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Pronunciation-specific adjustment strategies for intelligibility in L2 teacher talk: results and implications of a questionnaire study

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A questionnaire study was conducted to examine how 120 highly experienced EFL (English as a foreign language) teachers in Japan adjust their pronunciation in order to facilitate and refine their students' learning skills to approach mutual intelligibility in second language (L2) classrooms (i.e. *pronunciation-specific teacher talk*). The results of this questionnaire study exhibits that the majority of these teachers reported their conscious and/or intuitive efforts to make classroom input comprehensible to their students via phonological input modification. Then, by coding the questionnaire results, 12 pronunciation-specific adjustment strategies (e.g. speech rate and fluency modification, assimilation and liaison avoidance) were identified, and their frequency among the teachers was measured (e.g. they are likely to enunciate their speech, especially at a lexical level). These findings will not only aid and inform teachers on scaffolding and how to boost mutual intelligibility in L2 classrooms but will also assist to advocate and increase learners' awareness of the essential importance of acquiring accuracy in L2 pronunciation.

Keywords: intelligible pronunciation; pronunciation instruction; teacher talk; foreigner talk; teacher questionnaire

A desirable and justifiable goal in the context of second language (L2) pronunciation teaching has been to acquire intelligible pronunciation, rather than native-like pronunciation. There have been a number of studies that have contributed to our general understanding of which pronunciation features contribute to speech intelligibility (for comprehensive reviews, see Derwing & Munro, 2005; Levis, 2005; Setter & Jenkins, 2005), yet two problems have been revealed in this vein of L2 pronunciation research. First, while L2 learning contexts substantially differ according to (1) learners' first language (L1) backgrounds (phonetic structures of L1), (2) their proficiency levels and ultimate goals (advanced business or academic settings versus daily conversation level), and (3) their interactional patterns (with non-native speakers of English [NNEs] versus native speakers of English [NEs]), it seems reasonable to assume that the definition of intelligible pronunciation varies according to such learning contexts (Celce-Murcia, Brinton, & Goodwin, 2010; Levis, 2005). Yet, previous research has provided little guidance as to how practitioners can determine a set of key sound features with the goal to create a tailored phonological syllabus for a certain group of L2 learners, such as native speakers of Japanese (NJs) learning English in EFL (English as a foreign language) settings. Second, although mutual intelligibility is a

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bidirectional phenomenon between speaker and listener (both of whom make conscious or intuitive efforts to attain successful L2 communication) (Munro, 2008), previous studies focused exclusively on the degree of intelligibility of speaker's pronunciation and its impacts on listeners' comprehension, but without much attention to how listeners adapt their speech to approach mutual intelligibility, especially within classroom settings. In the original study, we first administered a teacher questionnaire to 120 highly experienced EFL teachers in order to establish a set of teaching/learning priorities necessary for NJs to achieve intelligible pronunciation (speaker → listener intelligibility) (Saito, under review). In this paper, we will report on a second set of data which investigated what kinds of adjustment strategies these teachers actually use to scaffold and boost mutual intelligibility in L2 classrooms (listener → speaker intelligibility).

Related literature

Due to maturational constraints and L1 influence on L2 development, especially in the phonological domain after puberty, attaining intelligibility, rather than native-like proficiency, for the purpose of successful L2 communication is an important and realistic goal for students to set (Derwing & Munro, 2005; Levis, 2005; Setter & Jenkins, 2005). Accordingly, a great deal of research attention has been directed towards investigating not only how a range of linguistic errors (e.g. grammatical, lexical, semantic, and phonemic and phonological errors) interact to influence an overall intelligibility judgement by NE listeners (e.g. Derwing & Munro, 1997; Isaacs & Trofimovich, in press; Munro & Derwing, 1999; Varonis & Gass, 1982) but also which pronunciation features, in particular, tend to hinder perceived speech intelligibility (e.g. Field, 2005 for lexical stress; Hahn, 2004 for sentence stress; Munro & Derwing, 2001 for speech rate; Munro & Derwing, 2006 for segmentals with high functional loads; and Riney, Takada, & Ota, 2000 for L2 specific segmentals). Furthermore, see Jenkins (2000) for the classroom observation method in order to determine a sufficient number of problematic pronunciation features with an objective to create a phonological syllabus for L2 communication between NNEs with different L1 backgrounds (i.e. English as an international language [EIL] contexts).

Although a majority of L2 pronunciation research has exclusively focused on revealing the problematic linguistic areas of NNE speech and its negative impact on NE perception (i.e. the speaker → listener intelligibility), surprisingly, very few studies have contributed to what kinds of adjustment strategies NE (and advanced NNE) interlocutors adopt to make their speech styles salient to NNEs and thus to enhance the degree of mutual intelligibility in L2 classrooms (i.e. the speaker → listener intelligibility) (cf. Derwing, 1990). The remaining section of the literature review provides a comprehensive overview of the latter directionality of intelligibility, synthesising related topics in L2 education and phonology research in an interdisciplinary manner.

Foreigner and teacher talk

Rather than following an NE model, a growing number of EIL studies have focused on how NNEs modify their speech habits when interacting with other NNEs who have different L1 backgrounds and various L2 proficiency levels (e.g. for a list of accommodation strategies in EIL communication, see the edited volume by Mauranen and Ranta [2009]). Speech-modifying habits have also been a focal point for L2 education research, but also to examine how NE (and advanced NNE) interlocutors accompany their less-capable NNE speakers during L2 interaction in order to facilitate their successful comprehension. This

is measured by way of comprehension checks, clarification requests, confirmation checks, and self-repetition and paraphrasing (i.e. foreigner talk). From a theoretical perspective, the proponents of the Interaction Hypothesis (Gass, 1997; Long, 2007; Pica, 1994) claim that these types of interactional modifications make L2 input more comprehensible and thereafter accessible for L2 learners, which in turn helps them notice and understand linguistic information within the L2 input more effectively (see also Schmidt, 2001). Similarly, the proponents of Sociocultural Theory maintain that learning occurs especially when novice learners co-construct knowledge in collaboration with more expert learners, because experts can help novices solve problems which solely they would not otherwise decipher (Donato, 1994; Dunn & Lantolf, 1998).

From a pedagogical standpoint, a number of empirical studies have further investigated how teachers adapt their speech styles for their students under a range of ESL (English as a second language) and EFL classroom conditions, revealing that teacher talk is operated in a more systematically structured manner relative to foreigner talk (for comprehensive overviews, see Chaudron, 1988; Cullen, 1998; Lyster, in press). For example, teachers tend to intentionally use less complex syntactic structures, fewer pronouns, and higher-frequency vocabulary items in order to make classroom input comprehensible to students. They also likely repeat what students have just said for the purpose of successful comprehension in the whole class as well as ask referential questions (i.e. open-ended questions) with sufficient pause time to elicit a great deal of students' L2 use and engagement in classroom discourse (i.e. negotiation for meaning). Furthermore, teachers occasionally make efforts to draw students' attention to certain linguistic structures with which they tend to have difficulties and increase their awareness of advanced language usage (i.e. negotiation of form). Specifically, they use proactive procedures (e.g. highlighting structures in bold in written input and emphasising them with higher pitch and louder voice in oral input) as well as retrospective procedures (e.g. providing input-providing or output-prompting corrective feedback on their erroneous use of these structures). As a result, such findings have greatly contributed to the continued development of teacher training programmes in various ESL and EFL settings over the past 20 years (Moser, Harris, & Carle, 2011).

Importantly, the discussion of the primary teacher talk studies has been limited to lexicogrammatical aspects of language, but without much attention to its phonological domain. That is, what characterises pronunciation-specific foreigner and teacher talk still remains understudied. Noteworthy is, however, that L2 learners tend to give priority to phonological, and particularly phonetic, aspects of language to decode information from L2 input (i.e. bottom-up approach; Jenkins, 2000). Phonological decoding is also a crucial first step towards language acquisition in major psycholinguistic models of L2 comprehension and production (e.g. Levelt, 1989). To follow is our review of relevant studies on this topic in the field of speech sciences.

Pronunciation-specific adjustment

In L1 speech literature, many studies have demonstrated how mothers exaggerate their speech towards infants (i.e. baby talk), such as through higher pitch, simplified prosody, and vowel hyperarticulation, all of which were claimed to maintain infants' attention as well as convey affective emotions (Fernald & Kuhl, 1987). As a point of interest, relevant studies have provided detailed analyses of the last-mentioned feature of baby talk (i.e. vowel hyperarticulation) and its acoustic properties: vowel space (i.e. first and second formant frequencies) between corner vowels /i/, /u/, and /a/ of mother talk is more spacious than that of normal speech directed to adults in various L1 contexts (Kuhl et al., 1997; Smiljanic

& Bradlow, 2005). There is also some evidence that parents' exaggeration of vowel space promotes infants' perceptual learning (Liu, Kuhl, & Tsao, 2003).

More recently, Uther, Knoll, and Burnham (2007) examined how NEs produced vowels when interacting with infants (infant-directed speech), NNEs (foreigner-directed speech), and other NEs (adult-directed speech). The results of the acoustic analyses found similar acoustic characteristics between baby talk and foreigner talk (i.e. extended vowel space). Accordingly, they suggested, 'vowel hyperarticulation provides a template of the vowel space of the language in question . . . In this way, FDS [foreigner-directed speech] would assist second language learners in developing the necessary phonemic discrimination skills to understand and produce the new language successfully' (Uther et al., 2007, p. 7). Iverson, Hazan, and Bannister's (2005) study examined the actual impact of such speech modifications on L2 phonological development. In their intervention experiment, NJ participants received three types of synthesised stimuli whose acoustic difference between non-native /r/ and /l/ contrast was differently enhanced as follows: (1) all enhanced (with third formant variation maximised, closure duration lengthened), (2) perceptual fading (starting with enhanced F3 variation but gradually moving on to listening to natural speech tokens), and (3) secondary cue variability (with second formant and duration enhanced). The results showed that all of the experimental groups equally noted significant improvement after training, which in turn supports the acquisitional value of acoustic enhancements in the L2 speech learning processes (see also McCandliss, Fiez, Protopapas, Conway, & McClelland, 2002).

Although similar studies have continued to reveal other acoustic characteristics of foreigner talk, such as longer vowel duration and slower speech rate (e.g. Scarborough, Brenier, Zhao, Hall-Ler, & Dmirtieva, 2007), these branches of speech studies have yet to provide sufficient information for practitioners in L2 classrooms. Thus, the question to be answered is: what kinds of adjustment strategies do NEs (and advanced NNEs) employ other than hyperarticulation of vowel sounds? In order to further examine pronunciation-specific teacher talk that actual teachers can adopt as pedagogic tools in L2 classroom settings, more pedagogically oriented research is necessary. To this end, the current study is a first attempt towards examining how experienced teachers adapt, in particular, *their pronunciation features* in order to approach mutual intelligibility and facilitate their students' learning in L2 classrooms (i.e. pronunciation-specific adjustment strategies).

Expert judgement

Whereas a range of methodologies have been employed in previous L2 pronunciation research in order to examine classroom intelligibility between speakers and listeners (or students and teachers), such as with classroom observation (e.g. Jenkins, 2000), rating, and transcription methods (e.g. Derwing & Munro, 1997), the current study adopts a relatively new approach in the field – the expert judgement approach, eliciting the advice of highly experienced teachers.

Over the past 20 years, teacher cognition has been a topic of much discussion in L2 education research. Although there has been some criticism as to the accuracy of teacher cognition and pedagogical content knowledge, especially with respect to inexperienced teachers (Gatbonton, 2008; Richards & Pennington, 1998), teacher cognition studies have documented the complex nature of foreign language teaching as well as have continued to emphasise the importance of accumulated classroom experience (i.e. teachers need to teach the subject through creating ample opportunities for student–teacher interaction, they need to continuously maintain their high proficiency in language, as well as meet the needs of both students and institutes; for details, see Borg, 2006). Thus, *experienced* teachers'

beliefs and knowledge are accredited with being an important resource for shedding light on these complex and controversial topics in actual L2 classrooms, because their opinions are based on their professional teaching experiences and tend to reflect the reality of classrooms (Ellis, 2006).

In fact, the expert judgement approach has been widely used in L2 grammar teaching studies to examine teachers' pedagogical knowledge and reasoning (e.g. Basturkmen, Loewen, & Ellis, 2004). Expert judgement also serves to identify the relative difficulty, learnability, and teachability of target linguistic features for a particular group of L2 learners (e.g. Robinson, 1996).

Though much fewer in number, some researchers have begun to apply this approach to L2 pronunciation teaching contexts. Jenkins (2005) and Sifakis and Sougari (2005) surveyed how experienced teachers perceive the pedagogical possibility to implant NNE pronunciation models as opposed to NE norms, such as general American and received pronunciation. Saito (2011) turned to the expert judgement in order to determine the important segmental sounds needed for NJs to acquire intelligible pronunciation and then tested its construct validity. After the survey, 48 experienced teachers' opinions identified /æ,f,v,θ,ð,w,l, r/ as the most problematic for NJs, and the impact of these segmentals on NE listeners' perception was assessed on a rubric of accentedness (i.e. phonological nativelikeness of utterances) and comprehensibility (i.e. how easy it is to understand what they say). The results demonstrated that mispronunciation of these sounds negatively influenced not only NE listeners' perception of accentedness but also their comprehensibility. The current study explores in depth teachers' cognitions of actual teaching practice in L2 classrooms, examining the results of a teacher questionnaire with 120 experienced EFL teachers in Japan.

Current study

The questionnaire consisted of two parts: examining (1) what pronunciation features are ranked by teachers as important for their students to achieve intelligible pronunciation, and (2) what pronunciation-related adjustment strategies teachers use to make classroom input intelligible to their students. Whereas the original study reported the first part of the questionnaire (Saito, under review), the current study further explores the latter point.

In the first part of the questionnaire (Saito, under review), we asked 120 experienced teachers (61 NE and 59 NJ teachers) to rate the relative teaching priorities from a range of pronunciation features on a five-point scale, from 'very important to *teach*' to '*not* very important to teach'. The ordered ranking identified and prioritised eight domains of problematic segmental and suprasegmental pronunciation areas for NJs (as summarised in Table 1).

The current paper presents the results of the second half of the questionnaire which investigated (1) what kinds of pronunciation-specific accommodation strategies these experienced teachers employ to scaffold and boost mutual intelligibility in L2 classrooms as well as (2) how likely they are to use these strategies in L2 classrooms.

Method

Participants

Given that one of the most salient problems about teacher questionnaire studies of this kind is *subjectivity* (i.e. opinions and standards about mutual intelligibility significantly differ among teachers), special efforts were made to recruit highly experienced teachers with relatively similar teaching backgrounds in EFL classrooms in Japan in order to

Table 1. Summary of the ordered ranking of what pronunciation features NJ students should work on for the purpose of successful speech intelligibility (adapted from Saito, under review).

1. Major segmentals
/ r / (e.g. rock, right, read), / l / (e.g. lock, light, lead), / θ / (e.g. think, thing, thick),
/ v / (e.g. very, vase, voice), / ð / (e.g. this, that, although)
2. L1 effect at syllable levels
Syllabification, cognates
3. Assimilation problems
/ sɪ / (e.g. sip, sit, sick), / ʃɪ / (e.g. sheep, sheet, ship), / tɪ / (e.g. ticket, team, tip)
4. Stress/intonation problems
Word stress, intonation, sentence stress
5. Secondary segmentals
/ f / (e.g. feet, fall, fill), / æ / (e.g. man, hat, apple), / ʌ / (e.g. cut, duck)
6. Diphthong problems
Diphthongs /aʊ, aɪ, oʊ, ɔʊ, eɪ/
7. Minor segmentals
/ w / (e.g. what, when, wood), contraction (e.g. won't, can't), / ŋ / (e.g. playing, king, song),
/ h / (e.g. hear, hall, hill), / n / (e.g. neat, neck, pattern), / p, t, k / (e.g. pitch, tall, call)
8. Fluency problems
Fluency, speech rate

elicit comparable opinions (Ellis, 2006; Saito, 2011). First, the authors contacted a nationwide language institute with which approximately 3000 teachers are associated, who teach conversation-based English classes (i.e. the focus of their classes is not on form but on meaning). Our assumption is that these teachers are highly familiar with adult NJ students with a wide variety of proficiency levels and have a great deal of experience in adapting their own speech and scaffolding students according to student needs.

During the first meeting with the language institute, the authors clearly explained (1) the purpose of the study (i.e. setting teaching/learning priorities and investigating teachers' adjustment/scaffolding techniques) and (2) the qualifications of the participating teachers (e.g. a great amount of teaching experience with a wide range of NJ students and familiarity with their conversational L2 speech). Out of approximately 3000 teachers, the institute carefully selected 120 teachers (61 NEs and 59 NJs) who were proficient teacher trainers with more than five years of teaching experience.[1] As in other ESL contexts (Breitkreutz, Derwing, & Rossiter, 2001; Derwing & Munro, 2005), the institute acknowledged that no training or workshops on the topic of pronunciation teaching were offered in their teacher training program; thus, the impacts of their prior knowledge about pronunciation teaching on their questionnaire responses would be minimum. Our goal was to examine whether, and to what degree, these highly experienced teachers *consciously or intuitively*[2] employed pronunciation-related adjustment strategies for successful L2 communication in their classrooms. Given that Jenkins (2000) pointed out that NNE teachers who have achieved highly intelligible speech through their L2 learning experience tend to be more acute in knowing which pronunciation features can be more vital for intelligibility, as well as more learnable than others, we recruited a similar number of NE teachers ($n = 61$) and NNE teachers ($n = 59$) for comparison reasons.

Teacher questionnaire

The questionnaire was carefully prepared in a self-explanatory manner so that the teachers could clearly understand (1) the purpose of the questionnaire, and (2) the answering procedure.

The purpose of the questionnaire

The beginning of the questionnaire emphasised the project targeting 'intelligible speech', but not 'accent-free speech'. Some would argue that the simplistic wording (i.e. intelligible speech) might not enable 120 teachers to reach similar understanding of what is meant by intelligible pronunciation. However, it needs to be emphasised that L2 pronunciation researchers have approached this complex topic with a wide range of definitions; even these researchers are not always coherent with one another in regard to the precise definition of intelligible pronunciation and what contributes to speech intelligibility (for definitional fuzziness in L2 pronunciation research, see Isaacs, 2008). In this regard, the goal of the current study is not to identify precisely which factors contribute to mutual intelligibility in controlled settings, but rather, to recruit a large number of highly experienced teachers to elicit their own opinions based on years of teaching experience (see the construct validity of the expert judgement approach, Ellis, 2006). In turn, this enables us to examine their current perspectives and consensus of (1) what sounds are important and unimportant for intelligible pronunciation in actual L2 classrooms, as well as (2) which aspects of their own pronunciation they modify and adapt to make classroom discourse intelligible to students.

Questions

The questionnaire comprised two parts. Part 1 asked the teachers to rate the relative importance of 25 pronunciation features on a five-point scale (1 = very important to teach to 5 = not very important to teach). Each pronunciation feature was followed by three or four example cases to permit teachers to comprehend what kinds of problems the questionnaire referred to (e.g. 'm<u>a</u>n, h<u>a</u>t, <u>a</u>pple' for /æ/, 'HE studied yesterday vs. he STUDIED yesterday' for sentence stress). Next, after the teachers rated the pronunciation problems NJ students tend to have in Part 1, they then proceeded to Part 2. In Part 2, they were required to answer (1) one yes/no question (i.e. whether they modify or adapt their pronunciation in L2 classrooms?) and (b) one open-ended question (what kind of adjustment and scaffolding strategies they consciously or intuitively employ during lessons in relation to typical English pronunciation problems of Japanese learners?) (see the Appendix). The results of Part 2 are discussed later in this paper.

Procedure

The questionnaire along with the consent forms was sent to the 120 participating teachers via the language institute. In order to ensure the consistency of the rating procedure, teachers were encouraged to contact the authors either by phone or email whenever they found anything unclear in the questionnaire. The questionnaire was administered during a three-month period between January and March 2009.

Coding adjustment strategies

Whereas previous related literature about adjustment strategies was generally concerned with not only phonological but also lexical, syntactic, and pragmatic aspect of L2 classroom discourse (e.g. Chaudron, 1988; Cullen, 1998; Lyster, in press), the researchers in this study tried to identify *pronunciation-specific adjustment strategies* to accompany our data and research goals. After reading all the questionnaire responses, the two researchers carefully discussed with each other what kinds of categories could emerge from the data. In addition,

our discussion substantially drew on the first part of the questionnaire (i.e. 25 pronunciation problems which Japanese learners of English tend to have) on the assumption that teachers would adjust their speech according to their students' errors (e.g. teachers intentionally speak slowly because their students speak English with slow speech rate). As a result, we distinguished 12 pronunciation-related adjustment strategies, as explained next with example answers from the teachers:

(1) *Segmental-level enunciation* refers to teachers' exaggerated enunciation of certain consonants and vowels, such as /æ/, /r/, and /th/, in order to elicit students' noticing and awareness of these problematic sounds at a phonemic level. This corresponds to hyperarticulation in the L1 and L2 speech literature (e.g. Kuhl et al., 1997):

> I pronounce /b/-/v/ sounds and /r/-/l/ sounds more distinctly with lower-level students. (NE Teacher 5)
>
> When necessary, I pronounce /t/ instead of the flapped /t/ sound. (NJ Teacher 17)

(2) *Word-level enunciation* involves teachers' word-level enunciation in order to facilitate students' comprehension of L2 classroom discourse instead of exaggerating individual sounds:

> I tend to pronounce words more distinctly when giving directions in the class. (NE Teacher 49)
>
> I try to pronounce words clearly to make sure my English is easy to understand. (NJ Teacher 46)

(3) *Word stress emphasis* refers to teachers' conscious or intuitive efforts to emphasise word stress by enunciating stressed syllables in order for students to notice:

> I emphasise target sounds to signal word stress. (NE Teacher 36)
>
> I put certain accents in a word. (NJ Teacher 30)

(4) *Sentence stress emphasis* indicates teachers' conscious or intuitive efforts to stress important information in a sentence:

> I put more stress on key words than I would naturally do. (NE Teacher 49)
>
> In order to make what I want to say clear to students, I pay attention to sentence stress. (NJ Teacher 5)

(5) *Intonation emphasis* refers to teachers' conscious or intuitive efforts to highlight English intonation patterns:

> I exaggerate an intonation. (NE Teacher 38)
>
> I try to emphasise intonation. (NJ Teacher 11)

(6) *Speech rate modification* refers to teachers' relatively slow speech, and this concurs with similar definitions in other relevant studies (e.g. Chaudron, 1988):[3]

> I decrease the speed of my speech with varying degrees. (NE Teacher 29)
>
> I modify speaking speed especially for the beginner-level students. (NJ Teacher 45)

(7) *Fluency modification* involves teachers' conscious or intuitive efforts to insert more pause or repetition in their classroom discourse:

> I repeat the important part of the statement or question to make sure the student understands. (NE Teacher 17)
>
> I speak with more pauses. (NJ Teacher 33)

(8) *Syllabification modification* refers to either teachers' enunciation of each syllable or insertion of epenthesis vowels to syllabify complex syllables (/pleɪt/ → /pəleɪtə/, /fækt/ → /fækətə/):[4]

> It's important for students to understand all the sounds that make up a word, so I often find they sound better after breaking up a word (e.g. Fe/bu/ru/a/ry). (NE Teacher 3)
>
> I try to enunciate individual sounds. (NJ Teacher 1)

(9) *Cognate strategy* concerns teachers' techniques to intentionally use Katakana counterparts when students have problems in comprehension:[5]

> If a student doesn't understand a word I say, that they should know, I say it Katakana way and they understand quickly. (NE Teacher 3)
>
> I tend to give Katakana sounds to Japanese learners when they don't seem to understand what's told. (NJ Teacher 21)

(10) *Contraction avoidance* relates to teachers' strategies to intentionally avoid using contractions such as 'gonna' for 'going to' and 'wanna' for 'want to':

> I avoid certain reductions such as 'wanna' and 'gonna' when speaking to lower-level students. (NE Teacher 57)
>
> I intentionally avoid certain contractions such as 'wanna'. (NJ Teacher 2)

(11) *Assimilation/liaison avoidance* refers to teachers' strategies to intentionally avoid word/sentence-linking phenomenon, such as assimilation and liaison:

> I avoid elisions and liaisons in speech. If the students can easily understand where one word ends and another begins, they can begin to utilise the correct sound for each of the specific words they've heard, making their own speech more intelligible. (NE Teacher19)
>
> I carefully pronounce 'what do you think' instead of 'wha'da'ya'think'. (NJ Teacher 18)

(12) *Oral gesture display* concerns teachers' conscious or intuitive efforts to visually show how they use articulatory gestures to produce certain sounds or words in order to help students mimic model pronunciation:

> I unconsciously articulate my mouth muscle positions and lip shapes so that listeners can mimic and activate their own lip muscle awareness. (NE Teacher 25)
>
> I explicitly show oral gestures especially when it comes to Katakana English (e.g. apple). (NJ Teacher 1)

Analysis

First, the 120 teachers were grouped as those who adjusted and who did not adjust based on the yes/no question. Second, all responses by teachers who adjusted were assessed by looking at (1) how many adjustment strategies they pointed out and (2) whether they fell into any of the above-mentioned 12 pre-determined categories. Finally, all answers were displayed using a scoring system in the following manner: if one participant identified one

adjustment strategy, then that strategy received one point. Thus, if one participant reported three strategies, such as 'word-level enunciation', 'word stress', and 'speech rate', one point was given to each strategy. Some answers included multiple adjustment strategies within a sentence, to which we assigned multiple points correspondingly. For example, in the response 'repetition using exaggerated mouth movements helps' by NE Teacher 61, one point was assigned to fluency modification and one point to oral gesture display. In addition, a few teachers reported enunciating several segmental sounds, but only one point was assigned to each teacher. For example, as NJ Teacher 29 pointed out, 'I consciously try to be careful with the pronunciation of /f/, /v/, /w/, and /r/ sounds', so he/she received one point for the segmental-level enunciation strategy. This scoring system method clearly displays the *frequency* of strategies among teachers. However, it is important to note here that frequency solely demonstrates the quantitative difference among strategies, but by no means is it our intention to indicate relevance of importance.

Inter-coder reliability

First, both the first and the second authors re-read and coded 20 questionnaires (10 NE and 10 NJ questionnaires) separately. The inter-rater reliability was significantly high between the two coders ($r = 1.00$). Subsequently, the first author coded the rest of the data set.

Results and discussion

First, the yes/no question in the questionnaire asked whether the experienced teachers consciously or intuitively modify and adapt their pronunciation. Although 15 teachers (three NS teachers and 12 NJ teachers) claimed to not make any modification in their L2 classroom discourse, adaptation of speech to accommodate students affirmed to be a preponderant skill used by 105 teachers out of the original 120; some explicitly claimed that they tend to do so especially with beginner-level students. Interestingly, some teachers stated that their adjustment process has become almost unconscious (e.g. 'I consciously adjusted when I first came to Japan, but now it's practically unconscious', NE Teacher 47). Others supported the role of adjustment especially in relation to students' proficiency levels (e.g. 'The students' exposure to English shouldn't be kept to the basics too long if they want to improve their listening and other skills', NJ Teacher 27). Noteworthy is that many teachers emphasised the importance of speech adjustment concurrently with acknowledging its potential negative impacts on students' L2 learning (e.g. fossilising students' erroneous L2 pronunciation). NE Teacher 19 pointed out:

> Sometimes I think there might be a danger in modifying my speech for students . . . students may become 'spoiled' by the classroom English and unprepared for all of the variables of a natural setting. But I think that, if the teacher carefully tailors their speech to fit the level and needs of their students, this tactic can help the students learn what's important in a sentence, both in terms of listening and speaking. It also makes good pronunciation a focus of every conversation the student has with their teacher. I think the benefits are more substantial than the dangers.

In sum, a majority of the experienced teachers reported their use of pronunciation-related teacher talk to some degree, which in turn supports the role of teachers' efforts to make classroom input comprehensible to their students.

Second, with the 105 teachers who remained, an open-ended question asked how they modify their L2 speech. This generated 224 answers, which were judged as pronunciation-related adjustment strategies (128 from 58 NE teachers and 96 from 47 NJ teachers). All

Table 2. The ordered ranking of 12 adjustment strategies by 105 teachers.

	NE teachers ($n = 58$)	NJ teachers ($n = 47$)	Total
1. Speech rate modification	35 points	31 points	66 points
2. Word-level enunciation	34 points	19 points	53 points
3. Segmental-level enunciation	10 points	9 points	19 points
4. Contraction avoidance	11 points	5 points	16 points
5. Assimilation/liaison avoidance	7 points	9 points	16 points
6. Fluency modification	10 points	2 points	12 points
7. Intonation emphasis	6 points	4 points	10 points
8. Sentence stress emphasis	3 points	4 points	7 points
9. Oral gestures display	3 points	4 points	7 points
10. Word stress emphasis	2 points	4 points	6 points
11. Syllabification modification	5 points	1 point	6 points
12. Cognates strategy	2 points	4 points	6 points
Grand total	128 points	96 points	224 points

answers were considered in relation to the 12 adjustment strategies, and teachers each contributed 2.13 points on average (SD = 1.15).

Last, the 12 adjustment strategies were ranked on the basis of the number of points each category received to see how likely these teachers used these strategies (see Table 2). The results revealed several interesting patterns, which will be discussed in depth from both a pedagogical and a theoretical perspective.

To begin, the results demonstrated that experienced teachers consciously or intuitively make efforts to make word-sized units of L2 input salient and distinct to their students. As shown in other teacher talk studies (e.g. Chaudron, 1988; Cullen, 1998; Lyster, in press), in addition to the current study, many experienced teachers slow down their L2 speech and clearly enunciate each word (66 points for speech rate modifications and 53 points for word-level enunciation). Furthermore, the results established that 44 teachers in total reported adjustment strategies by avoiding assimilation/liaison (16 points), contracting words (16 points), and speaking with more pause and repetition (12 points), which by corollary makes lexical and sentence boundaries in L2 input salient and more clear to students. Many L2 researchers themselves have claimed that L2 learning is lexically driven: L2 learners decode word-sized units of L2 input as default strategies in order to extract meaning (Baker & Trofimovich, 2008; de Bot, 1996; Levelt, 1989; VanPatten, 2004). These adjustment strategies enable students to detect words from L2 classroom discourse and thereby comprehend meaning in an effective and efficient manner.

Next, 19 points were given to the segmental-level enunciation (i.e. hyperarticulation), although these teachers tended to do so by focusing on very few sounds (i.e. the /r/-/l/ contrast by seven teachers, the flapped /t/ sounds by seven teachers, /æ/ by four teachers, and the /f/-/v/ contrast by one teacher). Although participating teachers rated five segmental sounds /l, r, ð, θ, v/ as the most important pronunciation features necessary for Japanese learners of English to achieve intelligible pronunciation (see, Saito, under review),[6] the results exposed that far fewer teachers actively indicated their conscious or intuitive efforts to make these crucial segmental sounds salient to their students. While L1 and L2 speech studies have shown that hyperarticulation of individual sounds is a common phenomenon (Kuhl et al., 1997) and facilitative of acquisition (Liu et al., 2003), the results of the current study also revealed that a number of these experienced teachers actually felt it difficult

or unnecessary to adjust L2 speech at a segmental level (e.g. exaggerating individual phonemes) during classroom discourse.

Some teachers stated categorically that segmental-level adjustment hinders natural flow of meaningful classroom discourse and is thus counter-productive ('As far as specific sounds go, I don't make any adjustments in this regard. I try to pronounce the sounds as naturally as possible', NE Teacher 49). Yet, the results of Part 1 of the questionnaire (five-point rating) suggest that teachers consider problematic individual sounds such as /l, r, ð, θ, v/ important for intelligibility and so may need to explicitly teach these features in order to assist their L2 learners in acquiring finer phonetic details of words at a segmental level (for the relative weights of learning segmental sounds in intelligibility, see Jenkins, 2000).

The question now becomes: how can teachers introduce these crucial sounds in an effective manner? Although some simply suggest providing stand-alone pronunciation lessons outside of their communicative classrooms, the efficacy of this approach remains questionable. Pronunciation teaching has been extremely notorious for its overdependence on decontextualised practice such as choral repetition and minimal pair drills, and it remains tremendously contentious whether and to what degree such exclusive focus on forms can assist L2 learners to transfer what they have learned in class to other communicative settings outside of the classroom (for discussion, Trofimovich & Gatbonton, 2006).

One way for teachers to focus on such features in a meaningful manner is by using *pronunciation-focused recasts* (i.e. reformulating students' mispronunciation of individual phonemes). An example illustrating a pronunciation-focused recast in a meaning-oriented classroom follows (Saito & Lyster, in press a):

Student: Children spend too much time in read[lead]*ing . . .
Teacher: 'R'eading (the teacher put stress on 'r' in reading)
Student: Reading. Too much time in reading comic books rather than novels.

In this example, after a student mispronounced /l/ for /r/ in 'reading' while expressing his opinion on the subject of reading comic books versus novels in an in-class debate activity, a teacher immediately reformulated his mispronunciation, enunciating the /r/ sound. In this way, the teacher could signal that the student's pronunciation was not correct (i.e. /l/ rather than /r/) and also provide a correct and pedagogically useful pronunciation model of /r/ in 'read' without interrupting the communicative flow of the lesson (see also Saito & Lyster, in press b for the role of recasts in L2 vowel acquisition).

Whereas L1 acquisition research has identified recasts as a common trait of baby talk and its acquisitional value in L1 acquisition (e.g. Farrar, 1992), recent L2 education research has found that recasts not only help students notice and practice their mispronunciation of individual phonemes (Kim & Han, 2007; Sheen, 2006) but also facilitates their segmental-level acquisition (Saito & Lyster, in press a, in press b). Although instructors might see recasts as error correction rather than a modification of their own pronunciation, recasts provide both negative and positive evidence without interrupting communicative flow of conversation discourse (Farrar, 1992; Long, 2007). Many L2 researchers have suggested that providing interactional feedback is a crucial part of instructional input needed for students to notice L2 target features in meaning-oriented classrooms (e.g. Lyster, 2007; Sharwood Smith, 1993).

Interestingly, although some teachers reported their tendency to re-syllabify complex syllable structures (e.g. inserting epenthesis vowel /ə/) (six points) or to intentionally use cognates (i.e. Katakana loan words) to help their students understand L2 classroom input (six points), other teachers clearly criticised such adjustment strategies, because these types of *overmodification* might negatively affect learners' word-level comprehension, as

Japanese learners might continue to use Katakana loan words or insert epenthetic vowels to complex syllables. For example, NJ Teacher 40 pointed out: 'I sometimes tend to use words that are familiar to Japanese because some words can be found in Katakana in spoken Japanese, although I never pronounce them the way Japanese Katakana may do'.

In fact, L2 pronunciation research has found that providing too much modified input might have detrimental effects on L2 speech learning. For example, Derwing (1990) showed that NEs who increased pause time tended to hinder communicative success in the NE–NNE interaction, and thus could be considered as an unwanted speech modification. Importantly, the results of Part 1 of the questionnaire emphasised the importance of discouraging students from using cognates (i.e. Katakana loan words) and teaching syllabification rules, both of which were categorised among the most important suprasegmental features to teach (see also Couper, 2006).

Finally, the current study results did not disclose any consequential difference in judgement between NE and NJ teachers, which suggests that these experienced teachers equally had sufficient teaching skills to adapt their speech styles for the purpose of facilitating their students' successful comprehension regardless of the teacher's native language background.

Conclusion and future directions

Given that teachers adapt their speech in order to not only help students successfully understand L2 classroom input but also raise their awareness towards more accurate usage of the target language, we initiated in surveying pronunciation-specific adjustment executed by highly experienced teachers in L2 classrooms. We confirmed that the majority of the teachers use L2 pronunciation-related strategies, and that the results allow us to draw conclusions and make suggestions as to (1) how teachers help their students successfully understand L2 classroom input (the teacher → student intelligibility) as well as (2) what pronunciation features teachers need to teach and learners need to learn (the student → teacher intelligibility).

First, given that L2 learners primarily process meaning at a lexical level, teachers can make the lexical and sentence boundaries in their speech clear to students by slowing down speech rate, enunciating each word, avoiding assimilation/liaison and contraction, and using more pauses and repetition. Second, the current study showed that teachers were unlikely to exaggerate individual sounds during classroom discourse, probably because they felt it difficult or counter-productive to do so without breaking the communicative flow. In this respect, teachers need to implement some intervention to draw students' attention to these sounds and push them to fill in finer phonetic details of their lexical-level pronunciation. We suggest providing recasts on students' mispronunciation with an exaggerated model pronunciation.

Finally, based on the results of the current study, adjusting syllabification and cognates (i.e. Katakana loan words) is subject to controversy because some teachers feel that these strategies might negatively influence students' English proficiency in the long term. Because there is scant research to support adjustment strategies for these features, it might be important to explicitly teach syllabification rules in English and discourage students from using Katakana loan words (Couper, 2006). This suggestion concurs with the results of the original study, which revealed that five segmentals (/l, r, ð, θ, v/) as well as the correct understanding of syllabification structures and restricted use of cognates were ranked by teachers as the most important pronunciation-teaching targets for NJs.

To conclude, methodological limitations of this project, as well as suggestions for future research, will be formally addressed. First, we would like to emphasise again that the data

set was based on the teachers' self-reports in a retrospective manner; it would be intriguing to conduct follow-up classroom observations of a subset of the teachers to see if their perceptions contest with what they actually do (see the relationship between teacher beliefs and practice, Basturkmen et al., 2004). Second, providing one open-ended question might have still been challenging for many of the teachers who paid little, if any, attention to the role of pronunciation teaching in L2 classrooms. Thus, future studies need to elaborate more reliable ways to elicit teachers' opinions about pronunciation-specific teacher talk, such as asking teachers to rate the perceived importance of the 12 adjustment strategies identified in the current study, in order to determine the relative weights of pronunciation-specific teacher talk towards attaining mutual intelligibility in L2 classrooms. Last, given that the current study identified a range of pronunciation-specific teacher talk techniques beyond hyperarticulation, future research needs to include intervention studies to investigate which adjustment strategies can be beneficial or detrimental to L2 phonological development (e.g. Iverson et al., 2005; Liu et al., 2003; Saito & Lyster, in press a, in press b).

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Notes

1. A small number of teachers can be promoted to be teacher trainers on the basis of the amount of teaching experience and the level of teaching skills.
2. A reviewer pointed out that teachers will only be able to identify conscious strategies in responding to the questionnaire. As it will become clearer in the later part of this paper, not many teachers in the current project consciously paid attention to how they modified their speech, but the questionnaire made them realize the fact that they were actually adjusting their speech styles without much attention.
3. According to Chaudron's comprehensive overview of teacher talk studies, teachers tend to have a mean rate of speech of 100 words per minute with beginning learners, but speed up to 140–160 words per minute with advanced learners (1998, p. 66).
4. Due to the fact that Japanese is a mora-timed language, NJs tend to pronounce each syllable with equal stress, which leads NJs to have difficulties in producing complex syllables allowed in English such as consonant-consonant-vowel-consonant (CCVC), CCVCC, and CCCVCC (Riney & Anderson-Hsieh, 1993).
5. As one of its three Japanese writing systems, Katakana borrows English words and adapts them within the Japanese phonetic system (e.g. /terebi/ for 'TV' and /konpjyutar/ for 'computer'). It is well known that NJs tend to continue to use Katakana English, resulting in a lot of confusion for NE listeners (Riney & Anderson-Hsieh, 1993).
6. Their judgement of the interdental fricatives as a prioritized teaching target needs to be interpreted with caution. It could be used as evidence that the teachers in the current study might have conflated the accentedness-comprehensibility distinction, because these sounds with low functional loads are hypothesised to make little impact on comprehensibility (Jenkins, 2000). Yet, there is another possibility that the teachers might have felt it safer to teach the interdental fricatives in conjunction with the reality of Japanese EFL classrooms: their students likely have high expectations to use English in future business and academic settings, whereby they need advanced oral L2 skills to successfully interact with a wide range of interlocutors, some of whom might have negative attitudes towards foreign accented speech (Munro, 2003). In other words, it is not surprising that the teachers in the current study chose to teach these sounds to avoid unwanted accent-related discrimination which their students might face in future communicative settings, especially given that the mispronunciation of the interdental fricatives is perceptually salient and it negatively relates to accentedness (but not to comprehensibility) (for discussion,

Gatbonton, Trofimovich, & Segalowitz, 2011). We would like to make a strong call for future relevant studies which will investigate the communicative and social impact of the interdental fricatives in listeners' reaction towards L2 speech with a controlled experimental design.

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Appendix. Part 2 of the Questionnaire

Native (or advanced non-native) speakers' approach to intelligibility

Given that Japanese learners likely have pronunciation problems presented above (see Part 1 in text), do you modify your English consciously or unconsciously when you speak with them compared with when you speak with other native English speakers? (yes, no)

If yes, please write down what you usually do.