CALL courseware for learning reactive tokens in face-to-face dialogs

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ABSTRACT

We developed courseware for teaching reactive tokens. Reactive tokens are audio or visual signals that structure discourse, and are sent by discourse participants who do not have the floor to those who do. Cultures with much in common sometimes differ markedly in their reactive tokens. Non-native language learners need to learn how to interpret and convey reactive tokens in order to be perceived as attentive, intelligent and polite. We believe reactive tokens are best learned when examples can be readily observed, practiced and critiqued. Our courseware combines computer-aided language learning (CALL) material for independent study, peer-based learning for production practice, and instructor-led learning for lectures and coaching. Experimental results show that some reactive tokens can be learned and retained.

Index terms: pragmatics, reactive tokens, learning listener behavior, CALL.

1. INTRODUCTION

We are interested in discourse audience behavior: that is, how discourse hearers work with the talker to structure discourse. Building on the literature (e.g., [1][2][3]), we call such behavior reactive tokens. Reactive tokens are audio or visual signals that structure discourse, and are sent by discourse participants who do not have the floor to those who do. We include behavior that occurs immediately following a floor change.

Reactive tokens can be classified based on discourse function (e.g., [2][4][5]). The pragmatic value of functional classification is apparent but occasionally the boundaries overlap and the roles of reactive tokens are debatable. We prefer categorizing reactive tokens based on physical properties, which is more exhaustive and systematic.

Similar cultures sometimes differ markedly in their reactive tokens. For instance, Chinese hearers rarely backchannel (say the equivalent of *uh-huh*); Chinese listeners avoid interruptions and defer comments until the talker has finished. Japanese hearers backchannel frequently to show they are paying attention; Japanese talkers depend on this behavior and will stop talking if backchanneling is absent. The goal in both cultures is to show respect, yet the expected behavior is quite different. Non-native language learners need to learn how to interpret and convey reactive tokens in order to be perceived as attentive, intelligent and polite.

The following sections describe our audiovisual corpus of reactive tokens, courseware, and learning experiment.

2. REACTIVE TOKEN CORPUS

We developed an audiovisual corpus of reactive tokens. The corpus was designed to record, observe, analyze and classify various reactive tokens in order to understand how the hearer's behavior affects the talker's, as expressed in elaborations, repairs, etc. We chose Japanese as our language for analysis. Table 1 summarizes the extent of the corpus.

The human subjects in our corpus were 2 extroverted, gregarious foreign language teachers who engaged in scripted, rehearsed audio-visual dialogs. Rehearsals were needed because desired reactive tokens do not easily appear in conversations merely by constraining discourse context. In order to view our interactants head on, we seated them across a table facing each other, and we placed 2 video cameras in the middle of the table facing opposite directions so that each camera captured one interactant's audio and video (Figure 1). The hearer's video image was enlarged to show detail, and the two recordings were synchronized to produce a video recording as shown in Figure 2 and the accompanying video file `utashiro_kawai.mov`.

Table 1. Corpus specifications. The corpus consists of transcribed video clips. Transcriptions describe the supposed social relationships of the interactants. The interactants worked from a script (which they modified extensively) to collect a range of reactive tokens in varying contexts. The recording techniques, which should be usable in any language, are shown in Figures 1 and 2.

Language	Japanese.
Interactants	2 (1 male, 1 female). Native speakers of Japanese. Second language teachers (male teaches English, female teaches Japanese). Both act and improvise eagerly, are expressive, talk clearly, and are willing to repeat the same conversation numerous times.
Video format	2 audio-video channels, 1 per interactant, were combined into one screen using commercially-available video editing software. QuickTime movie format (MOV).
Audio format	2 channels, 1 per interactant. Recorded using close-talking microphones.
Duration	50 video clips, each 20 to 30 seconds long.
Reactive tokens	4 types (*ee, soudesuka, naruhodo, nn*) appearing in various social relationships and conversation topics. Suited for beginning and intermediate non-native language learners.
Scripts	Drafted by experimenter. Revised and rehearsed by interactants. Transcribed after video recording.

Table 2. Reactive tokens that should be learned at each language skill level. Each higher learning level assumes satisfactory acquisition of all skills listed in lower levels. The 2 shaded cells show 4 reactive tokens at the beginning and intermediate levels that were chosen for the learning experiment.

Reactive token	Beginner	Intermediate	Advanced	Near-native
Oral backchanneling	receive and produce polite, general-purpose forms (e.g., *ee, soudesuka*)	receive and produce colloquial, friendly forms (e.g., *naruhodo*, *nn*)	receive and produce various lexical and prosodic forms	
Oral repetition			receive and produce phrases	
Oral paraphrase				receive some forms
Oral prediction				receive some forms
Gestures	receive and produce polite, general-purpose forms	receive and produce colloquial, friendly forms	receive and produce forms used in various contexts	receive subtle forms

Table 3. Learners of Japanese as a second language who participated in the experiment. Most were at the intermediate level. Their time in the L2 community ranged from 6 to 60 months.

L1 (native language)	L2 (target language = Japanese) proficiency	*n*
Chinese	intermediate to advanced	21
Korean	intermediate	1
Mongolian	intermediate	1
Polish	intermediate	1
Russian	intermediate	1

Table 4. Chronological order of learning experiment. The learners' receptive and productive skills regarding reactive tokens were measured before and after each learning stage.

order	activity	reception test	production test
1	pretest	yes	yes
2	independent learning	no	no
3	posttest_1	yes	yes
4	peer-based and instructor-led learning	no	no
5	posttest_2	yes	yes
6	no activity for 1 week	no	no
7	posttest_3	yes	yes

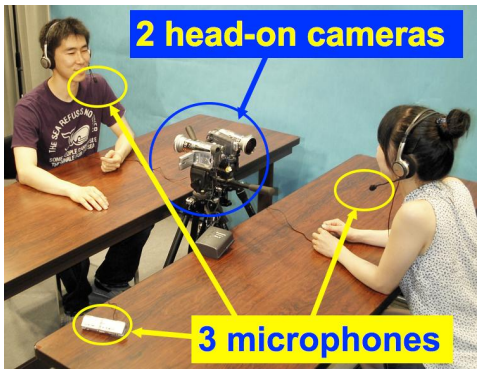


Figure 1. Placement of microphones and cameras. 2 interactants conversed facing each other across a table. We placed 2 video cameras in the middle of the table facing opposite directions to record the interactants' upper body. The third microphone was used to synchronize recordings from the 2 cameras.



Figure 2. Screenshot of corpus. The two audio-video channels from Figure 2 were combined to allow both interactants to be viewed head-on. The image of the hearer (the woman in the picture) was enlarged to show detail. The slight upward off-camera gaze was caused by placing cameras close below, but not on, the line of eye contact.

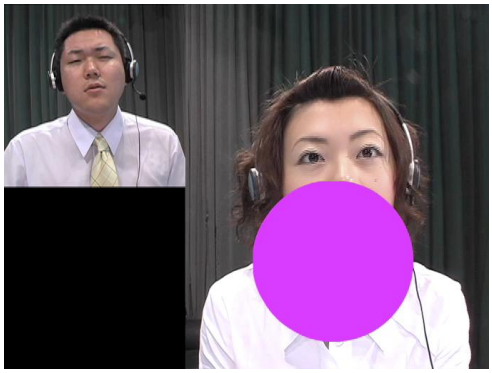


Figure 3. Screenshot of video masked for language learners. Excerpts from our corpus to train non-native language learners on how to interpret and produce reactive tokens. Selected reactive tokens were concealed by muting the hearer's audio and partially masking the video. Pink dots hiding the mouth area prevented lip-reading by language learners.



Figure 4. Screenshot of courseware for language learners. First, the conversation's context (such as the social relationship of the interactants and the topic of discussion) was explained to language learners. Next, the learners viewed videos and identified which reactive token would be appropriate for that circumstance. Finally, learners received feedback on their choices.

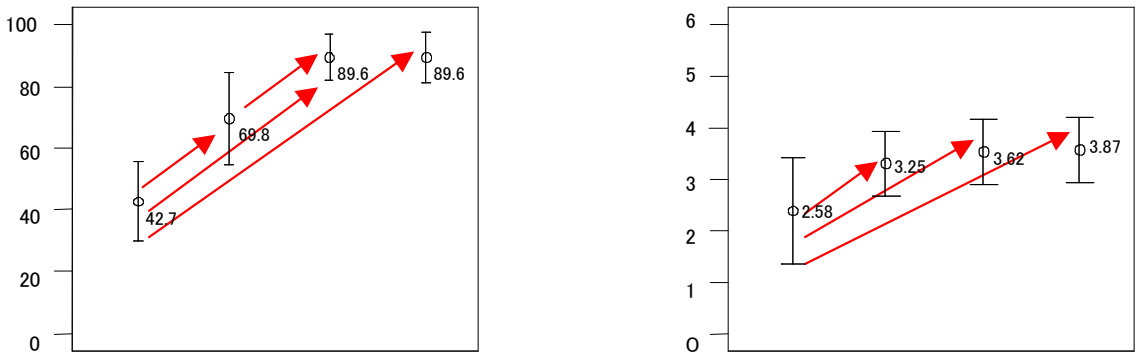


Figure 5. Perception scores (left) and production scores (right). Mean scores and 95% confidence intervals are shown. Red arrows indicate statistically significant score increases (p<0.05) based on ANOVA followed by the Bonferroni posttest. No significance between posttests 2 and 3 indicates skill retention. Perception scores were measured objectively with multiple choice quizzes. Production scores were measured subjectively via face-to-face interviews.

3. LEARNING EXPERIMENT

To our knowledge, reactive tokens are rarely taught explicitly, perhaps under the assumption that learners will somehow "pick it up" or "get the hang of it" through experience. The problem with this approach is twofold: (a) unsystematic, *ad hoc* treatment of reactive tokens creates an instructional void, and (b) most experience in the language classroom is observing talkers (such as instructors or videotapes) rather than watching native-speaker hearers ([6] argues similarly for necessity of instruction). We developed reactive token courseware because we believe being a passive audience (as a student might in a large classroom) does not guarantee learners will become good hearers participating in discourse.

Our courseware was developed to encourage independent study, peer-based learning, and instructor-led lectures and coaching, which learners experience cyclically. We developed a matrix of reactive tokens and language skill levels that specify which skills should be acquired at which stage of learning (Table 2). From this table, we chose several reactive tokens at the intermediate level for our learning experiment. 25 intermediate learners of Japanese as a second language participated in the experiment (Table 3). Learning occurred in 3 stages. The learners' receptive and productive skills regarding reactive tokens were measured before and after each learning stage (Table 4).

After a reactive token was chosen to be explained to non-native learners, its audio was muted and its video was partially masked as seen in Figure 3 and the accompanying video file `utashiro_kawai.mov`. The learner's task was to identify what reactive token would be appropriate for that circumstance (Figure 4).

Figure 5 shows results of ANOVA followed by the Bonferroni posttest for receptive and productive tests. Scores generally improved, particularly after both independent and group learning phases. This may be merely due to the increased time on task, or, wishfully, mean that both receptive and productive training are needed to fully grasp the value of reactive tokens. An encouraging note is the retention of skills after an admittedly brief period of inactivity.

Post-experiment interviews and anonymous written surveys suggest that pointing out the existence of reactive tokens causes learners to intentionally behave as good listeners. Learners report that explicit instruction helped them not only acquire skills specific to the reactive token being taught, but also become consciously aware of perceiving and producing reactive tokens in general -- probably because, at an abstract level, reactive tokens are important in all languages and cultures, and a few poignant examples suffice to alert the learner of their importance. Combining awareness and training seem to be the key.

4. CONCLUSION

We developed courseware for learning reactive tokens. Our courseware combines CALL material for independent study, peer-based learning for production practice, and instructor-led learning for lectures and coaching. Experimental results show that reactive tokens at the intermediate level can be learned and retained. As far as we are aware, this is the first instance of spoken language corpora being used to teach reactive tokens in Japanese as a second language.

We plan to convince the Japanese-language teaching community to adopt our courseware. Accomplishing this requires at least 4 steps: (a) cover more reactive tokens over wider learning levels, (b) emphasize cultural and linguistic differences between L1 and L2 such that courseware can be tailor-made for L1, (c) establish formative evaluation methods to monitor progress, and (d) show instructors how to mix reactive tokens with the teaching of other oral activities.

5. ACKNOWLEDGMENTS

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