A study on teaching reductions perceptually

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This paper reports the results of a study which investigated the teaching of reductions such as ***gonna*** and ***whaddaya*** perceptually. Some researchers in the field of pronunciation have argued that EFL learners need not produce these forms themselves, but that they need to be able to understand them receptively. The main purpose of the study was to examine whether learners could acquire perceptual competence with these forms without any work on production.

本論文は英語のリダクション（gonnaやwhaddaya等）の知覚に関する指導を検証した研究報告である。発音分野においてある研究者はEFLの学習者は自らリダクションを発話する必要はないが、理解できる必要があると主張する。この研究の主な目的は発話練習なしでリダクションを知覚する能力が身につくかどうかを調べることである。

Spoken English has numerous reduced forms, or reductions, such as *gonna* for "going to" and *wanna* for "want to". Most ESL teachers of listening and speaking probably devote some time to teaching their learners these forms. In a study of ESL teachers in Hawaii, Rosa (2002) found that most teachers had taught reductions, and that nearly all of them thought that teaching reductions is important. As Weinstein (1982) notes in the introduction to her textbook *Whaddaya Say*, while ESL students may understand teachers who speak slowly and carefully, they may have difficulty with rapid and reduced speech outside of the classroom. Meeting the communicative needs of these students may be one reason why teachers devote time to these forms.

Unlike ESL students, many EFL students seldom communicate in the target language outside of class. For this reason, they are not likely to have had much exposure to reduced speech in face-to-face communication. However, those students who listen to music or watch movies and TV shows from English-speaking

countries will certainly hear these forms. Considering that in EFL contexts music and movies are very useful ways for students to increase their exposure to the language, knowledge of reductions is important. Most teachers and materials writers in EFL contexts are aware of the importance of these forms. Cambridge University Press' (Richards, 2004) *Interchange* series, used by EFL teachers around the world, provides comprehensive treatment of reductions. Kumai and Timson's (1998) book *Hit Parade Listening*, published in Japan, is entirely devoted to improving learners' abilities to understand reductions.

Despite the prevalence of reductions in English, and their importance for both ESL and EFL learners, there has been relatively little research on them in the context of second language learning. Trends in the field may be partly responsible for this. Research in second language listening instruction has tended to focus more on the development of top-down skills than bottom-up skills (Vandergrift, 2004), and pronunciation instruction has not received adequate attention by proponents of communicative approaches (Celce-Murcia, Brinton, and Goodwin, 1996). In the past few years, however, it appears that this may be changing. In the field of L2 listening, Field (2003) calls for greater attention to perceptual (i.e. bottom-up) skills, and suggests teachers use dictation to improve students' abilities to comprehend reductions. In the field of L2 pronunciation, Jenkins' (2000, 2002) work on the *Lingua Franca Core* (LFC) has brought debate on pronunciation instruction in ELT to the fore for the first time in a number of years. The LFC is a set of pronunciation elements, including segmental and suprasegmental features, that is considered necessary for successful communication between non-native speakers of English. Jenkins (2000, 2002) places reductions outside of the LFC, and argues that in many contexts learners do not need to be able to *produce* these forms. However, she also states that learners who expect to have substantial contact with native-speakers of English should develop their ability to comprehend these forms in listening.

The main purpose of this study is to examine it whether it is possible, as authors such as Field (2003) and Jenkins (2002) have proposed, to teach reductions perceptually. In the next section, I will briefly review laboratory-based research studies that have addressed similar questions, as well as two classroom-based studies that addressed the same question. Following this, I will present the results of the current study.

Literature review

Research in such fields as cognitive psychology and psychoacoustics has greatly expanded our understanding of human speech perception. Within this field, some researchers have focused on the question of whether it is possible to improve perceptual skills. This line of research is usually referred to as *perceptual training*. Most perceptual training studies have been conducted in laboratories, and some have addressed the question of whether subjects can learn new sounds in a foreign language.

Pisoni et al. (1982) trained native speakers of American English to perceive differences in voice-onset time (VOT) that are phonemic in languages such as Hindi and Thai, but not English. The subjects rapidly improved their ability

to perceive these differences, with half of the subjects achieving a correct response rate of 85%. A follow-up study by McClaskey, Pisoni, and Carrell (1983) produced similar results. Studies have also been conducted with Japanese subjects, and have focused on the perception of /l/ and /r/. Logan, Lively, and Pisoni (1991) trained Japanese subjects to discriminate between /l/ and /r/ using a computerized minimal pair task, and found significant improvement after 10 hours of training. In a study by Akahane-Yamada, Tohkura, Bradlow, and Pisoni (1996), not only were improvements found in the area of perception of /l/ and /r/, but also in production, despite the fact that the training did not include on work on production.

Although the perceptual training studies described above were conducted in laboratory settings and did not focus on reductions, they do provide evidence that it is possible to train learners to perceive new sounds in a foreign language, and suggest that some sounds may be acquired rapidly. This provides some indirect support for proposals to teach reductions perceptually. However, classroom-based studies that investigate teaching reductions would provide more direct support. To date, there has been little classroom-based research in this area, but at least two studies have been conducted, Brown and Hilferty (1986) and Crawford (2005).

Brown and Hilferty (1986) taught reductions to Chinese-L1 graduate students studying in the United States during regular class time. The training mainly involved exposing the students to the new forms, and then having them check their comprehension of the forms with dictation exercises. The study was conducted over a period of four weeks in which lessons were held daily. The total training time spent on reductions was approximately 3 hours. Like the laboratory-based perceptual training studies, in this study significant improvements in perceptual ability were found. In the post-test, subjects in the treatment group increased their ability to identify and write down reductions by 32% over the pre-test, achieving a 68% correct response rate.

In Crawford (2005), I reported the results of a classroom-based study similar to Brown and Hilferty (1986) in which Japanese undergraduate students were trained to perceive reductions. As in that study, I exposed the students to reductions, and then had them check their comprehension of them with dictation exercises. At approximately 4 to 6 hours, the total training time was greater than that in Brown and Hilferty (1986), but the total number of reductions taught was smaller. There were two treatment groups in the study, and no control group. Analysis of pre-test and post-test scores revealed statistically significant improvement for both groups, with one group exhibiting an improvement of 12%, and the other 15%. These gains, while statistically significant, are less than those found in Brown and Hilferty (1986), and from a pedagogical perspective, are slightly disappointing. However, the study did provide some preliminary evidence that Japanese learners can be trained to comprehend reductions via classroom-based perceptual training.

Results of studies in the field of perceptual training have provided indirect support, and results from studies by Brown and Hilferty (1986) and Crawford (2005) support proposals to teach reductions perceptually. The purpose of the current study is to build on Crawford (2005) by improving the research design. In that study a pre-experimental design

(i.e. no control group) was employed. This study will adopt a quasi-experimental design with two intact groups, one control group and one treatment group. Each intact group consisted of a single university class. The main research question, as in Crawford (2005), is as follows:

> Research question 1: Will weekly perceptual training sessions with reduced forms in a classroom context lead to improvement of learners' perceptual accuracy of these forms?

In addition, the study provides a useful opportunity to determine how familiar Japanese university students are with reductions, and which reductions are amenable to perceptual training. Accordingly, there are two additional research questions:

> Research question 2: Which reductions are the learners in this study familiar or unfamiliar with prior to the training program?
>
> Research question 3: Which reductions can be taught effectively with the training undertaken in this study?

Method

Participants

Two intact groups of first-year undergraduate Japanese university students at a national university in northern Japan participated in this study. At the flip of a coin, class 1 (N=27) was chosen as the treatment group, and class 2 (N=27) was selected as the control group. Data from four students in the treatment group and one student in the control group were not analyzed, leaving a total of 23 students in treatment group and 26 in the control group. The data for these students were not included either because they were absent on the day of the pre-test or post-test, or because they were second-year students repeating the course.

The course that the students in this study were taking was entitled *English I*. This is a compulsory course for all first-year students at the university. At the beginning of the semester, students are assigned to different sections of this course. No placement tests are given, resulting in mixed ability classes. While this type of class placement does not result in random sampling (as students are generally placed in classes by department), it does result in groups that better represent the overall student population than streamed classes would.

Test instrument and training materials

The study employed a pre-test/post-test research design. The same instrument (see Appendix I), a 20-item cloze listening test, was used for both the pre-test and post-test. The split-half reliability of the instrument (based on the pre-test scores) was .72. Because this relatively moderate level may be due to the small number of items on the test, the Spearman-Brown Prophecy formula was used to estimate the reliability of the full test, yielding a coefficient of .84 (Brown, 2001).

The training materials consisted of seven worksheets (see Appendix II for a sample) that focused on either one or two reductions each (the reductions taught were *lotta*, *gotta*, *gonna*, *wanna*, *all* (I'll), *'e* (he), *cancha*, *doncha*, *woulda*,

shoulda, *whaddaya*, *couldja*, and *wouldja*). At the top of the worksheet, the reductions are explained by showing the non-reduced form followed by an arrow pointing to an approximation of how this form sounds when it is reduced. Following this are several example sentences which contain the target reductions. Below this there are ten cloze listening sentences that are designed to allow students to confirm their comprehension of the reductions.

Procedures

The pre-test was conducted during the second class of the semester in both the treatment and control groups. Before starting the test, the students were given two practice sentences. These sentences did not contain reductions, and were designed to show the students that the items on the test could consist of one word, or more than one word.

In the treatment group, starting from the third class, one worksheet was used per week, resulting in 7 weeks of training. Each worksheet took approximately 15 minutes to complete. First, the teacher introduced the reductions by reading the nonreduced forms and the reduced forms at the top of the page. Then, the example sentences were read aloud, first using unreduced forms, followed by reduced forms. Finally, the cloze listening exercise was completed. After listening to all ten sentences, students made any necessary corrections to their papers by looking at the correct answers written on the blackboard. The week after the 7th worksheet was completed, the post-test was conducted. The students were not informed in advance that they would be taking the post-test.

The control group only did the pre-test and the post-test. These were conducted during the same week as the treatment group, i.e. week 2 of the semester for the pre-test, and week 10 for the post-test. During the 7 weeks in which the treatment group received training, the control group did not receive any instruction on reductions.

Results

Research question 1

An independent samples t-test on the pre-test scores revealed no significant differences between the treatment and control groups (t=0.829, df=47, p<0.41 *n.s.*).

Table 1 presents the descriptive statistics for the study.

Table 1. Descriptive statistics

	Pre-test		Post-test	
	Treatment	Control	Treatment	Control
M	6.04	6.65	11.96	7.5
SD	2.26	2.81	2.84	2.89
Skewness	0.07	0.40	-0.51	0.36
Kurtosis	-0.14	-0.89	-0.66	-0.66

The values for skewness and kurtosis shown in Table 1 are within acceptable limits, confirming that the distributions are normal (Brown, 1997).

An independent samples t-test was also applied to the post-test data. The results of this analysis revealed a statistically significant difference between the treatment group and the control group (t=5.43, df=47, p<.0001). In terms of

percentages, the treatment group showed a gain of 30%, and the control group 4%.

Research question 2

The pre-test scores were used to determine which reductions the students in the study were familiar with, and which they were unfamiliar with. The following correct response rates were used to categorize the reductions: 75%-100% = familiar; 50%-74% = relatively familiar; 25%-49% = relatively unfamiliar; 0%-25% = unfamiliar. While this categorization is somewhat arbitrary, it provides a general picture of the students' knowledge of reductions. Table 2 presents the results of this analysis.

Table 2. Familiarity with specific reductions

Level of familiarity	Reduction(s)
Familiar	doncha, couldja, wouldja
Relatively familiar	whaddaya
Relatively unfamiliar	lotta, wanna
Unfamiliar	gotta, gonna, all (I'll), 'e (he), cancha woulda, shoulda

Research question 3

Table 3 presents a breakdown of the pre-test scores and post-test scores (for the treatment group only) for each reduction. The reductions are listed in descending order in terms of the effectiveness of the training. The degree of effectiveness was determined by calculating the gain scores for each reduction.

Table 3. Effectiveness of the training by reduction

Reduction	Pre-test (% correct)	Post-test (% correct)	Gain
cancha	13.0	65.2	52.2
wanna	45.7	91.3	45.6
gonna	15.2	58.7	43.5
whaddaya	54.3	95.7	41.1
woulda/ shoulda	0.0	34.8	34.8
gotta	4.4	41.3	36.9
lotta	34.8	69.6	34.8
all (I'll)	0.0	17.4	17.4
'e (he)	0.0	6.5	6.5

The response rates on the pre-test for *couldja* / *wouldja* and *doncha* were over 90%, and the rate on the post-test for both was 100%. Because of the high pre-test score, the gains were small, but this is not an accurate indication of the effectiveness of the training. For this reason, the data for these reductions were not included in Table 3.

Discussion and conclusion

This study provided further evidence that reductions can be taught effectively through perceptual training in classroom contexts. The gains demonstrated by the treatment group (30%) were more than double those reported in Crawford (2005), and nearly as high as those reported in Brown and Hilferty (1986). The greater gains in this study than those in Crawford (2005) are interesting. Unfortunately, however, comparison between the two studies is difficult because there are a number of differences, most importantly the

kind of training provided and the number of reductions taught. The earlier study involved the use of a textbook to teach reductions over the course of an entire semester, and included a larger number of reductions. It may be that the shorter training time and the smaller number of reductions in this study contributed to higher gains, but this is only speculation. Comparisons with Brown and Hilferty (1986) are also difficult, as that study involved Chinese graduate students, and also because the authors do not provide specific information about the reductions they taught. Nevertheless, it is interesting that the gains reported in their study (32%) are comparable to those found in this study because the training program more closely resembles the program in this study than that of Crawford (2005). It may be that the relatively short, intensive training that involves exposing students to the target forms and then having them confirm their comprehension via sentences dictated by the teacher is the most effective way to teach reductions. More research is needed, however, before any firm conclusions can be made.

The study also provided information about which reductions Japanese university students may be familiar with, and which they may not be familiar with. The results showed that of the 13 reductions taught in this study, the students were only familiar or relatively familiar with 4. Because the students in this study were first-year university students studying in their first semester, these results suggest that reductions may not be emphasized much in Japanese junior high schools or high schools. However, more research would be required to investigate this issue.

With respect to the effectiveness of the training for specific reductions, the study showed that for the majority of forms, gains of over 30% were obtained. Only two forms, *'e* (he) and *all* (I'll) were under 30%. *'e* was the form least amenable to training, with a gain of only 6.5%. These two forms appear to be challenging for students, and may require either additional training of the same type provided in this study, or a different type of training.

There are some limitations to this study. First, although the addition of a control group strengthened the research design (as compared to Crawford (2005)), the groups in the study were small and were drawn from only one institution, making generalization difficult. Larger groups from a greater number of universities would allow for some preliminary generalizations to be made. Second, at the time of the study, the students were only enrolled in one English course at the university, i.e. the course under discussion here, *English I*. However, it is possible that some students were also taking lessons at conversation schools or studying English on their own using their own materials. These possibilities could have influenced the results, but were not investigated. Third and finally, as reported above, the testing instrument only had a split-half reliability of .72. Although applying the Spearman-Brown Prophecy formula yields a coefficient of .84, there is still room for improvement. A more reliable instrument would allow for greater confidence in the results of the study.

Research on the teaching of reductions in L2 learning contexts is still limited. Further research is required in order to further examine the effectiveness of classroom-based perceptual training. In addition to perceptual training, future research on reductions could also consider a number of related issues. As was noted above in the literature review,

there is some evidence that perceptual training can lead to gains not only in perception, but also in production. This warrants investigation in the area of reductions. Also, although the training in this study was undertaken with the assumption that knowledge of reductions will improve learners' ability to comprehend native-speaker speech, either in face-to-face communication or watching movies and TV, whether or not this is indeed true has not yet been examined. Finally, there has been relatively little descriptive research on the use of reductions in both native and non-native speaker speech. Knowing in which contexts, and among what kind of speakers reductions are likely to occur would help teachers decide whether their students would benefit from learning about these forms.

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References

Akahane-Yamada, R., Tohkura, Y., Bradlow, A., & Pisoni, D. (1996). Does training in speech perception modify speech production? *Proceedings of the Fourth International Conference on Spoken Language Processing*, *vol. 2*. Retrieved January 15, 2005, from <http://www.asel.udel.edu/icslp/cdrom/vol2/277/a277.pdf>.

Brown, J.D., & Hilferty, A. (1986). Listening for reduced forms. *TESOL Quarterly*, *20* (4), 759-763.

Brown, J.D. (1997). Skewness and kurtosis. *Shiken: JALT Testing and Evaluation SIG Newsletter*, *1* (1), 16-18.

Brown, J.D. (2001). Can we use the Spearman-Brown prophecy formula to defend low reliability? *Shiken: JALT Testing and Evaluation SIG Newsletter*, *4* (3), 7-9.

Celce-Murcia, M., Brinton, D.M., & Goodwin, J.M. (1996). *Teaching pronunciation: A reference for teachers of English to speakers of other languages.* Cambridge: Cambridge University Press.

Crawford, M. (2005). Bottom-up skills and L2 listening pedagogy: A study on the teaching of reduced forms in English. *Journal of the English Literary Society of Hakodate*, *44*, 23-40.

Field, J. (2003). Promoting perception: lexical segmentation in L2 listening. *ELT Journal, 57* (4), 325-334.

Jenkins, J. (2000). *The phonology of English as an international language*. Oxford: Oxford University Press.

Jenkins, J. (2002). A sociolinguistically based, empirically researched pronunciation syllabus for English as an international language. *Applied Linguistics*, *23* (1), 83-103.

Kumai, N., & Timson, S. (1998). *Hit parade listening.* Tokyo: MacMillan Language House, Ltd.

Logan, J.S., Lively, S.E., & Pisoni, D.B. (1991). Training Japanese listeners to identify English /r/ and /l/: A first report. *Journal of the Acoustical Society of America*, *89*, 874-886.

McClaskey, C.L., Pisoni, D.B., & Carroll, T.D. (1983). Transfer of training of a new linguistic contrast in voicing. *Perception and Psychophysics*, *34*, 323-30.

Pisoni, D.B., Aslin, R.N., Perey, A.J., & Hennessy, B.L. (1982). Some effects of laboratory training on identification and discrimination of voicing contrasts in stop consonants. *Journal of Experimental Psychology: Human Perception and Performance*, *8*, 297-314.

Richards, J. (2004). *Interchange* (Third Edition). Cambridge: Cambridge University Press.

Rosa, M. (2002). Don'cha know? A survey of ESL teachers' perspectives on reduced forms instruction. *Second Language Studies*, *21* (1), 49-78.

Vandergrift, L. (2004). Listening to learn or learning to listen? *Annual Review of Applied Linguistics, 24*, 3-25.

Weinstein, N. (1982). *Whaddaya say?* Englewood Cliffs, NJ: Prentice-Hall Regents.

Appendix I. The pre-test / post-test instrument

Directions: Listen to the sentences and fill in the blanks with what you hear. Each sentence will be read twice.

Practice sentence 1: The weather report said that it's going to _____ today.

Practice sentence 2: Where are you planning _____ _____ this afternoon?

1._____ have in that bag?

2. Is she _____ come to class today?

3. _____ please give me a few extra minutes?

4. I _____ called, but I was too busy.

5. If you want, _____ call and make an appointment for you.

6. You know, I really _____ take a nice, long vacation this year.

7. _____ tell me how long it'll take?

8. Can _____ play the piano too?

9. There are a _____ good restaurants in town.

10. He told me that he's _____ work late today.

11. _____ have to turn in that paper tomorrow?

12. I think that it's _____ rain later today.

13. If possible, _____ tell me where the meeting is going to be held?

14. _____ think the best way to get there is?

15. Will _____ be able to attend the graduation ceremony?

16. I think that a _____ people will want to work there.

17. You've _____ study harder, or you might not do so well on the test.

18. If you don't time to do it, _____ do it for you.
19. I don't really _____ go there right now.
20. You _____ told me about that sooner.

Appendix II: Sample worksheet

Practice with reductions

would you ⇒ wouldja
could you ⇒ couldja

1.Listen to the following sentences.

Would you give me a hand here?	Could you lend me a little money?
Would you happen to have the time?	Could you give me a ride later?
Would you please let me know soon?	Could you please turn that radio down?

2. Listen to the sentences and fill in the blanks

1. _____ talk a little more loudly?
2. _____ this is a bigger size by any chance?
3. _____ to come if we changed it to Friday?
4. _____ this to Albert for me?
5. _____ in having dinner with me this weekend?
6. _____ tell me what the best way to get there is?
7. _____ drop by after work?
8. _____ to know who's in charge here?
9. _____ take Mary over to her aunt's house today?
10. _____ for some tea?