing reference words to reinforce pronunciation rules made a statistically significant positive impact on students' discriminatory performances, but not the other way around.

Table 3.
Pre-Test and Post-Test Results for Section One.

	MEAN# OF ERRORS	STD. DEVIATION	% CHANGE FROM PREVIOUS	% CHANGE FROM PRE-TEST
Pre-test	6.18	2.52	N/A	N/A
Post-test 1 [ɛ̃] [ɑ̃] [õ]	5.82	3.16	- 6.25%	- 6.25%
Post-test 2 [s] [z]	4.55	2.66	- 28%	- 26.47%
Post-test 3 [y] [u]	4.64	3.80	+ 1.96%	- 25.00%
Post-test 4 [ə] [e]	3.36	2.06	- 37.84%	- 45.59%

Table 4.
Pre-Test and Post-Test Results for Section Two.

	MEAN# OF ERRORS	STD. DEVIATION	% CHANGE FROM PREVIOUS	% CHANGE FROM PRE-TEST
Pre-test	5.58	2.54	N/A	N/A
Post-test 1 [ɛ̃] [ɑ̃] [õ]	5.58	2.71	0.00%	0.00%
Post-test 2 [s] [z]	3.25	2.18	- 41.79%	- 41.79%
Post-test 3 [y] [u]	3.08	2.15	- 5.13%	- 44.78
Post-test 4 [ə] [e]	3.33	2.19	+ 8.11%	- 40.30%

Table 5.
Pre-Test and Post-Test Results for Both Sections: A Comparative View.

	SECTION	MEAN # OF ERRORS	STD. DEVIATION	% CHANGE FROM PREVIOUS	% CHANGE FROM PRE-TEST
Pre-test	1	6.18	2.52	N/A	N/A
	2	5.58	2.54	N/A	N/A
Lesson 1 [ɛ̃] [ɑ̃] [õ]	1 (phon.)	5.82	3.16	- 6.25%	- 6.25%
	2 (ref.)	5.58	2.71	0.00%	0.00%
Lesson 2 [s] [z]	1 (phon.)	4.55	2.66	- 28%	- 26.47%
	2 (ref.)	3.25	2.18	- 41.79%	- 41.79%
Lesson 3 [y] [u]	1 (ref.)	4.64	3.80	+ 1.96%	- 25.00%
	2 (phon.)	3.08	2.15	- 5.13%	- 44.78
Lesson 4 [ə] [e]	1 (ref.)	3.36	2.06	- 37.84%	- 45.59%
	2 (phon.)	3.33	2.19	+ 8.11%	- 40.30%

Qualitative Findings

Qualitative analyses suggested that a majority of students favored explicit instruction. They reported benefitting from using phonetic symbols to compare and contrast French sounds. Quantitative analyses indicated that discrimination improved regardless of the explicit teaching approach but only significantly when the phonetic approach was introduced before the reference approach.

The qualitative data presented in Table 6 helps interpret the quantitative results. A key question on the final survey was: "Among the teaching techniques used by your instructor this semester, describe one or more that you feel helped improve your listening comprehension of French and explain how it helped." This question purposefully did not identify any teaching method so as to avoid leading the participants. The responses were sorted into categories that emerged upon reading the survey. Respondents often provided answers that fell into multiple categories, which is why there are more answers than participants in Table 6.

The formal pronunciation lessons, regardless of the approach, were mentioned the most as being helpful; 57% of participants identified them as beneficial without specifying reference or phonetic approach. When respondents did identify an approach as beneficial, the phonetic technique was noted the most (by 26% of participants). Minimal pairs, cited by 17% of the students, were used with both approaches but were more prevalent with the reference approach as they were reinforced in applications after the lesson. Therefore they can be tied to the reference approach. It seems that offering learners a structured time for the acquisition of perception and pronunciation skills makes an impact on how well they remember that type of instruction by the end of the semester, perhaps along with its content as well.

Next, another structured learning opportunity was singled out: the discrimination tests given after each formal lesson (22%). Learners felt that they benefited from that sort of assessment, perhaps as an opportunity to test and check their abilities. Aural input was favored as well as 30% of respondents mentioned benefitting from audio and video activities. Teaching pronunciation explicitly was found in 17% of the responses as having a positive impact but respondent did not provide further explanations. Only two students mentioned that listening and repeating after the instructor helped.

Table 6.
Categories, Number of Mentions in Survey Responses, and Percent Out of 23 Respondents

HELPFUL TECHNIQUES FOR LISTENING SKILLS (SELF-REPORTS)	N	%
Formal lessons (teaching approach left unspecified)	13	57%
Phonetics	6	26%
Discrimination tests	5	22%
Minimal pairs	4	17%
Listening (audio)	4	17%
Explicit (unspecified)	4	17%
Listening (video)	3	13%
Repeating after teacher	2	9%

DISCUSSION

This exploratory study suggests that both approaches to teaching pronunciation – phonetics and reference – have merit as they both seem to contribute to improving scores on listening comprehension tests and that learners report finding both helpful. But the sequence in which those techniques are presented to learners may be important. Progress was significant from lesson 1 to lesson 4 in the group that received the phonetic instruction first and learned from the reference method second.

Sequence Matters

There was one significant difference in the data examined above when within-group differences were considered: section one made significantly fewer errors on the discrimination test from the beginning to the end of the semester. Section two made fewer errors as well, but not statistically significantly. Tables 3, 4, and 5 above explore the progress in each group and show that each time the phonetic technique is introduced students make fewer discrimination errors (between -5% and -7% in each section). However, the second time it is employed, learners may make either fewer or more mistakes (-28% in section one – the 'phonetic first group', but +8% in section two, the 'reference first' group). Table 5 also shows, on the other hand, that each time the reference technique is introduced, students' number of errors either stagnate or increase (+2% in section one, 0% in section two). But the second time that learners are exposed to it they drastically reduce their number of mistakes (-38% in section one, -42% in section two). A possible interpretation would be that the phonetic approach is successful in introducing phonemic differences for short-term retention, while the reference approach manages to reinforce

and anchor those differences into long-term memory. The reference approach uses common familiar words that are easily recycled throughout the semester, which may aid long-term retention.

One might also postulate that the target sounds in the study have varying difficulties for learners. For example, distinguishing [s] and [z] (lesson 2) for a native speaker of English whose language also makes that distinction would logically be easier that differentiating [y] and [u] (lesson 3). That would explain why the number of mistakes dropped after lesson 2. However, the ability to discern the phonemes does not guarantee correct answers; learners still need to associate them to spelling. For instance, participants had to recognize that *dessert* in French is pronounced with a [s], not a [z] as in English. Success on the discrimination test therefore demonstrates correct phoneme discrimination as well as correct sound-to-spelling matching. As a consequence, the difficulty level of some target sounds depending on learners' native phonology cannot solely be tied to the test scores. What is becoming apparent is that the sequence in which phonemes are introduced and the sequence in which the teaching methods used are likely makes a difference in the learners' ability to correctly identify certain sounds in minimal pairs.

Different Learning Styles

Generally speaking, the formal pronunciation lessons were seen as beneficial by practically every respondent. This may mean that what matters is simply providing explicit instruction of any kind. However, among those who explained their answers, a majority preferred the phonetic technique over the reference technique (26% vs. 17%), suggesting that drawing support from symbols and articulatory information has an appeal to adult beginner learners of French. A participant explains: "I think the phonetics alphabet helped me. Sometimes you look at a word and trying to pronounce it seems overwhelming, but having it written in only phonetics tells you exactly what sounds to make." This comment indicates that the IPA functions as a tool from which learners can benefit. Students are given instruments such as rules, diagrams, and pictures to acquire grammar and vocabulary. Outfitting them with tools such as explanations on what to listen for as well as showing them symbols and correct speech organ placement should contribute to their success with pronunciation and discrimination as well.

Another respondent wrote: "Showing similar sounding words so we can look for patterns was beneficial." The ability to identify recurring patterns and derive rules from them constitutes a crucial step towards noticing, an act directly linked to the intake needed to develop second language skills as mentioned in the introduction. Those patterns can be reinforced visually with phonetics, thus multiplying opportunities for intake. Such visual stimuli are key assets of the phonetic approach. Based on students' comments regarding personal preferences, typical listening and pronunciation exercises mostly appeal to aural learners. Adding a phonetic component with symbols and articulatory demonstrations can create appeal for visual learners as well. This would explain why some respondents noted enjoying video exercises in addition to audio ones: visual cues seem to be helpful to improve listening skills as ways to materialize an aspect of language learning traditionally left unseen, and thus confined to the learners' auditory memory. With phonetic symbols, learners no longer need to depend on their memory alone to retrieve valuable information.

CONCLUSION

The quantitative and qualitative data analyzed in this exploratory study suggested that discrimination skills tended to improve with explicit teaching approaches but improvement was

significant only when the phonetic approach was introduced before the reference approach. Drawing attention to specific phonemic and articulatory differences gives learners the opportunity to notice them, reinforcing those distinctions with recycled familiar words appeared to have a positive significant impact on listening skills. As a consequence, the combination of different techniques was found to likely be the most efficient teaching technique for discrimination skills as was the case for pronunciation development (Lord, 2010; Miller, 2012). Introducing phonetic concepts at an early stage of proficiency may be effective and may enhance the effectiveness of other teaching techniques like the reference approach.

Acknowledgments

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APPENDIX A: reference method worksheet

<u>The pronunciation of 'u' and 'ou'</u>

1. Theory

In the spelling of the words "tu" and "tout", what indicates that they are pronounced differently?

2. Exercises

a. Sort the words below according to their pronunciation, to say if they are pronounced like the "tu" ou "tout".

lu   pour   dur   douter   mule   moule

Tu	Tout

b. Pronounce the following sentence.

N<u>ou</u>s venons d<u>u</u> c<u>ou</u>rs de littérat<u>u</u>re r<u>u</u>sse. Mon ami L<u>u</u>c ét<u>u</u>die t<u>ou</u>j<u>ou</u>rs beauc<u>ou</u>p.

APPENDIX B: phonetic method worksheet

<u>[y] vs. [u]</u>

1. Theory

a. In the spelling of the words "tout" and "tu", what indicates that they are pronounced differently?

b. How is tongue and lip placement different for [y] and [u]?

2. Exercises

a. Write the phonetic symbol ([y] or [u]) that you use to pronounce the following words.

> *lu*
> *pour*
> *dur*
> *douter*
> *mule*
> *moule*

b. Write the phonetic symbol ([y] or [u]) to indicate how the underlined letters are pronounced. Then pronounce the sentence.

N<u>ou</u>s venons d<u>u</u> c<u>ou</u>rs de littérat<u>u</u>re r<u>u</u>sse. Mon ami L<u>u</u>c ét<u>u</u>die t<u>ou</u>j<u>ou</u>rs beauc<u>ou</u>p.

APPENDIX C: discrimination test used five times in the semester

<u>Discrimination auditive</u>

Écoutez et encerclez le mot que vous entendez. Si vous n'êtes pas sûrs, cochez la case appropriée.

	A	B	C	?
1	Poisson	Poison	Poivron	
2	Ils sont	Ils ont	Ils vont	
3	Pull	Poule	Paul	
4	Ton	Temps	Teint	
5	Vos	Vous	Vu	
6	Tu	Tôt	Tout	
7	Lisez	Lissez	L'idée	
8	La	Le	Les	
9	M'en	Mon	Main	
10	Je	J'ai	J'y	
11	Ce	Ça	C'est	
12	Vingt	Vent	Vont	
13	Long	Lin	Lent	
14	Du	De	Des	
15	Désert	Dessert	Des verts	
16	Bain	Banc	Bon	
17	Pur	Pour	Port	
18	Son	Saint	Sans	

LEARNING TO PRODUCE CONTRASTIVE FOCUS: A STUDY OF ADVANCED LEARNERS OF ENGLISH

Greta Muller Levis & **John Levis**, Iowa State University

Contrastive focus carries an iconic meaning and is marked in English by changes in pitch and length. Previous studies have shown that nonnative speakers of English can be taught to recognize contrastive focus (Pennington & Ellis, 2000). This study examined the ability of international teaching assistants at a U.S. university to improve their production of contrastive focus. The subjects took a pretest to measure their recognition and oral production of sentences with contrastive focus. They were then taught about contrastive focus and given opportunities to practice, followed by a posttest identical to the pretest. Results showed high initial recognition scores that were sustained in the posttest. Oral reading performance improved significantly. The subjects' improvement indicates that contrastive focus is very learnable and that practice during instruction transfers to greater accuracy in controlled production.

INTRODUCTION

Prosody in English carries meaning beyond the words and phrases of discourse. There is a general consensus that native speakers (NS) and non-native speakers (NNS) alike need to use and understand these suprasegmental aspects of English (Derwing, Munro & Wiebe, 1998; Jenkins, 2000; Pickering, 2001).

One way suprasegmentals carry meaning is to emphasize important information. In normal English phrases, important information is at the ends of phrases and is emphasized with length and pitch changes. This emphasis is called sentence focus or sentence prominence. For example, the last word in (1), *test*, would normally be in focus:

(1)   I'm working on the scores for the **test**.

Sometimes, however, sentence focus belongs on words that are not at the end of a phrase. For example, in (2), the word *scores* is old information. That is, it is repeated from the sentence before, so it is de-emphasized and focus shifts to the last content word of new information, *rest*.

(2)   Here are the scores that I have finished. Later, I'll get you the **rest** of the scores.

Contrastive Focus

In addition, focus does not necessarily belong on the last word in a phrase when the context contains contrasts. For example, in (3), there is an implicit contrast with *a different exam*, implied by the focus placement.

(3)   These are the scores for **this** exam.

The contrast can be implicit as in (3), or explicit, as in (4). The contrast can also be in full words ("this" and "last") or in a part of the word ("normal" versus "abnormal").

(4)   The scores for **this** test are in **normal** distribution, unlike the **last** test, which were in **ab**normal distribution.

With explicit contrasts, it is possible the speaker has some choice about whether to emphasize both elements of the contrast (e.g., *this* and *last, normal* and *ab*) as in (4) or just the second element of the contrast (*last* and *ab*) as in (5).

(5)   The scores for this **test** are in normal **distribution**, unlike the **last** test, which were in **ab**normal distribution.

BACKGROUND

Previous research has shown that focus is essential to communicative success. L. Hahn (2004) studied how NS listeners recalled information in three conditions of focus placement: correct placement, incorrect placement, and no focus placement. The same bilingual Korean-English speaker recorded a short lecture in each of the three conditions and groups of NS undergraduate students listened and answered comprehension questions about the content of the lecture. The correct focus placement condition promoted the greatest comprehension, followed by the no focus condition. The weakest performance was in the incorrect focus placement condition.

Other research has shown that focus can be successfully taught, at least for recognition. Pennington and Ellis (2000) examined how Cantonese speaking learners of English distinguished sentences spoken with four types of prosodic distinctions: the iconic intonational distinctions of contrastive focus and tag questions, as well as distinctions in juncture and multi-word constructions. Without training, the learners showed no awareness of any of the prosodic distinctions although their memory for lexical differences was very good. In the second part of the experiment, learners were given instruction in the four prosodic distinctions before being asked to recognize differences again. The only prosodic distinction that showed an effect of instruction was contrastive focus. Pennington and Ellis attributed learners' progress in recognition to the highly iconic nature of contrastive focus.

Finally, there is also evidence that learners can be taught predictive rules about focus and can extend the rules to spoken production. M. K. Hahn (2002) examined how advanced learners of English improved their spoken production after being taught predictive rules for a wide variety of focus placements. All post-test focus placement scores improved after a semester of instruction, often dramatically so. In addition, Hahn examined delayed improvement rates 1-4 years after the post-test but after no other instruction. Spoken production based on some of the predictive rules continued to show significant improvement over pretest performance.

Because many teaching materials (e.g., Grant, 2009) and professional teacher training books (e.g., Kenworthy, 1987) emphasize the importance of contrastive focus, and because research shows that learners can be taught to recognize the meaning distinctions expressed by contrastive focus (Pennington & Ellis, 2000), we wanted to know whether learners can also learn to produce contrastive focus with instruction. This is the purpose of this study.

Research Hypotheses

We had two research hypotheses for the study. First, we expected that students would improve in their ability to hear focus in controlled contexts. Second, we expected that students would improve in their ability to produce contrastive focus in a sentence reading task.

METHODS

Our goal was to replicate the listening results of Pennington and Ellis (2000) and extend them to production. We wanted to test whether production of contrastive focus improved with explicit, targeted instruction in two contexts: Oral reading (based on a sentence reading task) and free speech (based on impromptus and individual prepared presentations). This paper reports only the results of the sentence reading task.

Our subjects were 18 graduate students from a variety of disciplines in a course for International Teaching Assistants at a Research I university in the US Midwest. All were placed into the course because testing determined they needed language support in order to teach. Our subjects included ten Chinese, four Koreans, two Indians, one Colombian, and one Ugandan. Ten were women, and eight were men.

Data Collection: Listening

All 18 subjects took an identical pretest and posttest (Appendix A) separated by three class days of instruction and two class days of presentations on topics involving contrasts. The pretest and posttest included 15 listening items and 18 reading items. In the listening test, subjects were asked to identify one word that was in focus for each of 10 sentences. For example, in (6), one of the three words would be in focus. Although the same sentences were used in both the pretest and posttest, the focus placements were changed to avoid learners remembering focus placements from the pretest.

(6)   <u>You </u>have a <u>new</u> <u>yellow</u> car

Also in the listening test, subjects were asked to identify two focus words for each of five sentences, as in (7). These sentences were included because contrastive focus often includes multiple contrasts within the same sentence.

(7)   <u>This</u> <u>week's</u> <u>storm</u> was the <u>very</u> <u>worst</u> of <u>all</u>.

The single focus and double focus sentences had a total of 20 possible identifications $(10*1) + (5*2)$.

Data Collection: Oral Reading

The reading test included 15 sentences with one or more contrasts. It also included three distracters that were not analyzed. For example, the sentences in (8) and (9) exemplify sentences with two or more required or potential focus words.

(8)   There isn't much agreement between their view and our view.

(9)   This verb is transitive whereas that verb is not.

Each sentence was read out loud two times, one reading immediately following the other. Both readings were recorded and analyzed for focus placement by the researchers. Any

disagreements were resolved through listening again and discussion. The numbers of correct focus placements were calculated for pretest and posttest readings.

Each sentence was selected from a large collection of contrast sentences turned in by students in previous semesters of the class. Sentences were used as is, or were slightly adapted to make the contrasts more evident in reading or to correct minor errors in grammar or word choice.

We also collected oral readings from four native speakers (NS) for a baseline of how NSs would realize the contrasts. The fours NSs were all senior undergraduate students in English Education. All had taken some introductory linguistics classes but showed no particular awareness of the purpose of the readings.

Eight of the sentences for the NSs showed great agreement on focus placement (90% or higher), so we analyzed NNS results only for these sentences. All reading sentences were analyzed by both authors. If there were disagreements, we listened again and discussed our findings until we came to consensus.

Instruction

Instruction took place over three class days (4 hours). It included listening practice, production practice, prediction practice, and instruction on non-pronunciation features. Listening practice included listening to read sentences that exemplified contrastive focus and listening to videos with interactive transcripts (e.g., TED: Ideas worth spreading, www.ted.com).

Production practice included instruction on the physical characteristics of contrastive focus, especially work on using pitch change to mark focus placement and practice producing increased syllable length on the focus word. A variety of tools were used to practice these physical characteristics including kazoos for pitch change and stretching rubber bands and using gestures for increased syllable length.

Prediction practice included giving subjects rules and generalizations about focus placement. They were then given opportunities for practice by choosing which words should be in focus in sentences (not included in the pretests and posttests) and interactive transcripts from videos before listening. After listening, subjects discussed why their predictions did or did not match the actual spoken performance.

Instruction on non-pronunciation features was not originally planned for the study, but it became evident that contrasts are often highlighted by discourse markers and that students were not effective at recognizing or constructing discourse that called attention to contrasts. Since the goal of the course was to improve their spoken language, it was felt necessary to also include instruction on the use of such words as *while, whereas, unlike, in contrast, but, however* and such frames as "there are (*two important characteristics*)." Also important were the use of the words *other, another*, and *the other*.

RESULTS

Hypothesis 1 stated that students would improve in their ability to hear focus in controlled contexts. Table 1 shows that the hypothesis was not borne out. Subjects identified focus at a very high rate in the pretest and the rate of identification stayed consistent for the posttest.

Table 1.
Mean identification of focus in sentences (Total Possible = 20)

Pretest	18
Posttest:	18.167

Std. Error, 0.513; t=0.325, p=0.749

Hypothesis 2 predicted that students would improve in their ability to produce contrastive focus in the sentence reading task. The NS readers provided a baseline of performance for the 8 sentences that were analyzed. Both readings for each of the eight sentences were included in the analysis. This meant that there were 176 potential focus placements (2 readings * 22 focus placements * 4 readers). Expected focus placements were realized 147/176 times, for a mean of 36.75/44.

On the pretest, the NNS subjects had a mean of 20.35. They produced 346 out of 748 potential focus placements (2 readings*22 focus placements*17 readers = 748 focus placements). One subject did not read all sentences twice on the pretest and so her results were not included. The same subjects' posttest mean scores increased to 32.94 (560/748). These results are seen in Table 2.

Table 2.
Mean correct focus placements in sentence reading task (Total possible = 44)

Pretest	20.35
Posttest	32.94

Std. Error, 1.92; t=6.57, p<0.0001*

The results indicate that subjects significantly improved in their ability to read sentences with contrastive focus after instruction.

DISCUSSION

Hypothesis 1 was not supported. The subjects were initially able to hear focus at a high level partly because hearing and producing extra length and pitch on normal focus had been an instructional priority already during the course. It also is likely that the listening test focus placements were read in such a way as to make focus more obvious, and that more subtle marking of focus would still be obvious to NS listeners but would show a greater range of variation in performance among NNS listeners. As it happened, the initial high focus identification left little room for improvement.

Hypothesis 2 was supported. It appears that the instructional treatment was effective in helping learners produce contrastive focus on the appropriate words with extra length and pitch movement. This suggests that focus, and contrastive focus in particular, can be taught and students can transfer the teaching to their controlled speaking.

In analyzing the subjects' performance, it is first notable that all students improved from the pretest to the posttest. Closer analysis suggests three patterns of improvement. First, a few students who demonstrated very little initial ability to produce contrastive focus, improved somewhat but continued with the lowest focus scores on the posttest. A second

group of students also demonstrated weak initial ability to produce contrastive focus, yet improved a great deal. In one of the most dramatic improvements, one subject scored 3/44 correct on the pretest and 34/44 on the posttest. Other students improved over 20 points on the posttest. The final group included subjects who started with scores that suggested awareness of the function of contrastive focus (25/44 or higher). All of these subjects also improved, even those who had pretest scores above 35. The maximum score of 44 was achieved by one of the subjects on the posttest. It appears that their initial intuitions about contrasts may have been helped by the instruction. There were no interviews of the subjects, so we cannot be certain what the subjects were thinking, but our impression from recording them was that they were consciously thinking about contrasts on the posttest readings.

The marking of contrastive focus in English depends on several acoustic factors, especially length of the syllables, a pitch change on the focused syllable, and de-stressing of syllables following the focused syllable. These do not all seem to be acquired at equivalent rates. We noticed subjects who lengthened syllables but did not use pitch change, subjects who used pitch changes without length, and/or subjects who used pitch changes and lengthening but did not de-stress following syllables, sometimes making it ambiguous which syllable was in focus. The brief period of instruction did not allow us to determine which of these were easier to learn.

We believe, however, that the de-stressing of following syllables was the most difficult element to learn and also the feature that caused our greatest difficulty in identifying which syllables were in focus. The syllables that stand out as prominent do so because of the acoustics of surrounding syllables as much as because of their own acoustic signals. De-stressed syllables thus serve an important function in the identification of focus (Dickerson, 2011).

The sentences that we used for the reading task were chosen for their multiple contrasts. Nonetheless, some contrasts seem to require both elements to be in focus; others only require the second element. The sentence in (10) was read by all of the NSs and most of the NNSs with focus on all four elements in bold. The this/that contrast was expected, but not as consistently as actually occurred. In contrast, the sentence in (11) has an obvious contrast in *left* and *right*, but only the focus on *right* was consistently realized. The focus on the first clause was instead realized on the word *equation* (normal focus placement).

(10)   **This** verb is **transitive** whereas **that** verb is **not**.

(11)   The quantities on the (**left**)-hand side of the (**equation**) must equal the quantities on the **right**-hand side.

It became clear that some contrast pairs in our sentences were more likely than others to both be realized with focus, but we do not know if there is a clear pattern to the structures that seemed to require all contrasts to be marked.

CONCLUSION

We expected that instruction would have an effect on the production of contrastive focus based on earlier research that showed an impact on the perception of contrastive focus. However, the impact of instruction on controlled production was much greater than we

had anticipated, especially given the relatively short instructional period of three class days. The improvement level clearly indicates that contrastive focus is worth teaching. It would also be worth examining the extent to which the subjects' improvement affects their spoken comprehensibility.

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Appendix A

Sentences for Listening Task

PART 1

Listen to the sentences. One of the numbered syllables in each sentence is more strongly emphasized than the others. Circle the number of the most emphasized syllable. Follow the example.

EXAMPLE

      1   (2)   3

      You have a new yellow car?

      1   2   3

1   Dogs are social animals.

      1   2   3

2   She always cries at weddings.

      1   2   3

3   I'm certain the answer is right.

      1   2   3

4   Did you talk during class?

      1   2   3

5   He drives a bus in town.

      1   2   3

6   He bought a new jacket.

      1   2   3

7.   The cat was very unfriendly.

      1   2   3

8   The paper is late again.

      1 2   3

9   I knew Jane was leaving.

      1 2   3

10   The bike is now in the garage.

Part 2

In the next five sentences, two of the numbered syllables in each sentence are more strongly emphasized than the others. Circle the numbers of the most emphasized syllables. Follow the example.

EXAMPLE

      1   2   (3) 4   5   (6)

      John likes to ski and he likes to travel.

      1   2   3 4   5   6

11   I want to know if she made the mess or if he did it.

      1 2   3   4   5   6

12   Jim had to go by bus but flying is what he prefers.

        1 2   3   4   5   6

13   This week's storm was the very worst of all.

          1   2   3   4   5   6

14   I know that you want to hear the story but I can't tell you.

       1   2 3   4   5   6

15   Yesterday felt cold but it was nothing like this.

Sentences for Oral Reading Task

(Bolded sentences used for analysis)

1. The advantages are much greater than the disadvantages.

2. **Most elements have two or more isotopes. The isotopes have the same atomic numbers, but they have different mass numbers.**

3. **There isn't much agreement between their view and our view.**

4. Carbon is an element, whereas carbon dioxide is a compound.

5. **It's safer to fly against the wind than with the wind.**

6. The exam scores for this test are in a normal distribution. The distribution of scores for the next test is abnormal.

7. **The quantities on the left-hand side of the equation must equal the quantities on the right-hand side.**

8. **When the price of apples increases, then the demand for apples will decrease.**

9. **In addition to improving language skills, ITAs should also work on their teaching skills.**

10. OK. Let's build a graph. We'll start with the price. Price goes on the vertical axis. Now we need quantity. Quantity goes on the horizontal axis.

11. **There are two main types of verbs: transitive verbs and intransitive verbs.**

12. **For a better understanding of this problem, let's split all forces into two categories: external forces and internal forces.**

13. This verb is transitive whereas that verb is not.

14. The product needs to go in the box not near the box.

15. **Some organisms are unicellular, which means they consist of a single cell. Other organisms are multi-cellular, which means they consist of many cells.**

EXTRA-LINGUISTIC FACTORS IN THE TEACHING AND LEARNING OF PRONUNCIATION IN AN ESL CLASS

Joshua Gordon, Indiana University

This paper presents the results of a study that investigated the nature and efficacy of an English as a second language (ESL) pronunciation class from a qualitative perspective. This study, based on ethnographic methods, portrays the reality of a pronunciation class in an intensive English program at a large American university, and uncovers extra-curricular aspects that can hinder the learning and teaching of pronunciation. Some aspects emerged strongly in the analysis as possible hindrance factors: contradictory expectations from the teacher versus the students as to the benefits to be obtained from the class and how to obtain those benefits, as well as complex socio-psychological aspects (e.g., identity, Norton; 1995, 1997; motivation, Ushioda, 2009) that affect teaching and learning in a pronunciation class. Although most of the research carried out in pronunciation has been experimental in nature and has analyzed aspects like native language background and age of learning, this study demonstrates that other extra-linguistic factors should also be taken into consideration, given their role in pronunciation teaching and learning in a classroom setting.

INTRODUCTION

Research on pronunciation teaching and learning has pointed out the positive effects of explicit instruction in the development of intelligible speech in language learners (e.g., Derwing, Munro, & Wiebe, 1998; Hahn, 2004; Lord, 2005). Findings from research in phonetics and phonology have also indicated what specific aspects second language (L2) learners should pay attention to in pronunciation learning to enhance intelligible speech. For instance, some studies suggest more attention to suprasegmentals (or prosody) and not just segmentals (i.e., vowels and consonants) in instruction, as suprasegmentals seem to play a major role in what is perceived as clear and intelligible speech (see Derwing et al., 1998; Field, 2005; Herbert, 2002; Kang, Rubin, & Pickering, 2010; Munro & Derwing, 1995). The development of intelligible speech is, in fact, what is currently sought in pronunciation teaching, rather than a native-speaker accent model (see Levis, 2005). To achieve this, basic concepts such as the roles and goals of both teachers and learners in pronunciation instruction should be clearly defined (Morley, 1991).

Although L2 learners study pronunciation for different reasons and under different circumstances, most classroom-based research on pronunciation instruction has been limited to analyses of what techniques, instructional methods, or linguistic features work best for learners in class (e.g., Acton, 1984; Derwing et al., 1998; Lord, 2005). However, very few studies have investigated the experience of learning or teaching pronunciation on the part of the student or the teacher, and what it is like to be a teacher or a learner in a pronunciation class with students of different first language (L1) backgrounds, age, proficiency levels, or who come to class with different reasons to study pronunciation (see Golombeck & Jordan, 2005; Morgan, 1997). The vast majority of research in L2 phonology has focused solely on strictly-controlled laboratory

conditions and on purely phonological phenomena, for the most part, and the repercussions of such research on pronunciation instruction are minimal in most cases (Derwing & Munro, 2005). This lack of connection between theory and practice in pronunciation instruction is not just a one-way street. It is also the case that research in L2 phonology does not take into consideration all the extra-linguistic factors that may hinder or enhance the acquisition of pronunciation skills in learners, which are reflected in all the complexities that classroom instruction entails (e.g., reasons for learning pronunciation, teacher and student expectations, motivation, identity). It is for this reason that classroom-based research that investigates holistically what happens in pronunciation classes could show how individuals approach the teaching and learning of this skill. This is not a recent claim, and in fact is one that has been promoted throughout the years (Derwing, 2003; Moyer, 1999; Pennington & Richards, 1986). The fact that some learners go through instruction and do not reach the minimally expected goals of a pronunciation class is proof of the divorce between theoretical research and classroom practices in different contexts, influenced by all the social and psychological richness that L2 teachers and learners bring to the classroom.

In this study, I investigated the teaching and learning of pronunciation in a classroom context from a qualitative perspective to understand what extra-linguistic factors (i.e., other factors aside from merely linguistic phenomena) enhance or hinder the teaching and learning of this skill, and how teachers and students cope with such factors in classes like this. The study was carried out to examine the nature of an English as a second language (ESL) pronunciation class and the actual practices of both teacher and students in class.

METHODOLOGY

Site Selection and Class

The pronunciation class selected for this study presented commonalities found in other classes of this nature across the United States. These ESL programs are a common context for many international students who come to the country every year to learn English. The class was part of a large intensive ESL program in an American university, and there were students from diverse linguistic and cultural backgrounds. The students were in their early- to mid-twenties. The teacher was a native speaker of American English, and the class met in different places on campus every day. Because of the intensive nature of the program, classes meet for 7 weeks, and the last 2 weeks of classes are usually used for final exams and standardized tests, such as the Test of English as a foreign language (TOEFL), or for administrative work for teachers. Instruction has to be accommodated sometimes to deal with different issues. For instance, the teacher attended a conference out of town during the second week of the session, and the class had a substitute teacher for that entire week.

Although pronunciation is taught in the speaking classes of the program, I purposefully selected this class for this study because it presented ideal characteristics for analyzing the teaching and learning of pronunciation in a large language program, given its focus on pronunciation only. The class is an elective course, and it is usually offered for students in Levels Six and Seven (i.e., students with average TOELF scores of 450-500) out of seven institutional levels. It met 5 days per week during the regular 7-week session, and for 2 of these days the group met in a computerized language lab on campus to analyze audio files and watch videos. In the lab, the teacher showed instructional videos about phonetic features (e.g., points and manners of articulation of different consonants, or lip rounding in vowels) or the students presented *YouTube*

videos, which they would later re-enact to imitate the speech of the speakers in the videos. Classes took place in different parts of campus during the other three days. The teacher would come to the class early and interact with the students while getting materials ready and setting everything up for the lesson, and there was always a good atmosphere between the teacher and the students.

Participants

The class was composed of 9 students (4 female & 5 male) from different nationalities and with different L1 backgrounds. They were from Saudi Arabia, China, Japan, Korea, Taiwan, Turkey, and Thailand. They were well acquainted with each other, because they were also taking (or had taken) other classes together. This was one of the last classes for some of these students, and many of them intended to enroll in American universities—either in undergraduate or graduate school—after completing the program. Out of the 9 students, 3 volunteered to participate in interviews: Xin, Tam, and Zahra.[1] They were in their early- to mid- 20s, and they were learning English in this program in order to enroll in American universities. For instance, Xin was a young girl from Taiwan who wanted to get a master's degree in physical education. Tam was a young male student from Thailand who intended to attend graduate school to study computer science. Finally, Zahra obtained a grant in her country (Turkey) to come to the United States and get a master's degree in psychology. These 3 students were very quiet and not necessarily the ones who actively participated in class on a regular basis. The instructor for this class was Annie, a native speaker of English who was also attending graduate school in the same department where this ESL program is based. This is a common characteristic in some of these programs, as graduate students get to teach ESL classes while they work towards the completion of their degrees in language teaching. Annie was originally from the West Coast of the United States, and she spoke a very neutral variety of English—which was beneficial for her students to understand her. She was a novice teacher with 2 years of experience (teaching ESL and EFL). She spoke two foreign languages and was learning another one at the moment of the study.

Data Collection

I used traditional ethnographic techniques to collect data for this study. I carried out classroom observations for 4 and- a- half weeks—4 days per week in 50-minute classes for a total of 15 hours. I sat in class as a nonparticipant observer and took notes on all the teaching and nonteaching events. I also audio-recorded the class for later transcription and analysis. As a nonparticipant observer, I took field notes and paid attention to the student-teacher and student-student interaction. For this, I used a thick-description approach to capture all the events and types of interaction (Geertz, 1973). I also kept a record of other important details that are particular to every language classroom, such as organization and development of class activities, special events, and behavior of both teacher and students.

Another source of data collection came from individual interviews with both the teacher and three students.[2] These interviews were semistructured and lasted about 1 hour each. All

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[1] Each participant was given a pseudonym for the purpose of the study, and is referred to by pseudonym only in this paper.

[2] Because of time constraints, it was only possible to carry out two interviews with the teacher and one interview with each one of the students. The interviews with the teacher took place during the third and sixth weeks of the

interviews were audio-recorded for later transcription and analysis (see appendix for sample semistructured interviews). During the teacher interviews, I asked about the selection of content, activities, and problems faced by students in learning pronunciation. As for the students, they discussed with me their experiences learning English pronunciation in class and in previous courses. They also pointed out their difficulties in learning and what issues and activities they perceived were beneficial for them or not. I also inquired about specific previous activities I had observed in class and their reaction toward them.

Data Analysis

I transcribed the classroom recordings and interviews using a combination of broad and narrow transcription. I codified common themes and categories that emerged in transcriptions of classroom interaction, interviews, and in the observation field notes. The codifying of themes and categories was done following Glaser and Strauss' (1967) comparative method. For instance, fieldwork notes from classroom observations were compared to the actual classroom transcripts to find common themes. Transcripts from interviews from both the teacher and the students were also compared to the other notes to find commonalities, and different categories and themes emerged. In addition to more information about the experience of teaching and learning pronunciation from the participants, three main categories emerged in the analysis, and these are described in detail in the Results section.

RESULTS

In this section I outline the main findings of this investigation, which came up in the analysis of field notes, class audio recordings, and interviews with both the teacher and the students. Three categories emerged strongly in the analysis: (a) a conflict of intelligibility versus native accent among the students, (b) preference for a specific type of instruction and activities in class, and (c) students' expectations of the teacher. These categories are presented in more detail as follows.

Intelligibility versus Native Accent

The first category that emerged in the data was a conflict between the goal of the students of attaining native accent in class versus a focus on intelligibility, as advocated by professionals in the field. As research in L2 phonology has demonstrated, it is unrealistic to expect learners to acquire a native accent, and very few learners actually achieve such proficiency levels (see Højen & Flege, 2006; Moyer, 1999; Munro, 1993). Thus, there has been a paradigm shift in instruction, from upholding native accent as the goal to helping learners achieve intelligible speech that will enhance communication (see Levis, 2005). Because this is a common topic in pronunciation teaching, I asked Annie about her position on it. In class, she always emphasized the importance of intelligibility. She constantly reminded her students that they should use her pronunciation for comparison purposes only, but that they did not necessarily have to sound like her. This is what Annie told me in the first interview:

> "I think that I emphasize intelligibility over… or, you know? I think I do a fairly good job emphasizing that they [students] don't need to talk exactly like me or my accent or any other American accent, or whatever you know? I want them to be able to talk to someone and have that person understand them better than before they had taken the class I guess.

course, whereas the interviews with the students took place in the fourth week (with Tam) and during the fifth and sixth weeks (with Xin and Zahra).

> And you know, whatever that means for that student I guess it's going to mean different things for everyone. But you know if for some students it means changing their intonation so that people know if they are asking a question or making a statement, whatever, or with the individual sounds, you know that's ok I guess" (Annie, interview 4/02/10).

In spite of Annie's position on intelligibility, her students presented different ideas. The 3 students I interviewed expressed that they came to this class because they wanted "to sound like a native speaker." Although there were contradictions at times in what they said, native proficiency was their common goal. For example, this is what Tam stated in his interview:

> "My goal is I, I… I want to speak as clearly as possible. It is like, when I talk to people, native speaker, with native speaker, they do not think, I mean you don't have to think about what I'm talking about. They got, they understand me. Uh… I cannot say I want to speak like native speaker [laughs] I think it's… it's my age I think right now it's kind of impossible, so I just want to… speak, uh… as clearly as possible […] If it's possible, I want to sound like native speaker. I mean, I want to sound like that, I think it's cool. But I think it's hard, it's difficult. But I'm ok with not sounding like that and having an accent. I think it's impossible [sounding native]. I just observe like people who have live here for 20 or 25 years but they all sound like Thai speakers" (Tam, interview, 4/07/10).

As evidenced here, Tam presented different contradictions. He is aware of the low probability he could ever sound "native" given his age—and aware of other Thai speakers in the community who never achieved native accent. However, he also considers it "cool" to sound like a native speaker. Ultimately, what Tam wants to achieve might be intelligibility, to sound clear to other interlocutors and avoid communication problems, especially given that at the beginning of the class he had a strong accent and needed to rephrase constantly to get his message across. However, wanting to sound clear and being understood also represents his need to integrate socially into the target language community composed mostly of native speakers of English in school. He seemed to be aware that improving pronunciation was necessary to achieve this integration. As demonstrated by research, speakers use their pronunciation to identify with a specific group (see Zuengler, 1988), and for Tam, sounding clear is a means to integrate and function in the target language community. Additionally, sounding "as clear as possible," as he said, would probably help him reduce his foreign accent, which often can be a source of discrimination, prejudice, or negative evaluation of a speaker (see Flege, 1988; Munro, 2008).

Another important and related factor to consider in this case is identity. Although Tam was very aware of his accent, he also expressed that it was fine with him to have one when he said "I'm ok with not sounding like that [native speaker] and have an accent," which resonates with his need as an individual to identify and associate with a specific group—in this case other Thai speakers in the community (see Gatbonton, Trofimovich, & Magid, 2005; Golombek & Rehn Jordan, 2005; Hansen Edwards, 2008).

Another student, Zahra, gave me a more concrete reason why she wanted to sound like a native speaker. She explained to me that in graduate school she would have to interact with native speakers constantly, so it would be very important not only to understand them but also to be understood by her American professors and classmates. Just like Tam, it is evident that Zahra wants to integrate into the target language community, and she knows that it will be important to speak clearly, given the amount of time she will spend in an American university.

In spite of the trend towards intelligibility over native accent in pronunciation classes, learners often want to sound native. This phenomenon is nothing new, and in many cases this depends on the students' needs and goals in learning (see Derwing, 2003; Timmis, 2002). For Zahra, clear pronunciation is essential, because her major and career in psychology will require frequent and complex verbal interaction. One important aspect in this case is the concept of investment (Norton, 1995; 1997; 2000), since Zahra appeared to be a motivated student who is willing to invest in learning to improve her speech. Based on Bourdieu's (1977) notion of investment and capital resources, Norton states that when learners invest in their L2, they do it with an understanding that they will have more access to the capital resources from the target language community. This is basically the case for Zahra, who confessed to me that part of the reason she wanted to participate in the interview was to have extra practice speaking English. She said that she will eventually have this type of interaction with other interlocutors and that pronunciation is important in it, and that extra practice is essential to get used to it. This is the type of investment Norton makes reference to: a highly motivated student who invests in her own learning in order to have access to material and capital resources in the target language community—in this case, investing in improving pronunciation and clear speech could help Zahra take full advantage of graduate school and a future career.

In addition to this conflict of intelligibility versus native accent, another important category that emerged in the data was related to instruction in class, which included some traditional techniques as well as some other more innovative activities. Student reactions to different activities affected their motivation. The details of this category are explained in the section below.

Type of Instruction in Class

The activities used in class focused on both segmentals and suprasegmentals. There were both controlled activities to develop accuracy, and other activities to develop fluency. These latter activities, including pair and group discussions, had a more communicative orientation. When I inquired about the selection of activities and tasks, Annie gave me two rules of thumb she used to bring activities to class. The first one was related to students' awareness of different aspects of pronunciation:

> "Well, one thing just on the basic level is I want them to understand, even if they can't produce it but at least understand, it is to understand the difference between individual sounds. That's one thing, I want them to be aware, you know, that there's difference between /i/ and /ɪ/ for example. And I think there are a number of students who didn't know those differences, who didn't know how many vowel sounds there were for instance, you know, things like that[…] I want them to feel they have these new tools to use that they can kind of go out and be more successful in communicating with people" (Annie, interview, 4/16/10).

To achieve this, Annie always tried to make sure that her students noticed the differences in suprasegmentals (e.g., differences in intonation patterns) or in specific sounds like vowels. For instance, she compared minimal pairs to demonstrate to the students—sometimes even by bringing other native speaker guests to class—the differences in individual vowels or consonants. The second rule of thumb, Annie said, was to bring activities that students would enjoy or would have fun carrying out in class, as she described in one interview:

> "I feel like if they're not having fun then they're not going to be learning much anyway, you know it's like they're not really into it. Um… so that's one thing, I guess I'm trying to pick things that have like real communicative value to them where it's not just, you know, repeat after me and move on, where it's like they have to interact and negotiate the sounds that they're making to make sure that they're making them right or hearing them right and things like that" (Annie, interview, 4/2/10).

In spite of Annie's criteria, the students were not very pleased with some of the activities. For instance, Xin was very emphatic during the interview in pointing out her frustration with activities that required the use of phonetic symbols. This is what she had to say about a pair activity (a Bingo game) in which the students had to pronounce vowel sounds and cross out the phonetic symbols on a sheet of paper:

> "For me I just think that is a game. Yeah, it's game, and I play a game like I play a game, and, uh… so, even though now you ask, you ask me what is this? how to pronounce this [drawing phonetic symbols of vowels on a piece of paper], you know that? I don't know!! I'm sorry! Yeah, or pronounce this? You know this? What's that? [pointing symbols to interviewer]. Yeah, you know, I just follow, you know. I just, every class I just like a new student, I just follow what the teacher, or follow what, what our classmates do.[…] I cannot hear it, and I don't know how to use that [phonetic symbols], and why I need to use that, for my pronunciation??? (2 sec) Yeah, I don't… you know, because… everybody say this is tool… to use… uh to have help your pronunciation, but now my situation is, I don't know how to use the tool, and I don't know, you know, I cannot tell the tool! How can I use these tools to help my pronunciation? That is now my situation, yeah that's my problem now" (Xin, interview, 4/1/10).

A similar view was expressed by Zahra, who said that she did not like to memorize phonetic symbols, which were confusing for her. What is interesting here is that Annie brought these activities to class based on her pedagogical knowledge and her background in language teaching. As a graduate student in a strong second language acquisition (SLA)-oriented program, Annie knew the importance of concepts discussed in the SLA literature, such as awareness and attention, which are important for acquisition (e.g., Schmidt, 1990, 2001). Based on her background, she knew the importance of making learners notice and be aware of differences in the input for acquisition (like the difference between individual sounds such as /i/ and /ɪ/). But of equal importance to the learning outcomes in this case is the difference between novice and experienced teachers. As a novice teacher, Annie was concerned with evoking empathy from her students, who she claimed needed to "have fun" and "enjoy" the activities to learn. This is a common priority for novice teachers, who are usually concerned about their students' perceptions—as opposed to more experienced teachers who are concerned about actual learning taking place in class (see Gatbonton, 1999).

These differences in what activities the teacher and the students consider useful are problematic because they create conflicts in class that could hinder learning. Annie considered that students needed to know about differences in sounds because these are "tools" that they would need to improve their pronunciation. However, the fact that students like Xin—who does not understand why phonetic symbols are considered "tools" to help her—do not see the pedagogical purpose and the ultimate goal of activities in class might have negative repercussions, such as demotivation to learn and make progress in the L2 (see Dörnyei & Ushioda, 2011; Gardner & Lambert, 1972).

Student Expectations of the Teacher

Another category that emerged in the data was related to the students' expectations of the teacher. As in most language classes, the students expected the teacher to play a specific role, which did not always seem to be fulfilled. For example, this was Annie's response after two students gave a presentation in class:

> Annie: Very good!! Nice job [teacher and students clap after the second student finishes his presentation]. Is anyone else ready to go today? Or will you go tomorrow?? Ok. Good job! Do you have any comments for them? (2.sec) for S2 or S1? (4.sec)
>
> S2: What's your comment?
>
> Annie: My comment? [laughter] I was impressed! I thought… I especially liked your…um intonation, I thought that you had your voice go up and down, um very well, and your stress! Also… like that, you know [laughter] and I stressed the word stress, um I thought you guys did a very good job with that, so…
>
> S2: What was the bad work?
>
> Annie: The bad work? [laughter] Hhhhmmmmm!! (4.sec) I don't know, I, I actually thought it was very good. Um… I don't know, we're actually… today in class we're going to focus on our weaknesses a little bit. So maybe you'll be able to discover your own today, um… and then I'll help you with that during this week. So that was a good lead in the next activity [laughter]. What I'd like you guys to do is to get in groups, please… (Class. 3/29/10).

This passage demonstrates how the students expected a specific role from Annie in class (i.e., feedback provider), but she decided to provide only positive feedback and not point out their pronunciation problems. Instead, she asked the rest of the class to give feedback to these two students, even when one of them explicitly wanted Annie to correct his speech (i.e., "what was the bad work?"). These expectations of the teacher were also evident in the interviews. Zahra stated that she wanted to hear from Annie not only about her strengths but also about her weaknesses, and this is a common reflection of the role students expect from the teacher in a language class (see Richards & Lockhart, 1996), perhaps especially in a pronunciation class like this, where students see the teacher as an expert in the subject and expect him or her to help them with their pronunciation problems. Tam explained to me that he joined a conversation club on campus to "have extra practice in speaking." This, he said, would help him because his native-speaking partner corrected him from time to time, unlike other speakers he found on campus, who would not correct him because, as he said, "they are not English teacher that they don't need to correct me" (Tam, interview 4/07/10). This demonstrated to me not only how interested Tam was in improving his pronunciation, but also that he was aware of the role of a teacher in class. For him, and for other learners, teachers are the ones who correct and provide feedback, unlike other speakers, who are not required to do so, because they are not "English teachers" as Tam said—that is, they are regular interlocutors who do not correct learners because they are not teachers. Tam's words reflect his awareness that the teacher is the authority in class (i.e., the one who corrects) and that other interlocutors he finds on campus are not necessarily required to play that same role.

This example shows how conflicts arise and can interfere with teaching and learning in class, if student expectations do not match the actions of the teacher. Annie wanted to empathize with her

students and decided not to provide negative feedback. In the interviews, she told me that she wanted to empower her learners and make them feel more comfortable in her class in order to help them learn. In this light, deciding not to point out students' weaknesses explicitly in class is probably a teaching strategy to avoid making them uncomfortable. However, for these students, Annie was the pronunciation expert or authority in the class, and as such, they did want her to use her expertise and point out their problems in order to help them improve their language. Ultimately, this is one of the reasons students come to a class like this—that is, to improve their pronunciation skills. When they see that their performance in class—which the teacher claims is fine—does not necessarily match with their performance and progress in the language outside of class, they can become demotivated. Thus, a mismatch between the students' and the teacher's expectations about the teacher's role in class affects learning.

Another important factor closely related to this issue is that lack of feedback can be problematic for acquisitional purposes. Researchers in SLA have expressed that a lack of focus on form might help learners develop fluency in the language but not necessarily accuracy, and it is here where corrective feedback is necessary to help learners develop accuracy (see Lyster, 1998; Lyster & Ranta, 1997; Lyster & Saito, 2010). Therefore, giving students positive feedback at the expense of not providing negative feedback (or "the bad work" as one of the students said) could be problematic for students in a pronunciation class like this where they expect the teacher to point out their deviant forms of the language. Receiving feedback from the teacher could enable learners to make corrections in their production and make important progress in their own learning.

DISCUSSION AND CONCLUSION

This pronunciation class presented different conflicts that had negative repercussions on the learning process of the students. First, as in many language classes, the students in this class expressed that they wanted to achieve native proficiency in pronunciation, a fact that the teacher seemed to be aware of. However, previous research has demonstrated that these goals are difficult to achieve for many learners, as Annie knew explicitly and as some students, like Tam, also seemed aware (e.g., Høgen & Flege, 2006; Moyer, 1999; Munro, 1993). This is an example of how learners in a pronunciation class can present inherent contradictions in what they want to get from the class and what they see as potentially attainable. Second, this class also provided evidence that methods of instruction can be problematic when teachers' actions—even when based on their pedagogical knowledge and training—collide with the students' perception of usefulness in learning. When students do not see the pedagogical purpose of specific activities implemented in class, there is a demotivating effect. For instance, students like Xin did not understand why the use of phonetic symbols to help learners "visualize" sounds —though common in pronunciation teaching—is supposed to help them in pronunciation if they cannot recognize the symbols or hear differences in sounds in the first place. Another problem stemmed from conflict between student and teacher expectations about the teacher's role. The teacher wanted to empower the students by making them feel more confident about their own speech. However, the students wanted another type of empowerment, and expected the teacher to help them overcome their pronunciation problems by showing them not only their strengths but also their weaknesses. They were frustrated in some cases when the teacher chose not to point out problems in their English, and they lost confidence in the value of the class.

In a class like this, these different extra-linguistic factors interfere with pronunciation teaching and learning. The issues found in this class belong exclusively to this specific context, and

although it is impossible to make generalizations to all teaching and learning scenarios, it is helpful to reflect on how similar issues may affect the dynamics of other pronunciation classes, and how these factors can prevent students from making progress in learning. The class portrayed in this study demonstrated that in addition to comparatively well-understood linguistic complexities that learners bring to the class (e.g., different L1 backgrounds, age, and different levels of exposure to L2), there are additional factors that play a central role in the learning process and that can either enhance or prevent learning for some students. Some students come to a pronunciation class with high levels of motivation that make them seek extra opportunities to invest in more learning. However, others come to class and the type of instruction they find demotivates them and prevents them from learning, especially when they do not see the usefulness of instructional techniques used in class, or when they do not receive the type of feedback they expect the teacher to give. It is my hope that the issues presented here can help us reflect about the need to investigate and analyze more what happens in the pronunciation classroom beyond the analysis of strictly phonological phenomena.

ABOUT THE AUTHOR

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APPENDIX

Sample Questions (Student Semi-Structured Interview)

Tell me a little about yourself (where you are from, what you would like to study, how long you have been in this program, etc.).

Why are you studying pronunciation in this course?

What would you like to learn (or achieve) in this course? Please explain.

How do you feel about the activities you do in class (dialogues, reading out loud, presentations, etc.)?

Do you study pronunciation outside of class? Explain.

When you interact with others outside of class, do you make an effort to put into practice what you learn in class? Explain.

How do you feel about your own English pronunciation right now?

What aspects are more important for you to improve in this course (e.g., vowels, consonants, stress, intonation, etc.)? Explain.

What aspects do you feel are more difficult for you in pronunciation? Explain.

What kind of things do you feel are easier for you in pronunciation? Explain.

How do you feel about some of the techniques used in class, and how useful do you think they are for your own learning? Explain.

How do you feel about the assignments in class? Are they helpful for you? Explain.

Is there anything else you would like to tell me about you and the class that I didn't ask you?

Sample Questions (Teacher Semi-Structured Interview)

How do you perceive your students learning of pronunciation in class?

What is your ideal vision about teaching pronunciation?

What are the strengths and weaknesses of your students learning pronunciation?

How do you select the activities that you bring to class? How do you select assignments?

How do you help your students with intelligibility in class? Do you feel it is important to teach them to be intelligible? Explain.

How do you think your students feel about intelligibility in pronunciation?

A lot of students seem to have a contradiction between sounding nativelike and their accent. How do you approach this in class?

In your opinion, what types of expectations do you think your students come to class with? Explain.

How useful has it been to learn about English pronunciation teaching/learning in your graduate program?

How do you deal with a student (for instance, when monitoring in individualized attention) that you see it's having difficulty with a specific sound or another feature? Explain.

How do you feel about the issue of identity and their pronunciation?

NATIVE-SPEAKER PERCEPTIONS OF SPOKEN L2 SPANISH: THE ROLE OF PRONUNCIATION AND IMPLICATIONS FOR PEDAGOGY

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Studies suggest that what NSs attend to while listening to L2 Spanish may be different from what L2 instructors attend to and that NS perceptions may be affected by both listener and speaker backgrounds. Therefore, sociolinguistic research on NS perceptions of L2 speech is relevant to the L2 classroom because it offers instructors guidance on what issues a student may face when interacting with a NS outside of the classroom. This paper reviews current research on NSs' perceptions of L2 Spanish speech and considers trends in comprehensibility, acceptability, irritation, and the effect that background of both the NNS and the NS can have on perception. It then considers the application of such research to the instruction of L2 Spanish. While pronunciation is not often taught in L2 Spanish classrooms, this research suggests that errors in pronunciation cause greater misunderstandings for NS than those related to morphosyntax and it therefore lends support to the teaching of pronunciation. Although the body of research is relatively small, it offers us a specific list of errors related to both pronunciation and morphosyntax that instructors can use in order to attend to L2 Spanish more like NSs. It also offers valuable insight into how NS and NNS backgrounds affect NS perception which can be particularly helpful in preparing students to interact with NSs.

INTRODUCTION

This literature review will examine the sociolinguistic research that has been done on the perception of L2 Spanish speech by NSs. While much research has been done to identify what factors help a NS to identify NN speech, this research focuses on NS reactions to L2 speech and it seeks to answer questions such as:

1. How do NSs view the use of their native language by NNSs?
2. What factors affect the reactions that NS have to NN speech?
3. What errors in NN speech are the most salient to NSs and which impede communication most?

Much of the research on NS perceptions of L2 speech has been done in relation to L2 English while there has been less attention paid to Spanish. Considering the role of Spanish in the United States and its popularity as an L2 in both high school and university classes, this lack of attention is surprising. Many authors included in this literature review agree that cultural differences would prevent us from generalizing conclusions found in research on perceptions of L2 speech across different languages (Chastain, 1980; Galloway, 1980; Schairer, 1992). For this reason, this literature review examines only research on NS perceptions of L2 Spanish.

While the research available on this topic is limited, the studies that have been done make some significant contributions that we can apply directly to the instruction of L2 Spanish. One of the most significant conclusions that we can draw from this research is that pronunciation errors in L2 Spanish are more significant to a NS listeners than other types of errors. Furthermore, there

are specific sounds that instructors can focus on to help their students become more comprehensible and improve communication with NSs.

LITERATURE REVIEW

In his review of research on perceptions of NN speech, Llurda (1995) points out that "some of the methods used to elicit NN performances are not comparable and neither are their results" (p. 48). Therefore, rather than comparing the studies, this discussion will consist of an examination of the trends found in the literature relating to comprehensibility, acceptability, and the effect of listener and speaker backgrounds.

Comprehensibility looks at the extent to which NN speech can be understood by NSs and attempts to correlate it with NNS errors to discover which errors cause difficulties in understanding (Schairer, 1992). Schairer's (1992) data showed that lack of consonant linking to word initial vowels is the error that causes the most problems for NSs in the comprehension of L2 Spanish. The reduced quality of vowels caused the second highest frequency of comprehension problems. She suggests that many English-speaking students of Spanish have the tendency to reduce vowels, which is a common phonological process in English. However, in Spanish "vowels carry both lexical and grammatical information. Gender markers for nouns and adjectives, markers of person, tense and mode in verbs, as well as distinctions between lexical pairs depend heavily on the distinction among vowels" (Schairer, 1992, p. 316). Therefore, vowel reduction can significantly reduce L2 comprehensibility in Spanish. In relation to consonants, the mispronunciation of *r*, which could be [r] or [ɾ], is listed as the only error with significant impact on comprehensibility.

Gynan (1985a) seeks to consider the possibility that pronunciation can lead to irritation but he also looks at comprehensibility. In his study of NS perceptions of beginner and intermediate level L2 Spanish speech he concludes that, when comparing pronunciation to morphosyntactic factors, pronunciation correlates more highly with comprehensibility than does morphosyntax. This is because while both intermediate and beginner level L2 speakers had a higher rate of accuracy for morphosyntax than for pronunciation, NSs rated both groups of L2 speakers as having a lower rate of morphosyntactic accuracy. Therefore, Gynan reasons that although pronunciation has a greater effect on native Spanish speakers' understanding of L2 speakers, the aspect of L2 speech that is the most salient for beginner L2 speakers is morphosyntactic errors. Although the difference between the ratings of morphsyntax and pronunciation were statistically significant for the beginners, they were not for the intermediate students. Gynan suggests that NSs rate intermediate L2 speakers globally and that neither pronunciation nor morphosyntax has more of an effect on the NSs' perception. While Gynan began his study with a discussion of irritation, he concludes by saying that no error in particular was irritating to the NSs. This might lead us to believe that there are other factors, like comprehensibility, that are more important to the way L2 Spanish use is perceived than irritation.

Acceptability, according to Gunterman (1978), is a NS's evaluational reaction to L2 errors, in other words whether or not the error is acceptable according to a NS. She examined what types of grammatical errors hindered communication and elicited evaluational reactions from NSs. Gunterman found that in Spanish incorrect substitutions with the verbs *ser*, *estar* and *haber*, errors in tense, and the omission of the conjunction *que* caused the greatest number of misinterpretations. However, the errors most frequently committed in L2 Spanish, agreement-type errors, caused the fewest misinterpretations. She discovered an inverse relationship between

acceptability and comprehensibility because NSs judged agreement-type errors to be less acceptable than errors made regarding verbs even though agreement-type errors were the easiest to comprehend. The only errors that caused severe comprehension difficulties were those that appeared in the same sentence with another error. Since the most frequent errors were the most comprehensible and only multiple errors per sentence caused severe difficulties for NSs, Gunterman concludes that most errors in grammar do not significantly affect comprehensibility even if they are judged to be unacceptable by NSs.

All of the studies reviewed so far have focused on factors relating specifically to L2 speech but extra-linguistic factors may also play a role in the way that L2 speech is perceived. It is important to consider a judge's background due to the fact that it is likely to color perception. Galloway (1980), for example, played video taped segments of NNS to four groups of judges. The four groups consisted of NNS teachers of Spanish, NS teachers of Spanish, non-teaching NSs living in the US with a good command of English, and non-teaching NSs living in Spain with little to no command of English. She found that both non-teaching native groups were sympathetic towards the NNSs in the videos.

Gynan (1985b) carried out a similar study focusing on the degree of bilingualism of the raters. The three groups of judges included bilinguals who learned English by the age of five, bilinguals who learned English between the ages of six and fourteen, and those who were essentially monolingual having only recently moved to the United States. He found that regardless of the degree of bilingualism, NN speech samples were consistently rated lower than native speech samples. He does, however, suggest that his data point to the fact that judges with the lowest degree of proficiency in English were the most forgiving. This is consistent with Galloway's (1980) findings, so it seems reasonable to conclude that background of the listener does play a role in the way that L2 Spanish language use is judged.

The background of the L2 speaker can also play a role in how L2 speech is perceived. Callahan (2004) examined how native and heritage speakers view the use of Spanish by NNSs, whether they believe that Latinos have an obligation to speak Spanish, and how native/heritage speaker's backgrounds affect their attitudes towards ethnicity and the use of Spanish. Based on questionnaire data, Callahan was unable to quantitatively confirm that NSs of Spanish consider it inappropriate for NNSs to use Spanish in certain situations nor that the use of L2 Spanish is more appropriate among Latinos than non-Latinos. There was much agreement among the participants that Spanish-speaking ability is essential for ethnic group membership and self identity, especially among those with higher language proficiency and age. This begs the question as to whether NSs view L2 Spanish use negatively since they consider it to be so closely tied to ethnic group membership. Although the quantitative data could not, qualitative data can offer some insight. Comments written at the end of the questionnaire used in the study range from support of anyone speaking Spanish as an L2 to caution about using it unless the L2 speaker has a very high level of proficiency. The attitudes expressed in this study may not all have been positive, but overall it seemed that many of the participants accept and encourage the use of Spanish by Latino and non-Latino NNSs. A negative attitude towards the use of L2 Spanish by NNSs could negatively affect perception, but Callahan's (2004) study seems to suggest that L2 speaker background would not play a strong role in the case of the perception of L2 Spanish.

IMPLICATIONS FOR PEDAGOGY

While the number of studies related to NS perceptions of L2 Spanish speech is limited, many useful conclusions have been drawn which may be applied to L2 Spanish pedagogy. Nearly all of the authors mentioned in this article review related their research to practical applications in the classroom. We will examine these applications and other useful contributions made by this research and we will also suggest practical guidelines for listening to and assessing L2 speech in a way that is more consistent with NSs' perception of L2 speech outside of the classroom.

In her review of research on the perceptions of L2 language use, which includes languages other than Spanish, Ludwig (1982) offers several imperatives for second language teachers, one of which says "teachers must redefine their concepts of irritation to resemble more closely that of NS" (p. 281). She emphasizes that what a NN teacher may attend to while listening to students' speech may be different than what a NS would pay attention to. Galloway (1980) showed that NSs were actually more sympathetic than the NN judges in her study. Therefore, teachers, especially NN teachers, should listen more sympathetically and pay close attention to what they are focusing on in terms of student errors.

Schairer's (1992) study shows that in terms of pronunciation, teachers should focus on consonant linking, vowel pronunciation (ie. not reducing vowels), and the pronunciation of *r*. In terms of grammar, Gunterman (1978) shows that errors with the verbs *ser*/*estar*/*haber*, problems with tense, and the omission of the conjunction *que* caused the most misinterpretations for NSs. Agreement errors, which are focused on heavily by Spanish teachers, surprisingly caused the fewest misinterpretations. In addition, Gynan (1985a) shows that at the intermediate level, NSs judge NN speech globally. This suggests that teachers should pay closer attention to evaluating students' discourse and not focus solely on individual errors in pronunciation and grammar. While Gynan does not make reference to any specific discourse features, he seems to imply that teachers focus on overall meaning rather than on individual errors.

It is interesting to note that Chastain (1980), Gynan (1985a), and Schairer (1992) discuss the creation of a hierarchy of errors based on NS ratings of L2 Spanish. They believe that a hierarchy of errors in these areas will give teachers a concrete idea of where they should be focusing their energies in error correction. Since these studies are based on what makes communication with a NS effective, error hierarchies would likely be beneficial to Spanish students and they would give guidance to Spanish teachers. With more research, we might be able to construct error hierarchies in all areas of Spanish language learning so that teachers will have an idea what NSs actually struggle with when listening to NN speech.

While this paper consistently assumes the importance of teaching pronunciation in L2 Spanish classrooms, pronunciation is often neglected. This may be due to the fact that the explicit teaching of pronunciation has been viewed as incompatible with the focus on language as communication in the Communicative Approach (Brumfit & Johnson, 1979). Some researchers have recently been revisiting the topic of teaching pronunciation because they see pronunciation instruction as beneficial to communication and therefore not contrary to the goals of the Communicative Approach. Arteaga (2000) argues that pronunciation as an integral part of communication and intelligibility and she points out several reasons including the fact that accented speech may not be "neutrally received by the listener" (p. 342). Elliot (1997) suggests that although the absence of phonological instruction in communicative classrooms does not seem to affect pronunciation negatively, it does not appear to improve without instruction, even

with increased amounts of input. His study, as well as Lord's (2005) study, show that explicit instruction can actually improve the pronunciation of many common L2 errors in Spanish. All of these researchers advocate for the explicit instruction of pronunciation and the research on NS perceptions of L2 speech reviewed earlier in this paper supports this need for explicit instruction. For example, Galloway's (1980) study shows that the highest percentage of errors produced by NNSs was errors in pronunciation. Schairer's (1992) research on the phonetic factors that affect the comprehensibility of L2 speech shows that there are pronunciation errors that hinder comprehensibility by changing the meanings of words, as with the mispronunciation of vowels. Gynan's (1985a) study also supports pronunciation instruction with the conclusion that pronunciation correlates more highly with comprehensibility than other types of error.

A final area in which this research contributes to L2 Spanish pedagogy is the relationship between "traditional" students and heritage students of Spanish. Galloway (1980) urges teachers to "deal openly with cultural sensitivities in the classroom, allowing students to know, if only in very general terms, the persons with whom they will be communicating" (p. 433). Sometimes these cultural sensitivities are already present in the classroom as in the case of heritage-language learners where the perception of NN speech may affect the dynamic between the heritage-language learners and the traditional learners. With the growing Spanish-speaking population in the United States, this type of research is ever more valuable. Callahan (2004) wonders what effect heritage speakers' attitudes towards out-group members using Spanish could have on NNSs. The data reveal "a more positive, or at least benign, attitude on the part of the target language group toward out-group members' use of their language than some publicly expressed opinions" (Callahan, 2004, p. 30). Research along this line should be continued because there is much more to understand in the relationship between "traditional" and heritage learners, especially in programs where they are put into the same classes.

The following is a list which summarizes the applications of research for Spanish instructors when listening to and assessing L2 speech:

- Listen like a native by focusing on the errors that cause comprehensibility problems for NSs.
- Focus more on pronunciation errors than morphosyntactic errors.
- For pronunciation, focus mostly on errors in vowels like (1) consonant linking to word initial vowels and (2) vowel reduction. The only consonant error to focus on is the distinction between r sounds in Spanish.
- For morphosyntax, focus on the verbs ser/estar/haber, tense, and the omission of the conjunction *que*. Do not focus heavily on agreement errors.
- For intermediate students, listen globally and assess discourse rather than errors in morphosyntax or pronunciation.
- Deal openly with the attitudes that NSs, heritage-learners, and NN students have towards the use of L2 Spanish (see Callahan, 2004).

CONCLUSION

Although the body of research reviewed in this paper is small, it suggests that some factors do affect NS perception of L2 Spanish. It is clear, however, that much more research in the field is needed, especially considering the importance of Spanish as an L1 and its popularity as an L2 in the United States. The goal of learning a second language, like Spanish, is to become able to

communicate effectively with NSs outside of the L2 classroom. Research on NS perceptions of NNS use of Spanish helps us discover what it is that makes a NN Spanish speaker effective when communicating with NSs. It allows instructors to become more aware of those errors in grammar and in pronunciation that impede comprehensibility for NSs. It also aids both instructors and students in understanding the ideologies that surround the use of L2 Spanish in the United States. The following are directions for future research that could help us to continue developing our sociolinguistic knowledge and improving L2 Spanish instruction:

1. Further studies of global judgments of L2 speech since all of the studies indicate that none of the individual factors that have been tested, whether phonetic or morphosyntactic, *significantly* impede communication on their own.
2. Studies to determine what combination of errors impedes communication. Gunterman's (1978) study seems to suggest that in combination, some errors do cause significant comprehensibility problems.
3. An examination of whether L2 Spanish teachers are addressing the morphosyntactic and phonetic problems in their classrooms that have been shown to make comprehensibility more difficult, rather than other errors that NSs do not have issues comprehending.
4. Studies to possibly create an error hierarchy for use by L2 Spanish instructors based on the perceptions of NSs.
5. Further exploration of language attitudes related to speaker and listener backgrounds and their effect on perception including how "traditional" and heritage-language students in mixed L2 Spanish classrooms view each other's use of L2 Spanish.

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TEACHING PRONUNCIATION WITHOUT USING IMITATION: WHY AND HOW

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We teach pronunciation using 'listen and repeat' exercises because that's how it's always been done, and because common sense seems to say that it should work even if it doesn't. The generally poor results we get in the classroom are usually ascribed to listening problems. Instead, they are more likely to be the result of two basic misconceptions: the widespread notions (1) that speech sounds (and timing phenomena) can be learnt by imitation, and (2) that children do this when learning L1. From a theoretical perspective these notions are both dubious. With respect to the second, not only is there no evidence that children learn to pronounce this way, but evidence is accumulating that they do not. It is more likely that their bootstrap into the sound system is the imitative exchanges in infancy where their caregivers reflect their utterances back to them, reformulated into L1 syllables. This basic paradigm can be reworked for the classroom, and has been successfully applied for many years by teachers using Gattegno's Silent Way. His approach has been significantly enhanced over that period and can be applied in conjunction with non-Silent Way approaches to grammar etc, and with intermediate and advanced students.

INTRODUCTION

The word 'imitation' covers many different copying processes: mimicry (recreating a sensory experience), matching (producing an effect judged to be similar), emulation (achieving the observed end result by different means), and others. In the teaching of pronunciation, much of our practice is based on attempted auditory matching by the learner, where we ask him to match his output to a model he has heard spoken by the teacher or on a recording. A more colloquial name for what we do is 'listen and repeat' (L&R). It's simple to do, and since we all believe that children learn to pronounce by first listening to adults and then basing their production on what they have heard, it seems sensible to teach older learners on the same basis.

Unfortunately, the process of learning to pronounce isn't as simple as this, for either children or older learners. And the problem is not just that the older learners cannot 'hear' new sounds or timing patterns, even if that is true. The problem is that we have misunderstood what needs to be learnt, and how that can be done.

I have explained elsewhere why we should not teach the production of stress and various timing phenomena (including the 'rhythm' of English) using L&R (Messum, 2008; 2009). Roslyn Young and I have been working together to develop new ways to teach these aspects of pronunciation (Messum & Young, forthcoming).

In this paper, I will just discuss the teaching of speech sounds. I start by asking you how you would know that it was time for you to review the way you do this. The point of this paper is to inspire you to reflect on your practice, and then perhaps to make a change!

Then I look at what adults have to do with themselves to learn the production of a sound that doesn't have a counterpart in a language they know, and how children learn speech sounds. At the end, I present a different way to teach this aspect of pronunciation.

For simplicity in the use of pronouns, I will label the caregiver of a child and teachers as female, and children and students as male.

Is it time to change?

There are various ways we can evaluate our teaching practice. The most important, of course, is to ask whether or not it is effective. If this causes us to have any concerns about the results that we get with L&R, we can start to ask other questions. For example: (Q1) Does the approach make sense theoretically?

And although learning a second language is different from learning a first, there is still value in another question: (Q2) Is L&R 'natural'? Do children learn to pronounce this way?

Q1: Is there a theoretical justification for teaching speech sounds by imitation?

There are distressingly few models of learning to guide our answer to this question. But in Caleb Gattegno's model (e.g. Gattegno, 1987; Young & Messum, 2011) awareness and awarenesses take a central position. Schmidt (e.g. 1990) also makes the case for this, though under the concept of 'noticing'. With Gattegno as our guide, we should look at where our students' awareness is being directed when we ask them to L&R.

The process starts with the teacher providing a spoken model. The student knows that his task is to produce something similar. The principal resources available to him are (i) the skills he developed in the past to reproduce sounds he hears, and (ii) his criteria for judging speech sound similarity – criteria that are well-developed for his first language but not yet developed for problematic sounds in the target language.

With these resources, he will start by attending to the spoken model, capturing some image of it. Then he makes a response, using his existing skills of sound reproduction. He tries to attend to the acoustic results of his response and captures some image of this. He compares the two images, and this gives him some idea of how successful he has been. His teacher may also give him feedback about this.

Notice, though, that the teacher has not directed him to attend to what he is doing with himself when he speaks: to attend to the movements of his articulators and the tactile and other sensations that these produce. If the student follows the directions the teacher gives him, then at the end of the process he knows nothing more about what he did with himself in order to be successful or unsuccessful than at the beginning. If he 'succeeded' then he knows that given a spoken model, he can imitate it. But he does not know what to do with himself to reproduce this in the absence of a model to trigger it[1]. If he did not 'succeed' then he is no wiser about what he might have to do to get a better result next time.

In general, we do not start to learn a motor skill by matching outcomes. To learn to walk, grasp, swing a tennis racket, or drive a car, we are present to what we do and we observe the

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[1] Such a model may also be a sound image he evokes, but when we are speaking we do not have the time to evoke sound images prior to making sounds.

consequences. Only once we can already perform a skill can we imitate the results of someone else's performance.

This normal way of learning motor skills – learning by doing - is reliably successful in real life, and it can be allowed to function in the language classroom, as explained later.

For now, though, let us just note that we have identified an alternative reason to the one usually given to explain why students are so unsuccessful during L&R activities. The basic problem is not that they cannot 'hear' the model (even if this is true). The basic problem is that the teacher sets them the wrong task: she should ask them to be present to what they are doing with themselves when attempting to make a new sound and listening to the result, but instead she asks them to be present to a model they hear and then to compare it to what they produce in response. The teacher has misdirected the students' attention, and only those who subvert her instructions - by quietly practising on their own, just listening to themselves rather than trying to copy her - will be successful.

Q2: Do children learn to pronounce by imitation?

To answer our second question - 'Is L&R natural?' – we need to draw a distinction which is absolutely fundamental, yet never drawn in the literature: between 'learning to pronounce a word' and 'learning to pronounce (speech) sounds'.

Confronted by a word that is new, say 'horripilation', a mature speaker learns to pronounce it by parsing it into three or four chunks (whether he encounters it on the page or hears someone else say it). Let's say that he breaks 'horripilation' into chunks corresponding to the spellings <ho>, <ri>, <pi> and <lation>. Each of these chunks are recognised as 'speech sounds' that the speaker already knows how to pronounce. That is, he knows how to say something for each that will be recognised by his listeners to be equivalent to the speech sounds that they make.

All our speaker now has to do is to string these four speech sounds together, and he has successfully pronounced the word in question.

The process is one of imitation, but not one of mimicry or auditory matching. This is serial imitation: copying a series of events using actions that produce equivalent results to each individual event. Each action is already known. Only the sequence is new.

We don't know when children start learning the pronunciation of words like this, but it's probably very early and may well be connected to the so-called 'vocabulary spurt' at around 50 words/18 months. The alternative is some kind of mimicry of the whole word shape, and this is problematic for producing words spontaneously, swiftly and automatically as needed for fluent speech. (Even if this alternative turns out to be the way an infant recreates the very first words he adopts.)

The important thing to notice is that serial imitation relies on prior learning. Our speaker has to have learnt how to say speech sounds equivalent to those he hears before he can make use of this mechanism to 'learn to pronounce a word'. The question of 'learning to pronounce sounds' is how this prerequisite is achieved.

It's possible that a child learns to pronounce sounds by imitation, which in this case would mean a process of auditory matching. The cycle would be started by a caregiver producing a speech sound, then the child would try to copy it, evaluate how good his attempt was, try something else, evaluate that, and so on. Of course, the initial sound would not be presented as something to

be learnt – parents don't usually tutor their children so explicitly – but might be a sound that the child extracts from a word.

The very few phoneticians and speech development theorists who have gone into print on this issue have asserted that some process like this must occur. Famously Fry (1968, p. 18) did so, and Kuhl has followed him:

> "Infants learn to produce sounds by imitating those produced by another and imitation depends upon the ability to equate the sounds produced by others with ones infants themselves produce." (Kuhl 1987).

However there is no evidence whatsoever for this assertion, and the idea leads to many of the anomalies found in speech science (Messum, 2007; Howard & Messum, 2011).

There is an alternative, and one that is more plausible for many reasons.

Since an earlier stage than the onset of speech, infants have been learning about themselves through observing how others respond to their behaviour. In the literature, this activity of caregivers is described as 'mirroring' because children perceive what they do reflected back to them. The name is a little misleading though; caregivers sometimes do exactly what the child has done, but they usually respond by doing something appropriate but not necessarily the same. So, for example, in what is called 'affect attunement', caregivers respond to signs of anger or distress in their infants by soothing them. This is a very different response from, say, bouncing them up and down, and helps the child to understand his expressions of emotion.

The same mechanism would give infants a bootstrap into the sound system of L1. We know that infants babble, and that they become skillful at doing things that make certain sounds (exploding their lips apart to make what we hear as a /p/ or /b/, for example). These sound-making activities are called vocal motor schemes (VMS) (McCune & Vihman, 1987). We also know that young children play imitative games with their mothers and other caregivers, and that they understand that each party is doing what it considers to be 'the same' as the other (Meltzoff & Moor,e 1997). Further, every time these interactions are analysed, we find that it is overwhelmingly the mothers who 'imitate' the children rather than vice versa (e.g. Pawlby, 1977). When the object of these games is sounds, though, the form of that imitation is not usually mimicry but reformulation: the mothers reflect back to their infants their interpretation of the infant's output in well formed syllables of L1.

From this, the infant can deduce that the result of his VMS is understood by his mother to be the same as the L1 syllable he hears her make.

With this equivalence relationship established (and tested by him to operate in both directions during those imitative exchanges), he is in a position to peel some of the sounds he hears his mother make out of the words in the stream of her speech, and to attempt to use them in the circumstances that he sees her using them. /mI/ might be heard when milk is served, and he can reproduce the VMS that he learnt to be equivalent to this, and discovers that he is now more able to get what he wants as a result. What power!

In summary, the infant is present to his sound making activity and creates VMS's out of some of it. He learns from his mother's responses that some of them produce an acceptable rendition of a particular sound that she makes, often a speech sound in L1. With this correspondence established, he is launched into learning the approach to the pronunciation of words that will support efficient word learning.

This paradigm has been tested with a computer model of an infant interacting with caregivers who speak different languages. The infant manages to learn the pronunciation of words at a similar performance level as human 2 year olds. (Howard & Messum, 2011; forthcoming)

An alternative paradigm for teaching pronunciation

Gattegno (1962, pp. 5-9) understood what was happening between mothers and their children, and also the importance of directing older learners' attention to where it needs to be if they are to learn the motor skill of pronouncing new sounds.

In his Silent Way approach, the teacher does not provide a model, but instead asks the student to start making a target sound by trial and error. (Some way of referring to the target sound is needed, of course. IPA symbols are one possibility; I prefer coloured rectangles for reasons explained below.)

The teacher's role is to give feedback on how well the student does, encouragement to keep experimenting, and suggestions of things he might try. The suggestions will often be visible – things for the student to notice – rather than oral instructions. For example, the teacher might silently hyperarticulate the sound if this would give a clue to the student, or use her hands to indicate a new tongue movement.

As soon as the student realises that the teacher does not think that his first attempt is good enough, the student is faced with the need to do something different. And that means becoming present to his own articulators and deliberately using them in a new way. Then, listening to what the result is; listening this time in a state that is ready to hear something different because he knows he did something different.

It's difficult to create a new sound, so success won't be immediate. But this process continues over the days of the class as the sound is embedded in longer sequences of sounds and practised at different rates, loudness, and so on. At all times, the student will be encouraged to be present to the two things he needs to be present to in order to learn a new motor skill: the articulators which are creating the sound, and the resulting sound they create.

In this process, the model a teacher might provide would be an unhelpful distraction.

In the classroom

Gattegno's Silent Way has been developed since his death in 1988, particularly with respect to the pronunciation materials. However, they are still adapted for the whole Silent Way approach and best suited for beginners.

If a teacher would prefer not to use the Silent Way, or is teaching intermediate or advanced students, then the paradigm that Gattegno pioneered for pronunciation can still be used, and is supported by the PronSci charts (see the gallery at www.pronsci.com for examples).

Here, colour rather than IPA symbols is used to refer to sounds without the teacher having to say them herself. A chart showing the sounds of English as coloured rectangles provides a synthetic vision of the sound system of the language and of the internal logic of its elements. The sound to colour coding then extends to charts where coloured letters mean that words and spelling combinations are displayed using standard orthography but with their pronunciation immediately apparent to the student. This is one of a number of reasons why colour is better than IPA symbols for most pedagogical purposes.

The teacher can point to sequences of coloured rectangles and/or words, and students can work on their pronunciation with their attention firmly on their own actions, the consequences and the evaluation that the teacher gives them. Gradually they develop their own criteria for correctness and develop secure motor schemes for producing the speech sounds of English as part of words and the longer sequences of speech.

More information about how to use this approach is available in Messum and Young (forthcoming).

CONCLUSION

'Listen and repeat' is easy for teachers to do but gives disappointing results. When we examine why, we see that it makes no sense as an approach for teaching the motor skills that are required for pronunciation. Nor is it likely to reflect the way that children learn the pronunciation of their first language.

The alternative is for us not to model sounds and sequences of sounds for our students but to work on their motor skills, which means that the teacher needs to act in the way that any sports coach normally acts: by encouraging her charges to work on the problem for themselves and giving them feedback on how they are doing in areas where they have not yet developed criteria for themselves.

Speaking from experience, I know that it takes a degree of faith to start working this way. But students do not find it unsatisfactory. Quite the opposite: they very much appreciate the chance to work on the problem themselves, and to have themselves heard in a space that is not overwhelmed by the teacher's expert production skills. Do try it!

ABOUT THE AUTHOR

Piers Messum has taught English in Japan, France and the UK. He came across Gattegno's Silent Way in the mid-1980's, and was particularly struck by its radically different approach to pronunciation teaching and by how effective this was in his own learning of Japanese. In 2007 he completed a PhD which looked at how English speaking children learn the pronunciation of the language. Since then, he has been working with Roslyn Young to apply these ideas and others in developments of Gattegno's work.

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HELPING CHINESE LEARNERS DISTINGUISH ENGLISH /l/ AND /n/

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Research has demonstrated that certain consonant errors have strong negative effects on speaker intelligibility and comprehensibility to NNS and NS listeners (Jenkins, 2000; Munro & Derwing, 2006). One consonant distinction identified on theoretical grounds by Brown (1988) and Catford (1987) as "high functional load" and empirically demonstrated (Munro & Derwing, 2006) as important to comprehensibility in English is the /l/ and /n/ distinction. Certain Chinese speakers of English tend to confuse /l/ and /n/, and this paper therefore escribes their struggle, discusses characteristics of the Chinese language context that likely affect their /l/ and /n/ substitution, and proposes a research agenda aimed at clarifying various aspects of this struggle so that more effective pedagogical methods and materials for helping these learners can be developed.

INTRODUCTION

In *The Phonology of English as an International Language* (2000), Jenkins contends that prevailing pronunciation pedagogy emphasizing suprasegmentals vis-à-vis segmentals runs contrary to the need of most English language learners around the world. In fact, in Jenkins' (2000) studies, 27 out of 40 total instances in which "a [NNS listener] was unable to understand the meaning of his or her [NNS] interlocutor" (Jenkins, 2000, p. 84) were caused by learners' inappropriate transfer of L1 segmentals into English.[1] Suprasegmental errors, in contrast, figured in only one of these 40 communication breakdowns. It is unsurprising, therefore, that the first of four areas Jenkins proposes as key to preserving phonological intelligibility is the English consonant inventory, though it is important to note her caveats here. These caveats can be summarized, in my words, as "All consonants are not created equal." That is, a few consonant conflations, i.e. /θ/, /ð/, and /ɫ/ do not compromise EIL intelligibility, but others such as the the stereotypical Asian /l/-/r/ substitutions do (Celce-Murcia, et al., 2010; Jenkins, 2002; Paolillo, 1995).

Functional load, as it relates to phonology, has been defined by King (1967) as "A measure of the work which two phonemes (or a distinctive feature) do in keeping utterances apart" (p. 831). According to Brown (1988), two important means of measuring functional load are (1) the

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[1] Transfer from a learner's L1 to her or his L2 interlanguage is, of course, a well-recognized phenomenon in SLA. Jenkins points out, however, that the role of L1 transfer in pronunciation is unique in that "It is widely agreed that habit formation in language transfer figures more extensively at the phonological level than at either the syntactic or lexical levels: "The influence of L1 phonological habits in second language acquisition is due largely to the nature of the speech process itself. . . . The production of speech sounds is unlike that of lexis and syntax, since it does not involve passing messages through the brain, but rather the development of highly automatized motor skills and, consequently, over time, the formation of L1 speech habits which are not easily de-automatized in L2" (Jenkins, 2000, p. 112)

frequency of minimal pairs containing the two phonemes and (2), the frequency of each phoneme individually in the target language. Munro and Derwing (2006) suggest a phoneme's word position may be an additional relevant factor since research indicates that "word initial errors are more important than errors in other positions" (p. 530).

The functional load principle predicts that high functional load phonemic errors will more greatly affect listener comprehension than low functional load errors (Brown, 1988). While this makes intuitive sense, the functional load principle was not empirically investigated until Munro and Derwing (2006) conducted a study in which thirteen NS listener judges rated NNS- and NS-produced sentences for comprehensibility (i.e., listeners' impression of the ease of understanding a speaker) and accentedness (i.e., how a speaker's NNS production differs from NS production). The intent was to discover whether sentences containing phonemic errors identified by Brown (1991) and Catford (1987) as high functional load (specifically /l/ →/n/; /n/→/l/; /s/→/ʃ/; /ʃ/→/s/; /d/→/z/) would receive lower ratings than those containing errors identified as low functional load (specifically /ð/→/d/ and /θ/→/f/). Interrater reliability was high—0.968 for comprehensibility and 0.987 for accentedness—with findings strongly supporting the functional load principle as a reliable guide for identifying segmental errors most likely to affect the comprehensibility of NNS pronunciations for a NS audience. Munro and Derwing (2006) write that "even sentences that contained only one high FL [functional load] error were rated significantly worse for comprehensibility than sentences containing three low FL errors" (p. 528) and "the effect of low FL errors on comprehensibility appeared to be very small in comparison with the effect of these errors on accentedness" (p. 529).

Thus, Munro and Derwing's (2006) research addressing the comprehensibility effects of high functional load errors on NS listeners and Jenkins' investigation of the causes underlying instances in which " a [NNS listener] was unable to understand the meaning of his or her [NNS] interlocutor" (Jenkins, 2000, p. 84) concur: the confusion of certain consonant pairs has strong negative effects on listener understanding, whether listeners are NNSs or NSs.

/l/ and /n/ substitution: A high functional load phonemic error

The consonant pair /l/ and /n/ made up two of the five high functional load substitution errors (i.e. /l/→/n/ and /n/→/l/) investigated in Munro and Derwing (2006). In Brown (1988, 1991), /n/ and /l/ are one of five minimal pairs ascribed the highest rank (that is, a "10," meaning "of maximal importance" [p. 222]) on the basis of functional load. Similarly, in Catford (1987), /l/ and /n/ rank higher for functional load than many of the minimal pairs frequently addressed in commercial pronunciation textbooks (e.g. for word-initial position, /b/ vs. /v/; /s/, /t/, and /f/ vs. /θ/; and /d/, /v/, and /z/ vs. /ð/; and for word-final position, /n/ vs. /ŋ/; /p/ vs. /b/; and /t/, /s/ and /f/ vs. /θ/).

My personal interest in helping Chinese learners who struggle with /l/ and /n/ substitution began when after two years of teaching English in China and travel in several Chinese provinces, I returned to the U.S. and taught three sections of a pronunciation course for international teaching assistants (ITAs) at my university. The 37 students required to take my course were those who had received the lowest scores (largely due to problematic pronunciation) on our university's ITA oral and teaching proficiency exam and five of these 37 students were Chinese who confused /l/ and /n/. I could not understand how such a high percentage of /l/-and-/n/-confusing Chinese could test at the level of my pronunciation course, the lowest one offered, when according to my memory, I had previously had few or no encounters with /l/-and-/n/-confusing individuals among

my hundreds of Chinese friends, colleagues, acquaintances, and former students. In addition, although like most ESL/EFL instructors, I have become accustomed to interpreting the English of low-proficiency NNSs, I found resolving confusion I experienced as a result of my students' /l/ and /n/ substitutions more difficult than resolving confusion due to nearly any other student pronunciation error. Also, whereas ordinarily I see students make obvious progress as regards problematic segmentals addressed in weekly individual pronunciation tutoring sessions, progress as regards /l/ and /n/ substitution has seemed much less assured and hard-won when it actually does occur. Thus I became strongly interested in acquiring an understanding of the Chinese language context which fosters such widely varying pronunciation performance in Chinese speakers' L2 English.

Understanding the Chinese language context as it relates to /l/ and /n/ substitutions

The purpose of this section is to share information well-known among Chinese, but frequently not known outside of China so that non-Chinese teachers of Chinese ESL/EFL learners may better understand their students and reasons for their sometimes widely varying pronunciation needs.[2] Teachers who have had Chinese students who struggle to distinguish /l/ and /n/ will undoubtedly have noticed their problem is not shared by every Chinese person. This is because, as Paolillo (1995, p. 275) notes, "[The language known as] 'Chinese' actually refers to a group of related languages that differ considerably in their phonology." That is, spoken "dialects"[3] of "Chinese" abound and only some confuse /l/ and /n/ (perhaps most notably the dialects of Hubei and Sichuan provinces).

Teachers who have had students who struggle with /l/ and /n/ substitution will likely also have noticed that *how much* their students' struggle vary widely. This is frequently a reflection not only of inherent differences among learners in terms of the variables usually considered in individual learner difference research, but also of the degree to which students have grown up in a dialect environment (where /l/ and /n/ may or may not be distinguished) versus a Mandarin environment (which, in its standard form, *does* distinguish /l/ and /n/). For example, in most metropolitan areas of China, where native speakers of many dialects live together and where national media influence is strong, Mandarin is used not only for school, government, and major business interactions, but also for many other everyday interactions. However, in rural areas and in a few metropolitan areas (perhaps most notably those where the dominant dialect is Cantonese), everyday interactions and sometimes even formal interactions which might elsewhere be expected to occur in Mandarin are frequently accomplished via the dialect. In addition, while Mandarin is the prescribed language of the schools, since teachers generally

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[2] I have acquired this information via myriad conversations with Chinese students, colleagues, and friends over a period of several years. It is therefore impossible for me to list all who have contributed to this section. However, I do want to specifically thank my current colleagues Zhi (Jay) Li and Manman (Mandy) Qian, both of whom grew up in /l/-and-/n/-confusing dialect areas of China and who graciously agreed to read and comment on this paper in order to verify I was accurately presenting Chinese perspectives.

[3] Chinese speakers define "dialect" as spoken language by which listeners can identify where one grew up. Thus, both speakers of northeastern Chinese, whose spoken language may be only slightly different from standard Mandarin, and Cantonese speakers, whose spoken language is mutually unintelligible with Mandarin, are both said to speak a dialect. To identify a Chinese learner's dialectal background, teachers can ask questions about (1) whether language learners speak a dialect in addition to Mandarin; (2) how easily someone who speaks only Mandarin could understand their dialect; and (3) in what contexts in China do they usually speak their dialect versus Mandarin (e.g. at home, with neighbors, in neighborhood shops, in banks, in government buildings, in school, etc.)?

teach in their home area, they frequently speak a "Mandarin" that is strongly dialect-influenced. Learners who have grown up in an area where the local dialect confuses /l/ and /n/ and is used extensively are likely to have substantial struggles distinguishing the sounds in both listening and speaking. However if students have grown up speaking an /l/-and-/n/-confusing dialect only at home or in a few informal contexts, and if they have been taught by teachers who speak a more standard form of Mandarin, they may not struggle with /l/ and /n/ substitution in Mandarin (or English).

English language teachers attempting to help students who confuse /l/ and /n/ need also to consider how the tonal character of Mandarin (and many other Chinese dialects) likely affects how these learners understand and subconsciously allot attention to segmental cues versus suprasegmental cues in their reception and production of oral language. The tonal character of Mandarin and many Chinese dialects implies that segmental errors have less influence on a speaker's intelligibility and comprehensibility than they do in a nontonal language like English.[4] This is because syllables in Mandarin are distinguished not only by segmental combination, but also by which of the four tones they take (or whether their tone is neutralized). In fact, Mandarin utilizes only about 400 syllables (that is, about 400 segmental combinations),[5] so it is likely that L1 Chinese speakers, in comparison to L1 English speakers, unconsciously attend more, both in listening and in speaking, to a syllable's tone and context (within a multi-syllable word and/or the sentence) than to its segmentals[6]. This and the fact that Mandarin syllable structure makes /l/ and /n/ substitution possible only in word-initial position[7] is likely the reason why Chinese speakers commonly view it as producing mere accentedness, whereas in English, /l/ and /n/ substitution has serious intelligibility ramifications. Certainly then, it is important that research be conducted on the characteristics of the high functional load /l/→/n/ and /n/→/l/ substitutions so that principled pedagogical methods and materials effective in helping these learners grow in their control of the /l/ and /n/ distinction can be developed. To this end, I therefore propose the following research agenda.

AN /l/ AND /n/ RESEARCH AGENDA

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[4] Unfortunately, I am aware of no empirical research addressing the relative impact of phonemic versus prosodic errors on intelligibility and comprehensibility in Mandarin (though such research would probably be useful for informing the teaching of English speaking and listening to Chinese students).

[5] While tone distinguishes many syllables that would otherwise be homophones, the number of homophones in Mandarin, relative to English, remains large. A classic example of this is the eight different Chinese surnames transliterated "Li" in English. While the four tones of Mandarin do distinguish some of these surnames, they clearly are not adequate to distinguish all eight!

[6] Evidence for this is found in the standard discourse routines used by listeners in Mandarin vs. English to resolve uncertainties about what a speaker has said. Whereas Chinese listeners normally ask a speaker "什么丽?" ("Which 'li'?") to which speakers respond by providing an additional, nonambiguous context, "美丽的丽" ("Meili's 'li.'"), English listeners who are uncertain about the particular word a speaker has said frequently repeat what they think they have heard—that is, the problem word's segmental sequence and, in the case of multisyllabic words, its word stress—with a question intonation, i.e. "Night?" English speakers are likely also to insert the two possible words they believe the speaker may have said into a choice question: "Night or light?" Both English speaker responses, however, involve listeners asking for disambiguation via clear segmental pronunciation. The Chinese discourse routine would be much more likely to be answered with a spelling in English (e.g. "Which 'their'?") than with an additional context.

[7] All syllables in Mandarin are either V, CV, or CVC and the language does not allow /l/ (or /ɫ/) in word-final position.

Confusion of /l/ and /n/ among these learners appears to be the result of a situation described by Jenkins (2000) in which two phones (i.e. [l] and [n]) have the status of allophones in the learner's L1 (in this case, their regional dialect), but full phonemic status in the L2 (i.e. English). As Jenkins indicates frequently occurs in this situation, learners' resulting incorrect distribution of the phones in their L2 speech tends to lead ultimately to unintelligibility.[8] She describes this situation as "particularly troublesome, since learners may not be aware of any difference in the articulation of sounds which are purely allophonic in their L1" (2000, p. 33). Jenkins' (2000) description of the challenge students who must learn in their L2 to distinguish as phonemes sounds (phones) which are allophonic in their L1 seems closely to match my observation of my students' /l/ and /n/ learning process: "Although production would also prove difficult prior to extensive instruction, it would almost certainly precede perception. We cannot assume that because [nonbilingual English speakers] are able to produce sound contrasts, they can necessarily discriminate aurally between them; indeed, the opposite is not infrequently true" (pp. 33-34).

While my experience with these students suggests that they face this particular troublesome situation, the bulk of my data has been collected anecdotally and unsystematically. It would therefore be valuable if future research involving pretesting, pedagogical treatment, and mid-treatment assessments confirmed or disconfirmed the following hypotheses:

- Learners having /l/ and /n/ substitution problems tend to confuse the two sounds both aurally and orally.

- Learners generally gain control of the /l/ and /n/ distinction orally, as they acquire and learn to apply "physiological knowledge regarding. . .articulation" (Jenkins, 2000, p. 33), prior to gaining the ability to distinguish /l/ and /n/ aurally.

In addition, if it is true that /l/ and /n/ are allophones of these students' home dialect(s), it would also be useful to discover the answer to the following research questions via a carefully designed pretest:

- How does learners' production of /l/ vs. /n/ vary according to characteristics of the phonetic environment? For example, are /l/ and /n/ produced in complimentary distribution? Or does recent production of /n/ facilitate nasalization of sounds that follow whereas recent (accurate) production of the oral /l/ facilitates oralization in sounds that follow? Does the recent production of other similar phonemes (e.g. /m/, /ŋ/, /d/[9], /ɬ/) have similar facilitative/debilitative effects, and if so, what are they?

From my observation, it appears /n/ is much easier for these learners to produce than /l/. John Levis has suggested in our various conversations on the topic that this may be the result of a dialectally-conditioned articulatory setting in which learners' default stream-of-speech position is with the velum in its relaxed, partially open state. That is, the problem may not be with

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[8] The research of Brown (1988), Catford (1987), and Munro and Derwing (2006), of course, suggests that unintelligibility is not likely in *all* cases where L1-allophonic phones have full phonemic status in the L2, but only where L1-allophonic phones correlate to L2 phonemes carrying high functional load.

[9] The similarity between [n] and [d] may not be transparent, but [d] is a voiced alveolar *oral* stop, whereas [n] is voiced alveolar *nasal* stop.

learners' tongue position[10], but rather with their (at least) partially open velum, which results in their producing a nasalized /l/. This would explain my observation that students frequently seem to be producing one of the standard allophones of neither English /n/ or /l/ when attempting to produce /l/, but rather a different phone altogether (although admittedly one that sounds more /n/-ish to English-conditioned ears than /l/-ish). It also explains an observation made by both John Levis and me that learners who confuse /l/ and /n/ sometimes also nasalize /d/. Phonetic/acoustic analysis (e.g. via PRAAT, see Boersma & Weenik, 2012) of learner speech samples (preferably not only in English, e.g. from their pretest, but also in their dialect) would therefore be valuable to answer the following research questions:

- To what extent, if any, is learners' default stream-of-speech position with the velum in a relaxed, partially open state?
- When the untrained ear of an L1 English speaker hears learners apparently substituting /l/ for /n/, are these learners producing a nasalized /l/ (such as [l̃])—and thus their apparent substitution results solely from inappropriate nasalization in their L2 English—or is their apparent /l/ and /n/ substitution the result of both improper mouth positioning *and* nasalization?

CONCLUSION

Clearly, obtaining answers to the research questions above would allow us to develop more effective pedagogical methods and materials for helping learners whose L2 English reflects an /l/-and-/n/-confusing dialect to acquire this high-functional-load distinction and thereby increase their L2 English comprehensibility (Jenkins, 2000; Munro and Derwing, 2006). I therefore hope that other teachers and researchers working with these learners will join me in researching the above questions and in developing methods and materials for helping learners overcome this very damaging error.

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[10] Meaning, of course, that any attempt teachers make to demonstrate how /l/ and /n/ are different in the mouth, whether via sagittal section diagrams or modeling, will fail to help.

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THE EFFECT OF METACOGNITIVE FEEDBACK ON SECOND LANGUAGE MORPHOPHONOLOGY

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This paper reports on a study investigating an instructional approach designed to convert learners' explicit to implicit pronunciation knowledge, thereby increasing intelligibility and decreasing negative social evaluation. The study explored the effect of metacognitive feedback on oral production of inflectional morphology of students in two Intensive English Program pronunciation elective classes. According to Jiang (2007), "Inflectional bound morphemes of English, such as third person singular -s, plurals, and past tense, are notoriously difficult for adult learners of English as a second language (ESL)" (p. 603). They were chosen for investigation for their social and intelligibility impact. The premise of the study is that explicit instruction is necessary but not sufficient to develop accuracy and automaticity. Both groups' pre-intervention data revealed explicit rule-knowledge but inconsistent, missing, or mispronounced inflections in cloze tests, read-aloud tasks*,* or spontaneous speech samples. The treatment group received feedback delivered in one transactional move requiring learners to supply and accurately pronounce target morphemes during controlled and spontaneous speech production. Findings are discussed in terms of the minimal elements required in an instructional approach that would promote bridging the gap between learners' explicit knowledge of a rule-governed feature of English morphology and their accurate production in spontaneous speech.

INTRODUCTION

The narrow focus of this exploratory study is the suppliance and accurate pronunciation of noun and verb inflectional morphology. The phenomenon of advanced-level learners who demonstrate rule knowledge on controlled drills and grammar tests, but fail to include these morphemes in spontaneous speech or when reading aloud has been reported for suppliance of 3rd person singular present tense (Lardiere, 1998; Long, 2003), regular past tense verbs and plural nouns (Lardiere, 2003b, 2005; Jiang, 2007). Since read-aloud tasks do not require recollection of grammar knowledge, the assumption motivating this research is that missing and/or mispronounced inflectional morphemes represent a pronunciation issue; that is, phonological factors are responsible, not grammar deficiency. Current approaches to second language inflectional morphology have yet to resolve the question of whether acquisition is constrained more by phonological or morphological transfer effects (Bliss, 2006). The Failed Functional Features Hypothesis (Hawkins & Chan, 1997; Hawkins & Liszka, 2003) provides a morphological account of acquisition. Analysis of Chinese speakers' suppliance of t/d codas in monomorphemic words, but low rates of suppliance of past tense inflectional morphemes motivated the claim that morphosyntactic categories that are not activated in the L1 are inaccessible in the L2. The Consonant Cluster Reduction Hypothesis (Lardiere, 2003a), reporting on the speech of a native Chinese speaker long immersed in English, is a phonological account of acquisition. Data analysis revealed consistency between spoken irregular past tense verbs, reported as nearly always produced accurately, and written suppliance of regular past tense -ed, reported at approximately 78% accuracy. However, the regular past tense morpheme rate of suppliance in speech was just 6%, consistent with

the subject's systematic deletion of t/d in word final clusters in monomorphemic forms. Lardiere rejects a failed feature account, instead positing an L1 constraint on coda consonant clusters. Another phonological account, the Prosodic Transfer Hypothesis (Goad, White, & Steele, 2003) attributes missing surface inflections in Chinese subjects' production of English to differences in prosodic adjunction structures between the two languages. By this account, the mechanism for adjoining inflectional suffixes to English words at the prosodic word level is absent in Chinese, which adjoins its few inflections, such as verb aspect, at the prosodic foot level, thus constraining suppliance of English inflectional morphemes.

The potential for unintelligibility due to missing or mispronounced inflectional morphology is bidirectional: as either conversational initiators or interlocutors, both native and non-native speakers are at risk for misperceiving the other. Listening comprehension compromised by a mismatch between a learner's acoustic image of a target and its actual pronunciation, documented by Reed & Michaud (2011), involved "misinterpretation of "He looked it up" as "He looked up" by a speaker who pronounces "look" + past tense as two syllables..." (p. 98). Even when communication is intelligible, verb morphology errors are noticed by native speakers and are highly stigmatizing (Major, 1995). Negative social evaluation has been reported in surveys of native speaker judges who characterize lack of verb morphology as sounding "comical," childish," and "incompetent" (Beebe, 1978). Reporting a survey in which English language teachers referred to missing verb morphology as merely "a local error," while native-speaker judges characterized it as "low class" and "uneducated," Major (1987) asserted it is an error type that should be corrected.

A premise of this study is that explicit instruction, claimed to be helpful in building explicit knowledge which can be accessed in building implicit knowledge (Robinson, 2003; Andrews, 2007), is necessary but not sufficient to develop accuracy and automaticity. In their integrated model of pronunciation, Reed and Michaud (2011) provide checklists for bound inflectional morphemes and argue that "teacher intervention is key to helping learners move from isolated production" (p. 100) to incorporation into spontaneous speech, facilitating noticing of these morphemes in others' connected speech. Their recommended mechanism, prompted production, is a form of corrective feedback deemed critical in bridging the gap between learners' explicit, declarative knowledge and implicit, procedural knowledge. Error correction, however, as surveys have documented, is at best inconsistently provided (Allwright, 1975), if not rejected outright, particularly in communicative classrooms which put a premium on meaning and fluency over form. Noting the extensive acquisition-oriented as well as pedagogically-oriented literature on the topic of error correction, Russell (2009) suggests that deciding whether and how to correct errors "depends upon the methodological perspective to which a teacher ascribes" (page 21. Factors determining teacher beliefs, such as teacher preparation programs and in-service development, and teachers' own language learning experiences were studied by Schulz (2001), who discovered differences between learner and teacher perceptions of oral error correction. Consistent with findings of other studies (Lasagabaster and Sierra, 2005; Baker and Murphy, 2011), Schulz's cross-cultural study reported "94% of U.S. and 95% of Colombian students expressing a preference for their teachers to correct their oral errors during class" while "only 48% of U.S. and Colombian teachers believed that these errors should be corrected" (p. 255). In light of teacher variation regarding whether and/or how to provide oral error correction, the objective of the study reported here is to determine the minimally essential component(s) of corrective feedback necessary to increase learner suppliance and accurate production of inflectional affixal morphology in spontaneous speech.

Corrective Feedback (hereafter CF), defined by Chaudron (1977) as "any reaction of the teacher which clearly transforms, disapprovingly refers to, or demands improvement of the learner utterance" (p. 31), has been studied and its component moves labeled and categorized. In a landmark study, Lyster and Ranta (1997) posited a model of corrective discourse in which they categorized oral CF observed in Grade 4/5 French immersion settings into six types. Recasts were defined as "teacher's reformulation of all or part of a student's utterance, minus the error" (p. 46) while metalinguistic feedback was defined as "comments, information, or questions related to the well-formedness" (p. 47) of student utterances. Correlations between feedback, uptake, and repair were examined, with uptake being defined as "different types of student responses immediately following the feedback, including responses with repair of the non-target items as well as utterances still in need of repair" (p. 49). It was noted that two CF types, elicitation and metalinguistic feedback, generated most of the learner-generated repair, since both were unambiguous in intent and, according to Panova and Lyster (2002), both "promoted more active learner involvement in the error treatment process than do feedback types that reformulate learner errors (i.e., recasts and explicit correction)" (p. 577). The settings in which these data were gathered, immersion classrooms, in which monolingual children speaking English, the majority language of Canada, learned the minority language, French, through content-based classes, provided a seemingly ideal locus for testing the main tenant of the Monitor Model (Krashen, 1981, 1982) that "comprehensible input" was the necessary and sufficient condition for acquisition. Since the grade school children in these settings acquired the course content but lacked accuracy in their production of the target language, Swain (1985), in formulating her "comprehensible output" hypothesis, concluded that input alone was insufficient for acquisition of morpho-syntax and argued instead for "pushed output" accompanied by pedagogical intervention. Advocating the provision by teachers and peers of useful and consistent feedback, Swain (1995) asserted that the potential benefit of the resulting "modified output" was to "stimulate learners to move from the semantic, open-ended, non-deterministic, strategic processing equivalent in comprehension to the complete grammatical processing needed for accurate production" (p. 128). The benefits of syntactic processing for stimulating memory connections were noted by de Bot (1996), who claimed learners were likely to benefit more from being pushed to retrieve target forms than from merely being exposed to them in the input. Lyster (2004) agreed, suggesting the benefits include strengthening knowledge representations, stimulating memory connections, and promoting the restructuring of interlanguage representations (p. 407).

The pedagogical mechanism adopted in the study reported here will be referred to as a production prompt. This term is derived and adapted from Lyster's (1998b) consolidated classification of CF into three categories, based on the relationship between error types and feedback type in his reanalysis of the Lyster and Ranta (1997) data. Of the three new categories, explicit correction was not selected for the present study. While it is an unambiguous indication of an error, it typically includes provision of the correct form, offering both negative and positive evidence, but obviating the need for learner-generated modified production of the target form. The second category, recast, was similarly rejected. While less communicatively intrusive than explicit correction and determined by Lyster to be the most preferred CF type for grammatical errors, recast was the least effective as measured by uptake, since recasts frequently do not elicit repair (Loewen and Philp, 2006). The recommended category for grammatical errors, initially referred to by Lyster (1998a, 1998b) as negotiation of form, has the advantage of pushing learners to produce output, in accordance with Swain (1985), and affording an opportunity for noticing the gap (Schmidt, 1990) between faulty output and target structures, leading in turn to restructuring. Referred to at one point as form-focused negotiation (Lyster, 2002), the term "prompt" begins appearing in the CF literature as a set of four moves designed to prompt learner self-

repair without providing the correct form (Lyster and Mori, 2006). Of the four prompting moves, three (elicitation, clarification request, and repetition) were rejected for this study as they potentially require more than one transactional move to accomplish their goal. The fourth type of prompt, metalinguistic information, was adopted for this study for the following reasons: in one transactional move it explicitly indicates that an error occurred; indicates the locus and nature of the error, directs the learner to relevant, stored, explicit knowledge; and requires self-repair. As Yang and Lyster (2010) attest, output-pushing CF such as prompts elicit student self-repair, allowing students to gain control over already acquired forms and facilitating greater access to rule-based systems.

THE STUDY

This study explored the effect of metacognitive feedback, specifically production prompts, on oral production of inflectional morphology of students enrolled in two Intensive English Program (IEP) pronunciation elective classes. In the aforementioned integrated model of pronunciation, production prompts are licensed only after the target form has been introduced, instruction has been provided in the use of student tools such as pronunciation checklists and logbooks, and conceptual grasp of rule-governed forms has been ascertained by means of tell-backs (a term borrowed from the reading instruction literature and used here to mean student restatements of their understanding of the formulation and production of the target material). Teaching talk, the language of instruction used to introduce the target form, condensed to its most succinct metalanguage to elicit tell-backs (Reed & Michaud, p. 101), constitutes the efficient yet unobtrusive production prompt used in this study. Subjects were Asian, Middle-Eastern, European, and South American high-intermediate and advanced-level students (D- and E-level in an A- to E-level IEP), in two sections of a Pronunciation, Listening, and Speaking elective in a university-based, academically-oriented English language Center. Pre- and post-tests consisted of a recorded oral read-aloud sample, spontaneous speech samples, and a written pronunciation survey. Data were elicited by means of a digital student response system (clickers) to determine subjects' metacognitive awareness. Speech production was recorded using MP3 recorders. Both treatment and comparison groups received a review of the target morphemes including the allomorphs for bound noun and verb endings, and articulatory practice for default ([z], [d]) and assimilated ([s], [t]) allomorphs singly and in coda clusters. The study design called for the treatment group to receive immediate, not delayed, feedback in the form of a production prompt delivered in one transactional move requiring the learner to supply and accurately pronounce target morphemes during both controlled and spontaneous speech production. All students in each pronunciation elective course had studied English prior to attending this IEP; all were applying or accepted into either undergraduate or graduate U.S. college or university programs. Pre-intervention survey data revealed that many of these students considered suppliance of inflectional morphology optional. Two prompts were used to elicit students' metacognition via their beliefs about target structures. Students were given the following prompt: "If time words are present (for example *yesterday, last week,* etc.), it's not necessary to produce the –ed ending on the verb since verb endings are optional." This offered a binary, true/false choice. In the comparison group, eight of the 14 students (57.14%) selected "true" for this question; 5 of the 12 students in the treatment group (41.67%) also selected the "true" response. A prompt requiring students to select the number of ways to pronounce past tense endings on regular verbs offered four choices. Of the 26 subjects, only 8, five in the comparison group and three in the treatment group, responded correctly. Pre-intervention responses to this question are provided in Figure 1.

Figure 1. Pre-intervention comparison group (left, 14 respondents) and treatment group (right, 12 respondents) responses in percentages to the metacognitive prompt, "How many ways are there to pronounce -ed endings on regular past tense verbs?"

It is interesting to note that in both groups, students expressed resentment and resisted reviewing basic rules for inflectional affixes, claiming they already knew the rules "add –s" or "add –ed", having learned them at early stages of English language instruction. However, the metacognitive responses reveal ambivalence as to whether these endings are obligatory; they also revealed uncertainty as to how to accurately pronounce them. The use of the anonymous student response system to investigate student metacognition was instrumental in determining a pre-requisite condition for implementation of the production prompt intervention, namely, addressing underlying knowledge and assumptions before attempting to correct surface errors.

The exploratory study reported here was conducted in two 12-week elective classes, each meeting for 2.5 hours twice a week for a total of 30 hours per class. The same course textbook and institutional syllabus were used in each class; the study was undertaken with the consent of the two course instructors. The researcher attended all class sessions in both classes in their entirety, and was allowed 30 minutes per class meeting in each class. Following pre-intervention spontaneous speech and read-aloud samples conducted in the language lab to measure suppliance and accurate pronunciation of inflectional morphology, students in both groups received identical instruction and review of the target forms, checklist and pronunciation logbook training, and identical instructional materials, designed to elicit target morphology. Production prompts focused on noun and verb morphology were used by the researcher in both comparison and treatment groups during her 30-minute class time. Selection of the treatment-group instructor was made on the basis of survey and interview responses. It was anticipated that seamless provision of CF would occur in the treatment group; in fact, however, it materialized that the course instructor's delivery of CF differed from the researcher's in two respects: consistency and timing. A review of the MP3 recordings and transcripts revealed that the treatment group instructor, an avowed proponent of error correction, nevertheless responded to the content, not form, of students' spontaneous utterances, reserving CF for the occasional practice with target inflectional morphology. In addition to inconsistent delivery of CF, the timing of the feedback was delayed. The instructor chose to deliver feedback after the fact, in the form of reminders to use target structures, particularly

noun and verb endings, as the activities or the class period ended, revealing a bias for delayed feedback not detected in the instructor survey or interview, and inconsistent with the study design. The net result was that students in the 'treatment' as well as comparison group received the intervention - immediate, targeted, and consistent production prompts - only during the 30-minute researcher-conducted class time, for a total of six hours across the 12-week term.

THE RESULTS

Gains were made in student metacognition. In post-intervention surveys, only one student from each group maintained that suppliance of verb endings was optional. Regarding pronunciation of regular past tense -ed, self-reported think-aloud responses to the post-intervention questionnaire revealed three instances of misunderstanding or insensitivity to the pronunciation focus of the question. Selection of '2 ways' to pronounce the past tense was reportedly based on the 'regular versus irregular' distinction; the '1 way' selection was reportedly based on the 'add -ed' rule. Post intervention responses are provided in Figure 2.

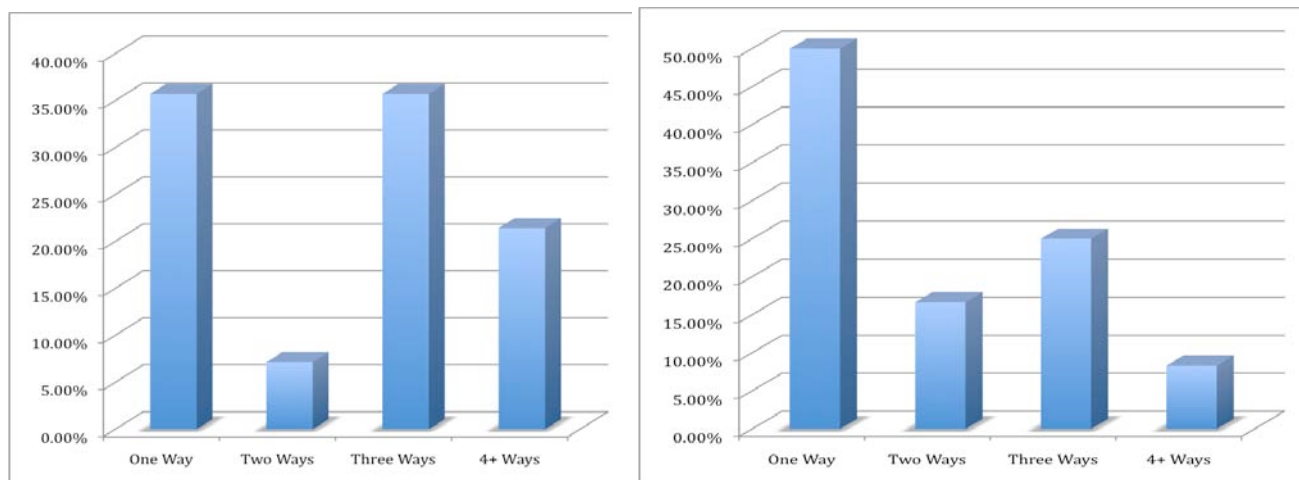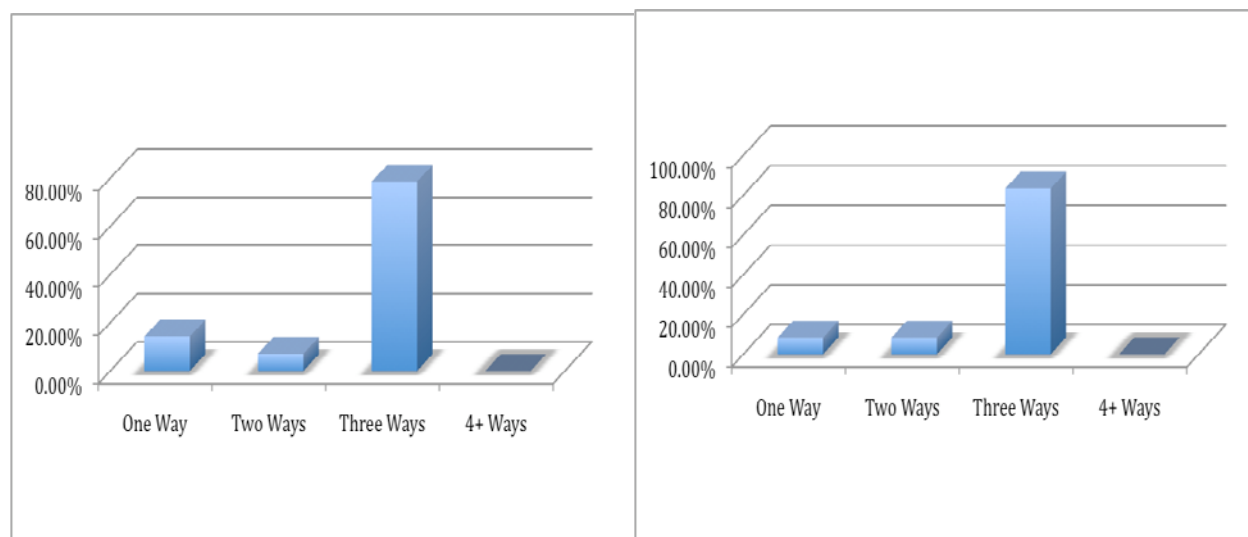*Figure 2.* Post-intervention comparison group (left, 14 respondents) and treatment group (right, 12 respondents) responses to the metacognitive prompt, "How many ways are there to pronounce -ed endings on regular past tense verbs?"

Analysis of the data reveals post-intervention within-group differences with respect to oral suppliance of the target morphology, but no significant differences with respect to accurate pronunciation. A repeated measures analysis of variance was conducted for each elective class, respectively, and the results indicated a significant within-group effect but no between-group effects for both number of missed past-tense endings (F [1, 13] = 82.65, p. <.001) and missed plural endings (F [1, 13] = 139.51, p. <.001) indicating that for both classes, students recorded fewer missed past-tense endings and fewer missed plural endings following participation in the course. Figure 3 demonstrates the reduction in missed endings.
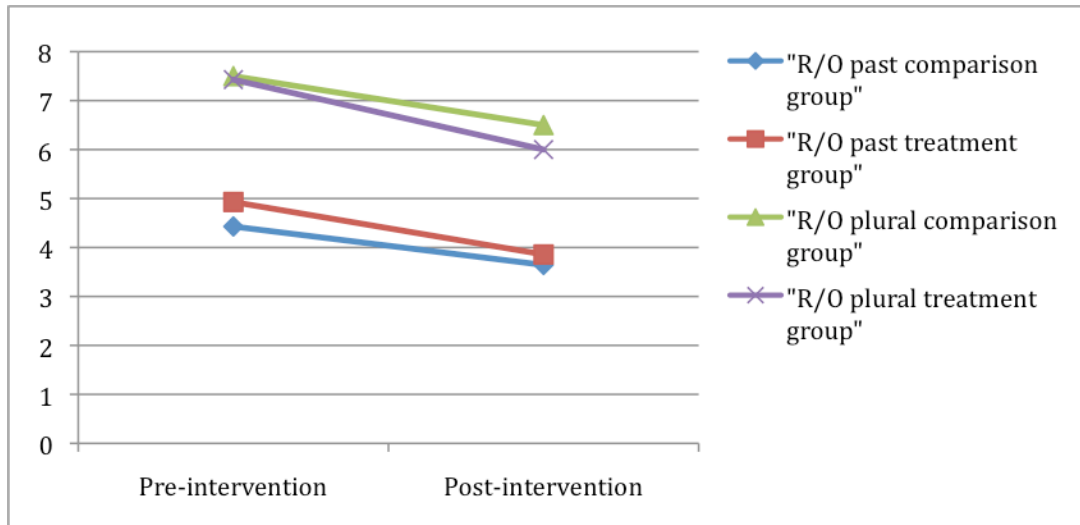
Figure 3. Required but omitted (R/O) comparison & treatment group pre-& post-intervention suppliance of count noun plural and past tense regular verb inflectional morphemes.

The within-group effect may be attributable to the researcher-conducted 30 minutes/class period designed to elicit target morphemes, ensuring both classes equal opportunity for the intervention to be provided. To account for the lack of between-group significance, comparison of the instructional focus and feedback provision in the instructor-conducted portions of the classes is informative. The instructional focus of the comparison group was choral repetition of segmentals, especially vowel sounds; at the suprasegmental level; remaining class time was devoted to thought groups and derivational affixation-driven stress pattern shifts. Time and opportunities for target inflectional morphology to be produced outside of the researcher-conducted class time were limited, restricting opportunities for the target to be generated. When target errors were produced, the intervention was not implemented. The treatment group provided a better balance of segmental and suprasegmentals, as well as conscious inclusion of opportunities for student production of noun and verb inflectional morphology. Students were reminded about this orally and on a blackboard checklist at the start of each class meeting. However, the treatment group instructor's preferred CF mode, though focused on the target morphemes, was delayed, in effect reminding the students before class dismissal of what they already knew but depriving them of real-time opportunities for learner-generated 'pushed' output.

To summarize, the literature review established that learners report wanting corrective feedback more than teachers report being willing or comfortable providing it. The study established that learners' explicit knowledge of rule-governed structures can be converted to spontaneous production if opportunities for students to produce the target structure and receive needed corrective feedback are sufficient and when targeted feedback is immediately and consistently provided. The contribution of this study is in determining the minimal elements required in an instructional approach that would promote bridging the gap between learners' explicit, declarative knowledge of a rule-governed feature of English morphology and their procedural knowledge, operationalized as production and accurate pronunciation in spontaneous speech. It is proposed that the post-instruction gap-bridging mechanism for promoting learner autonomy and automaticity is corrective feedback that is targeted, immediate, consistent, and persistent, delivered in succinct, unobtrusive metalanguage in the form of output-pushing production prompts in the fewest transactional moves possible.

ABOUT THE AUTHOR

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EFFECT OF AUDIO VS. VIDEO LISTENING EXERCISES ON AURAL DISCRIMINATION OF VOWELS

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Despite the growing use of media in the classroom, one critical aspect of digital instruction has been largely ignored, the effects of using of audio versus video in aural discrimination tasks. To analyze the impact of the use of audio or video training on aural discrimination of vowels, 61 participants (all students in a large American university) took a pre-test followed by two training sessions on a vowel contrast (/i/-/ɪ/). One group received audio training and the other group received video training. The groups then took a post-test and delayed post-test to determine the impact of the training. For the 40 that met the requirements for data analysis (based on pre-test and completion of all training), results showed that while both groups improved significantly from the pre-test to both post-tests, the video and audio groups performed similarly (no statistically significant difference). The student reactions to the two training types were also obtained through a questionnaire. Results showed that reactions were more favorable to the video training.

Due to increased use of media in language classrooms, it is important to consider what effects these technologies might have in terms of performance, motivation, and attitude. While technology has been recognized as an important teaching tool for pronunciation, most of the emphasis has been on developing automatic speech recognition, visual feedback, and software use (for examples, see Levis & Pickering, 2004 and Wang & Munro, 2004). The effect of incorporating audio versus video in the classroom has largely been ignored. This is a problem because audio and video materials are commonly used by teachers in their classes, whether through teacher-recorded materials, websites, podcasts, or even software programs, without knowing whether the two have different impacts. This research study aims to investigate the effects of using audio and video pronunciation training on perception of English vowels.

Review of the Literature

Learning pronunciation in a second language (L2) involves more than just production; it also involves perception, learning to listen in the L2. For vowels in particular, learning to listen to English will often require that the subject develop vowel categorizations appropriate for English. English vowels are distinguished by the following characteristics: tongue position and height within the oral cavity, lip rounding or spreading, tension, and gliding (vs. simple vowels). Length is not a distinguishing feature, but instead is influenced by the vowel's phonetic environment (Celce-Murcia, Brinton, Goodwin & Griner, 2010).

Research has supported the idea that sounds in an L2 are filtered through the phonological system of the first language (L1) (Beddor & Strange, 1982; Blankenship, 1991; Flege, Munro, & Fox, 1993). Filtering through the L1 can lead an L2 learner to make distinctions that are inappropriate for the L2. English vowel pairings such as /i/ and /ɪ/, /e/ and /ɛ/, and /ɛ/ and /æ/ are likely to be problematic for learners, because vowels with similar articulatory positions are often difficult to discriminate. Learning to listen to the L2 then will entail a redefining of the vowel

space to better reflect the vowel distinctions of English. However, filtering through the L1 does not entirely explain the use of vowel errors for L2 learners. Bohn and Flege (1990) show that non-native speakers often rely on vowel length, even if they do not do so in their L1. This means that learning appropriate vowel categories will also entail a shift from focusing on length of the vowel to quality of the vowel (spectral cues).

Learning to create aural discrimination categories based on spectral cues is not only important for comprehension, but is likely to play a role in production. Researchers have found evidence that practice in perception can improve production (Bradlow, 1997; Rochet, 1995; Rvachew, 1994). Thus, instruction should help students listen for and produce the articulatory differences of vowels and lead students away from a reliance on vowel length alone. One way of doing this is through the use of listening exercises that utilize minimal pairs. Research into the effectiveness of minimal pair listening training has shown that it can lead to significant improvement in perception (Bradlow, Pisoni, Yamada, & Tohkura, 1997; Pisoni, Aslin, Perey, & Hennessey, 1982; Strange & Dittmann, 1984).

Although it seems clear that these activities can be useful in increasing ability to discriminate vowels, there is still the question of whether presenting activities through video or audio (video here refers to video with audio) is more effective. Research on the effects of audio vs. video training with minimal pairs has shown that video can promote increased acquisition. For example, research on the /r/ and /l/ contrast in English shows that video training improves perception more than audio training alone (Bradlow et al., 1997; Hardison, 2003; Hardison, 2005). In a study on vowel contrasts, Hirata and Kelly (2010) found similar results for 60 L1 English speaking participants receiving training in Japanese vowels, which, unlike English, are contrasted through length differences. Results show that the added visual of the person saying the words improved perception more than audio training alone.

The increased improvement from the video training groups may be explained through information processing theory which accounts for this benefit by explaining that by using both auditory and visual information a student is able to use dual-coding and access information through multiple routes (Bagui, 1998).

Research is needed, however, to know whether utilization of visual cues will aid or hinder the development of aural discrimination categories for vowels in English. Based on previous research, it is hypothesized that extra modeling and visual cues will aid in the development of vowel categories. It is possible, however, that while students watch videos for training in pronunciation they rely on the facial movements to help them determine the vowel. This, in turn, could allow students to excel in the training activities without developing the ability to listen and use spectral cues in determining vowels. Thus, this research study aims to investigate the impact of audio vs. video training on subjects' ability to aurally discriminate English vowels.

In addition, this research aims to examine student reactions to the different training delivery methods, which may affect the appeal of the exercises. This, in turn, could affect the students' motivation to learn and the effectiveness of the training. Bagui (1998), for example, found that the introduction of animation, sound, and interactivity in lessons increased student motivation. Bagui, however, was examining interactive multimedia. It is not clear whether a switch from audio to video would also affect reactions to the training.

Research Questions

This research study thus aims to evaluate the effect of training on the discrimination of vowels, specifically, /i/ and /ɪ/, because these vowels do not contrast phonemically in many languages (Nilsen & Nilsen, 2002), are both frequent in English (Edwards, 1992), and have visible differences in facial movements when pronounced. The research study aims to answer two questions:

1. Will the group receiving audio pronunciation training differ from the group receiving video pronunciation training in their aural discrimination of /i/ and /ɪ/ in the post-test and delayed post-test?

2. Will students find video training more appealing than audio training?

METHODS

Participants

The participants were advanced ESL students enrolled in a college level writing class for ESL students at a large university in the United States. They were assigned to one of two groups: 30 to the video training group and 31 to the audio training group. The formation of groups attempted to control for factors such as native language, age, gender, length of time in the US, and length of English study overall, as well as for the pre-test scores to equalize for proficiency. Table 1 shows the make-up of each group.

Table 1

Group Formation Data

	Group 1- Video Training	Group 2- Audio Training
N=	30	31
Native Language	80% Chinese	87% Chinese
	20% Other	13% Other
Gender	M= 18	M= 23
	F= 9	F= 7
	Non-report= 3	Non-report= 1
Years studying English	8.82	8.05
Months studying in U.S.	11.58	10.44
Pre-test score	17.53	17.6
SD of pre-test score	2.43	2.26

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Materials and Procedures

The materials used in this study comprised of a pre-test, post-test (which was also used for the delayed post-test), audio and video training materials, a biographical data questionnaire, and a

student reaction questionnaire administered after the rest of the study was completed. In the first session, after signing an informed consent form, subjects filled out the biographical data survey and took the pre-test. Both the pre-and post-test each contained twenty listening items. Participants were asked to mark on a sheet decisions about words such as, "Are these two words the same words or different words?" and "Does this single word have the "e" sound like in "feet"?". The researcher, whose voice was used for all materials, carefully recoded each exercise to control for possible length differences, checking words through Audacity to ensure similar lengths (within .02 seconds of each other).

To ensure equivalence of forms, the items from the pre-and post-test used single, closed syllables for all words and controlled for the number of vowels that would be colored by nasalization, postvocalic [r] or [l]. To check the overall equivalency of forms, the items of the pre- and post-tests were mixed together into a single test taken by three ESL students not participating in the research study. The results indicated that the items were of similar difficulty.

For each of the two training sessions (Sessions 2 & 3), participants watched a video (group 1) or listened to an audio file (group 2). Both videos were a little over 13 minutes. In order to create audio files that were exactly the same (in sound and content), the audio was stripped from the video files by a program called Video MP3 extractor provided by geovid.com. These audio and video materials were provided to students for download through a website. In Session 3, participants also took an immediate post-test.

For Session 4, which occurred a week after Session 3, subjects took the delayed post-test and filled out the questionnaire, which included 5 Likert scale items about the appeal of the training materials. The questionnaire also included two open-ended questions to allow for individual comments on the training.

Analysis

Research question 1.

The pre-, post-, and delayed posttests were used to answer research question 1, whether the groups would differ in performance due to different training. The pre- and post-tests were scored for correct and incorrect answers. Because all subjects took all three tests it was possible to analyze the data using a mixed ANOVA.

Exclusion of subjects from analyzed data.

Some participants had to be excluded from the analyzed data for the pre-test, post-test, and delayed post-test comparisons. There were two possible reasons for exclusion; a participant not completing all four sessions of the research study, which eliminated 12 participants, or a participant receiving a perfect score on the pre-test. The rationale for the second exclusion possibility is that for these participants improvement due to training would not be visible in either post-test. This occurred in 8 cases. This resulted in 21 participants in the audio group and 19 in the video group.

Research question 2.

The student feedback questionnaire was used to answer research question 2, student reactions to the appeal of the training. All subjects that completed the questionnaire and both sessions of training were included in the analyzed questionnaire data (n=54). Reactions to the Likert scale items were scored on a 1-5 range with 5 representing strong agreement with the claim and a 1

representing strong disagreement. The average score for each item was calculated for comparison. Responses to the open-ended questions were coded by the researcher and explored for common themes and types of responses.

RESULTS

Participant Improvement from Pre- to Post- Tests

Results showed that both groups responded similarly to training; they both showed significant improvement (p= .000) from the pre-test to the post-test with an effect size of .70. Despite a decline in the average score from the post-test to the delayed post-test, students maintained a significant improvement from the pre-test to the delayed post-test (p= .008, effect size= .39). The decline from the post-test to the delayed post-test was not statistically significant. Table 2 reports the average scores for each group at each testing time.

Table 2

Scores for Pre-, Post-, and Delayed Post-tests by Group

	Video Group		Audio Group	
	Average	SD	Average	SD
Pre-test	16.63	2.52	16.95	2.01
Post-test	18.11	1.85	18.24	1.55
Delayed post-test	17.47	3.04	18.00	2.07

Although the improvement for the audio group was slightly higher than the video group (7.27% versus 6.43%), this difference was not significant. Also, the score decline from the post-test to the delayed post-test for the audio group was slightly lower than for the video group (1.2% versus 3.2%). This, however, was also not significant. Figure 1 shows the average score for each group on each of the three tests.
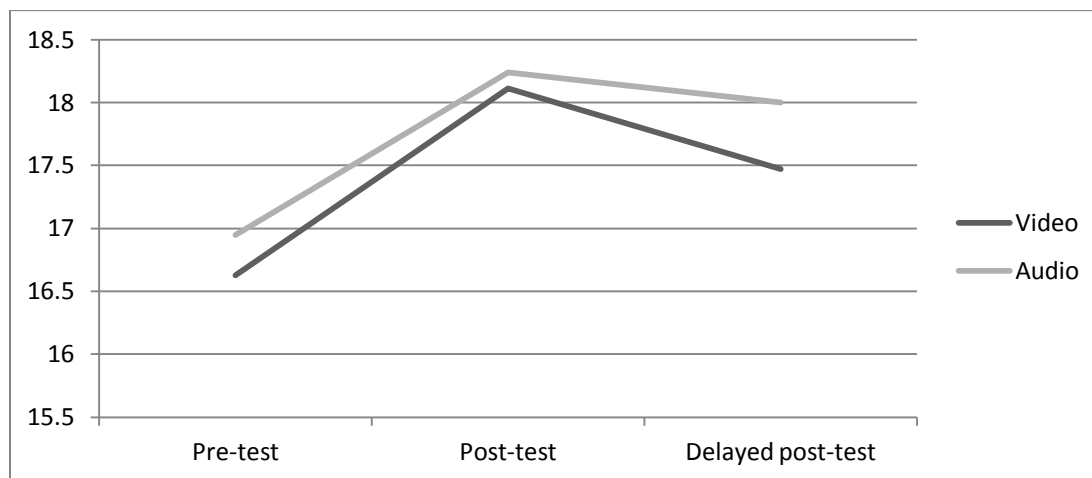
Figure 1 Scores for Pre-, Post-, and Delayed Post-tests by Group

Appeal of the Training

Overall, in response to the questionnaire, the video group gave higher scores for every item. Table 3 shows the five claims presented to students and the average score given for each item. As stated previously, a score of 5 indicates strong agreement while 1 indicates strong disagreement.

Table 3

Scores to Likert Scale Questionnaire Items by Group

	Video Group		Audio Group	
	Average	SD	Average	SD
The instructions for each activity were clear	4.55	0.51	4.43	0.68
The quality of the recordings was high	4.50	0.51	4.00	0.95
I feel that my ability to hear vowel differences has improved	3.75	0.55	3.57	0.75
I feel the training was interesting	3.55	0.76	3.38	0.74
I would like to do more training like this	3.85	0.81	3.05	1.20

This relationship can be better illustrated in Figure 2.
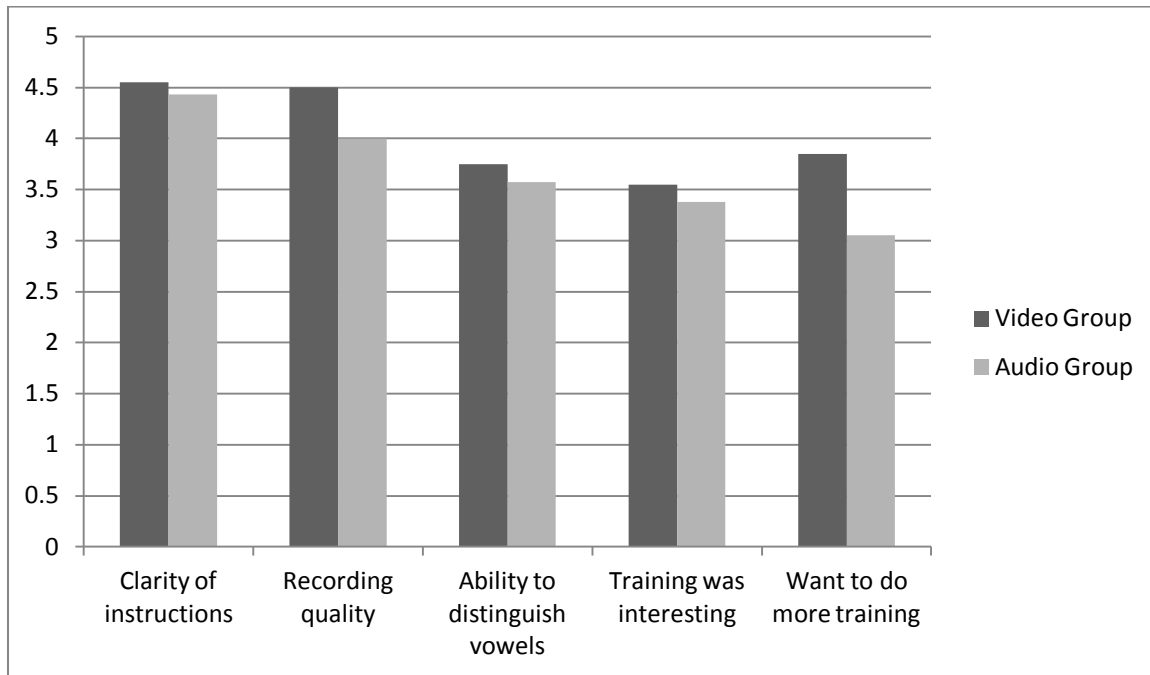
Figure 2 Scores to Likert Scale Questionnaire Items by Group

In response to the open ended question "The other research group received training through [opposite form]. Do you think this would have been better or worse than the training that you

received? Please explain your answer" only five of the video group thought that the audio would have been better. In contrast, 12 members of the audio group thought that video would have been better.

Of the participants that thought video was better, 12 indicated that seeing the mouth movements was helpful for understanding how the sounds were made. One participant wrote, "I think [audio] would've been worse. I could learn how lips are different when pronounce different vowels through video." This utilization of visual cues was also mentioned as a negative by the participants who thought audio would be better. Three participants mentioned that because they could get the answers through looking at the different visual cues, audio would be better training. Four other participants answered more generally that because the goal was to improve listening, audio would be better. One participant said, "[Video is] worse. This activity is focus on listening. The audio is focus on listening. The video might make people focus on the screen." Also, two participants specifically mentioned that they thought the video would be distracting.

Although most of the participants responded to the question of which is better in terms of improvement, four participants responded in terms of appeal. They stated that the video would be better because it is more interesting (2 from each group). One participant stated, "I think video must be more interesting and attractive than just audio files."

In response to the question, "How do you think this training could be improved?" the most common response was that the training needed more difficult items and activities (6 for video group and 7 for audio group). Also, the next most common comment for each group was that the training needed more items and questions. Interestingly, although in the previous question, four people indicated that the video would be more interesting, more people in the video group indicated that the training could be improved by making it more interesting. Another interesting finding was that two members of the audio group wanted clearer directions, but none of the video group members indicated this. Finally, one member from each group indicated that they wanted personalized feedback from the training.

DISCUSSION

This study produced two main findings. First, in contrast to previous research (Hardison, 2003; Hardison, 2005; Hirata & Kelly, 2010) the introduction of video versus audio seems to have made little difference. This does not support the information processing theory, which claims that audio plus video would allow for dual coding and better storing and accessing of new information (Bagui, 1998). For teachers, this means that training for English vowels can be done through either method. For most teachers, audio recording, which can be done with free software such as Audacity, would be less time consuming and expensive.

Although the two training types produced similar results in terms of participant improvement, reactions were generally more favorable to the video training. This is in line with previous research that has shown that the use of multimedia can increase student motivation (Bagui, 1998). It seems that the change from audio to video can also produce changes in attitudes and reactions towards training. For teachers, this would suggest that by incorporating video (at least occasionally) teachers may be able to offset feelings of monotony and perhaps increase student interest.

It is important, though, that all findings be considered in light of the limitations of this study. One of the main problems encountered with this study was the ceiling effect caused by numerous

high scores on the pre-test. Over 75% of the original 61 participants scored a 17 or higher on the pre-test (out of a possible 20). This left little room for visible improvement. It may be possible that, with a more sensitive pre-test, greater differences could have been found.

Also, although this study began with 61 subjects, data from 20 subjects could not be used for analyzing improvement from the pre-test to the two post-tests. With only 41 subjects, the generalizability of the results is uncertain. Future research with a greater number of subjects or with subjects at lower proficiency levels should be done to check these findings.

Future research should not only look to replicate these findings, but also expand them to include more pronunciation features. Thus far only one English vowel pairing, /i/-/ɪ/, and one English consonant pairing, /l/-/r/, have been investigated. Yet there are many other pairings that have clear differences in visual cues, such as /ʌ/ vs. /a/ or /θ/ vs. /t/ or /s/ that could add to the understanding of the impact of the visual cues.

Also, future research should look more closely at the impact on production for video vs. audio training. It may be that the visual clues, which provide modeling, may be more helpful for improving student production. This line of research could also be extended to include multimedia or software. For example, software could be designed to give answers and personalized feedback to students. This may satisfy the desires of students who want personalized feedback.

Because there has previously been relatively little interest in this area of research, there are many possible directions for future research. As teachers are already employing these modes of delivery in their classrooms and as homework, it is important that further research be conducted to determine the effects of these two methods of training delivery.

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NONNATIVE SPEAKERS' PRONUNCIATION ERRORS IN SPOKEN AND READ ENGLISH

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Adult foreign language learners typically reach a lower level of proficiency than do native speakers of the language. This is most obvious in pronunciation, where foreign accents are the norm and native-like accents the rare exception. When diagnosing pronunciation errors, teachers usually ask learners to read a passage that includes a variety of possible pronunciation targets. However, it is not clear that the errors that occur when reading are the same errors that learners demonstrate in spontaneous speech. This is especially true for foreign learners of English because of the indirect correspondence between English spelling and how words are pronounced.

This study looks at the English speech of three people from each of four different first language groups: Korean, Malay, Chinese, and Spanish. Each speaker read a passage intended to sample all possible pronunciation errors in English. They also took part in a brief, semi-structured interview that elicited conversational, unplanned speech. The most frequent vowel and consonant errors in each learner's read speech were identified and compared to the equivalent vowel and consonant features in their unplanned speech. The results suggest that the type of spoken language task influences the types of errors made by the speakers. Implications for diagnosing pronunciation are provided.

INTRODUCTION

When teaching pronunciation to nonnative speakers of English, it is important to determine the kinds of errors that learners actually make in order to effectively use class time. Some errors may be more important than others, but a critical first step is to identify errors in their oral production or in aural comprehension. Such diagnosis can be made in a variety of ways, including tests of listening comprehension, evaluation of free speech, or through oral reading tasks at the word, sentence or discourse level. It is not clear, however, whether evaluating pronunciation using these different approaches leads to similar findings.

Background – Oral Reading

Oral reading is commonly, though not invariably, used as a technique in published textbooks (e.g., Dauer, 1993; Grant, 2001; Smith, Meyers & Burkhalter, 1992) to diagnose pronunciation accuracy, and a host of reading passages have been constructed to efficiently provide full coverage of many phonological targets at the same time. For example, Prator and Robinett (1985) provide a diagnostic passage of 166 words that is designed to provide coverage of six areas related to stress and rhythm, seven related to intonation, four related to vowels, eight for consonants, and four for combinations of vowels and consonants (such as the pronunciation of allomorphs for the -s and -ed endings), as well as a section for general comments. The benefits

of this kind of diagnostic reading passage are many. It allows the diagnostic testing to be controlled, and multiple tokens of important vowel and consonant sounds to be included. Diagnostic passages also can be used to elicit intonation and stress targets, such as the intonation of different types of questions, the intonation of lists, the rhythmic structure of sentences and the stress of various multisyllabic words.

However, reading aloud is not actual speech. It includes spoken performance abilities that have no clear parallel in spontaneous spoken language. Reading aloud uses a dual-route processing architecture (Coltheart, Curtis, Atkins & Haller, 1993) in producing phonological form, in which lexical knowledge may be more important when orthographic regularities are not strong (Rosson, 1985). Second, reading aloud is affected by knowledge of English spelling and its relationship to the phonological form of words (Glushko, 1979). If reading aloud includes words that are unusual in any way, they are more likely to be read wrongly. Such orthographic knowledge may be especially weak for nonnative speakers of English. Because diagnostic passages are meant for nonnative speakers of English, the inclusion of unusual words may lead to mispronunciations that do not necessarily reflect overall pronunciation patterns. Moreover, reading aloud may be a fairly unusual task in most people's lives. People read aloud when reading books to their children, if they are elementary school teachers, if they teach literature, if they are actors, and if they are called upon to read in public contexts such as giving speeches or religious services. Effective performance can be improved with practice, and the oral interpretation of texts may be an important part of learning public speaking (Moran, 2006). Finally, there is a well-attested tendency for many readers to treat the language in reading aloud not as real communication but rather as an object, leading to flatter pitch patterns and unusual rhythm (Brazil, 1997). However, this tendency is unlikely to lead to mispronunciations of vowels and consonants.

There have been few studies on oral reading and its effectiveness in diagnosing non-native speakers' pronunciation accuracy. Munro and Derwing (1994) examined whether accented speech is judged as more accented when it is originally read or originally spoken freely. They collected and transcribed the English free speech narratives of 10 students (L1 = Mandarin Chinese). The students then read their own narratives aloud. Native English speaking listeners evaluated both the original narratives and the read versions. No differences were found in ratings of accent in the two conditions.

Levis (2011) asked a group of experts to listen to the speech of two advanced proficiency nonnative speakers of English, a native speaker of Spanish and a native speaker of Korean. Both were graduate students at a large US Midwestern university. The group listened to each speaker's performance once, taking notes and then discussing their reactions in a round table format. Their discussion suggested that using reading tasks elicited fundamentally different patterns of errors than free speech. The Korean speaker was halting and difficult to listen to in free speech but read aloud more fluently and smoothly. In contrast, many experts (but not all) found the Spanish speaker easy to understand in free speech, but extremely hard to follow when he was reading aloud. Even though the experts only listened to two speakers, they felt strongly that reading aloud was not a natural speech task and that it may skew accurate diagnosis of pronunciation needs.

Frequency of lexical items may also be a factor in pronunciation accuracy when reading aloud (Gerhand & Barry, 1998; McCann & Besner, 1987). Levis & Cortes (2008) examined the frequency of words in minimal pairs found in ESL pronunciation textbooks, looking for a

potential influence of frequency on mispronunciation. They found that minimal pairs rarely include two words of equivalent frequency, and suggested that more frequent words may show a different pattern of errors than less frequent ones. Furthermore, native English-speaking listeners may be less likely to misunderstand the pronunciation of frequent words when the word is pronounced like an infrequent word (e.g., if *think*, a frequent word, is pronounced like *sink*, an infrequent one). In all these cases, there is a suggestion that oral reading and free speech may identify different types of errors. We thus sought to examine the patterns of errors that occurred in the free speech and read speech of nonnative speakers to determine whether they showed different patterns. We looked at the error patterns in vowels and consonant production only, ignoring errors in stress and intonation.

The research question for this study had two parts. Will students show different frequencies of errors in read speech than in free speech, and will there be differences in the patterns for vowels and consonants when looking at the percentages of errors in read and free speech? Since we are looking at both consonant and vowel errors in this study, we wanted to see whether there were differences between these two categories of segmentals.

METHOD

Twelve nonnative speakers of English were recorded speaking three texts. The twelve subjects were three speakers from each of four different native languages: Spanish, Korean, Malay, and Chinese. All speakers were graduate students who had self-selected for pronunciation tutoring.

The first text for each subject was an interview in which they answered questions freely. The interview focused on questions personal to the speaker, asking about topics such as their hometown and their studies. After the free speech interviews were transcribed, the errors in both vowel and consonant sounds were examined. The second recording was the reading of a diagnostic passage of three paragraphs (Appendix 1). This was used to analyze speakers' consonant errors in reading. The third recorded text was a series of minimal pairs developed by the researchers, words that differ only in their vowel sounds (Appendix 2). This was used to examine vowel errors in reading. Each text was listened to and analyzed by two listeners. The vowel sound errors in the minimal pair reading and the consonant vowel sound errors in the diagnostic passage reading were identified and then compared to the errors made during the free speech.

Calculating the error rate

To calculate the error rate, 2-3 consonant sounds and 2-3 vowel sounds that were pronounced with errors were identified for each speaker from the read texts. The same sounds that were identified in the read speech were examined in the free speech texts. (Some speakers had only two sounds that showed frequent errors, while others had three.) The number of actual errors for each sound was divided by all the times the sound would have occurred for a native speaker. For example, if for 20 potential errors with the vowel in *seat, bee, seen*, 8 errors are actually identified, this would give an error rate of 40%. To come up with error rates for each language group, the error rate for each individual speaker within the language groups was combined.

The errors chosen were ones that had sufficient frequency in both the read and free speech. In addition, they were errors whose realization we could (phonemically) categorize. Those we

could not categorize were not counted for this study. For example, one subject consistently pronounced /l/, /n/, and /r/ in a way that did not match English articulatory targets for any of the three sounds. Even though all three targets were frequent in both read and free speech, we did not include them in the research because of our inability to precisely identify the errors being made.

RESULTS

Our research question asked whether students would show different frequencies of errors in read speech and in free speech and whether there would be differences in the patterns for vowels and consonants. It was clearly the case that there were more errors in read speech than in free speech, but this difference in frequency came from the number of vowel errors, which was considerably higher in read speech than in free speech. In comparison, the percentage of consonant errors was very similar in both modes. For some of the language backgrounds the difference for vowel errors was quite large (Malay 86% read vs. 36% free), while for others the difference was noticeable but narrower (Spanish 82% read vs. 67% free). As a group, however, the errors in read speech for vowels for the 12 speakers were much higher (79.5% vs. 48.3%) than the equivalent sounds in free speech.

Table 1
Percentage of Errors in Read Speech and Free Speech by Language Background

Language	Vowels		Consonants	
	Read	Free	Read	Free
Spanish	82%	67%	45%	57%
Chinese	81%	34%	49%	49%
Korean	69%	57%	37%	39%
Malay	86%	36%	59%	66%
Total	79.5%	48.3%	47.25%	52.58%

DISCUSSION

The first and the second research questions are tied together in the results. Subjects showed different frequencies of errors in read speech and in free speech, but the differences were tied to the types of errors. The percentage of errors in consonant sounds was very similar, while errors in the pronunciation of vowels were much more noticeable in read speech than they were in free speech.

We have already seen that the percentage of consonant errors was similar in free speech and reading for all language groups. One reason for this may be that the correspondence between consonant spellings and sounds is fairly direct in English, especially for the consonant sounds that we examined in the study. Consonant articulations are also more precise and more noticeable. Certain parts of the mouth touch in ways that can be felt by speakers. This is a contrast to the pronunciation of vowels, which are less precise since they are based on the shape

of the mouth cavity. In addition, even within any particular variety of English, such as North American English, vowel sounds may vary greatly. The /æ/ in North American English, for example, varies from a pure [æ] in much of Canada, to [eə] throughout much of the US, to [ɛ] in the upper US Midwest in words like bag, to [iə] in parts of New York. This presents a moving target to learners, who may not have ever had good control over even the pure [æ]. In addition, vowel variation may be less noticeable to listeners in free speech than in reading aloud, especially with the reading of minimal pairs.

Another reason that vowel errors were more common in read speech may be that the correspondence between vowel spellings and vowel sounds is very indirect in English. It is well known that there are five vowel letters in written English while there are 15 or more vowel sounds, depending on the variety of English and the descriptive scheme used. Vowel sounds are thus not directly represented by spelling patterns, with the same vowel spellings often representing three or more vowel sounds.

Also, because English has a well-populated vowel space, there are a number of perceptually close sets of vowel sounds that are difficult to distinguish in very controlled reading of minimal pairs, a task that is guaranteed to test control of a learner's ability to distinguish sounds that in normal speech may not need to be distinguished as clearly. We found that when subjects looked at the minimal pairs before reading aloud, it was common for them to laugh nervously and say that they could not say the pairs of words differently. They knew there was a difference - the task made that obvious - but when called on to make the difference, they felt uncomfortable. Often they made a distinction, such as saying [i:] for beat and [i] for bit, creating a quantity (long/short) distinction where English instead uses a quality (tense/lax) distinction.

Decoding sound from written form may still be a particularly important skill for learners, even if reading aloud is an unusual task. Because learners often receive much of their input from written sources, it may be important to explicitly teach them how to connect spelling to sound, as advocated by Dickerson (1987) and Gilbert (2001). Dickerson's patterns of spelling/sound correspondences are meant for more advanced learners and are connected to an understanding of word stress patterns for multisyllabic words (see Dickerson, 1989 for more information on word stress patterns). In contrast, Gilbert especially advocates teaching decoding skills for beginning learners, based on high frequency patterns in which English spelling reliably predicts sound (Carney, 1994).

Recommendations

In diagnosing pronunciation errors, it seems clear that we must use both read and free speech, especially to make sure that certain classes of sounds are represented. For consonants, diagnosis of pronunciation difficulties seems to be as accurate with reading aloud as with free speech. However, with vowels, this is not true, and read speech may overstate (or state more accurately, it is not clear) the seriousness of vowel errors. Reading minimal pairs is not reading aloud in the true sense, and it may give us a more accurate view of distinctions they really can or cannot make. We do not know without further research.

Jenkins (2000) says that distinguishing vowel quantity (the tendency of English to lengthen vowels at the ends of syllables or before voiced segments, and to shorten the same vowels before voiceless segments) is a critical pronunciation feature for English as a Lingua Franca, but that vowel quality distinctions may not be critical to teach, as they vary between inner circle varieties. As a result, we need research on whether read speech is more or less accurate than free

speech for vowels, and whether students' tendency to focus on length over quality is actually useful.

Limitations

There were a number of limitations to our results. First, the errors measured were only a small sample of those that were made. We found that some bothersome errors did not lend themselves to easy counting, either for reading or for free speech. For example, errors involving nasalization (n, ŋ, m) were quite difficult to count, since the errors may have involved nasalized vowels, or sounds that were not quite right but were not quite wrong either. Other consonant errors were hard to count precisely, such as one subject's pronunciation of /l/, /n/, and /r/, which were often produced with sounds that were not clearly identifiable as any of the three categories.

This analysis also does not examine the relative seriousness of errors for communication. Some of the errors we counted (such as the /ð/ for words like *these*) appear to be very common but not very serious (Munro & Derwing, 2006). This study instead looked only at whether the same errors that were common for each speaker showed different frequencies for read and free speech.

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APPENDIX 1

Pronunciation Reading Passage (Celce-Murcia, Brinton & Goodwin, 2010, p. 481)

Is English your native language? If not, your foreign accent may show people that you come from another country. Why is it difficult to speak a foreign language without an accent? There are a couple of answers to this question. First, age is an important factor in learning to pronounce. We know that young children can learn a second language with perfect pronunciation. We also know that older learners usually have an accent, though some older individuals also have learned to speak without an accent.

Another factor that influences your pronunciation is your first language. English speakers can, for example, recognize people from France by their French accents. They can also identify Spanish or Arabic speakers over the telephone, just by listening carefully to them. Does this mean that accents can't be changed? Not at all! But you can't change your pronunciation without a lot of hard work. In the end, improving appears to be a combination of three things: concentrated hard work, a good ear, and a strong ambition to sound like a native speaker.

You also need accurate information about English sounds, effective strategies for practice, lots of exposure to spoken English, and patience. Will you make progress, or will you give up? Only time will tell, I'm afraid. But it's your decision. You can improve! Good luck, and don't forget to work hard.

APPENDIX 2

Minimal Pairs of Vowels Used in Read-aloud Task.

beat----bit	met----mat	caught----coat
deed----did	bed----bad	bought----boat
seek----sick	men----man	law----low
leap----lip	guess----gas	raw----row
bid-----bed	boot----book	cot----cut
miss----mess	Luke----look	lock----luck
lit-----let	pool----pull	cob----cub
lift----left	fool----full	mod----mud
bird----bud	late----let	nice----noise
girl----gull	mate----met	ties----toys
shirt----shut	laid----led	kind----count
lurk----luck	raid----red	high----how

Griffee, D. T. & Gevara, J. (2012). Analyzing item bias to validate and revise an ITA performance test. In. J. Levis & K. LeVelle (Eds.). *Proceedings of the 3rd Pronunciation in Second Language Learning and Teaching Conference,* Sept. 2011. (pp. 195-204). Ames, IA: Iowa State University.

ANALYZING ITEM BIAS TO VALIDATE AND REVISE AN ITA PERFORMANCE TEST

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Classroom teachers sometimes have an aversion to testing because they see tests as a device to fail students rather than teach them. However, when teachers are involved in a program with high stakes results, the test need to be as fair as possible. Estimating item bias is one way to evaluate a test to make it a more equitable decision-making instrument. Using the SOAC program evaluation model, this paper reports a test instrument validation study. The purpose of this study was to determine item bias on International Teaching Assistant (ITA) Performance Test version 8.3, a test designed to evaluate speech fluency and pronunciation in simulated teaching situations (Gorsuch, Meyers, Pickering, & Griffee, 2010). Using Multiple Analysis of Variance (MANOVA), we examined scores from the ten test criteria from passing and failing groups. Results showed no statistically significant difference for criterion four (ITA uses grammatical structures, word choice, and transitional phrases effectively to provide cohesion to the content) and criterion nine (ITA candidate uses visuals or multimedia effectively). Results for the other eight criteria, however, operate effectively, showing a statistical significance between the two groups.

DEFINITIONS

Bias is systematic error (Vogt, 2005), and as used here refers to the tendency of test criteria to systematically skew the test results by not performing in the way intended. *Evaluation* judges the value or worth of an educational endeavor, and *an evaluation study* gathers information in a systematic way in order to accomplish that judgment (Alderson, 1986; Brown, 1995; Lynch, 1996; Stufflebeam & Webster 1983). A *high stakes test* refers to a situation that has important consequences for test takers. A *master* is a test-taker who passes a test at a prescribed cut score and is, therefore, assumed to have mastered the material. A *non-master* is a test-taker who has not. *Validity* is an estimation of the extent to which evidence supports the interpretation of a test result (Messick, 1996). A *program evaluation model* is a working theory of how a program functions and how evaluation studies can be organized and sequenced (Stufflebeam & Shinkfield, 2007).

The SOAC evaluation model

The SOAC model, as seen in Figure 1, is a program evaluation model designed especially for second language courses, and can be helpful in explicating the role of instrument validation (Griffee & Gevara, 2011).
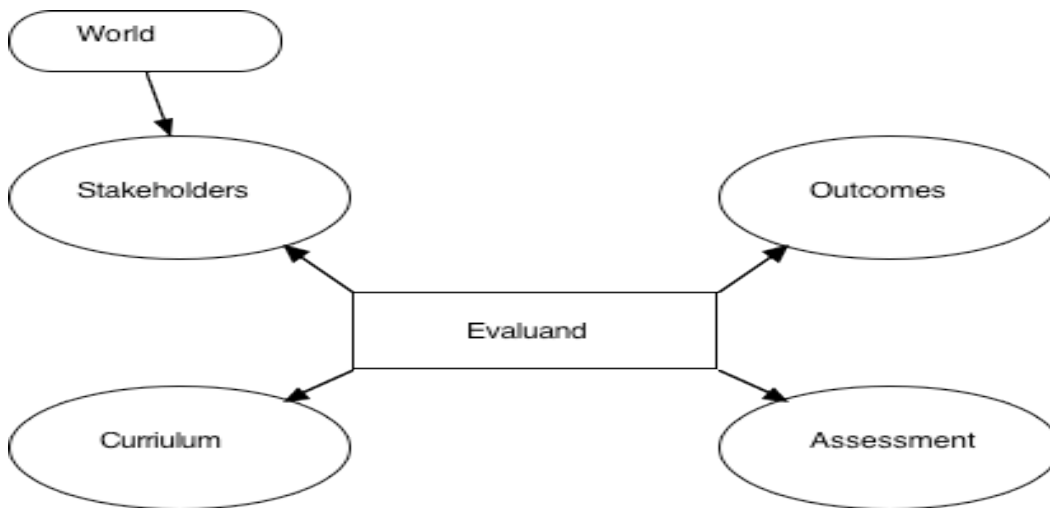
Figure 1. The SOAC (pronounced soak) model of program evaluation.

The SOAC model posits that the evaluand, the part of a program being evaluated, be evaluated in terms of four basic areas of interest: stakeholders, outcomes, assessment, and curriculum. The area of *stakeholders* includes, among other things, persons or agencies that have an interest in the outcome of the evaluation, and directly connects to the *world*, influences and pressures from outside the course. *Outcomes* include goals, objectives, or learning outcomes of the evaluand, in our case a course. *Assessment* refers to data collection instruments and other aspects of the assessment plan, and *curriculum* includes anything related to materials and teaching. The SOAC model is flexible in that any area of interest can be related to any other area and by relating the four areas of interest and the world, several evaluations areas can be identified. For example, by examining the relationship between outcomes and stakeholders, a goal validation study can be undertaken, and by examining the relationship between curriculum and outcomes, a course logic evaluation (does the curriculum logically support the outcomes) can be conceptualized. The relationship of particular interest in this study is the interaction between curriculum and assessment here called a *test instrument validation study*.

Classroom teachers and testing

Many classroom teachers enter the teaching field with little interest in test construction and validation. According to Graves (1996, p. 32), teachers feel inadequate in dealing with testing because they believe testing to be a specialist field for which they do not have adequate training. If they take a testing course, they generally find it interesting and helpful (Bailey & Brown, 1996), but the majority of classroom teachers do not take a testing class. Nevertheless, in language programs, especially those requiring high stakes decisions, tests become a relevant issue because program directors are reluctant to base high stakes decisions on a single, holistic teacher decision. Tests are valued because of their perceived potential to add a layer of objectivity and fairness to the decision-making process.

ITA programs

An international teaching assistant or ITA is a student who typically has graduated from a master's program in his or her country, and is now entering a doctoral program at a U.S. university. In return for tuition assistance and perhaps a stipend, the ITA is assigned to teach certain courses, especially first year undergraduate courses and labs. In the best case, the university department gains a high quality teacher and the ITA gains financial aid, visa support, and teaching experience (Sheridan, 1991).

Beginning in the 1980s, the number of U.S. graduate students began declining while the number of ITAs began increasing, especially in math and science (Wilkening, 1991). At the same time, increasing numbers of U. S. undergraduates were coming to college with plans for jobs upon graduation. When U.S. undergraduates met the ITAs, they sometimes complained to their parents that they could not understand the ITAs, parents complained to university administrators and state legislators, and ITA training programs were born. One such program is at our university.

The function of the present ITA program is to test incoming ITA candidates, and based on test results, to approve those who score at or above the cut scores to teach. For those ITA candidates who do not meet the cut score, remediation programs are used which include retesting. One type of test used to evaluate incoming ITA candidates is a performance test.

Based on university operating policy in response to the Texas Education Code, international students accepted into a Masters or Doctoral program and eligible to receive a Teaching Assistantship are notified of the ITA workshop, which they are required to pass. ITA candidates who do not pass have the option of taking ESL5310, a semester class equivalent to the ITA workshop. Candidates passing the course are eligible to teach the following semester.

Performance Test

A performance test (PT) requires a test candidate to do something rather than to demonstrate knowledge of something. PTs appeal to teachers who engage their students in the productive (speaking and writing) aspects of language rather than the receptive aspects (listening and reading). Examples of performance tests include writing, roleplays, and giving a presentation. The purpose of a PT is to evaluate a candidate on a set of *criteria*. According to McNamara (1997), a PT uses criteria, something the teacher wants and expects the candidate to do in real life, and the test is a simulated performance providing a sample of language. The function of the PT is to supply data to allow an inference about what the ITA will do later. In a presentation, the test candidate picks a topic that is similar to one he or she might teach, for example a key term that can be defined, illustrated, and explained. Teachers rate the performance in real time on a set of criteria according to some scale, in this case, from one to five. Ratings are typically done by two raters in a classroom and must be completed during the presentation, lasting from five to eight minutes.

Motivation for the Current Study

The purpose of this test validation study was to investigate to what extent each criterion on Performance Test version 8.3 (see Appendix) contributed to the purpose of the test,

which is to identify students who can be approved to teach. Criteria identified as not functioning can be eliminated or revised. Our study will investigate the following evaluation question (EQ): Are all the ten criteria of Performance Test v8.3 functioning to distinguish between Masters and Non-masters?

METHOD

Participants

Participants in this study were 146 ITA candidates who completed the 2010 summer ITA workshop. Of these, 80 were males and 66 were females. They came from 39 countries mainly China, India, South Korea, Sri Lanka, and Thailand. The majority of the ITA candidates were enrolled in doctoral programs in 29 departments mostly (about 70%) in Biology, Chemistry, Foreign Languages, Math, and Petroleum Engineering. As a result of the workshop, there were 67 masters and 79 non-masters.

Materials

ITA Performance Test v8.3 was created by Gorsuch, Meyers, Pickering & Griffee (2010). Version one, titled *The ITA Test*, was initially published in *Communicate* (Smith, Meyers, & Burkhalter, 1992). For versions two through seven, the name of the test was changed to the *ITA Presentation Test* to reflect the primary use of the test to evaluate a class presentation required for each ITA candidate. A history of the development of The ITA test versions one to six is available from Gorsuch (2006).

Version seven was based on the communicative competence theory found in Bachman & Palmer (1996); however, the test still utilized a curriculum taken from the *Communicate* textbook. In version eight, the test ceased reflecting the assumptions of *Communicate*, and attempted to more accurately reflect the curriculum exemplified in Gorsuch, Meyers, Pickering and Griffee (2010). Version eight can be seen as a shift in emphasis rather than a complete break from the past in that version eight is a shift from *a real-life approach* to an *interactional/ability approach* in which the test reflects communication as a theory rather than a perception of individual abilities (Bachman, 1990).

ITA Performance Test v8.3 (Appendix) contains 10 criteria that raters use to assess the English abilities of ITA candidates. Each criterion is titled with a brief definition of the variable given underneath the title. A 5-point Likert scale is placed under the definition of the variable for raters to assign a score. A star (*) is placed on a score of 4 for each criterion with a description of the abilities displayed by an ITA candidate at that level. Because a passing score for the performance test is at least nine 4s with only one 3, defining a score of 4 is necessary for face validity and rater reliability.

Raters.

In the spring semester prior to the summer workshop, people are recruited to work as raters and instructors at the ITA workshop. The hierarchy of recruiting raters begins with current Teaching Assistants (TAs) of the regular academic year ESL class. Because the volume of ITAs during the summer session is significantly more than the academic year, additional raters, other than the ESL TAs, are needed. Next on the hierarchy of recruitment for the workshop are raters of previous ITA workshops. Because the workshop needs instructors and teaching assistants, previous assistants are the next to be recruited. Finally, current Applied Linguistics Masters candidates are recruited to fill out

the remaining rater and assistant positions. All raters and assistants in the workshop are either Applied Linguistics Masters candidates or degree holders. Two days prior to the start of the ITA workshop, all raters and assistants are trained on how to rate the ITA Performance Test, regardless of previous workshop experience. Previous ITA performance videos are then shown to raters and assistants in order to align scores. Over the past three years, the ratio of experienced raters to non-experienced raters has been 4:2.

Procedure

Candidate scores were coded as Masters and Non-masters (Brown, 2005). For each candidate who took the Performance Test, two raters scored the candidate on each of the criteria for the Performance Test (Appendix). Each criterion is awarded a score of one to five. The two sores for each candidate on all criteria were entered into an SPSS statistical program to analyzed using a MANOVA.

Analysis

Although Schaefer (2008) and Kondo-Brown (2002) utilized the FACETS program to determine rater bias in their studies, our research suggests the use of a MANOVA for achieving similar results through analysis of the items. Analyzing the items rather than raters is better suited to a program that does not have a regular in-house staff of raters. With the ITA workshop and semester course (ESL5310), new raters are recruited yearly. A MANOVA analysis is able to analyze data from a variety of raters and assess the items on the test, not the abilities of the raters, which is more appropriate to a university level program with a changing staff of raters.

RESULTS

MANOVA analysis results for the interaction between Performance Test items and Master and Nonmaster groups can be seen in Table 1.

Table 1.

MANOVA Analysis of Interaction between Items and Groups for Performance Test 8.3.

Criteria	F-value	p-value
One	32.51	.00
Two	27.38	.00
Three	21.91	.00
Four	02.69	.10
Five	05.61	.02
Six	09.29	.00
Seven	09.07	.00
Eight	09.42	.00
Nine	02.76	.10
Ten	08.80	.00

Because each item on the Performance Test is expected to separate Master from Non-master candidates, non-significant results are the focus of this study. Criteria four and nine on ITA Performance Test v8.3 are above the cut point of 0.05 and are judged not significantly different and therefore are judged as not functioning as intended.

Why criteria four and nine did not function adequately

A possible explanation for the inability of criterion four to discriminate between master and non-master groups is that criterion four is a loaded item, meaning that there are multiple elements that, although related, require the rater to think about each one, which is time consuming and possibly distracting. Specifically, criterion four asks the rater to estimate cohesion in terms of grammatical structures, word choice, and transitional phrases. If a test candidate were perceived as fulfilling one element of the criterion but not the other, the rater is left with the problem of what score to assign. It is likely that raters, pressed for time and required to make a decision, tended to give a passable score just to satisfy the requirements of the test. This would result in scores that would not differentiate master from non-master.

Criterion nine may not have functioned because it was not be perceived by raters as pertinent to assessing English abilities based on the communicative theory (Bachman & Palmer, 1996). Criterion nine addresses whether candidates used a visual and whether it was used "effectively." The description associated with the item states, "Visuals can be clearly seen, candidates talk about them, explains why they are using them." The description for what deserves a score of four out of five only addresses the conscious awareness of the visual by the candidate and audience, but not the linguistic skills when presenting it.

Solutions and revisions

One possible solution is to delete criteria four and nine, leaving the performance test with eight criteria. The advantage of this solution is that an eight-criterion performance test would be easier to grade in the real-time context the test operates. The disadvantage, however, would be that criterion four contains aspects of the Communicative Language Theory that stakeholders and raters agree adds face validity to the performance test. The limitation of criterion four stated by both groups is that there are several variables that are independent of each other.

A second possible solution is to cut criterion nine because is does not require any linguistic ability to answer, and revise criterion four by dividing it into two parts, and to use each of those parts as new criterion. Because raters perceive criterion nine as a judgment of aesthetics rather than a judgment of linguistic ability, there is no challenge to delete the criterion. Dividing criterion four would ensure that important components of the curriculum presently assessed in criteria four such as the *use of grammatical structures* and *transitional phrases* to strengthen cohesion will continue to be assessed. After consultation with co-authors of the textbook in which the test appears, this was the course of action we took. There are no changes to criteria one, two, three, or ten either in content or in location in the test. Criterion four was divided into new number four and new number five and criterion nine was cut.

CONCLUSION

This test instrument validation study was conducted on a performance test that has a long history including multiple revisions. Notwithstanding, this empirical investigation found that two of the ten criteria functioned in a sub-optimal way, a matter of concern in a high stakes program. We conclude that in test instrument development and validation, there is no substitute for empirical verification. The take-home lesson is that we cannot assume that our tests are functioning just because they have a long history. Test validation, the systematic investigation of test performance in terms of test use, is a necessary exercise.

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APPENDIX

ITA Performance Test v8.3
Grammatical competence
1. The ITA candidate pronounces sounds clearly enough at the word level that the listener can understand what word is intended.

| 1 | 2 | 3 | 4 | 5 | Occasional difficulty, but usually understandable. |

Low　　　　　　　*　　High

2. ITA uses word stress (*expectation, similar*) and does not add or drop syllables.

| 1 | 2 | 3 | 4 | 5 | Multisyllabic words usually understandable. |

Low　　　　　　　*　　High

3. ITA candidates uses thought groups effectively.

| 1 | 2 | 3 | 4 | 5 | Generally listeners not aware of whether thought groups used. |

Low　　　　　　　*　　High

Textual competence
4. ITA uses grammatical structures, word choice, and transitional phrases effectively to provide cohesion to the content (*Let me give you an example of this theory*).

| 1 | 2 | 3 | 4 | 5 | Listener can generally follow the logic of the talk. |

Low　　　　　　　*　　High

5. ITA gives clear definitions and examples based on audience awareness.

| 1 | 2 | 3 | 4 | 5 | Candidate frequently inserts definitions and examples. |

Low　　　　　　　*　　High

Sociolinguistic competence
6. ITA uses prominence.

| 1 | 2 | 3 | 4 | 5 | Listeners are aware of important words. |

Low　　　　　　　*　　High

7. ITA aware of listener non-comprehension by techniques such as eye-contact, wait time, and checking for comprehension. (*Does everybody understand so far?*)

| 1 | 2 | 3 | 4 | 5 | Does at least two of the above. |

Low　　　　　　　*　　High
8. ITA varies tone choice so as to produce a variety of rising and falling tones; not a monotone.

| 1 | 2 | 3 | 4 | 5 | Not all rising tones, not all falling tones. |

Low　　　　　　　*　　High

9. ITA candidate uses visuals or multimedia effectively.

| 1 | 2 | 3 | 4 | 5 | Visuals can be clearly seen, candidate talks about them, explains why they are using them. |

Low   *   High

<u>Functional competence</u>

10. Candidate expands beyond audience questions by acknowledging the question, confirming understanding by repeating or paraphrasing the question, answering the question, and checking back to confirm question has been answered.

| 1 | 2 | 3 | 4 | 5 | Candidate accomplishes at least 3 of the 4 techniques. |

Low   *   High

<u>Recommendations for the future that the candidate can work on.</u>

BEACHES AND PEACHES: COMMON PRONUNCIATION ERRORS AMONG L1 SPANISH SPEAKERS OF ENGLISH

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The following descriptive study aims to illustrate several types of common errors for L1 Spanish speakers of English. It describes four common phonetic distinctions that cause such speakers difficulties in English, including /p/ versus /b/ in a word-initial position, /i/ and /ɪ/, /ɔ/ versus /ow/, and the final voicing distinction between /t/ and /d/. Targeted errors were chosen based upon their relative functional load as well as the tendency to be problematic for Spanish-speakers of English. Data in the form of short read texts and a free speech activity is examined from two different international teaching assistants at a large, North American university in order to ascertain whether they exhibited such problems as well as to diagnose other pronunciation difficulties. Results showed that while the initial /p/ versus /b/ and /ɔ/ versus /ow/ errors were less problematic, the /i/ versus /ɪ/ and final voicing distinction between /t/ and /d/ were most difficult for the speakers in this sample. The latter type of error in addition to those involving other final-position consonant clusters, is argued to be of the highest priority for pronunciation teaching at the advanced level, as it tended to be the factor that most influenced the intelligibility and comprehensibility among the high-proficiency speakers examined here.

INTRODUCTION

The following descriptive study aims to illustrate several types of common errors for L1 Spanish speakers of English (SSOE). It describes four targeted phonetic errors that such speakers are said to have in English, examining data from two different individuals in order to ascertain whether they exhibit such problems. Targeted errors were chosen based upon their relative functional load as well as the tendency to be problematic for Spanish-speaking individuals.

Functional load, as described by King (1967, p. 831, as cited in Munro & Derwing, 2006) is "a measure of the work which two phonemes (or a distinctive feature) do in keeping utterances apart." Catford (1987) provides a ranked list of common segmental pairs that gives information about their relative functional load based on factors such as minimal pair frequency, neutralization of phonemic distinctions in regional varieties of English, where the sound occurs within a word, and its likelihood of individual minimal-pair occurrence.

Avery and Ehrlich (1992) and Coe (1987) identify several errors that seem to be common among many SSOE of varying dialects. Among these individuals' consonant difficulties, both cite the problem with unaspirated initial /p/, /t/, and /k/ and word-final plosive replacement of /t/ for /d/. Vowel difficulties include, but are not limited to problems distinguishing between /iy/ and /ɪ/ and confusion between /ow/ and /ɔ/. (Note: This paper will use the /iy/ and /ow/ symbols for IPA /i/ and/o/ because they more accurately represent the glided vowels common in American English.) Both authors also reference the problem between /b/ and /v/ sounds, which causes confusion between English words such as *vowels* and *bowels* and whose sounds may not be distinguished by speakers due to their allophonic distribution in Spanish. They also note the common substitution of /ʃ/ and /ʧ/, in words such as *ship* and *chip*.

Brown (1991) advises English as a second language (ESL) instructors to learn the sound distinctions that their target learner group has problems with in order to address their common errors based on functional load. For this reason, the following errors, as shown in Table 1, were selected based upon their functional load as well as whether they tended to cause confusion among SSOE.

Table 1

Relative functional load adapted from Catford (1987) for Spanish-speaker errors

Consonant/Vowel	RFL (%)	Example
initial p/b	98	pit/bit
iy/ ɪ	95	beet/bit
ɔ/ow	88	bought/boat
final t/d	72	sat/sad

The second criterion used to settle on the errors to be analyzed in this study was based upon both the present author's own intuition as well as several different researchers' explanations regarding the recurrent pronunciation difficulties that many SSOE may encounter (Avery & Ehrlich, 1992; Coe, 1987; Dale & Poms, 1985; 1986).

/p/ versus /b/

The first error listed in Table 1, /p/ versus /b/ in a word-initial position has a 98% relative functional load and can frequently cause misunderstandings, as in the case of *pear* sounding like *bear* and *pat* sounding like *bat* (Dale & Poms, 1985, p. 81). According to Coe (1987), the aspiration of word-initial /k/ also tends to be problematic but does not have a very high functional load, which is likely due to the smaller number of minimal pairs that exist between /k/ and /g/. Although /p/ is a familiar consonant to Spanish speakers, the English [pʰ] at the beginning of stressed syllables is aspirated whereas the Spanish [p] is not. English /p/ must be produced with aspiration in order to avoid confusing it with English /b/.

/iy/ versus /ɪ/

The phonemes /i/ and /ɪ/ have a relative functional load of 95%, which make them common sources of misinterpretation if pronounced incorrectly. Spanish speakers frequently confuse the short vowel, /ɪ/, for the longer /iy/ due to the fact that there is no distinction between tense and lax vowels in their mother tongue (Avery & Ehrlich, 1992). Additional problems occur because of English spelling patterns as well as because the English glided vowel [iy] is unlike the Spanish non-glided [i], which occurs only occasionally in English words such as *city* [sɪti]. For this reason, Spanish speakers are often heard to say *sheep* [ʃip] as *ship* and *eat* [it] as *it* (Dale & Poms, 1986, p. 11).

/ɔ/ versus /ow/

The /ɔ/ versus /ow/ distinction can be heard in words such as *caught* and *coat* or *bought* and *boat*. Although this distinction's relative functional load is less than that of the two minimal pairs considered thus far, it could be confusing for SSOE due to the absence of both sounds in their L1. In addition, unfamiliar English spelling patterns including /ɔ/ tend to make speakers replace this sound for more familiar Spanish sounds such as [o], which is closer to the English glide vowel [ow].

/t/ versus /d/

The final common error examined here is that of the final voicing distinction between /t/ and /d/ in words such as *pat* and *pad*. Despite the fact that this pair has a functional load of 77%, it does seem to plague SSOE in words such as *food* and *foot* or *card* and *cart*. Whereas the English [d] is often produced by touching the tip of the tongue to the upper gum ridge, Spanish speakers are used to placing the tongue a little farther forward in the mouth so that it hits the back of the upper front teeth (Dale & Poms, 1985, p. 23). In some cases, the Spanish L1 speaker's pronunciation of final [d] may become [ð], with the tongue inserting between the teeth as in words such as *said*, pronounced [sɛð].

METHODOLOGY

Materials

The materials used for this study (Appendix A) included four short texts, which were of the author's invention or were adapted using the Dale and Poms (1985; 1986) workbooks targeting the consonant and vowel sounds that SSOE frequently encounter. In addition, participants were also asked to engage in a free-speaking activity at targeted the /iy/ versus /ɪ/ contrast, which entailed playing the role of student A in a role-play activity. Simple roleplays can be excellent ways to engage in communicative practice according to Celce-Murcia, Brinton, Goodwin, and Griner (2010). The rationale for using a communicative free speech task over a more open free speech activity was that both participants in the study had a relatively high level of English speaking proficiency as indicated by their current enrollment as MA students in a North American university. Its main purpose was to elicit the four expected pronunciation errors shown in Table 1 in order to test the hypothesis that these errors would be problematic for L1 SSOE as well as ascertain what other possible errors might cause communication difficulties among these individuals.

Participants

The participants for the present study included Fulano and Juanita (pseudonyms), two SSOE whose ages were 36 and 34 respectively. Each was studying in a different MA degree program at a Midwestern university in the US. Fulano reported having been in the US for two years and studying English in formal classroom settings for a total of two and a half years, while Juanita had been in the US for seven years and had never formally studied English.

Procedure

The short texts were utilized in this study to elicit L1 SSOE's production, to diagnose their pronunciation errors, and then to compare these errors to those initially predicted. After agreeing to participate in the study, participants were asked to fill out a short survey and were then given a worksheet that asked them to read the short texts (Figures 1-4) and participate in the role-play task (Figure 5). The researcher recorded all activities using open-source audio recording software, Audacity (http://audacity.sourceforge.net/). Oral discourse was later transcribed using broad phonetic transcription and examined in detail in order to ascertain whether or not the expected errors were those that the participants actually committed as well as to diagnose any unexpected pronunciation problems that may have occurred. All materials and transcriptions can be found in Appendices A-C.

Analysis

Analysis of the participants' oral discourse included the transcription of all tasks followed by a quantitative analysis of the number of potential errors that participants could have made and those that they actually had. The data was further examined qualitatively in order to diagnose and describe any unexpected errors.

RESULTS AND DISCUSSION

The following section is organized according to the type of error that participants made during the five tasks. As Tasks 1-4 each targeted a particular type of error, only those were used to tabulate the expected error frequencies observed in Table 2. Because of the nature of the fifth task and despite its targeting the [iy]/[ɪ] distinction, five additional unexpected types of error beyond the four targeted types were observed. These unexpected errors will be detailed in the final part of this section. Full transcriptions of participants' speech can be found in Appendix C.

Table 2

Frequency of Expected Errors Made by Participants

Participant	Initial [p]/[b] (%)	[iy]/[ɪ] (%)	[ɔ]/[ow] (%)	Final [t]/[d] (%)
Fulano	0	20.0	5.3	21.4
Juanita	0	20.0	5.3	14.3

Initial [p] versus [b]

Out of the possible 13 instances of word-initial [p] (or 17 instances of syllable-initial [p]), Fulano did not make any of the expected replacements of [p] with [b]. His greatest difficulties came with the first line of the tongue twister, in which he replaced the final ending of the word *pickled* with [t], causing it to sound like [pɪklt]. Juanita also did not replace [p] with [b] in any of the expected initial positions.

[iy] versus [ɪ]

The second reading task's results showed that Fulano had some difficulty making the [iy] versus [ɪ] distinction. Out of the total 15 instances where [iy] could have been substituted for [ɪ] or vice versa, he did this three times. The most problematic instance was in the second sentence, where the word *dip* ended up sounding like *deep* and vice versa due to the reversal of the [iy] and [ɪ]

sounds. Although the results of Fulano's free speaking roleplay task showed that there were very few errors made that could potentially cause a communication breakdown, he did continue to confuse [iy] and [ɪ], which is seen in *cheat* [ʧit], *asking* [askiyŋ], *pill* [piyl], and *drink* [driynk]. In *cheat*, although Fulano did not confuse [iy] with [ɪ], he did fail to make a full glided [iy], instead using the Spanish vowel, [i].

Like Fulano, Juanita continued to replace the /ɪ/ with the /iy/ sound in words such as *pill* and *sick* in the second activity and /iy/ with /ɪ/ in *cheat* in the free speaking activity. For the reading task, Juanita also only substituted [iy] for [ɪ] or vice versa three out of the possible 15 times, where *field* and *filled* sounded like [fɪld] and *deep* and *hit* sounded like [dɪp] and [hiyt] respectively.

[ɔ] versus [ow]

The third task seemed to give both participants some difficulty but not necessarily because of their confusion of [ɔ] and [ow], but rather because of their conflation of [ɔ] and [ow] with proximal vowels, such [aw], which is seen with Fulano's pronunciation of *how* as [how]. Out of the 19 possible instances of [ɔ] and [ow] in the reading task, Juanita confused these only once in *ought* [owt], which may be due to unfamiliarity with the word. She also struggled with the replacement of glided vowels in the free speaking task, such as /ow/ and /uw/ with /o/ and /u/ in words such as *hot, don't* and *truth*.

Another error in relation to these sounds occurred with the glided vowel [ow] in proximity to a consonant, such as [n] or [b] and each participant had a different way of handling this pattern of sounds. On one hand, Fulano failed to pronounce final nasal sounds associated with [ow] altogether, such as in *alone* [əlow] and *phone* [fow]. Juanita; however, when faced with similar sound combinations, maintained the voiced consonant but failed to produce the glided vowel [ow], as seen in her pronunciation of *phone* [fon] and *nobody* [novadi]. These different strategies for dealing with [ow] + consonant was unexpected but noteworthy.

Final [t] versus [d]

As previously mentioned, the final [d]/[t] distinction is implicated in grammatical morphemes such as past tense markers of verbs such as *talk<u>ed</u>* and *walk<u>ed</u>*. Mispronunciations are not only an issue of sound but also of grammatical markers. For this reason, the mispronunciation of these final sounds can be problematic and have a greater potential to cause breakdowns in meaning between speakers.

Out of the four errors expected for the fourth task, Fulano's [t] versus [d] errors were most prevalent, as is also evidenced in the third task with his replacement of final [d] with [t] in words such as *heard* [hiyrt], *answered* [ɛnsərt], and *offered* [ɔfərt]. In Task 4 he confused [t] and [d] three out of the possible 14 instances where it occurred [eyd] for *ate*, [bæt] for *bad*, and [wʌd] for *what* as well as failed to pronounce the final [t] sound in the word *stopped*. It should also be noted that saying [wʌd] for *what* is produced by many native speakers given the initial vowel phoneme in *about* given that it is very unnatural to say *what about* as [wʌtəbauwt].

For the fourth task, Juanita confused the final [d] with [t] two out of the possible 14 times in *cold* and *bad*, but much more salient is her final [t] aspiration in words such as *ate* and *fruit*, which may be more frequent when reading than in spontaneous speech.

Non-targeted errors

In addition to targeting the [iy]/[ɪ] distinction, the activities provided opportunities to encounter some of the less expected errors that participants were making. For example, in the free speaking task, Fulano substituted [uw] in the word *misunderstood* and a [d] alveolar stop for [ð] voiced fricative is a repetition of the same issue in words such as *the*. Whereas the first error might be attributed to the proximity of the [uw] to the Spanish [u], the second appeared frequently throughout both participants' read and free speech. Juanita, like Fulano, also substituted [d] for [ð] in words such as *the* and *then.* He also failed to pronounce the final [d] in the word *field* and the replacement of [ð], interdental fricative, with the [d], alveolar stop in *the* during the second reading task.

Second, both participants tended to replace voiced consonants such as [v] and [z] for voiceless [f] and [s] in words such as *have*, *of,* and *was*, supporting Coe's (1987) claim that Spanish speakers often fail to pronounce the /z/ due to its relative non-existence in Spanish. This may also occur because of the tendency of Spanish speakers to pronounce English as it is spelled, such that orthographic <s> and <f> are likely to be pronounced in the same way.

Third, Juanita's pronounced of *home* with a velar fricative [x], which may be explained by the tendency of *h* to be silent in Spanish words such as *hola* [ola]. Thus, she may have had to consciously remind herself to pronounce [h] resulting in an overemphasis using the velar fricative [x].

Fourth, Juanita's replacement of [b] with [v] in *nobody*, two frequent sounds in Spanish. This conflation of [b] and [v] is a frequent error amongst Spanish speakers according to Coe (1987) and Dale and Poms (1986), due to their interchangeable nature in Spanish words such as *vela*, which can be pronounced either [vela] or [bela].

The final error that will be discussed here is the tendency of both participants to leave the consonant endings off words such as *don't, test, truth* and *cheated*, ended up sounding like [don], [tɛs], [tru], and [ʧit]. This omission is similar to problems between final [d] and [t], in that in some cases it may be due to a lack of grammar knowledge rather than pronunciation. This is further evidenced by the fact that Juanita in particular seemed to struggle with present and past simple verb tenses, as seen in her substitution of *come* for *came*.

This section has outlined the results regarding the expected errors with initial [b]/[p], [iy]/[ɪ], [ow/[ɔ] and final [t]/[d]. It has also detailed five unexpected types of error that participants made including issues with [d] / [ð], [b] / [v], [h] / [x] and [s] / [z] and final consonant omissions. Several conclusions can now be made about the most pressing phonetic problems for participants.

CONCLUSION

The analysis of common pronunciation errors among L1 Spanish speakers of English allows for several conclusions to be made about the most pressing phonetic problems that the participants of the current study produced. First, of all of the expected errors examined in this paper, the /ɔ/ versus /ow/ and /p/ versus /b/ distinctions appeared to be the least problematic for participants, although this still may be a critical issue in learners with a lower proficiency than those exhibited

here. Second, the /iy/ versus /ɪ/ and final-position /d/ versus /t/ distinctions seemed to be the most common at higher levels of spoken proficiency. One phenomenon that relates to the latter distinction is the tendency of SSOE to eliminate final consonant clusters and sounds, which is noted by Avery and Ehrlich (1992), Coe (1987) and Dale and Poms (1985). Avery and Ehrlich (1992) further note that since the failure to add consonant clusters often interferes with the interpretation of grammatical tense, the inability to produce such clusters in often misinterpreted as a grammatical problem. This type of error, at least among the high-proficiency speakers examined here, is argued to be of the highest priority for pronunciation teaching, as it tended to be the factor that most influenced their intelligibility and comprehensibility. Finally, both speakers also tended to supplement [d] for [ð] in words such as *the* and *then*, an error that may not be critical for understanding but that may make a listener have to work harder to comprehend.

ABOUT THE AUTHOR

Jesse Gleason is a PhD student in Applied Linguistics and Technology at Iowa State University, where she teaches Spanish for the World Languages Department. She holds a BA in Spanish from the University of Michigan, an MA in Linguistics from the Pontificia Universidad Católica de Chile and has over 13 years of L2 teaching experience in English and Spanish. She has published in journals such as Studies for Second Language Acquisition (SSLA) and the Canadian Journal of Applied Linguistics (CJAL) and presented at conferences in North America, Europe, and Australia. Her current research interests include systemic functional approaches to discourse, computer-assisted language learning (CALL), and language assessment.

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Appendix A
Participant Survey

How old are you?

How many years have you lived in the United States?

What degree are you pursuing at Iowa State? (e.g. MA in Architecture)

How many years have you formally studied English? (e.g. taken English classes)

Appendix B

Speaking Tasks 1-5
Instructions: Please read tasks 1-4.

1. Targeted sounds: Initial [p] and [b]

Peter Piper picked a peck of pickled peppers. How many pecks of pickled peppers
did Peter Piper pick? A peck!

2. Targeted sounds: [iy] and [ɪ]

The field was filled with flowers.   She will sit in the seat.
Take a dip in the deep water.   The heat will hit the city.

3. Targeted sounds: [ɔ] and [ow]

Joe was home alone and thought he heard the phone ring.
'Oh no! It ought to be my boss!' he thought.
'Hello?' he answered.
Nobody offered a hello back.
'How awful,' thought Joe as he hung up the phone.

4. Targeted sounds: Final [t] and [d]

The boat stopped cold.   You ate a fruit tart?
The light went bad.   But what about when she washed her plate?

5. Targeted sounds: [iy] and [ɪ]

Instructions: Now please complete Task 5 with a peer.
Student A

Identity: Jean / Jim Green (student)

Situation: Your physics teacher, Mr. / Mrs. Bean, has called you into her office because she
suspects you of cheating on the quiz. You explain that you didn't cheat. The heat was making
you feel ill and you needed to take a pill.

Appendix C

Phonetic transcription of Task 1, Peter Piper tongue twister reading

Fulano

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peter           piper picked peck of pickled peppers
[piɾdəɾ]        [p]  [p]    [p]  [əf] [pɪklt] [p]
how many pecks of pickled peppers did peter piper   pick
         [p]          [p]    [p]          [p]   [p]    [p]
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Juanita

```
peter piper picked a peck of pickled peppers
[p  [pipər] [p]       [p]  [əf] [pɪkl]  [p]
how many pecks of pickled peppers did peter piper   pick
         [p]          [pɪkl] [p]        [p]   [pipər] [p]
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Phonetic transcription of Task 2, reading of [iy] and [ɪ] sentences

Fulano

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the field was filled with flowers        she will sit in the seat
   [fiyl]      [ɪ]      [ɪ]                  [ɪ] [ɪ] [ɪ]    [iy]
take a dip   in  the deep water           the heat will hit the city
    [diyp] [ɪ] [də] [dɪp]                 [hiyt] [ɪ] [ɪ]      [ɪ]
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Juanita

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the field was filled with flowers        she will sit in   the seat
   [fɪld]       [fɪld] [wɪt]                 [ɪ] [ɪ] [ɪ] [də] [iy]
take a dip in the deep water              the heat will hit the city
    [ɪ][ɪ]      [dɪp]                     [hiyt] [ɪ] [ɪ][də] [ɪ]
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Phonetic transcription of Task 3, reading of [ɔ] and [ow] short story

Fulano

Joe was home alone and thought he heard   the   phone ring
[ow]   [ow] [əlow]   [tɔt]   [hiʏrt] [də]   [fowriʏn]
oh no it ought to be my boss he thought
[owno] [ɔ]   [ɔ]   [ɔ]
hello he answered
 [ow]   [ɛnsərt]
nobody offered a hello   back
 [ow]   [ɔfərt]   [ow] [bak]
how   awful thought Joe as he hung   up the phone
[how][ɔl̩ɹ]   [ɔ]   [ow]   [hæn][ab][də] [fow]

Juanita

Joe was home alone and thought he heard the phone ring
[ow]   [jow] [əlʌn]   [tɔt]   [də] [fon]
oh no it ought to be my boss he thought
[ono]   [owt]
hello he answered
 [ow]   [ænsərt]
nobody offered a hello back
[novadi] [ɔfərt]   [ow]
how awful thought Joe as he hung up the phone
[ha] [ɔful] [ɔɹ̩]   [ow]   [ab][də][fon]

Phonetic transcription of Task 4, reading of final position [t] and [d] sentences

Fulano

the boat stopped cold   you ate a fruit tart
     [t] [stap] [d]   [eʏd]   [t] [t]
the light went bad   but what about when she washed her plate
     [t]   [t] [bæt]   [t] [wʌdəbauwt]   [t]   [t]

Juanita

the boat stopped cold   you ate a fruit tart
[də] [t]   [t][kowlt]   [eʏtʰ][fruwtʰ][tartʰ]
the light went bad   but what about when she washed her plate
[də][laʏtʰ] [ʊɛntʰ][bæt]   [bʌtʰ][wʌdəbauwt][yuw]   [t]   [t]

Phonetic transcription of Task 5, free speaking task pronunciation errors

Fulano

I didn't cheat
  [ɪ]   [ʧit]
you ahm misunderstood a situation the other day with another classmate
            [ɪ]   [stuwd] [ɪ]   [ʌdər]   [ɪ]
I was just eh asking for how many minutes eeh do we we had for to finish the exam.
            [ɪ]   [ɪ]   [iy][iy]   [ɪ][ɪ] [də]
I was asking to my classmate for for a pill or something to drink. but was not about the exam
  [askiyn]   [piyl]   [ɪ]   [driynk]   [ðəksæm]

Juanita

I don't have idea
  [don] [hæf] [iy]
I haven't been cheating in any exam
    [havənbɪn] [ʧitən] [ɪ]
I remember the day of the test. I was feeling sick…was too hot. The class was too hot
            [də]   [əfdə] [tɛs]   [iy] [siyk] [was]   [hot] [də]
I needed to take a pill because I was sick so ehh probably I went outside to take the pill and then
  [iy]   [piyl]   [siyk]   [prali]   [də] [piyl] [don]
I come back but I I'm I'm telling you truth.
                                [tru]
I have never cheated in my life
  [hæf]   [ʧit]   [ɪ]

INTELLIGIBILITY ASSESSMENT AND THE ACOUSTIC VOWEL SPACE: AN INSTRUMENTAL PHONETIC ACCOUNT OF THE PRODUCTION OF ENGLISH LAX VOWELS BY SOMALI SPEAKERS

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Previous phonetic attempts to account for the intelligibility of L2 English vowels have relied exclusively on impressionistic acoustic approaches. In the impressionistic framework, native speakers (and sometimes nonnative speakers) are called upon to render comprehensibility and intelligibility judgments regarding speech samples that they hear and transcribe. In this paper a different approach is proposed whereby intelligibility assessments are based solely on the acoustic signals produced by nonnative speakers. This exploratory study deals with the acoustic vowel space of 10 Somali male participants. The first two formants of their lax vowels are measured and compared with those of General American English (GAE) in accordance with Peterson and Barney's landmark study of 1952. The comparisons make it possible to predict which GAE lax vowels are most likely to cause intelligibility challenges when these Somalis speak English.

INTRODUCTION

The propensity for vowels to contribute to regional variations is well documented in the sociolinguistic literature. Second language acquisition researchers also attribute aspects of unintelligibility to vowels, especially lax vowels (Flege et al., 1986: Munro & Derwing, 1995; 2008). In a comprehensive review of vowels systems, Crothers (1978) found that lax vowels are more infrequent (i.e., more marked) than tense vowels. These findings seem to validate the claims made by the proponents of the Contrastive Analysis Hypothesis and the Markedness Differential Hypothesis that lax vowels are troublesome for learners of English whose first language lacks them. Indeed, nearly all the "Note to Teachers" found in Celce-Murcia et al. (2010, pp. 117-22) have to do with the difficulties associated with lax vowels. Very little information exists in the second language phonology/phonetic literature as to whether or not speakers of languages that have a similar inventory of lax vowels as General American English (GAE) would have difficulties producing them. The goal of this paper is to provide some preliminary answers to this question. English and Somali are strikingly similar with respect to their phonemic inventory of simple vowels. It is commonly agreed that English has 11 phonemic monophthongs (Fromkin, Rodman & Hyams, 2011, p. 248) and Somali has 10 (Saeed, 1999, p. 11). Moreover, the two languages share almost the same number of lax vowels, namely, ɪ, ɛ, æ, ɔ, ʊ/ except that /ʌ/ is missing from the vocalic inventory of Somali. In this paper an instrumental phonetic analysis of F1 and F2 formants of lax vowels in Somali English (SoE) is done and plotted against those of GAE. This methodology serves as the basis for the inferences that are made in this paper about the intelligibility of lax vowels in SoE.

ARTICULATORY PHONETIC CLASSIFICATIONS OF VOWELS

First and foremost, it must be noted that linguists have had a hard time describing with accuracy the articulatory gestures involved in producing vowels. Fromkin and Rodman (1998, p. 235) recounts her frustration with vowels as follows:

> There have been many different schemes for describing vowel sounds. They may be described by articulatory features, as in classifying consonants. Many beginning students of phonetics find this method more difficult to apply to vowel articulations than to consonant articulations. In producing a [t] you can feel your tongue touch the alveolar ridge. When you make a [p] you can feel your two lips come together, or you can watch your lips move in a mirror. Because vowels are produced without any articulators touching or even coming close together, it is often difficult to figure out just what is happening. One of the authors of this book, at the beginning of her graduate work, almost gave up the idea of becoming a linguist because she could not understand what was meant by "front," "back," and "low" vowels.

The labels "front," "back," and "low" are not the only confusing terms that linguists use to describe vowels. Another vague descriptor that is often used is the label "tense." According to Fromkin and Rodman (1998), a tense vowel is one that is "produced with greater tension of the tongue muscles" (p. 239). This description appears to be simple and straightforward but Thomas (2011) doubts its usefulness. He contends that "the name tenseness is not especially helpful in understanding what's going on. It's based on the questionable notion that 'tense' vowels show more muscular tension rather than 'lax' vowels, but muscular tension won't help you a bit when you're trying to measure acoustic signals or conducting a perception experiment" (p. 147).

The vagueness of the labels tense vs. lax in describing some vowels has led linguists to look for a descriptively more accurate term. After trying various labels such as "narrow vs. wide," "primary vs. wide," "expanded vs. non-expanded," Ladefoged and Maddieson (1996, p. 300) note that over the past two decades, the term "ATR" (advanced tongue root) has gained wide acceptance among phoneticians and phonologists. The ATR label is deemed more acceptable than the traditional label "tense" because it depicts accurately the physiological mechanisms involved in producing vowels. Tiede's (1993, p. 114) MRI study of tongue advancement in English and Akan has shown that in producing tense vowels the tongue does indeed move forward a few more millimeters than in producing their lax counterparts, as shown in Table 1:

Table 1
Tongue Root Advancement Measurements

Vowel	Akan Root Advancement	English Root Advancement
[i]	22.97 mm	22.97 mm
[ɪ]	17.50 mm	21.88 mm
[e]	21.88 mm	21.88 mm
[ɛ]	19.69 mm	19.69 mm
[u]	32.81 mm	30.63 mm
[ʊ]	18.50 mm	18.59 mn

NOTE: Tiede (1993) did not provide measurements for [o], [ɔ], [æ], [ʌ], and [ɑ].

For the tense back vowel [u], the tongue advances twice as forward as in the back lax vowel [ʊ]. This forward thrust of the tongue root brings about secondary articulatory gestures such as enlargement of the pharyngeal area and the lowering of the larynx (Ladefoged & Maddieson, 1996). Even so, Ladefoged and Maddieson remark that the label [+ATR] vowel is not completely synonymous with the term tense vowel. They contend that "there is an overlap in the usage of these terms" but that "among back vowel pairs, there is no such parallel" (p. 300). The supporting evidence for this claim will be discussed in the section where GAE and SoE back vowels are compared. This caveat notwithstanding, I will follow contemporary usage and consider tense vowels to be the same as [+ATR] vowels; and lax vowels to be identical with [-ATR] vowels.

The Distribution of Lax Vowels Worldwide

The original study that led to the discovery of [±ATR] vowels was done on West African languages. For this reason, the literature has focused more extensively on [±ATR] vowels of languages from that region. However, Saeed (1999) notes that Somali, a language spoken in the Horn of Africa, also [± ATR] has vowels: "Somali has an interesting version of a five vowel system, involving two sets of five vowels. The two sets form five pairs of vowels where in each pair one vowel is pronounced with the tongue more forward than the other. Each pair of vowels can be differentiated by the phonetic feature advanced tongue root (ATR): thus we can label the Front series [+ATR] vowels and the Back series [-ATR]" (pp. 11-12). If we accept the proposition that tense vowels are synonymous with [+ATR] and lax vowels are the same as [-ATR] vowels, then according to Whitley S(2004), tense/[+ATR] and lax/[-ATR] have the following worldwide distribution. The frequency of occurrence of lax vowels worldwide listed in the third column provides additional support to the claim that lax vowels are troublesome to nonnative speakers of English. There seems to be a correlation between frequency of occurrence and learnability. The general impression is that lax vowels that occur infrequently are harder to acquire than those that occur more frequently.

Table 2
Worldwide Distribution of Lax Vowels

N0	Vowels	Feature	Worldwide Distribution
1.	[ɪ]	[-ATR] / Lax	17.4%
2.	[ɛ]	[-ATR] / Lax	38.5%
3.	[æ]	[-ATR] / Lax	13.6%
4.	[ɔ]	[-ATR] / Lax	32.5%
5.	[ʊ]	[-ATR] / Lax	15.5%
6.	[ʌ]	[-ATR] / Lax	1.3%

NOTE: There are disagreements among linguists regarding the status of some vowels as to whether they are tense or lax. The list of lax vowels presented here follows Ladefoged's (2006, p. 96) classification.

Now that some of the articulatory and distributional facts about tense and lax vowels are known, we will proceed with an acoustic phonetic investigation of GAE lax vowels as produced by Somali speakers.

PARTICIPANTS, TOKENS, AND EQUIPMENT

In summer 2011 I began an experimental study entitled "An Exploratory Study of Somalis' Pronunciation of English Vowels." It was approved by the Institutional Review Board (IRB) of Saint Cloud State University. The study replicates Peterson and Barney's classic 1952 study of GAE vowels. Twenty-two Somali participants were recruited to pronounce the words <heed>, <hid>, <hayed>, <head>, <had>, <hawed>, <hoed>, <hod>, <hood>, <who'd>, and <HUD> (an acronym for "Housing and Urban Development") and to read an expanded version of the George Mason University Speech Accent text (http://accent.gmu.edu/browse_language.php).

Seventeen Somali males and five females participated in the study. The participants were selected on the basis of their age of arrival (AOA) in the United States. AOA is important because in second language research, a correlation has been found to exist between the age of arrival/learning and accentedness in vowel production. For instance, Munro et al. (1996) found in their study of vowel production by 240 Italian immigrants to Canada that "the age of arrival in Canada of the Italian speakers examined in this study had an effect on the degree of perceived accent in all the English vowels studied here" (p. 326). The Somalis who participated in this study were all post-pubescent, that is, 15 or older prior to immigrating to the USA. Nearly all of them are in their late twenties or mid-thirties now. One participant is over fifty years old. Due to cultural and religious factors, availability of female Somali speakers of the same demographic profile was very limited. Also, the literacy level of the female participants was so low that some of them could not read the research tokens. In the end, the speech samples provided by the female participants were discarded in this analysis because some of the tokens were contaminated. The female research assistant who helped gather the data was heard in the background of one of the recordings coaching a participant. The speech samples from seven other Somali males could not be used in the present study because of technical difficulties.

All in all, the study is based on the speech samples provided by 10 participants because the data they provided is acceptable. The participants were all students at Saint Cloud State University at the time of the recording. Each person provided me with 33 tokens (11 words repeated three times). Collectively, they provided 330 tokens (33 x 10). Although the number of participants and tokens is far smaller than Peterson and Barney's data (76 participants and 1,520 recorded words), the number of participants and tokens for the present analysis is more than sufficient for an acoustic phonetic analysis. By way of comparison, Daniel Jones's classic study of British Cardinal Vowels was based on his own pronunciation (Thomas, 2011, p. 146). Furthermore, Thomas adds that "for studies in which speakers' entire vowel inventories are mapped, some authorities recommend measuring at least 20 tokens each. However, I've found that measuring as few as seven to ten is adequate if atypical or outlier tokens are excluded" (p. 159). Ladefoged and Maddieson's (1996, p. 283) analyses found in *The Sounds of the World's Languages* were often based on speech samples provided by no more than five people. Many phoneticians, including Ladefoged (2006), sometimes base their findings on their own speech samples or the speech sample provided by one or two family members (Thomas, 2011, p. 240; Yavaş, 2006, p. 103). Given the fairly large number of the tokens analyzed in this study, it can be claimed that the findings reported here are representative of SoE.

EQUIPMENT, DATA COLLECTION TECHNIQUES, AND PROCEDURES

All the recordings were done with an Olympus Ws-710 M Digital Voice Recorder. The recorded data were converted into .wav files with Switch Sound File Converter Plus, Version 4.09 by NCH Software. In some instances, all 11 words were recorded as a single sound file. The Wave Pad Sound Editor Masters Edition, Version 5.0 by NCH Software was used to create smaller files. The acoustic measurements and analyses were done with Praat, an online open source software designed for acoustic phonetic analyses.

The "word list speech style" also known as "citation-form speech style" was the elicitation technique used to collect the data (Thomas, 2011, p. 292). It is essentially the same style that Peterson and Barney used (1952, p. 175). This style has many advantages for an exploratory study such as this one. First, it helps eliminate the phenomenon of undershooting because when vowels are pronounced in a naturalistic fashion (casual speech style), they may not be enunciated fully. However, when vowels are read in a word list speech style, they are realized fully so that their onset and their offset are clearly visible on a spectrogram. An additional benefit associated with the word list speech style is that all the vowels are stressed. This makes it easier to measure their duration in various environments. Thomas (2011, pp. 138-139) summarizes the advantages of citation-form speech style as follows:

> This practice [casual speech] contrasts with that of most phoneticians, who usually favour citation-form speech. Citation-form speech, whether in word lists or in phrases, has two advantages of its own. For one thing, it yields more heavily stressed, longer tokens than most of those in conversational speech. As a result, the tokens in citation-form speech approximate their phonetic targets more closely than most tokens from conversational speech and hence show less coarticulation and undershoot. For another, the words elicited in citation-form speech can be controlled, which is why even sociolinguists often use reading passages and minimal pairs.

Finally, a word should be said about how the vowels occurring between /h/ and /d/ were measured. There are several methods for measuring vowel tokens (Thomas, 2011, pp. 41, 45, 138, 150-153). Ladefoged and Maddieson (1996, p. 287) and many phoneticians recommend collecting information about vowels at the midpoint so as to minimize the effects of the preceding or the following consonant on the vowel under investigation. However, in keeping with Peterson and Barney's original methodology (1952, p. 176, Figure 2), F1, F2, and duration information were collected by measuring the whole vowel from the onset to the offset. Thomas (2011) does not see any serious harm in doing so for an exploratory study because, after all "any measurement of a formant is an estimate – it isn't really possible to determine a formant value exactly" (p. 41). He only recommends that one sticks only with one method: "The key is to be consistent – choose the guidelines you want to follow and then stick with them" (p. 139). Figure 1 highlights the onset and offset areas of the vowels used in the analysis. They are indicated on the spectrogram by vertical lines.
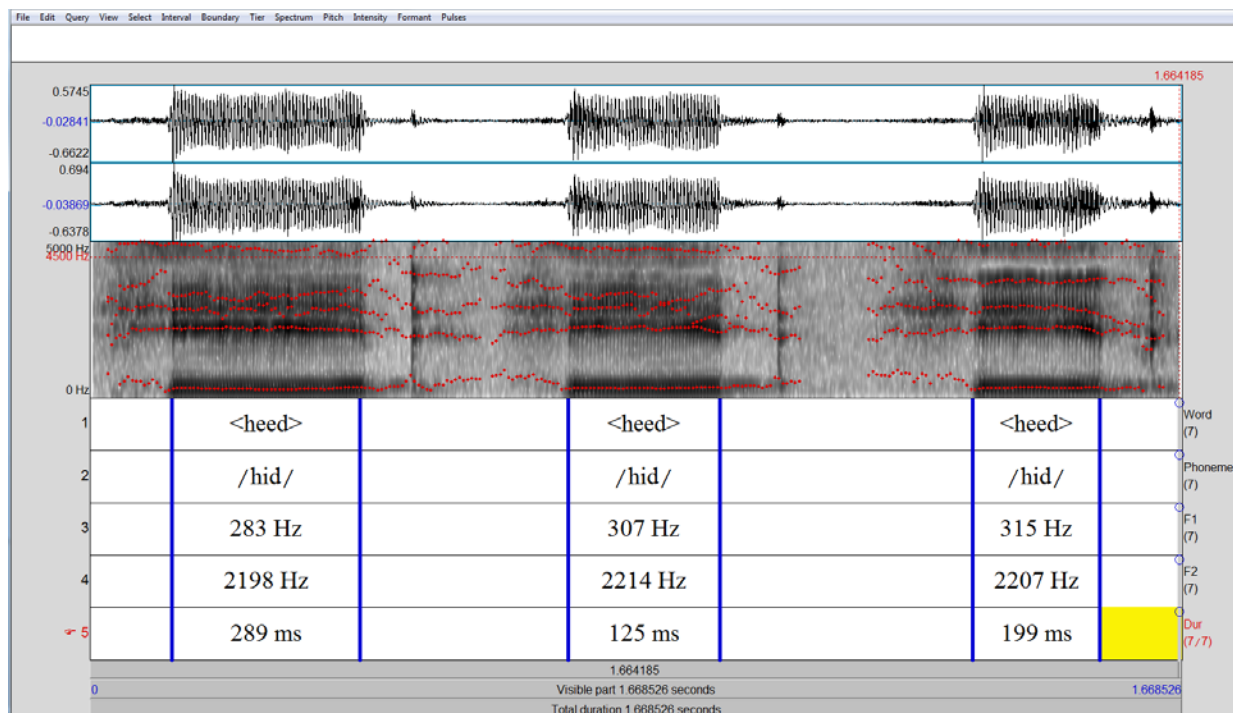
1	<heed>	<heed>	<heed>	Word (7)
2	/hid/	/hid/	/hid/	Phoneme (7)
3	283 Hz	307 Hz	315 Hz	F1 (7)
4	2198 Hz	2214 Hz	2207 Hz	F2 (7)
5	289 ms	125 ms	199 ms	Dur (7/7)

Figure 1. Sample spectrograph of vowels.

Data was collected from each repetition of the token. The numerical values were then averaged. This process was repeated for all 330 tokens. Only F1 and F2 formant information were gathered because most studies of English vowels concern themselves only with height and backness features. Ladefoged (2006, p. 272) and Ladefoged and Maddieson (1996, pp. 282-292) contend that height and backness parameters are acoustically the most relevant in describing vowels in world languages (see the section on feature hierarchy and intelligibility for the full rationale).

IMPRESSIONISTIC VS. INSTRUMENTAL ASSESSMENT OF INTELLIGIBILITY

For a little over two decades, Tracey Derwing and Murray Munro have devoted a considerable amount of professional energy to the intelligibility of the speech of nonnative speakers of English. The depth and breadth of their scholarship defies summarization lest their seminal work be oversimplified. Fortunately, my goal here is not to summarize their findings but to highlight the methodology that they use in assessing intelligibility. To do this, I will focus on two of their studies, one published in 1995 and the other in 2008. Determination of intelligibility and comprehensibility are made on the basis of how judges rate the speech of nonnative speakers. Munro and Derwing go to great lengths in many of their publications to note that the judges have passed a pure-tone hearing screening test. They also give ample sociometric information about the judges: native speakers versus nonnative speakers, linguistically trained versus linguistically untrained, their ages, etc. These judges (including Derwing and Munro) listened to speech samples provided by nonnative speakers (Mandarin Chinese speakers for the 1995 study, Mandarin and Slavic language speakers for the 2008 study). In the 1995 experiment, in addition to the selected tokens, the researchers had the participants produce short extemporaneous utterances. For the 2008 study, the participants embedded carefully selected 10 vowel tokens

into the frame "Now, I say _____" where the target word had a CVC syllabic structure. In the 1995 study, a nine-point Likert scale (1995, p. 77) was used to assess the speech of nonnative speakers. The 2008 was a longitudinal study which sought to assess the intelligibility of vowels over six time frames. In the 2008 paper, the researchers reported on page 486 that "interjudge agreement was determined in terms of whether each production was assessed as the target vowel. Overall, three out of four listeners gave the same assessment 91% of the time. Complete agreement from all four listeners was reached on 67% of the time." In the 1995 paper, on pages 92-94, the authors discussed various issues that caused discrepancies among the judges in their assessment of intelligibility and its correlations (or lack of) with comprehensibility and accentedness. As one reads their other publications, (see Munro 2011, pp. 10-12 for example), one sees that they discuss linguistic and paralinguistic factors that may affect a judge's assessment of intelligibility. They often mention the following: rate of speech, speech clarity, voice quality, word choice, ambient noise, listeners' dispositions, among others.

The adjective "impressionistic" is an accurate description of the methodology used by Munro and Derwing to assess intelligibility and comprehensibility. I use the label "impressionistic" in relation to their methodology because they rely solely on the perception of selected judges to rate the intelligibility and comprehensibility of spoken tokens. There is nothing inherently pejorative about an impressionistic methodology.[1] Ladefoged (2003) confirms the usefulness of this methodology by saying that "early phoneticians did wonderful work relying simply on their ears" (p. 30). The methodology that I use in this paper to assess the intelligibility of SoE has been labeled "instrumental" because it does not rely on human agency to assess intelligibility but rather on acoustic devices and techniques. Ladefoged (2003) and many sociophoneticians recommend such a methodology because "instrumental phonetics has made it possible to document descriptions of languages more precisely" (p. 30). The use of this instrumental methodology presupposes that I view intelligibility first and foremost as an acoustic phonetic event. Thus, I redefine intelligibility in this paper as the acoustic phonetic cues that feed into word recognition and ultimately into semantic comprehension. This definition is in line with the distributed network approach discussed by Thomas (2011, p. 310).

This methodological stance does not in any way suggest that there is a simplistic correlation between the acoustic signals emitted by the talker and those perceived by the hearer. Any cursory look at the phonetic literature shows that the issue has been vigorously debated for fifty years or more. Johnson (2012) underscores this in a quote that he attributes to Cooper: "There are many questions about the relation between acoustic stimulus and auditory perception which cannot be answered merely by an inspection of spectrograms, no matter how numerous and varied these might be" (p. 123) To start with, the physiological structure of the ear makes a perfect correlation impossible (Johnson, 2012, pp. 83, 180-181). As a result, Johnson (2012) concludes that "acoustic analyses give only a rough approximation to the auditory

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[1] There are two schools of thought in theoretical linguistic phonetics: the phonetics of speech production versus the phonetics of speech perception. Some of the leading theoreticians of the two schools are at odd with each other on methodological grounds (Johnson, 2012, p. 112). Production scholars focus on the acoustic vowel space to account for unintelligibility or confusion of speech sounds. Perception scholars emphasize the perceptual vowel space to do the same (Johnson, 2012, pp. 144-148). This paper highlights the insights that the acoustic vowel space brings to assessing the intelligibility of vowels. However, I do not discount the contributions made by perception scholars. My preference is simply a matter of my training. I'm more familiar with the instruments used to measure production than those used to measure perception. Ideally, production practitioners and perception practitioners should work collaboratively to fine tune intelligibility assessment in L2 acquisition.

representations that listeners use in identifying speech sounds" (p. 94). These caveats notwithstanding, phoneticians have also known for a very long time that sounds that are phonetically and acoustically closer are often very easily confused. Johnson (2012, p. 119-123) and others are now using "multidimensional scaling" computational techniques to visually represent the distance between sounds. So, in spite of the unresolved issues that keep theoreticians awake at night, comparing acoustic vowel spaces, as in Figure 4, can lead to important insights for teaching pronunciation to nonnative speakers of English or any language. An additional rationale for assessing intelligibility instrumentally is provided by Flege et al. 1986, p. 362):

> Perhaps some of these misidentifications [of vowels] were due to *talker* rather than listener variations. Vowels might be misidentified as the result of overlapping tongue positions for vowels adjacent in the phonetic space. Given the relatively small volume of the oral cavity and the large size of the tongue, the need to produce all 15 vowels of English with non-overlapping tongue configurations (or movement patterns) seems to represent an enormous control problem.

The "enormous control problem" mentioned in the quote increases tremendously for multilingual speakers because, somehow, they have to use the same tongue in the same restricted vowel space for all the languages that they speak. Somehow, they have to remember (subconsciously) that when they are speaking this or that language, they should allocate slightly different spaces to the vowels of their second, third, or fourth language. Failure to do so may result in unintelligible utterances.

Findings and Analyses

We will now investigate whether or not Somali speakers allocate the same vowel space as speakers of GAE do when producing English lax vowels. To find answers, a straightforward comparison is done between the formant values of GAE lax vowels and those found in SoE. Thomas (2011, p. 162) notes that this is a commonly used method:

> One common method that is sometimes used in variationist studies is to compare the vowel or vowels that exhibit the variation that's being studied against another vowel or vowels that are thought to be stable in the dialect or community in question. For example, a study might compare F1 and F2 values of some vowel against those of an [i] vowel, such as the FLEECE vowel in English. This method is easy to use and requires no complicated mathematical transformations: all you need is a ratio of the formant value of the stable vowel against that of the varying vowel.

For this study, I take the F1 and F2 formant values given by Peterson and Barney (1952, p. 183) to be representative of GAE vowels. It is against these formant values that SoE vowels are compared and contrasted, as shown in Table 3.

Table 3
Mean Formant Values in GAE and SoE

N0	Vowels	US Male F1	Somali Male F1	US Male F2	Somali Male F2
1.	<hid> [ɪ]	390	549	1,990	1,886
2.	<head> [ɛ]	530	570	1,840	1,810
3.	<had> [æ]	660	678	1,720	1,674
4.	<hawd> [ɔ]	570	609	840	1,339
5.	<hood> [ʊ]	440	436	1,020	1,396
6.	<hud> [ʌ]	640	629	1,190	1,532

The methodology adopted in this study consists in comparing lax vowels of the same types in GAE and SoE. In comparing F1 and F2 formant values among different dialects/languages, it is good to keep Baart's (2010, p. 67) interpretive framework in mind:

> A frequency difference of, say, 200 Hz is much more noticeable for people (and perceived as a much greater difference if lower frequencies are involved (as in the difference between 200 and 400 Hz) than if higher frequencies are involved (as in the difference between 2000 and 2200 Hz).

The 200 Hz frequency that Baart uses is just for illustrative purposes. Basic frequency calculations must be performed for each language under investigation to gauge frequency differences that matter. For this study, I have decided to use Peterson and Barney's (1952) benchmark acoustic measurements of GAE. The median frequency range is 135 Hz for F1, and 170 Hz for F2, as displayed in Table 4:

Table 4
Frequency Distance between GAE Vowels

N0	Vowel Pairs by Natural Class	F1 Difference	F2 Difference
1.	[ɪ] vs. [ɛ]	140 Hz	150 Hz
2.	[ɪ] vs. [æ]	270 Hz	270 Hz
3.	[ɛ] vs. [æ]	130 Hz	120 Hz
4.	[ʊ] vs. [ɔ]	130 Hz	180 Hz
5.	[ʊ] vs. [ʌ]	200 Hz	170 Hz
6.	[ɔ] vs. [ʌ]	70 Hz	170 Hz

Median frequency ranges are often displayed in vowel charts with ellipses drawn with solid lines to show areas on the chart where a specific vowel is pronounced slightly differently by different people. Sometimes, no ellipse is drawn but the various realizations of the vowel under consideration are scattered on the chart, see Ladefoged (2003, p. 129-30, figures 5.17, 5.18) for an example of both methods. In evaluating vowel intelligibility, it is assumed that if the F1 and F2 frequencies between GAE and SoE vowel of the same type are lower or equal to 135 Hz and 170 Hz respectively, then the SoE vowel is intelligible. The reason for this is because the difference in frequency falls within the median range. However, if F1 and F2 frequencies are in excess of 135 Hz or 170 Hz, then the SoE vowel under consideration is moderately to strongly accented.[2] It is hard to state conclusively that a vowel is unintelligible just by looking at frequency differences. However, when frequency differences are plotted in the same vowel quadrant, a clearer picture of which vowel(s) may or may not be intelligible emerges.

Height Comparison between GAE and SoE Vowels

Comparisons of GAE and SoE vowel pairs of the same type yield the following frequency differences:

Table 5
F1 Distance between GAE and SoE Vowels

N0	Minimal Pairs	F1 Frequency	F1 Difference
1.	English [ɪ] vs. Somali [ɪ]	390-549	159 Hz
2.	English [ɛ] vs. Somali [ɛ]	530-570	40 Hz
3.	English [æ] vs. Somali [æ]	660-678	18 Hz
4.	English [ɔ] vs. Somali [ɔ]	570-609	39 Hz
5.	English [ʊ] vs. Somali [ʊ]	440-436	4 Hz
6.	English [ʌ] vs. Somali [ʌ]	640-629	11 Hz

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[2] According to F1 formant data provided by Koon (2006, pp. 150, 152), in Central Minnesota /æ/ is strongly accented because it raises from 644 Hz to 836 Hz when produced by men and women before the voiced velar /g/. When compared with Peterson and Barney's data, /æ/ before /g/ is raised by 176 Hz.

Given the information in Table 5, it appears that the only GAE lax vowel that is produced in an accented fashion is [ɪ] because the frequency difference between GAE and SoE exceeds 135 Hz. The Somali pronunciation of [æ], [ʊ], and [ʌ] do not appear to be accented because the frequency differences between them are subsonic, that is, they are below 20 Hz. Ferrand (2007, p.34) and Ladefoged (1996, p. 21) note that human ears cannot detect frequencies below 20 Hz. It is therefore doubtful that a GAE hearer can detect any difference if a Somali speaker repeats the words /hæd/, /hʊd/, and /hʌd/ directly after a GAE speaker. With the exception of /ʌ/, SoE and GAE and lax vowels are similar with regard to F1. The Somali vowel [ɪ] is much lower than its GAE counterpart because, as is well known in acoustic phonetic studies, there is an inverse relationship between vowel height and F1 frequency.
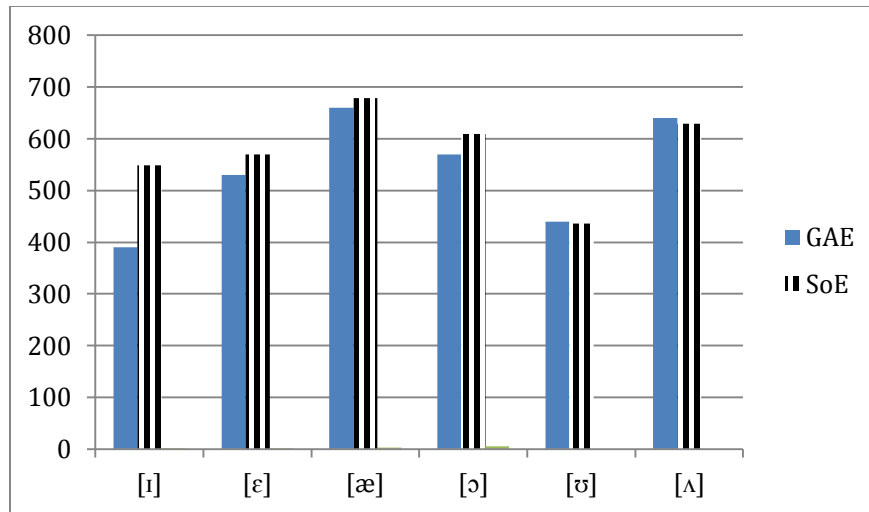

Figure 2. F1 Frequency Graphs.

Backness Comparison between GAE and SoE Vowels

The median F2 frequency range for English lax vowels is 170 Hz. This means that if a vowel is produced with an acoustic energy equal or less than 170 Hz, that vowel is not considered accented. Accordingly, the vowels [ɔ], [ʊ], and [ʌ] may tentatively be thought of as being accented in SoE but the vowels [ɪ], [æ] and [ɛ] are not, as shown in Table 6. However, the word "tentatively" is the key word here because later discussions will show that F2 has only a marginal effect on vowel perception.

Table 6
F2 Distance between GAE and SoE Vowels

N0	Minimal Pairs	F2 Frequency	Difference
1.	English [ɪ] vs. Somali [ɪ]	1,990-1,886	104 Hz
2.	English [ɛ] vs. Somali [ɛ]	1,840-1,810	30 Hz
3.	English [æ] vs. Somali [æ]	1,720-1,674	46 Hz
4.	English [ɔ] vs. Somali [ɔ]	840-1,339	499 Hz
5.	English [ʊ] vs. Somali [ʊ]	1,020-1,396	376 Hz
6.	English [ʌ] vs. Somali [ʌ]	1,190-1,532	432 Hz

It is worth noting that the F2 frequencies in Table 6 confirm what Ladefoged and Maddieson (1996, p. 300) have said about the difference in acoustic behavior of back and front vowels. They found that [-ATR] front vowels across a wide range of languages behave similarly acoustically but [-ATR] back vowels do not. We see this clearly in the bar graphs in Figure 3. All three front vowels in GAE and SoE are similar but there is a notable difference in the acoustic behavior of back vowels.
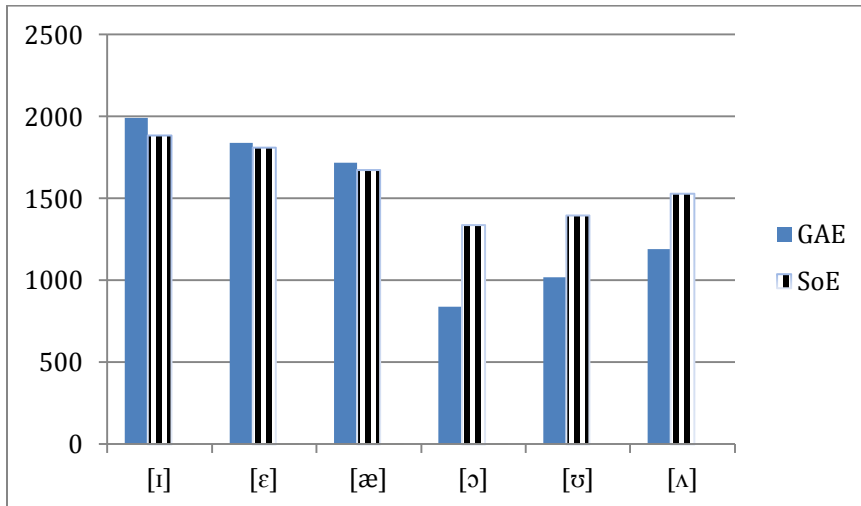

Figure 3. F2 Frequency Graphs.

The comparison between the lax back vowels of GAE and SoE show that English back vowels are fronted, that is, they are pronounced towards the front of the mouth by Somali speakers. Additional insights between the two vocalic systems can be gained by plotting GAE and SoE vowels in the same vowel quadrant (Figure 4).
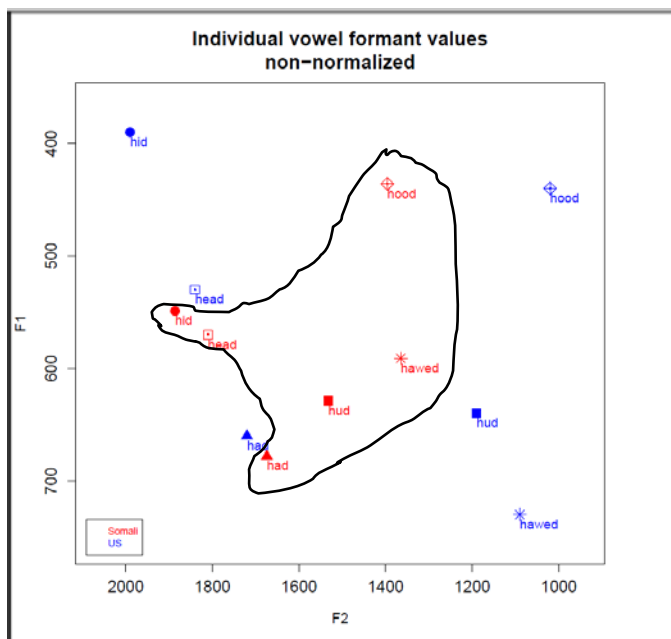

Figure 4. Comparative Vowel Quadrant.

A line has been drawn around SoE vowels to make them stand out. Figure 4 reveals two essential differences between SoE and GAE vowels. First, the space occupied by SoE vowels is far more restricted than that of GAE. Secondly, all GAE back vowels are fronted in SoE. These observations can shed some light on SoE vowels that are more or less likely to be intelligible. Ladefoged (2001) recommends plotting the vowels of different dialects of the same language in the same vowel quadrant so as to highlight dialectal similarities and differences. He contends that "vowel charts provide an excellent way of comparing different dialects of a language" (p. 43). He provides an additional rationale for his preference by saying that "this kind of plot arranges vowels in a similar way to the vowels in the IPA vowel chart. The formant frequencies are spaced in accordance with the Bark scale, a measure of auditory similarity, so that the distance between any two sounds reflects how far apart they sound" (Ladefoged 2003, p. 130). This last piece of information is important because it shows that a display such as the one in Figure 4 simulates as closely as possible how a human being who listens to SoE and GAE vowels perceives them acoustically.

Feature Hierarchy, Formant Hierarchy, and Intelligibility

The comparisons done in the previous sections suggest that the Somali pronunciation of vowels [ɪ], [ɔ], [ʊ], [ʌ] may pose intelligibility challenges to GAE hearers but [ɛ] and [æ] would not. However, this extrapolation is unwarranted because it fails to take into account feature hierarchy. Phonologists claim that in processing vowel sounds, some features are more prominent than others. Ladefoged (2006, pp. 271-272) lists five main features for vowels and places them in the following hierarchical scale: Height > Backness > Rounding > Tongue Root > Rhotic. Ladefoged and Maddieson (1996) rank height as the most important feature because, they argue, "all languages have some variations in vowel quality that indicate contrast in the vowel height dimension" (p. 286). With respect to the features backness and rounding, they note that "the languages of the world make much more limited use of the front-back and rounded-unrounded dimensions" to distinguish between utterances (p. 290). Furthermore, Fischer-Jørgensen (1985, p. 93) adds that the dimension front-back is more complicated and has given problems to phonologists because very few languages rely on this feature in formulating phonological rules. So for phonologists, the most salient feature for vowels is height.

Phonetic experimentations have confirmed that the intuition of phonologists about feature hierarchy is acoustically verified. Even though vowel quality encompasses many formants, only the first three (F1 for height, F2 for backness, and F3 for lip rounding) are acoustically relevant in many instances. Moreover, in many acoustic phonetic studies, very little mention is made of F3 because "[it] has very little function in distinguishing the vowels shown" (Ladefoged 2001, p. 46). As for F2, nobody doubts its relevance in the acoustics of vowels. Yet, its role in accounting for the perception of intelligibility is rather marginal and limited. Sociophonetic studies suggest that dialectal changes involving F1 are more noticeable and more pervasive than those involving F2. For instance, nearly all the examples of the Northern Cities dialect shift have more to do with variations in F1 than variations in F2. The examples of /bæd/ pronounced as [bɛd] is a case of vowel raising (Ladefoged 2001, p. 45, Figure 7). The phenomenon dubbed "Canadian Raising" by Fromkin et al. (2011, p. 312) also involves variations in F1. In any event, Ladefoged (2006) provides acoustic data to explain why F1 plays a more dominant role than F2. He writes, "As a further refinement, because the second formant is not as prominent as the first formant (which, on average has 80% of the energy in a vowel), the second formant scale is not as

expanded as the first formant scale" (p. 188). Since F1 has 80% of the energy in the vowel, it is clearly the most important formant. Consequently, it plays the most salient role in the perception and assessment of the intelligibility of vowels.

Using Formant Hierarchy to Account of Intelligibility in SoE

It has already been noted that [ɪ] in SoE is considerably lower than [ɪ] in GAE. Figure 4 reinforces this drastic difference visually. In fact, [ɪ] in SoE is pronounced so low that it virtually occupies the same articulation space as the [ɛ] of GAE. There is only a 19 Hz difference between the Somali [ɪ] and the GAE [ɛ]. Acoustically speaking, this difference is subsonic, that is, it is so infinitesimal that most listeners are unable to distinguish between the two. As a result, the SoE pronunciation of a word such as [hɪd] may sound like [hɛd] to a GAE listener. GAE speakers who have informally[3] listened to the audio files have not been able to tell <hid> apart from <head>, and vice versa. It is not unusual for people to confuse these two vowels. Peterson and Barney (1952, p. 179) reports that about 7% of the occurrences of these two vowels in their 1,520 tokens were misidentified by native speakers listening to other native speakers. However, the occasional confusions between [ɪ] and [ɛ] among GAE speakers are nothing compared with the situation that occurs in listening to SoE. Since both vowels have overlapping spaces, the likelihood of unintelligibility is fairly high. If [ɪ] and [ɛ] are not clearly differentiated in pronunciation, unintelligibility increases tremendously because, according to Faircloth and Faircloth (1973, p. 18), [ɪ] and [ɛ] occur very frequently in GAE. The vowel [ɪ] ranks first and [ɛ] ranks sixth in GAE. Moreover, the pair [ɪ] and [ɛ], has according to Celce-Murcia et al. (2010, p. 160) has a functional load of 43%.

The spacing of SoE lax vowels also shows that the Somali pronunciation of [ʌ] and [ɔ] can lead to unintelligibility in some instances. There is only a 21 Hz difference between the two sounds. Even though a frequency of 21 Hz can be detected by human beings, these two sounds are acoustically so close that unless a person pays very close attention, they might mistake one sound for another. This means that a GAE speaker hearing a Somali person say the words <cut> and <caught> could very easily mistake them for <caught> and <cut> and vice versa.[4] In fact, Munro et al. (1996, p. 326) found that [ɝ], in all likelihood the Canadian counterpart of [ʌr], was the most poorly produced vowel by Italian immigrants.

Pedagogical Implications

Researchers who work within L2 phonology frameworks such as the Contrastive Analysis Hypothesis and the Markedness Differential Theory may be misled in believing that if two languages have the same sets of vocalic segments, they may be transferred positively. This assumption has led to erroneous conclusions such as the following:

> Somali and English share a number of the same vowel phonemes and diphthongs. Because of this, problems with pronunciation will not likely come because a student can't produce the vowel in question (Lindsay, 2006, p. 47).

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[3] The word "informally" is used here because I have not done a formal perception study of Somali vowels.

[4] When I was writing this paper, I attended a meeting of the Immigrant Research Group at Saint Cloud State University. An African faculty member who is involved in community planning used the phrase "housing bust." Another faculty member, a native speaker of Spanish, heard "housing bossed" and asked aloud "who is this housing boss?" The production difficulties associated with [ʌ] and [ɔ] are widespread in many forms of African Englishes.

However, the instrumental acoustic analysis done in this study does not support such a conclusion. Given the intelligibility challenges posed by the lax vowels [ɪ, ɛ, ɔ, ʌ], what pedagogical strategies can teachers use to improve the production of vowels by post-pubescent Somali students? Fischer-Jøgensen (1985, pp. 93, 95) suggests an articulatory phonetic regimen based on manipulating jaw movements. He describes it as follows:

> Moreover, a number of phonetic and phonological rules and developments involving height are better understood when described in articulatory terms. … I suppose production plays a role in this connection. As demonstrated by Lindblom and Sunberg, the simplest way to produce differences in vowel height is by raising and lowering the mandible, and it may be relatively easy to control this movement. First, the proprioceptive sensitivity seems to be more developed for jaw movements than for advancing or retracting the tongue. This may have something to do with the fact that jaw opening and closing is used for other biological purposes, for example, eating. Second, jaw movement is visible. (It may happen that a student starting a phonetics course believes that he produces an [e] by retracting his tongue, but he will not maintain that he produces [a] by closing his mouth.

The preeminence of the first formant over the second is reaffirmed again here. According to Fischer-Jøgensen, it is easier to translate height information into pedagogical practice than backness movement because most people cannot feel their tongue advancing or retracting a few millimeters from its position at rest (see Table 1). In their longitudinal study of L2 vowel acquisition, Munro and Derwing (2008) report that intelligibility of English vowels can improve over time. It is my contention that targeted instruction based on findings such as the ones in this study can hasten and improve intelligibility.

SUMMARY

The findings presented in this paper are not intended to predict in absolute terms that every occurrence of [ɪ] and [ɛ], or [ɔ] and [ʌ] will lead to unintelligibility. There are a number of factors that mitigate an erroneous perception of these vowels even if they are acoustically mispronounced. For instance, if the discourse context is sufficiently rich, sentential clues will alleviate the phonetic processing load on the hearer. Byrd and Mintz (2010) explain how this is possible even in the face of a heavily accented speech: "A speech sound will be perceived as intended by the speaker, even if the speaker introduces some articulatory, and hence acoustic variation from production to production" (p. 143). A rich syntactic context enables reliance on top-down processing strategies rather than bottom-up strategies. The differences in the acoustic of GAE and SoE vowels provide us with quantifiable data as to why when most post-pubescent Somali immigrants speak English, they may be misunderstood more often than not if other discursive strategies fail. Last but not least, it should be borne in mind that the data in this study deal with averages. As a result, it does not take into account intraspeaker variations. However, this caveat is not an admission of methodological weakness but rather an acknowledgment that Somali speakers, just like other human beings, have their own particular speaking styles and speech idiosyncrasies that fall outside the reach of instrumental acoustic phonetics.

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EVALUATING INDIVIDUAL VARIABILITY IN FOREIGN ACCENT COMPREHENSION

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How much do people vary in their ability to understand foreign-accented speech? Answering this question may lead to useful insights into communication processes among interlocutors from diverse linguistic backgrounds. Although some speakers are often described as being easier to understand than others, listener factors also play a role in whether a particular accented utterance is understood. Such influences include prior experience with the speaker's accent and sharing the same first language as the speaker. Age may also be important, in that young children may have less robust perceptual representations that compromise processing of unfamiliar speech patterns. This paper describes the development of a pilot tool for assessing listeners' comprehension abilities. Six groups of listeners differing in age and L1 background completed a true-false judgment task in which they responded to sentence-length items produced in English by Cantonese speakers. The resulting comprehension scores indicate effects of listener age (teens performed better than younger children) and listener proficiency; however, they also indicate shared comprehension across listeners, even among those from diverse L1 backgrounds.

INTRODUCTION

In the study of second language (L2) phonetic learning, *intelligibility* and *comprehension* are closely related phenomena. Intelligibility is often seen as a characteristic of speakers, utterances, and accents, and it is common to describe people and their speech productions in terms of how intelligible they are. However, intelligibility, as most speech researchers understand the term, refers to the degree to which a speaker's communicative intent matches the listener's response (Schiavetti, 1992). For that reason, it can be assessed only by reference to what listeners understand. It cannot be evaluated by enumerating phonetic errors; nor can we measure it with acoustic analysis software, no matter how sophisticated our approach might be. This is because intelligibility does not reside exclusively in the speaker or in the utterance itself. Rather, in real-world situations it is the result of a speaker's attempt to communicate with an audience. Assessing speech intelligibility therefore requires that we measure the comprehension[1] of listeners. However, the complexity inherent in the notion of comprehension makes it impossible that any single measure could suffice. In the speech sciences, the most common approach to intelligibility assessment is to have listeners transcribe (in standard orthography) the utterances

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[1] It is important here not to confuse *comprehension* with *comprehensibility*. We use the latter term to refer to a listeners' perception of the degree of difficulty in understanding an utterance.

they hear and to count the number of correct words in their transcriptions. While there is no question that determining the words in an utterance is a prerequisite for understanding, it is often not clear how such a simple measurement corresponds to the listener's appreciation of such matters as the speaker's attitude or intent, or the relevance of the utterance to the speaking context. Understanding these phenomena is clearly a part of comprehension, and any full characterization of intelligibility must take them into account.

The fact that some listeners succeed more than others at comprehending L2 speech raises intriguing issues in the measurement of intelligibility and in the teaching of L2 pronunciation. One fundamental problem facing researchers is establishing the sources of inter-listener variability. Although many anecdotally-based opinions exist, actual research on this topic remains limited. Gass and Varonis (1984) observed a positive effect on listeners of familiarization with a particular accented speaker, the accent being spoken, accented speech in general, or the topic being spoken about. Other work indicates that sharing the L1 background of the speaker (i.e., the same accent) can offer comprehension benefits for speech in noise (Bent & Bradlow, 2003). However, this effect may occur primarily in low-proficiency listeners (Hayes-Harb et al., 2008). In a study of speech without noise, Munro, Derwing & Morton (2006) assessed high-proficiency L2 listeners' comprehension of English produced with their own and other accents. Although Japanese listeners did understand slightly more than other listeners when presented with Japanese-accented speech, Mandarin-speaking listeners showed no such advantage for their own accent. Given that other studies have yielded similar weak findings, there is no indication that sharing an L1 background offers large or consistent benefits for comprehension. Rather, listeners – even from diverse backgrounds – tend to comprehend similarly: a speaker who is not understood by one listener will tend to be understood poorly by others (Munro, in press).

Another source of variability in the comprehension of L2 speech is the listener's age. Burda, Scherz, Hageman, & Edwards (2003) observed poorer comprehension by geriatric listeners compared with younger adults. Although comprehension of accented speech by children has received little attention from researchers, older children might be expected to have an advantage over younger children. Because L1 phonetic development is a matter of language experience, older children may process speech more efficiently, giving them greater capacity to adjust to speech patterns with which they are not familiar.

The goal of this exploratory project is to determine the feasibility of constructing an easy-to-administer tool for comparing listeners' comprehension of L2 speech. Such a tool could be used to systematically compare different groups of listeners to evaluate the effects of such factors as L1 background and age on L2 speech comprehension. For this purpose we propose a sentence verification task consisting of utterances representing a range of speakers who vary in intelligibility. To be useful as an assessment tool, the task must be straightforward for listeners to complete and sensitive enough to yield differences in performance when listeners genuinely differ in comprehension. Our approach is to pilot a 40-item test in which we compare listeners varying in L1 background and age.

METHOD

The verification task used here is based on previous work by Munro & Derwing (1995), who developed a set of short statements that could be readily judged as true ('Some people have sandwiches for lunch') or false ('April is the first month of the year') using general knowledge.

This task assesses listener comprehension (and therefore intelligibility) in that listeners must process a complete utterance in order to determine the correct response. It is a convenient alternative to counting correct words in a transcription task and tends to yield very similar results (Munro & Derwing, 1995). Individual listeners' scores on the 40-item test were used to assess their comprehension. In both the original study and the current one, speech representing a single foreign accent was used to minimize effects of potential prejudices against particular accents.

Stimulus Preparation

The test stimuli were drawn from a set of over 3200 utterances recorded by 81 Cantonese speakers, all of whom were high-proficiency English speakers enrolled in post-secondary institutions in Canada. Other aspects of their backgrounds are largely irrelevant to this study because our objective was to obtain a set of speech items varying in intelligibility. Success in that respect could be determined only after completion of the experiment.

During individual recording sessions in a sound-treated room, the speakers read aloud a set of 40 sentences similar to those used by Munro and Derwing (1995). Prior to actual recording they practiced the full set of items once. High fidelity recording equipment was used, and all productions were saved in digital format with a sampling rate of 22.05 kHz and 16-bit resolution. Repetitions were elicited for productions that included false starts, self-corrections or hesitations; only fluently-produced utterances were retained.

The multiple steps used to reduce the full set to a single 40-item test will not be described here in detail. The process entailed screening of the full set for low-, medium- and high-comprehensibility speakers by two phonetically-trained research assistants. Subsequently, three complete sets of all 40 sentences were assembled by randomly choosing items from high, medium, and low comprehensibility speakers. These sets were piloted informally on native English listeners to ensure an intelligibility range of 0 to 100% on the items. A final selection of 40 sentences was then made, consisting of 20 true items and 20 false items, each spoken by a different Cantonese speaker.

Listeners

Here we report on six groups of listeners who completed the test. Table 1 provides basic information about each group according to native language, age, and listening conditions. The EA, EG4, and EG groups – all native speakers of Canadian English – were tested to permit an examination of the effects of age on L2 speech comprehension. While EA consisted of adults, EG4 and EG10 were native Canadian English children in grades 4 and 10 respectively. The CA and MA groups were adult native speakers of Cantonese and Mandarin, and the SA (Slavic-speaking) group consisted of adult native speakers of Russian and Ukrainian. The CA group was tested so as to allow a comparison between adults sharing the same L2 accent as the speakers (i.e., Cantonese), with native English listeners (the EA group). Listeners from the CA group were all high-proficiency speakers of English studying at Canadian post-secondary institutions. The MA and SA groups, however, had only intermediate-level English speaking skills.

Table 1.

The Six Listener Groups in the Study

Group	L1	Age	N	Task Conditions
EA	English	Adult	26	sound booth, headphones
EG4	English	8-10 years	22	quiet room, loudspeaker
EG10	English	14-16 years	27	quiet room, loudspeaker
CA	Cantonese	Adult	7	sound booth, headphones
MA	Mandarin	Adult	21	quiet room, headphones
SA	Russian/ Ukrainian	Adult	23	quiet room, headphones

Procedure

Because the test was administered in different locations it was not possible to use identical listening conditions for all participant groups. The EA and CA groups completed the test individually in an audiometric booth in the first author's research lab. Stimuli were presented randomly in a self-paced task through high-quality headphones. After hearing each stimulus item, the listeners responded by selecting "True," "False," or "Don't know" from buttons on a computer screen. They were instructed to use the third choice if they could not understand the item. Once a response was registered, the computer played the next item.

The MA and SA listeners were participants in a larger study reported elsewhere. Because it was impossible for them to visit the same lab used for the EA and CA groups, they were tested individually in a quiet room, wearing headphones. Their task was similar to that of the EA and CA groups, except they used a pen and paper to circle their responses. The children performed the task during group listening sessions in quiet rooms in their schools. Stimuli were presented free-field through high-fidelity audio equipment connected to loudspeakers. After each item, playback was paused so that that the listeners could record their responses on paper by circling one of the same three choices described above. The experimenter controlled the presentation rate to ensure that all listeners stayed in step.

RESULTS

Mean scores for the six groups are presented in Figure 1. The EA group score (M = 87%) serves as a reference for comparison with the other groups. Although the EA group performed well above chance, scores ranged from 75% to 95%. No listener scored perfectly. "Don't know" responses made up 6% of the total, and 7% of the responses were incorrect.
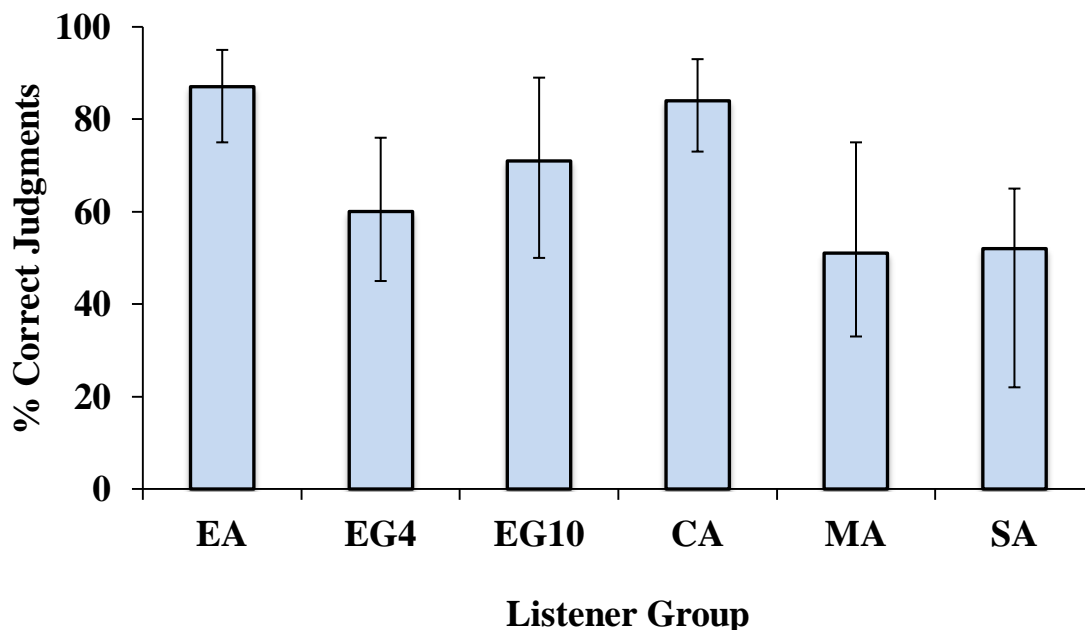
Figure 1. Mean scores for each of the six listener groups: English Adults (EA), English Grade 4 (EG4), English Grade 10 (EG10), Cantonese Adults (CA), Mandarin Adults (MA) and Slavic-speaking Adults (SA). Error bars indicate score ranges.

Effect of age

The effect of age was evaluated by comparing the EG4 and EG10 scores using an independent samples t-test. A significant between-group difference, $t(47) = 4.471$, $p < .001$ was observed, indicating better performance on the part of the EG10 group. Although the EA group performed numerically better than both the EG4 and EG10 groups, we did not carry out statistical tests because the listening conditions for the EA group were different than for the two non-adult groups.

Effect of shared L1 background

To determine whether sharing the same L1 background as the speakers offered any benefits for the CA group relative to the EA group, a further independent samples t-test was computed. The difference in scores between these two groups proved non-significant, $t(31) = 1.007$, $p = .322$.

Effect of variable non-shared L1 background

The performance of the MA and SA groups was compared in order to determine whether a non-English L1 background in phonologically different languages would affect comprehension. An independent samples t-test yielded no significant effect $t(42) = .375$, $p = .710$. Moreover, scores on the 40 items for the two groups were highly correlated, $r(38) = .828$, $p < .0001$. Figure 2 illustrates this relationship.
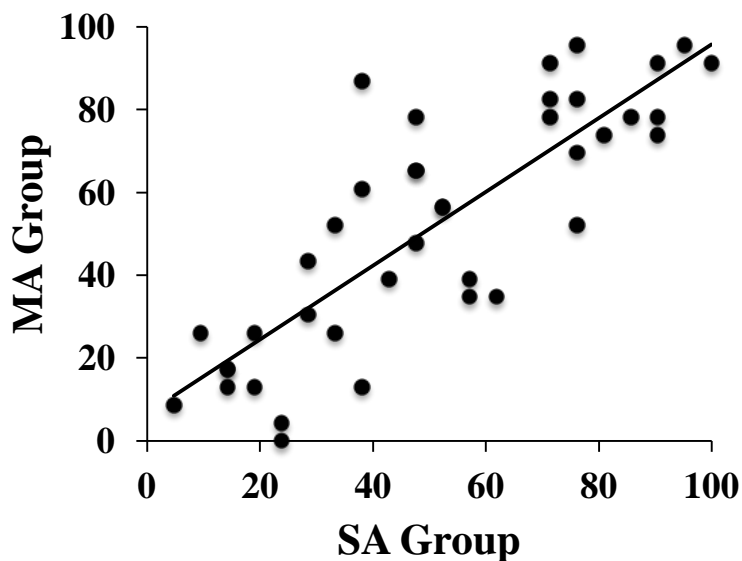
Figure 2. Relationship between the Mandarin (MA) and Slavic (SA) listeners' scores.

DISCUSSION

The results of this investigation point to the feasibility of a verification task as a means of evaluating sources of variability in L2 speech comprehension. In addition to being short and easy to administer, the test was sensitive to between-group differences. The statistically better performance by teens than younger children suggests a beneficial effect of cognitive maturity on the comprehension of accented speech. The (informally assessed) better performance of native English adults than of both groups of children lends additional support to such an account.

As in some previous investigations, sharing an L1 background with the speakers appeared to afford no benefit to the high English-proficiency Cantonese listeners in this study. This outcome is consistent with Hayes-Harb et al.'s (2008) finding that such effects were more evident in lower-proficiency speakers.

Because the Cantonese phonological system is closer to the Mandarin system than to Slavic phonology, one might have predicted better performance by the Mandarin listeners than the Slavic listeners on this test. However, these two listener groups did not differ from each other in terms of mean scores. Moreover, an analysis of item scores revealed a strong correlation between the two groups. Thus, as in previous work (Munro et al., 2006) utterances that were difficult for one group of listeners to understand tended to be comparably difficult for another group from an entirely different linguistic background. This finding supports the view that intelligibility is not merely a highly subjective phenomenon that differs dramatically from one listener to another. Rather, it is often a shared experience for listeners from diverse L1 backgrounds. While intelligibility does not reside entirely within the speech stream, it is also incorrect to assume that it lies completely 'in the ear of the beholder.'

Future work should explore the usefulness of this task in evaluating other sources of listener variability in L2 comprehension. Among the factors worth considering are listener attitudes and amount of L2 exposure. A further matter to investigate is whether some listeners are simply more adept at understanding L2 accents, even when age, L1 background, attitudinal factors, and

exposure are taken into account. If so, research to identify the underlying cognitive influences on L2 speech comprehension will be needed.

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ANALYZING COMPREHENSIBILITY AMONG NON-NATIVE SPEAKERS OF ENGLISH: THE EFFECT OF LISTENER FIRST LANGUAGE BACKGROUND

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The evolution of English from a native speaker centered language to a means of communication among speakers of various first language (L1) backgrounds motivates the empirical examination of communication among non-native speakers (NNS) of English. This paper describes a study where NNS of various L1 backgrounds, as well as a native speaker, rated NNS speech samples for comprehensibility. Analysis of variance (ANOVA) and descriptive statistics were used to address the following questions: In comprehensibility ratings of NNS speech, do NNS listeners vary: (1) by L1 background? and (2) when compared with a NS listener trained in assessment? Results showed a significant effect for listener L1 background in comprehensibility ratings of several speakers. This finding contradicts previous research suggesting that the quality of an NNS utterance itself is more influential in determining comprehensibility than are any listener characteristics (Hazan & Markham, 2004; Munro et al., 2006). However, it may be an example of matched interlanguage intelligibility benefit, where NNS listeners of the same L1 background as the speaker find speech easier to understand than their non-matched peers (Bent & Bradlow, 2003). It seems that further investigation is needed into the complicated relationship between L1 background and comprehensibility among NNS of English.

INTRODUCTION

The extent of the global spread of English becomes apparent when one examines statistics about its use. It has been estimated that there are 320 to 380 million speakers of English as a first language, but over one billion users of English overall (Crystal, 2003). These numbers illustrate that second language speakers of English far outnumber those who speak English as a first language. In fact, it is predicted that in the next ten to fifteen years, there will be two billion English language learners worldwide (Graddol, 2006).

In this context, empirical investigations have been made to determine speaker and listener features that make NNS-NNS communications successful or less so. The results of these studies have important implications for university ESL contexts, where the wide reach of English and the predominant use of communicative language teaching methods (see, e.g, Pica et al., 1993) mean that students of various L1 backgrounds are expected to learn English by speaking with each other. However, research on the role of L1 background in comprehensibility among NNS of English has produced mixed results to date, leaving instructors with little guidance on how to facilitate learning in NNS-NNS interactions. While some studies have found that listeners share a response to non-native speech regardless of their L1 (Munro et al., 2006), others have suggested that a listener who shares the speaker's L1 may benefit from this match (Bent & Bradlow, 2003). Still other studies have concluded that such a match is not beneficial, and may even be a detriment

for the listener (Major et al, 2002). Further investigation is needed to unravel the intricate relationship between L1 background and successful oral communication among NNS of English.

RESEARCH QUESTIONS

The previously mentioned empirical studies provide background in effective research methods for assessing speech samples. However, further investigation is needed into the effect of listener first language background on the perception of comprehensibility of non-native speech. In addition, it is important to examine how non-native speaker listeners differ in their ratings of comprehensibility from a native speaker listener who is trained in ESL. Such data will provide direction for ESL teachers and materials creators in developing pronunciation syllabi and communication-based classroom tasks. It may also have implications for oral proficiency assessment, addressing the question of the ability of NNS raters to assess speech in a similar way to that of NS ones. As such, this study addresses the following questions:

1. In comprehensibility ratings of NNS speech, do NNS listeners vary by L1 background?

2. In comprehensibility ratings of NNS speech, do NNS listeners vary when compared with a NS listener trained in assessment?

RESEARCH DESIGN

Participants

The NNS listeners in this study (n=18) were members of an intact English for Academic Purposes (EAP) course taught by the researcher. The course is a required component of an Intensive English Program (IEP) at a large research university in the southeastern United States. This IEP is organized into skill-area courses (i.e., oral communication, academic writing) designed to prepare students for university work. The program is comprised of five levels, ranging from "high beginning" (Level 1) to "advanced" (Level 5). According to in-house proficiency testing and placement procedures, the participants in this study were classified as Level 4, or "high intermediate" English learners. These higher-level students were targeted in order to attempt to control for proficiency level interference in comprehensibility ratings. Any difficulties in comprehensibility can hopefully be attributed either to qualities of the utterance or to the listener's language background, rather than to the listener's difficulty with syntactic or lexical items that might have occurred at lower proficiency levels. Table 1 provides further description of NNS rater characteristics.

Table 1
Description of NNS Listeners (n=18)

L1	Age (years)	Gender	Exposure to accented English (1= very little; 2= some; 3= a lot)	Time studying English (years)
Vietnamese (n=4)	26.1 (m)	Male (n=8)	2.56 (m)	3.9 (m)
Spanish (n=3)	7.8 (STD)	Female (n=10)	0.11 (STD)	2.9 (STD)
Chinese (n=3)				
Korean (n=3)				
French (n=2)				
Arabic (n=2)				
Japanese (n=1)				

The native speaker rater (n=1) is a PhD student in Applied Linguistics who has a professional background in assessment of non-native speakers. At the time of the study she was the testing coordinator for the university's ESL program. As such, her duties included administering and rating oral proficiency exams for incoming university students to determine their need for ESL services. Given her background and training, she had been frequently exposed to accented English and was adept at assessing it for comprehensibility.

Speech Samples

The sound files played for NNS raters were collected for the listening and speaking portion of an internal university ESL proficiency test developed by the university's Department of Applied Linguistics. This proficiency test is designed to assess the reading, writing, speaking and listening skills of international students seeking enrollment in university programs, and consists of various sections designed to target these skills. For this study, free speech samples from the oral proficiency interview portion of the exam were played for NNS listeners. Each of the seven sound files was approximately one minute long. In these sound files, respondents were answering the interviewer's question: "Can you tell me a little bit about what you're studying?" The NS rating used for the purposes of this study is the interviewer's rating of the overall oral proficiency interview, which also included warm-up questions and a reading passage that were not played for NNS listeners.

Data collection procedures

Seven 1-minute digital recordings from the interview portion of the oral proficiency exam were obtained with permission from the university. Descriptive statistics for the speakers recorded in these segments are listed in Table 2.

Table 2
Description of NNS Speakers (n=7)

L1	Age (years)	Gender	Academic Major
Chinese(n=5)	24.7 (m)	Male (n=3)	Communications (n=1)
Indian(n=1)		Female (n=4)	Economics (n=1)
Korean (n=1)			Chemistry (n=2)
			Computer Science (n=1)
			Music (n=1)
			Statistics (n=1)

Recordings were played for the 18 NNS raters by the researcher as an in-class listening activity. Before completing the listening activity, informed consent was obtained from each class member. NNS raters were asked to complete a language background / biographical data questionnaire (Appendix A) and then to rate each speech sample on a 7-point qualitative scale (Appendix B) for comprehensibility, or the listener's estimation of his or her difficulty in understanding an utterance (Munro et al., 2006). The native speaker rating had been previously assigned during oral proficiency interviews with the seven interviewees who produced the speech samples.

RESULTS AND DISCUSSION

The Effect of Listener's L1 Background on Comprehensibility Ratings

Statistical analysis.

In order to address research question one, the overall rating means for four different language groups were compared using One-Way Analysis of Variance (ANOVA) calculated in SPSS version 16.0. Although seven L1 backgrounds were represented among the eighteen NNS raters, only four (Chinese, Spanish, Vietnamese, and Korean) were chosen for analysis. This decision was informed by Johnson (2008), which suggests that each group in an ANOVA analysis should have a minimum of three observations to ensure robustness of hypothesis testing. Ratings from French (n=2), Arabic (n=2), and Japanese (n=1) speakers were not included in the ANOVA analysis for research question one because there was not a sufficient number of participants in these language groups.

A non-parametric equivalency test for differences in means, the Kruskal-Wallis test, was initially considered given the small number of participants in each group. However, the four groups chosen for analysis were also analyzed for equality of variances, which is another of the required assumptions of an ANOVA analysis (Johnson, 2008). This analysis showed that the equality of variances assumption was met (Levene > .05). Given this assumption of normal data distribution, ANOVA was used despite the limited number of participants in each group. Table 3 shows results of the ANOVA calculation.

Table 3
ANOVA Summary Table for Comprehensibility Scores by L1 Background (Chinese, Spanish, Vietnamese, Korean)

Source	SS	Df	MS	F
Between	37.29	3	12.43	6.211*
Within	174.10	87	2.00	
Total	211.39	90		

* p = .001

Because the initial ANOVA analysis showed significant differences among the four groups for two of the seven speech samples that were rated, a post-hoc Tukey HSD analysis was conducted to further examine these differences. This analysis revealed that overall Spanish speaker ratings (m=4.14) were significantly lower (the speech was interpreted as less comprehensible) at a significance level of p<.01 than were Vietnamese (m=5.72), Korean (m=5.67), and Chinese (m=5.57) speaker ratings. There were no significant differences, however, among the speakers of the Asian languages. Furthermore, Spanish listeners rated speaker #2 (m=3.67) and speaker #5 (m=3.0) as significantly less comprehensible than did Chinese or Vietnamese listeners (p<.01). Both of these low-rated speakers were Chinese.

Discussion.

It appears that for certain speech samples, listener first language background was influential in determining the comprehensibility rating. These results seem contradictory to those of Munro et al. (2006), which found that listeners of various language backgrounds generally shared a response to L2 speech when they evaluated it for intelligibility, accentedness, and comprehensibility. In the current study, in both cases where differences among the four rating groups were significant, Spanish listeners rated Chinese speakers as less comprehensible than did Chinese or Vietnamese listeners, respectively. It would appear, then, that Chinese and Vietnamese listeners experienced a comprehensibility benefit when listening to the accented English of Chinese speakers. This finding may be further support for the matched interlanguage intelligibility benefit posited by Bent and Bradlow (2003).

Although it was not possible given the scope of this study, it would have been helpful to gather qualitative data from the Spanish-speaking listeners about their perception of English spoken with an accent other than their own L1. Interestingly, based on the researcher's observations from teaching this class, the Spanish speakers were among the most highly proficient speakers in the class. Although they had little trouble speaking fluently, this data suggests they had more trouble understanding Chinese speakers' English than did their Chinese or Vietnamese speaking classmates. Thus, the Spanish speakers' own insights about their ability to understand speakers of various language backgrounds would be helpful. This additional information about the listener's attitude toward the speaker as a non-native user of the language (see, e.g., Hu & Lindemann, 2009; Lindemann 2002; Lindemann, 2005; Lippi-Green, 2001) might paint a more comprehensive picture of why Spanish speakers assigned lower ratings than their classmates.

If further research continues to suggest that L1 background does have an effect on the comprehensibility ratings of NNS speech, more investigation will be needed into exactly how L1 background interacts with comprehensibility ratings of different types of L2 accented speech. More data about the listeners and speakers and more analysis of the speech itself might further reveal the interaction between speaker and listener. For example, studies might be conducted with listeners who vary in their L1 background, length of stay in target language community, academic background, and attitudes toward the speaker. The speech itself might be analyzed for lexical, syntactic, and phonological similarity to the target language. This growing body of research analyzing different

aspects of listener and speaker characteristics might result in suggestions about how best to support students for successful mutual comprehension in communicative language activities.

Native Speaker Versus Non-native Speaker Comprehensibility Ratings

Statistical analysis.

In order to examine research question two, mean rating scores for all non-native raters (n=18) and the native speaker rater (n=1) were compared. Because of the disparate group sizes, inferential statistics were not used. Descriptive statistics for average NNS/NS ratings for all speakers are presented in table 4.

Table 4
Means and Standard Deviations of Comprehensibility Scores by NS/NNS

L1 Background	N	Mean	Standard Deviation
English	1	6.0	0.52
All NNS	18	5.36	0.99
Spanish	3	4.14	0.71
Chinese	3	5.57	0.29
Vietnamese	4	5.71	0.61
Korean	3	5.67	1.14

Discussion.

This second research question provides insight into how the ability of language learners to understand other learners compares to the ability of native speakers to perform the same task. In addition, there is another factor in this analysis: the NS rater is an expert in this type of assessment, while the NS raters were not. Previous research in this area has suggested that non-native speakers rate speech samples as more comprehensible than do native speakers (Bent & Bradlow, 2003), which may mean that there are traits of NNS interlanguage that the non-native listeners share but that the NS rater may not understand. However, the analysis for this study suggests opposite trends: the NS rater found non-native speech to be more comprehensible than did the NNS ones.

Although caution should be used in interpreting the results of this exploratory study, higher NS ratings may signal an area that merits further investigation. In this study, the NS rater may be a more sympathetic listener than are the NNS raters. That is to say, she was aware that the students she was speaking with were nervous given the context of an oral proficiency interview, and she is accustomed to interpreting non-native speech. However, her overall goal in assigning a rating was to determine whether or not the interviewee was in need of ESL services at the university. For a few speakers, the NS rating meant that the interviewee was deemed comprehensible enough so as not to need ESL course work. However, these same speakers were rated much lower by NNS listeners, who assigned a score that would have placed the student in a pronunciation course. This possible disparity between assessment outcomes and classroom demands warrants further attention in comprehensibility research. Such investigations may also be of interest to the assessment community, in which there has been debate about whether or

not non-native speakers are appropriate candidates for assessing English oral proficiency examinations (see, e.g., Kim, 2009).

LIMITATIONS AND CONCLUSION

The one minute clips used in this study may not have been ideal. The rating assigned by the NS listener also took into account additional portions of the oral interview: warm-up questions and a reading passage. Scholars in pronunciation teaching and assessment have suggested that in order to obtain a global picture of the speaking and listening skills of test takers, both a free speech sample and a diagnostic passage should be obtained (see, e.g., Celce-Murcia, 1996). NNS raters, however, assigned their comprehensibility score based only on the one-minute free speech clip. Therefore, caution should be used when comparing ratings across these two groups of listeners. Also, playing sound files from an interview in an experimental setting may detach the interview from what researchers have called its context of use (Field, 2003; Jenkins, 2000). In future studies, the social context of an interview may be more closely replicated for raters if they are able to see a video of the interview in addition to listening to it.

The findings of this study suggest that there may be an L1 effect for listener ratings of comprehensibility of L2 speech. Spanish listeners rated speech from Chinese speakers as significantly less comprehensible than did Chinese, Vietnamese, and Korean raters. These results imply that there may be features of the interlanguage of the speech samples that the raters who speak Asian languages share, but that the Spanish speaking raters do not. However, more raters and speakers of these languages and others should be analyzed to confirm that this difference is actually related to L1 influence. In addition, studies of authentic contexts may be appropriate for addressing comprehensibility, given the relative nature of this construct (Pickering, 2006). Such studies would shed light on the complicated relationship among speakers, listeners, and the unique environments in which they communicate.

ABOUT THE AUTHOR

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Appendix A: Questionnaire for NNS Raters

Please answer the following questions. Please do not write your name.

Participant # _____ (to be completed by researcher)

1. What is your age? _____ years

2. What is your first language? _____

3. How long have you been studying English? _____ years _____ months

4. Please rate your amount of exposure to English spoken with a non-native accent:

no exposure   a little exposure   a lot of exposure

Appendix B: NNS Listener Rating Sheet

Participant # _____ (to be completed by researcher)

You will be rating the following speech samples for their **comprehensibility: how easy or difficult is it for you to understand the speaker?**

Listen to each speech sample (1-7). Assign each one a number (1-7) based on **how comprehensible it is to you**. A score of 1 is not comprehensible at all. A score of 7 is completely comprehensible.

1	2	3	4	5	6	7

not at   completely

all comprehensible   comprehensible

Speaker # 1 score (circle one):   1 2 3 4 5 6 7
Speaker # 2 score (circle one):   1 2 3 4 5 6 7
Speaker # 3 score (circle one):   1 2 3 4 5 6 7
Speaker # 4 score (circle one):   1 2 3 4 5 6 7
Speaker # 5 score (circle one):   1 2 3 4 5 6 7
Speaker # 6 score (circle one):   1 2 3 4 5 6 7
Speaker # 7 score (circle one):   1 2 3 4 5 6 7

THE ROLE OF WORD STRESS IN ENGLISH AS A LINGUA FRANCA

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Jennifer Jenkins, in numerous publications (e.g., 2000; 2002; 2006), has proposed a syllabus for teaching English pronunciation that takes into consideration the new role of English as an International Language (EIL), or English as a Lingua Franca (ELF). In these publications, she proposes a "lingua franca core" in which some pronunciation features are considered core, or necessary for intelligibility, and some features are considered non-core, or not necessary for intelligibility. She proposes that word stress not be considered part of the core for three reasons: because word stress does not pose intelligibility issues, because word stress is too complex to be teachable, and because word stress patterns are variable among Native Speaker (NS) dialects of English. This paper will argue from other research that each of these issues may be seen as an argument for rather than against word stress being considered a core feature, thus suggesting a more important role for word stress in ELF.

INTRODUCTION
Jenkins' Lingua Franca Core

As Jenkins (2000) points out, research shows that the number of Non-Native Speakers (NNS) using English for international communication now outnumbers its NSs (Jenkins, 2002, p. 83). This is changing the way that people view teaching English. Pronunciation is of particular importance in this discussion because Jenkins' research suggests that while pronunciation errors are not the only causes of communication breakdowns in NNS-NNS communication, they are the most common and the hardest to overcome (Jenkins, 2002, p. 87) and for many students obtaining a native-like pronunciation is unlikely. Instead of trying to get students to match a NS pronunciation, the focus of ELF is mutual intelligibility. In order to maintain mutual intelligibility, Jenkins recognizes that NNSs must still conform to some standards of pronunciation, and that variations in pronunciation around the world cannot be unbounded if speakers are to be able to communicate successfully. Thus, Jenkins wanted to establish which aspects of pronunciation were most important for intelligibility in order to form her own model, the lingua franca core, or LFC.

To determine which aspects of pronunciation were most important for the LFC, Jenkins examined interactions between NNSs (NNS-NNS). Specifically, over a three-year period she did observations of casual speech and classroom situations, as well as recording information exchanges between participants. The participants were fairly high level English language speakers who had passed the Certificate of Advanced English (CAE) qualification (http://www.cambridgeesol.org/exams/cae/index.html), a globally recognized exam that indicates preparedness for university study in English.

For her data analysis, she located miscommunications between the NNSs and analyzed the reasons behind them. She found that mistakes in pronunciation were the most common cause of communication breakdowns (Jenkins, 2002, p. 87). Analyzing the different types of

pronunciation errors that caused breakdowns led to her formation of the LFC. Some of the core features were the distinction between tense and lax vowels, all consonants except /θ/, ð /, and/ɫ/, aspiration of voiceless plosives, nuclear stress and contrastive phrase stress (Jenkins, 2002, p. 96-97). She found seven commonly taught pronunciation topics to be non-core, or not necessary for mutual intelligibility. Among those were ɵ/ and /ð/, reduced schwa in function words, features of connected speech (such as assimilation), stress-timed rhythm, pitch movement, and placement of word stress (Jenkins, 2002, p.98).

These non-core pronunciation features were also argued to be un-teachable or un-acquirable (Jenkins, 2002, p. 97). Word stress in particular was mentioned as being too complex because of the many rules involved and the numerous exceptions (Jenkins, 2000, p. 39). She also said that word stress is variable across NS varieties and yet communication across dialects is possible (Jenkins, 2000, p. 40), suggesting that word stress is not essential.

Her argument, however, does not stand up to close examination. As the teaching of ELF increases across the globe, it is important to reconsider the role of word stress in English as Lingua Franca. In the following sections, I will examine word stress based on the three reasons that Jenkins claims it should be non-core, and I will argue instead that word stress should be core.

Word Stress and Intelligibility

Jenkins' argument is mostly based on the fact that for the NNS-NNS interactions in her study word stress misplacement alone did not seem to create communication breakdowns. This presents three major problems. First, Jenkins has made assumptions about the meaning of intelligibility within the data analysis. Also, she bases her claim for NNS-NNS intelligibility on a very small amount of interaction data. Finally, although Jenkins claims that NSs are not relevant to her ELF model, with limited research on the impact of word stress errors for NS listeners it becomes increasingly important to consider the research that does exist, research with NS listeners.

When analyzing her data, Jenkins found that word stress misplacement caused no communication breakdowns. She therefore concluded that word stress was not a core feature. One main problem in this conclusion, however, is the criterion that, to be considered a problem, the language feature must be capable of creating a complete communication breakdown, or what Munro and Derwing (1995) call a loss of intelligibility. Jenkins' data did not account for the extra processing energy or effort it may have taken listeners to figure out what word was being said, or what Munro and Derwing (1995) call a loss of perceived comprehensibility. Cutler and Clifton (1984) showed that misplaced word stress can slow processing times for NS listeners. Slowed processing of mis-stressed words means that parts of the message will be lost as the listener works to decode the mis-stressed word.

In addition to the problems with assumptions that underlie her data analysis, Jenkins based her arguments on a limited amount of data: five classroom or social interactions in which there was a communication breakdown, five information exchange tasks, and recorded social exchanges. Although it is not clear how much time this data actually encompasses, it is possible that it is as little as a couple of hours of total recorded interaction time. Basing an entire syllabus on such little data is suspect. To support her claims, Jenkins and other researchers would need to duplicate the findings that word stress errors do not impede intelligibility. Instead, recent research seems to be pointing in the opposite direction. Field (2005) used two syllable words

recorded with standard stress, shifted stress, and shifted stress with a vowel change (from weak to full vowel.) Overall, NSs and NNSs reacted to stress changes in surprisingly similar ways. For example, Field found that a shift in stress, without an accompanying vowel shift, lowered intelligibility almost 20% for both the NSs as well as the NNSs. In contrast to Jenkins' results, this study shows that word stress can have an impact on the intelligibility of words, even for NNSs.

More importantly, however, Jenkins' data is limited in a much more profound way by her lack of native speakers in the data. Because Jenkins' research is based on such a limited amount of data and there is such void of research on NNS listeners (regarding word stress errors), research from NSs may help illuminate this issue, especially in light of Field's work which showed that NNSs reacted in similar ways to NSs regarding word stress issues. Findings from research on the effects of word stress for NSs show a clear and heavy reliance on word stress. Cruz (2003), in a study of Brazilian English learners' pronunciation errors, found that the only statistically significant determinant of intelligibility for NS listeners was word stress. Similarly, Anderson-Hsieh, Johnson, and Koehler (1992) examined pronunciation scores from the SPEAK test for 60 subjects from 11 different language backgrounds and found that errors in word stress were found to highly correlate negatively with the pronunciation score as well as the global speaking ability score. Also, research studies have also looked at ratings of intelligibility by NSs and noticed that improved word stress led to improved intelligibility scores (Derwing, Munro, & Wiebe, 1998; Liu, 2007).

The reason word stress is so important to native speakers seems to be that when faced with a hard to understand word, NS listeners rely heavily on word stress. Zielinski (2008) recorded non-native speakers speaking at length on educational topics, then used to recordings to cut segments out of the recordings that contained pronunciation errors, and then asked native speakers to transcribe those segments (an intelligibility task, in Munro & Derwing's terms). The researcher found that in every sample where the word was difficult to determine, the transcribers tried to use word stress and the number of syllables to determine what the word was. Similarly, Benrabah (1997) found that when words were mis-stressed by NNSs, NS listeners used their knowledge of word stress patterns to try to determine the words instead of listening to the segments. This usually led to the inaccurate identification of the word even when the segments were accurate which led Benrabah to conclude that if speakers want to be intelligible they need to stop focusing on getting every sound right and start working on their word stress. This finding highlights the importance of word stress in ELF intelligibility.

Jenkins' decision to classify word stress as non-core may make EIL significantly less intelligible to NSs. Therefore, a model of ELF that lists word stress as non-core may not be as successful when confronted with the real-world ELF situation, which includes NSs.

Word Stress and Teachability

As part of Jenkins' claim that certain elements of pronunciation should be non-core she points out that many of the non-core elements are not teachable (Jenkins, 2002, p. 97). This does not seem to be based on empirical research. On the contrary, there is evidence that word stress is teachable (Liu, 2007; Murphy, 2004; Sardegna, 2009; Tanner & Landon, 2009). The main reason that Jenkins finds word stress un-teachable is due to its complexity (Jenkins, 2000, p. 39). Although it may be true that the word stress system is complex, Dauer (2005) points out that 85% of the polysyllabic words in English can be accounted for by a limited number of rules.

Dickerson (1994) makes the even more impressive claim that, "the stress of nearly every word in English can be assigned by using one of four simple rules" (p. 25).

Jenkins continues by pointing out that although she is aware of people claiming to be able to break down word stress into a limited number of rules, "[No pronunciation teaching manual] that [she is] aware of, though, provides '10 powerful word stress rules.' This is probably because many of the rules have multiple exceptions and/or are far too complex for mental storage by students and teachers alike" (Jenkins, 2000, p. 39). On the contrary, many materials exist that attempt to share these rules with students (although not all textbooks manage it in 10 or fewer rules). For example, Hahn and Dickerson (1999) package word stress into the four previously mentioned rules. Other texts that also teach word stress through manageable rule based systems are Dauer (1993) and Grant (1993). Such rule based teaching strategies have been successfully put into action within Dickerson's pronunciation classrooms, and research by Sardegna (2009) shows that following Dickerson's model students are able to significantly improve their word stress through the use of covert rehearsal. The use of predictive rules has also found support in others' work, such as Liu (2007) who conducted a one-month intervention for word stress placement with sixty Chinese college students who were able to improve their stress placement and intelligibility. These research studies suggest that not only is word stress *teachable*, but it is also *learnable*.

Of course, teaching prediction rules is not the only way to teach word stress. Murphy (2004) suggests developing a system of talking about the syllables and word stress of new vocabulary. In his own classes he teaches students to assign numbers to each new word they learn, the first being the number of syllables, the second being the number of the syllable that receives the major stress (as indicated by the dictionary.) Thus a word such as, "unbelievable" would be a 5-3. Students, then, learn to not only focus on the consonants and vowels of new words, but also the syllables and stress placement. He found that 86% of students considered this method helpful for learning the stress of new words.

Even technology has been employed in the attempt to teach word stress. Tanner and Landon (2009) have found that through the use of computerized tasks students were able to improve their word stress placement over the course of thirteen weeks. They measured improvement through a pre- and posttest and found significant improvement in both the perception and production of word stress.

From these studies, it is possible to infer that the students were acquiring these pronunciation features through teaching. Despite the complexity of the word stress system, numerous teachers and researchers are successfully teaching word stress and finding that it is teachable and learnable.

Word Stress and Teachability of Other Language Features

Not only do Dauer and Dickerson claim that word stress is teachable, they also point out that word stress affects a number of other important features, such as vowel quality and length, aspiration, and nuclear stress. All of these features are listed as core features in Jenkins' proposal and were thus shown within her data to impact intelligibility. If Jenkins uses un-teachability as a reason to relegate features to the non-core category, it would seem she views the core features as teachable. Many of the core features, however, cannot be successfully produced without accurate word stress.

For example, whether or not a syllable has stress determines the vowel quality of that vowel. "Vowels have no sounds unless they are embedded in a spelling environment and are accompanied by stress information" (Dickerson, 1994, p. 22). Dickerson uses the example words, "slate" and "pirate." Despite the similar spellings "ate", the vowel quality is different because it is determined by the word stress. Jenkins states that the contrasts between short and long vowels should be maintained. Given that vowels are determined by stress, to predict a vowel sound correctly stress must fall on the correct syllable(s).

Stress can also affect consonants, specifically plosives. Celce-Murcia, Brinton, and Goodwin (2010) point out that the plosives /t/, /p/, and /k/ are aspirated before a stressed vowel, but not before an unstressed vowel. They give the example of "rapid" versus "rapidity"(p. 79). The /p/ in rapidity is aspirated because the stress falls on the following "i" but not in rapid because the stress in this word is on the first syllable. Voiceless plosives that are not aspirated, when aspiration is required, are more likely to be heard as their voiced counterparts, /d/, /b/, and /g/, which could easily lead to misunderstandings. Jenkins claims that proper aspiration on voiceless plosives is a core feature. Students would need to know word stress in order to correctly determine whether a voiceless plosive should be aspirated.

Finally, nuclear stress is also affected by word stress. Jenkins claims that nuclear stress is critical for intelligibility. It is impossible, however, to produce proper nuclear stress on multisyllabic words without proper word stress. Words receiving nuclear stress carry that stress on the primary word stress (Couper-Kuhlen, 1986, p. 39). Therefore, a student that does not understand word stress could misplace nuclear stress even if he knows which word needs to receive it. Jenkins, however, tries to separate the issues of nuclear stress and word stress. In reality, nuclear stress is heavily dependent on word stress, and nuclear stress cannot be considered core if word stress, its basis, is not core.they should not be considered separate issues.

Leaving word stress out of the core features makes prediction or use of the other dependent features impossible. For students, being able to predict features of the language can be very useful. "Learners no longer have to wait for the teacher to teach them, nor do they have to confine their learning to the classroom, because prediction skills empower learners to teach themselves at any time in any location. They have the tools with which to become self-instructors" (Dickerson, 1994, p. 29). Teaching the rules of word stress, then, would help students not only predict correct word stress, but also predict the other core features that are dependent on word stress.

Word Stress in Varieties of English

Another way that Jenkins justifies word stress as non-core is by saying that word stress is variable across dialects of NS Englishes. She says, "Word stress patterns differ quite markedly among L1 varieties of English, most notably RP and GA, with no subsequent loss of intelligibility (though admittedly, familiarity with these accents is likely to have a role in this)" (Jenkins 2000, p. 40).

First of all, this argument is unsound. The fact that variation exists for some words across dialects of English does not mean that word stress does not make a difference for all of the other words. Granted, variability is a documented fact (Kingdon, 1958). But while it is clear that variability does exist, it is likely that this affects a rather small percentage of the words in English. Variability also occurs for many consonants, but they still remain part of the LFC.

Whether or not the word stress differences affect many words or only a few, Jenkins claims these differences cause no loss of intelligibility, but she does not back this claim up with evidence. More research on the affect of word stress variability on both native speakers and non-native speakers would be needed in order for Jenkins to be able to support her claim. Without such evidence, however, this argument should not be used to exclude word stress from the LFC.

CONCLUSION

While an image of the role of word stress in intelligibility is emerging for NNSs, one of the findings of this investigation into the role of word stress in ELF was simply that further research is needed. Because Jenkins bases her finding that word stress is not important for intelligibility on a lack of data (lack of misunderstandings due to word stress) instead of a preponderance of data, more research needs to be conducted on the impact of word stress misplacements on NNS listeners.

Although more research is needed, the three main reasons that Jenkins offered for word stress' placement into the non-core category (intelligibility, teachability and variations across L1s) have been shown through other research to be questionable.

Jenkins' proposal for ELF is a fresh and realistic take on pronunciation. Her model steps away from past practices which required students to attempt to match a native speaker norm and attempts to create a manageable system that allows for NNS variation. It has fallen short, however, by delegating word stress to the category of non-core. Based on this investigation, word stress should be included in the core features of Jenkins' proposed ELF. By reassigning word stress to the core features, Jenkins would make her version of ELF more usable not only to NNSs, but also to the numerous NSs involved in international communication.

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