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SCAFFOLDING STUDENTS' SELF-REGULATED EFFORTS FOR EFFECTIVE PRONUNCIATION PRACTICE

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While attending a 15-week ITA course that empowered students with strategies to improve their English pronunciation, 15 international graduate students reflected on their use of strategies and practice at home through weekly pronunciation trackers, and self-assessed their pronunciation progress through questionnaires. To evaluate the effectiveness of student-centered instruction combined with teacher scaffolding, the students' reports on their pronunciation trackers, reflections, and self-assessments were triangulated with their accuracy scores for vowel reduction, linking, primary stress, and intonation in pre-and post-read-aloud tests. Results indicated improvement with the target features as well as evidence of effective teacher scaffolding. These findings support the view that instructors play an integral role in scaffolding students' self-regulated efforts for successful pronunciation practice.

INTRODUCTION

Research indicates that students' autonomous and self-regulated efforts are key factors contributing to their level of pronunciation improvement (He, 2011; Ingels, 2011; Sardegna, 2012). Additional factors for effective pronunciation training include explicit instruction, guided-practice, and strategy training and use (Sardegna, 2009; 2011) entwined with the critical components of learners' reflections and self-assessments (Dlaska & Krekeler, 2008; Sardegna & McGregor, 2012a). The gap in current research now lies in investigating the instructors' role in threading and integrating such factors into their curricula and activities on the basis of previous research findings. This study attempts to fill this gap in our knowledge base by examining the effect of teacher scaffolding on students' self-regulated efforts during pronunciation practice.

Teacher scaffolding consists of performing three related pedagogical actions: (a) providing a support structure to enable certain activities and skills to develop, (b) carrying out those activities in class, and (c) assisting learners in moment-to-moment interaction (Walqui, 2006). Empirical evidence documenting the positive effects of pedagogical actions undertaken in order to scaffold L2 reading, writing, listening and/or vocabulary acquisition through strategy instruction are abundant (e.g., Fitzgerald & Graves, 2004; Olson & Land, 2007; Vandergrift & Tafaghodtari, 2010; for comprehensive reviews of other studies see Chamot, 2005; Macaro, 2006). However, teacher scaffolding in relation to L2 pronunciation improvement has been an understudied area of research.

RELEVANT LITERATURE

Approaches to teaching EFL/ESL pronunciation have long emphasized the importance of empowering students with pronunciation learning strategies that they can use to correct their

mistakes (Derwing, Munro, & Wiebe, 1998; Dickerson, 1994; Morley, 1994; Osburne, 2003). Recent empirical findings on the effectiveness of pronunciation instruction continue to support metacognitive pronunciation training (He, 2011; Ingels, 2011; Sardegna, 2009; 2011; 2012), and highlight the need to consider students' beliefs about pronunciation learning and their perceptions of what works for them (Derwing & Rossiter, 2002; Couper, 2011). These views are supported by strategy training experts who have also stressed the importance of raising students' awareness as to how, when, and why strategies can be used (Chamot, 2005; Cohen & Macaro, 2007). Yet, little is known about how pronunciation teachers can facilitate awareness raising and strategy training.

Recently, Sardegna and McGregor (2012b) proposed a student-centered approach to teaching suprasegmentals grounded on research findings in the areas of pronunciation teaching, strategy instruction, and second language acquisition. The approach consists of the following components:

1. Prioritization of pronunciation goals based on student needs.
2. Empowerment through explicit instruction, guided practice, and learning strategies. That is, empowerment through teacher scaffolding.
3. Opportunities for students to monitor their performance during their pronunciation practice, and reflect on their outcomes.

Underlying this instructional model is the premise that students need to be able to recognize, understand, correct, and improve their pronunciation challenges on their own. The teacher's role is to scaffold the acquisition of these skills, thereby helping learners to become increasingly more autonomous. That is, the goal is to teach for empowerment. Under this model, students self-assess and reflect on their individual pronunciation challenges and the pronunciation training process with teacher support provided through awareness-raising activities, explicit teaching of pronunciation features and strategies, instructional guides, practice opportunities, models, resources, and individualized feedback. Yet, it is still up to the learner to utilize the opportunities, new knowledge, models, resources, and feedback to improve their pronunciation skills.

Dlaska and Krekeler (2008) alert on the importance self-assessment procedures for enhancing learners' self-awareness, increasing the reliability of their assessments, and motivating them to continue working on their L2 pronunciation problems on their own. The integral role of self-reflective practices in creating opportunities for learners to become increasingly self-regulated and more aware of their deficient oral skills has also been documented in the literature (de Saint Lèger, 2008). In fact, self-assessments have been found to be conducive to learning and more accurate when learners receive explicit instruction, feedback, and practice on how to self-assess (Chen, 2008); and when they refer to their episodic memory of using particular skills in the classroom (Ross, 1998). In accordance with these research findings, Sardegna and McGregor (2012b) argue for combining students' in- and out-of-class pronunciation practice and self-assessments through teacher scaffolding. The purpose of the current study was to look for evidence of effective teacher scaffolding in students' self-regulated efforts in a course that taught for empowerment.

Specifically, the two research questions are:

1. Do ITAs who receive English pronunciation instruction based on empowerment and their specific pronunciation needs improve their read-aloud accuracy for vowel reduction, linking, primary stress, and intonation during the course of 15 weeks?

2. What evidence of teacher scaffolding for improving these four pronunciation features is demonstrated in student-generated materials and practice behaviors out of class?

METHOD

Participants

Participants were 15 international graduate students (3 female and 12 male) from 10 different majors at a large research institution. To become eligible for teaching at this institution, international students must pass an oral English proficiency screening. Students that "conditionally pass" this screening, like the participants in this study, are required to take an oral proficiency course before they can be screened for teaching again. At the time of this study, the participants were taking this oral proficiency course. On average, their initial read-aloud accuracy level was 68% for primary stress placement, 66% for intonation, 48% for vowel reduction, and 49% for linking. Their initial accuracy level for these targets in extemporaneous speech was not measured. Their native languages were Chinese (9), Korean (4), Turkish (1), and Cantonese (1).

Characteristics of the Oral Proficiency Course

The course taught international graduate students how to employ pronunciation learning strategies to improve their English oral skills. It was specifically developed for students that wanted to become international teaching assistants (ITAs). It met for an hour and a half twice a week for fifteen weeks. The materials and activities were designed to scaffold student pronunciation learning and maximize their practice opportunities outside of class. Basically, the instructor's pedagogical intervention adhered to Sardegna and McGregor's (2012b) student-centered approach. The goal was to empower learners (i.e., to help learners become increasingly more autonomous) by instructing them on the use of pronunciation strategies and providing them with appropriate tools, resources, and materials to improve their English pronunciation. Specifically, the instructor scaffolded student learning by incorporating the following pedagogical actions in her teaching:

1. Raising students' awareness of the pronunciation features they needed to improve and the strategies they could use to improve them.
2. Providing explicit instruction and individualized feedback on specific speech features.
3. Modeling the use of resources and strategies.
4. Creating opportunities for guided practice and for learners to utilize the pronunciation strategies.
5. Developing self-assessment procedures and activities.
6. Guiding learners' reflections in relation to the learning process, the practice, and the outcomes.

These scaffolding components (or pedagogical actions) provided a support structure for the students to develop their oral skills. Before instruction, the instructor prioritized student pronunciation needs and challenges on the basis of student input, a read-aloud diagnostic test, and a three-minute academic introduction. Then, she provided explicit information about targeted speech features and pronunciation strategies for improving the features. These strategies focused on developing students' perception skills (e.g., listening for the primary stress of a sentence, identifying different meanings on the basis of changes in intonation), prediction skills (e.g., analyzing phrases in order to figure out what word(s) should receive primary stress, applying rules to judge the intonation of a phrase, dividing sentences into message units before reading them aloud), and production skills (e.g., self-monitoring, self-evaluating, reading aloud, mirroring). To maximize effectiveness, all the activities modeled guidelines and resources for practice outside of class. In addition, students received continuous feedback (recorded, written and/or oral) on homework assignments and class work, and three fifteen-minute one-on-one individualized consultations with the instructor. The consultations consisted of goal setting (including the prioritization of target speech features) and assessment of progress, and opportunities for individualized feedback. Finally, in order to make students more aware of their progress and accountable for their goals and pronunciation practice, students completed guided self-assessment and reflection activities.

Table 1 illustrates the integration of teacher scaffold into one class activity (*This I Believe: YoYoMA*) focused on improving suprasegmental features and linking. The scaffolding components or pedagogical actions embedded in this activity included teaching features and pronunciation strategies explicitly; modeling features as well as strategies to improve the features; raising awareness; offering feedback; providing resources and opportunities for practice in and out of class; and facilitating reflections and self-assessments. The activity components included a lecture on the targeted features (i.e., thought-groups, primary stress, intonation, and linking) followed by modeled and guided practice with a recorded sample script for awareness-raising, development of perception of the features, and strategy instruction. After the in-class lecture and practice with the recording and script, students were assigned to go through the remaining sentences of the script (approximately 10 sentences) for homework and mark the thought-groups and primary stresses. They were also instructed to listen specifically for intonation patterns, and linking in the same sentences. Students returned to the following class with marked scripts and discussed challenges and questions. Next, the students practiced with the marked script and recording, and tried to mimic the speech features of the model speaker (in this case, *Yo Yo Ma*). Students compared and contrasted their production with the recorded version and self-assessed their performance. If they were not satisfied with their production, they could re-record the script until they were satisfied before they submitted it for instructor feedback. Finally, to consolidate their pronunciation training experience and practice, the students reflected on the entire activity. The reflection guidelines prompted them to reflect about what they learned regarding the speech features and the strategies that can help them improve them, and what they thought of their production accuracy and obtained teacher feedback.

Table 1

This I Believe: YoYoMa Activity

Activity Components	Activity Description	Teacher Scaffolding Components
1. Lecture on suprasegmentals and linking phenomena	Instructor describes and illustrates suprasegmental features and linking.	***Giving Explicit Instruction***
2. In- and Out-of-Class Practice	Instructor provides a recorded speech[1] and a shortened transcript to practice, and teaches pronunciation strategies.	***Facilitating Learning*** ***Illustrating the Use of Practice Strategies***
a. Listening, Identification, Analysis, and Application of Strategies	Students listen to the recording and some pronunciation targets: • *Thought Groups*: Put a "/" where they hear a pause. • *Primary Stress*: Mark a dash over the syllables that get primary stress. • *Intonation and Rhythm*: Listen for syllable-by-syllable movements of pitch and the rhythm within thought-groups. • *Linking*: Put a "__" to indicate sounds that are linked within and across words in thought-groups.	***Raising Awareness***
b. In-Class Practice and Speech Monitoring	Teacher models targets, and students imitate and apply the strategies learned.	***Modeling Features and Strategies***
c. Out-of-Class Practice and Speech Monitoring	Students practice at home with marked script, and record own version.	***Providing Opportunities for Guided Output, Speech Monitoring and Self-Assessment***
3. Assessment	Students compare and contrast own with recorded version, and receive instructor feedback.	***Providing Opportunities for Self-Assessments and Instructor Feedback***
4. Reflection	Students write post (on Blackboard) about what they learned/practiced.	***Facilitating Guided Reflections***

Data Collection and Analysis

The effects of teacher scaffold on students' self-regulated efforts were investigated through a mixed method analysis that triangulated data from (a) a pre/post read-aloud diagnostic recording administered on the second week and again on the 15th week of class, (b) participants' background questionnaire, (c) participants' weekly pronunciation trackers, and (d) participants' self-assessments and reflections.

During the diagnostic recording, participants were told to monitor their pronunciation as best they could, but they had no way of knowing what targets were in focus for assessment and in what words or sentences in the testing materials—a long passage adapted from Celce-Murcia, Brinton, and Goodwin's (2010, p. 481) diagnostic test. The targets chosen for analysis in this study were primary stress placement, intonation, reduction, and linking. The test measured accuracy with these targets 31 times for primary stress, 25 times for intonation, 20 times for reduction in function words as well as within polysyllabic words, and 48 times for linking (including five linking types described in Sardegna, 2011). The test also measured accuracy with

[1] YoYoMa's *This I Believe* speech (http://www.npr.org/templates/story/story.php?storyId=87960790)

other pronunciation features, such as segmentals and word stress, which were also targeted for instruction during the course. In the post-test, students were asked to monitor their production with all the instructed pronunciation features while reading the long passage. Having received no feedback after their pre-test and with no symbols indicating a feature targeted for assessment, it is unlikely that there could be a test effect resulting from using the same test for pre- and post-instruction assessment. Participants' percentage of incorrect verbal responses was calculated by dividing the frequency of correct responses by the total number of targeted instances. The result of this calculation constituted the participant's score for each target type. Participants' percentage improvement was calculated by subtracting their pre-test mean percentage scores from their post-test mean percentage scores. These achievement scores were analyzed to measure students' reading accuracy improvement during the 15-week intervention. No analyses were performed to measure students' improvement accuracy in extemporaneous speech.

The background questionnaire administered at the beginning of instruction elicited information about participants' perceptions of their pronunciation problems. During the course, students were free to choose type, amount, and frequency of practice activities outside of class. The weekly pronunciation trackers were designed to gather participants' choice of resources and activities as well as the amount of time and frequency of practice. For this study, the researchers only analyzed the type of activities participants self-selected for practice. The guided self-assessments and reflections elicited participants' experiences with the features and activities, and their conclusions on what they thought they needed to do to improve the features. They also asked them to reflect on the value and effectiveness of the activities they performed. Students' self-reported data on the background questionnaire, weekly pronunciation trackers, and self-assessments were analyzed for evidence of teacher scaffold effectiveness in guiding students' self-regulated efforts for pronunciation improvement.

RESULTS

Research Question 1: Do ITAs who receive pronunciation instruction based on empowerment and on their specific pronunciation needs improve their read-aloud accuracy for vowel reduction, linking, primary stress, and intonation during the course of 15 weeks?

Participants' achievement scores from the pre/post read-aloud diagnostic recorded on the second week and again on the 15th week of class were compared and analyzed for significant differences through paired t-tests. When students' overall accuracy for these features was compared, a paired t-test revealed that their accuracy improved 11.5% (SD = 7.574; p = 0.000). A series of paired t-tests were performed to analyze for significant improvement with each of the targeted features. These tests revealed that the students improved each of the features significantly ($p < 0.05$). Specifically, students' improvement with reading accuracy in reduction was 5.7%, with linking was 12.9%, with primary stress was 14.5%, and with intonation was 11.4% (see Figure 1).

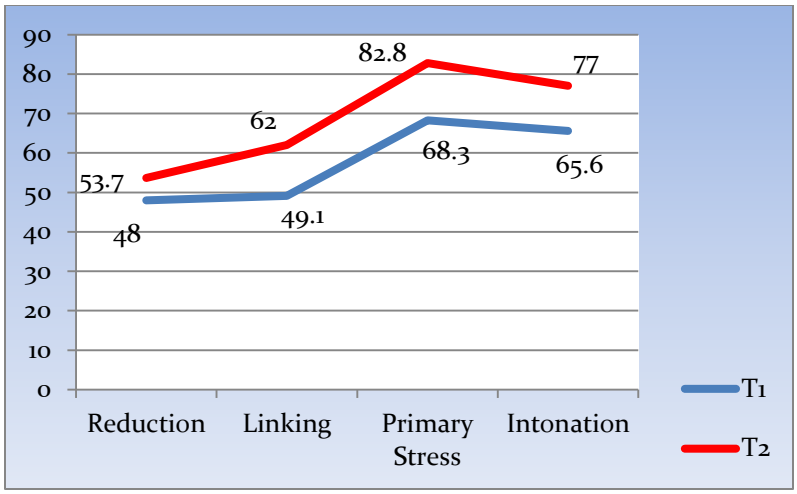

Figure 1. Reading accuracy improvement with target features from T1 (before instruction) to T2 (after instruction).

It was therefore concluded that the ITAs who received scaffolded instruction based on empowerment and on their specific pronunciation needs improved their read-aloud accuracy with reduction, linking, primary stress, and intonation targets during the course of 15 weeks. Because there was no measurement of extemporaneous speech accuracy, no claims are made regarding students' improvement with these features in spontaneous speech.

Research Question 2: What evidence of teacher scaffolding with these features is demonstrated in student-generated materials and practice behaviors out of class?

The background questionnaire that students completed before instruction revealed that half of the participants (n=8) believed that their pronunciation problems were related to segmental problems, while a few identified problems with words (n=3) or sentences in general (n=1), or reported not knowing what their problems were (n=3). Interestingly, only S8 and S15 identified problems with suprasegmental features in addition to problems with segmental features. In summary, students initially self-assessed their pronunciation challenges as difficulty in pronouncing specific sounds or words, or were unsure of their problems.

After an awareness raising activity in which students compared their academic introductions in English and in their first language, students started to note a wider range of problems other than sounds. Through the students' reflections their raised awareness becomes apparent. For example,

S10: *Although I try to pronounce the words clearly and imitate the intonation of native speakers, I found it not obviously shown on my video.*

S15: *I feel I use strong Chinese accent when I talk in English and I really want to change it.*

S9: *I speak very fast in English, which leads to a bad pronunciation.*

S11: *It seems I am not used to speak English. I am unfamiliar with the pronunciation of many words such as "improve" and "select", and I feel hard to tell the difference between [n] and [l]. I placed the stress on "detail" wrongly, and I did not use connections at all.*

Several weeks later, after learning about suprasegmental features and connected speech phenomena in class and working with the YoYoMa recording activity (described in Table 1 above), students' reflections continue to show expanded awareness and understanding of the

target speech features and how to improve them. For example, the following reflections illustrate students' thoughts on the process and purpose of the activity, as well as their conclusions on how the activity helped them note what to do to improve.

S2: *This practice is helpful since I could get familiar to these thought groups, linkers, and stress. We imitate what the speaker says, and then record what we speak. By this method, we could compare our speech to the speaker and find what we should improve.*

S14: *I have to say I like this practice. Doing this practice let me catch the breath points and intonation while listening to others. It's helpful to my self-training (…) Analyzing it before imitation makes me be able to follow the details of the talk. (…) I especially like the linking marked in the answer sheet. It helps me to find cues about what kinds of phrase I should link them together.*

Other students reflected about what they learned regarding the target features, what they were doing wrong with them, and what they could do to improve them.

S12: *What I learn from this activity is stress. Before that I did not notice my problem on stress. I focused only on the fluency but not stress. (…) Now when I am doing listening practice or talking with natives, I pay much more attention to the stress...*

S4: *Also, I found out that intonation can be changed even for the same phrases. Because the recording is still fast for me to took notes on the intonation, I made some "prediction" using my speaking habit and found out it is different from Ma's when I checked them again. Finally, I realized it is because he wants to emphasize a specific point in his lecture, so he makes that intonation and pause. Intonation is highly context-dependent.*

Students' discoveries and increased awareness of the target features and ways of improving them are also evident in their weekly pronunciation trackers. The following excerpts from students' weekly pronunciation trackers show what students learned regarding the target features after engaging in self-selected practice at home.

S9: *I have learnt a lot form the record. I know that I should arrange the words in chunks. I also notice that I can use a long pause if I want to grasp other people's attention.*

S11: *The division of thought groups is due to the meaning.*

S6: *I found the intonation and rhythm very important for audience to understand after this practice.*

The above sample reflections indicate that the scaffolded activities, which included the explicit instruction of pronunciation strategies (focused on perception, production, and prediction skills), increased students' awareness and understanding of suprasegmental features and linking. These reflections and others also demonstrate that student-generated materials and practice activities for out-of-class practice resembled the activities, resources, and practice behaviors modeled and scaffolded by the teacher during the course (i.e., analyzing before reading aloud, recording, listening and imitating, self-assessing, etc.). For example, S9 noted that he chose to do the following during his self-practice:

S9: *I read the news on the website and paid lots of attention to my intonation and linking. I listen carefully to the speakers' linking, stress and pause. Then imitate.*

It was therefore concluded that student-generated materials and practice behaviors suggested evidence of teacher scaffolding on the targeted features.

DISCUSSION

Before instruction, students seemed to know little about their pronunciation problems beyond specific sounds. It is possible that students think of the term pronunciation as equivalent to segmentals, which could explain why over half their responses indicated problems with sounds. It is also likely, however, that the students had limited knowledge and understanding of suprasegmental features or connected speech phenomena, or that they had never considered their own specific challenges with these targets. Lack of knowledge or lack of formal instruction on these features could also account for the limited descriptions initially. Regardless, from their initial responses, it seemed students had limited awareness of their pronunciation challenges in relation to suprasegmental features and/or linking. After students were asked to self-assess their production by listening to a recording of their speech and comparing it with their native language performance, they formulated richer descriptions of their pronunciation challenges, became more motivated to engage in pronunciation practice, and exhibited a greater understanding of what they needed to improve. This change in their motivations and perceptions provides validity to the role self-assessment plays in awareness raising and a rationale for the importance of integrating such practices into pronunciation training activities.

After receiving instruction on suprasegmentals and linking, and engaging in guided practice using a model speaker and script, students' reflections showed their increased knowledge and understanding about the target speech features. Their comments identified ways of improving the features and their recognition of their ability to produce them. In this activity, the instructor scaffolded learning by raising students' awareness of the target features (through explicit instruction, listening perception, and marking scripts), guiding their practice, giving them feedback, and asking them to reflect on the process and activity. Whether or not students' improvement in reduction, linking, stress placement, and intonation could be attributed to the instructor's scaffolding efforts could be debated, but the significant improvement and students' reflections provide evidence for teacher scaffolding being effective in producing a change in students' practice and production of the targeted speech features.

Interestingly, the instructor allotted comparably less class time to teach and practice vowel reduction than to teach and practice primary phrase stress, intonation, and linking. The little emphasis on vowel reduction (which was a conscious decision by the instructor) may explain why no comments were made regarding this specific feature in student reflections and self-assessments, and why students made the least improvement with this feature (+5.7%), achieving an overall accuracy of roughly over 50% at the end of the course. It is apparent that most students did not become aware that they needed to improve in reduction nor did they learn ways of doing so. This finding also seems to suggest the integral role of teacher scaffolding in establishing priorities for practice, modeling practice behaviors, and guiding students in the selection of features to target as well as in the selection of appropriate resources, activities, and pronunciation strategies. When the teacher did not scaffold learning for a particular feature (in this case, reduction), students' improvement was comparably less effective (+5.7%), and students' reports of practice with this feature outside of class were not found. On the contrary, improvements with primary phrase stress (+14.5%), intonation (+11.44%), and linking (+12.9%) were much larger and comments about work with these features outside of class were often present in students' self-reports. Because the features under study require somewhat different

pronunciation skills, this finding needs more validation from the field. However, it provides some evidence for teacher scaffolding playing a role in students' degree of pronunciation improvement and their choice of activities for self-improvement outside of class.

CONCLUSION

There are a multitude of factors involved in effective pronunciation training. This study provides evidence of one contributing factor: teacher scaffolding. Students' reflections and practice behaviors revealed that their improvement in the read-aloud diagnostics could be attributed at least in part to the role played by the teacher in scaffolding student learning; that is, in intentionally leading students' practice behaviors through carefully crafted activities that supported their learning and assisted their self-regulated efforts. The instruction was grounded in three pedagogical principles: prioritization of pronunciation practice based on student needs; empowerment through scaffolded instruction; and opportunities for students to monitor their performance and reflect on their outcomes (Sardegna & McGregor, 2012b). More research on teacher scaffolding is needed to better understand the instructors' role in facilitating effective pronunciation training.

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