

Reed, M. (2012). The effect of metacognitive feedback on second language morphophonology. In. J. Levis & K. LeVelle (Eds.). *Proceedings of the 3<sup>rd</sup> Pronunciation in Second Language Learning and Teaching Conference*, Sept. 2011. (pp. 168-177). Ames, IA: Iowa State University.

## 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 supplience 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 supplience of 3<sup>rd</sup> 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' supplience of t/d codas in monomorphemic words, but low rates of supplience 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 supplience of regular past tense -ed, reported at approximately 78% accuracy. However, the regular past tense morpheme rate of supplience 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 supplience 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 supplience and accurate production of inflectional affixal morphology in spontaneous speech.

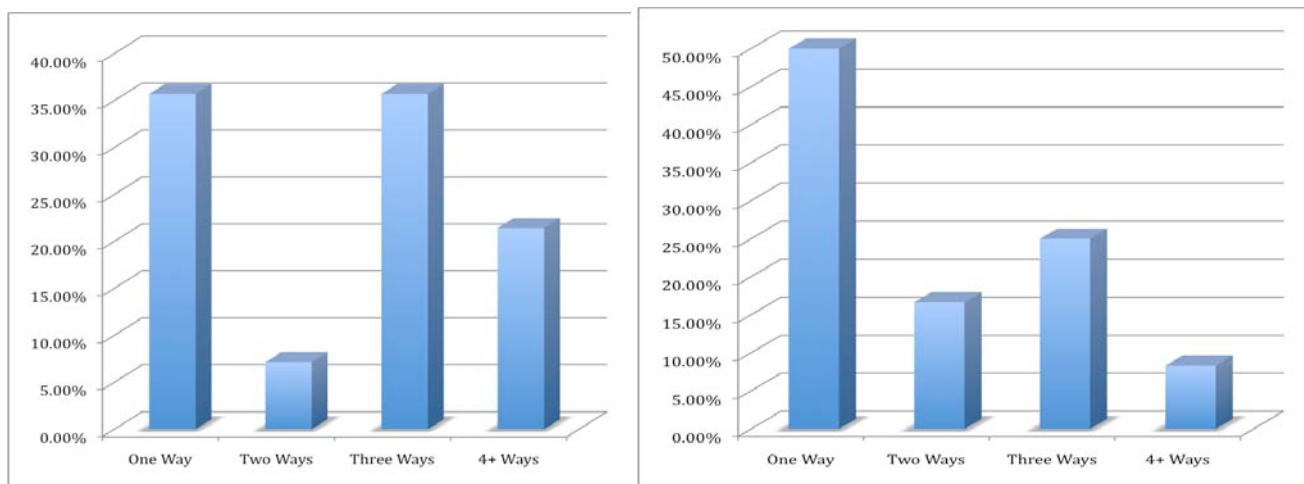
Corrective Feedback (hereafter CF), defined by Chaudron (1977) as "any reaction of the teacher which clearly transforms, disapprovingly refers to, or demands improvement of the learner utterance" (p. 31), has been studied and its component moves labeled and categorized. In a landmark study, Lyster and 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 supplience 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?”

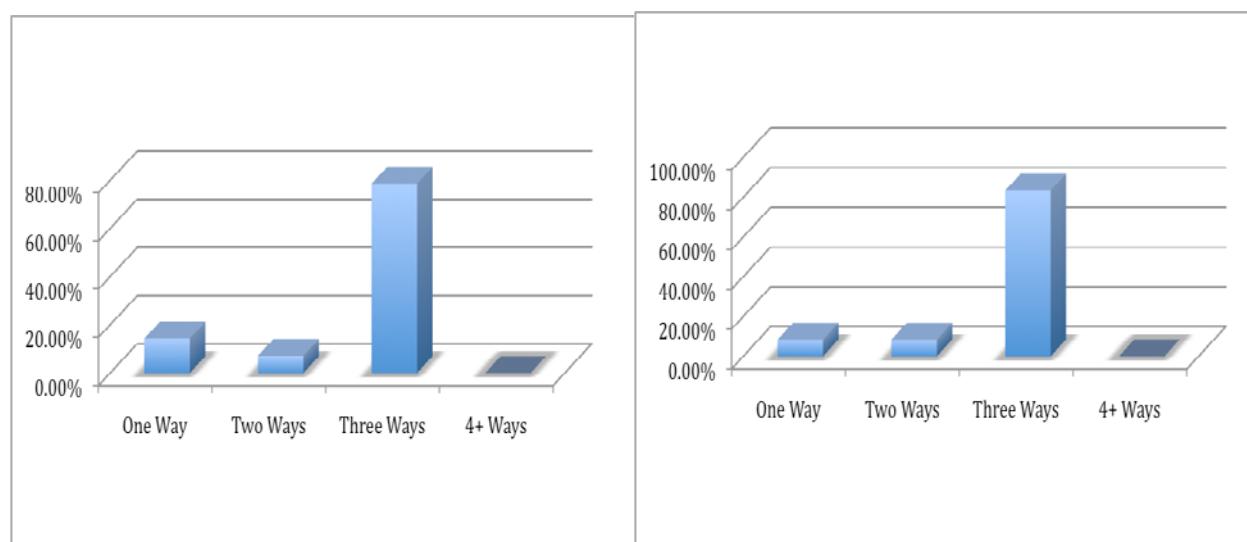
It is interesting to note that in both groups, students expressed resentment and resisted reviewing basic rules for inflectional affixes, claiming they already knew the rules “add -s” or “add -ed”, having learned them at early stages of English language instruction. However, the metacognitive responses 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 supplience 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.

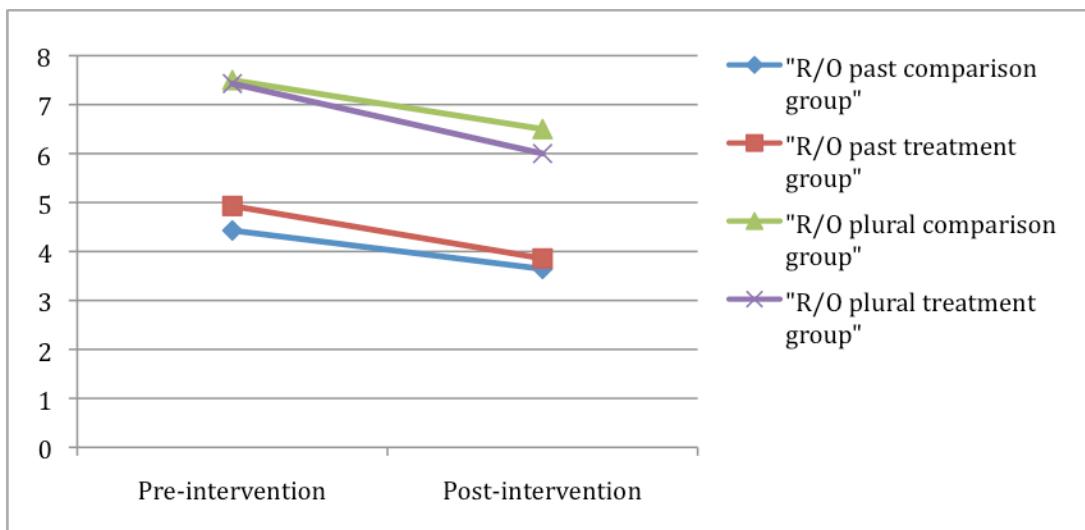
## THE RESULTS

Gains were made in student metacognition. In post-intervention surveys, only one student from each group maintained that supplience 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 supplience 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 sufficiency 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

Marnie Reed is Associate Professor of Education at Boston University, affiliated with the TESOL and Applied Linguistics programs. Her work focuses on the roles of auditory feedback in perception and production of connected discourse, metalinguistic feedback in the acquisition of morphosyntax, and metacognition in the teaching of English intonation. She is co-author (with Christina Michaud) of *Sound Concepts: An Integrated Pronunciation Course* (McGraw-Hill), and *Goal-Driven Lesson Planning for Teaching English to Speakers of Other Languages* (University of Michigan Press), and co-editor (with John Levis) of the forthcoming *Handbook of English Pronunciation* (Wiley-Blackwell). She is co-organizer of the Pre-Conference Symposium "Teaching and Learning Pronunciation: Local and Global Perspectives on Research and Practice," Australian Council of TESOL Associations (ACTA) 2012 Conference. She can be contacted at Boston University, School of Education, 2 Silber Way, Boston, MA 02215. Phone: 617-353-1811. Email: [tesol@bu.edu](mailto:tesol@bu.edu)

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