HHS Public Access

Author manuscript

Second Lang Res. Author manuscript; available in PMC 2016 December 21.

Published in final edited form as:

Second Lang Res. 2013 ; 29(3): 257–283. doi:10.1177/0267658312467029.

The role of hypercorrection in the acquisition of L2 phonemic contrasts

Fred R. Eckman and **Gregory K. Iverson**

University of Wisconsin-Milwaukee

Introduction

Purpose of this paper is to report preliminary findings of an ongoing investigation into the acquisition of second-language (L2) phonemic contrasts. Specifically, this paper considers the status and role of hypercorrection in the various stages through which L2 learners are able to develop and internalize a target-language (TL) contrast.

Hypercorrection is a technical term that has been employed extensively in studies of language variation and linguistic change to describe a situation in which a form is extended beyond its regular linguistic usage, resulting in an erroneous form. As pioneered by Labov (1969) and used in sociolinguistics (e.g. Wolfram 1991) and historical linguistics (e.g. Campbell 1998), hypercorrection involves awareness on the part of speakers of different speech varieties which, in turn, are associated with differing amounts of prestige. A speaker of a less prestigious variety changing a form in an attempt to have it match a more prestigious form, and overshooting the mark, thereby producing a incorrect form would be an instance of hypercorrection.

A well-known example involves speakers of Cockney English, which lack the sound [h] in their variety of English, producing words such as *house* as [aws]. Realizing that their pronunciation of *house* is not prestigious, they change their pronunciation of words by adding [h] at the beginning. This causes them to overshoot the target and to produce words with an initial [h] that are supposed to begin with a vowel, thereby pronouncing the word *out* as [hawt].

There are two straightforward ways in which to pursue this research program. The first is to analyze IL grammars relative to a given general, linguistic principle with a view towards testing whether IL grammars adhere to the principle in question. The second is to use general linguistic principles as intervention strategies to test whether they can shape the learning of IL grammars.

In this paper we present data showing the acquisition of a target language (TL) phonemic contrast using words containing the contrasting segments in certain phonological contexts will result in the learner necessarily generalizing the contrast to other phonological contexts. A learner acquiring the contrast in different phonological environments does not necessarily result in the generalization of learning.

The remainder of this paper is structured as follows.

Background

Within the three logically possible ways in which an NL and a TL can differ with respect to a two-way phonemic contrast, this study reports the elicitation of both production and perception data to investigate the acquisition of these logical possibilities listed below in (1).

(1) a. The NL completely lacks the two TL sounds;

b. the NL has only one of the two contrasting TL sounds;

c. the NL has both of the TL sounds, but has them as allophones of the same phoneme in complementary distribution.

The language contact situations of native speakers of Korean learning English exemplify the above in that, respectively, Korean has (i) neither of the sounds [f] and [v]; (ii) the phoneme /p/, but lacks the phone [f]; and (iii) has both of the sounds [s] and [š], however, these sounds are allophones of /s/ in Korean, with [š] occurring in words only before a high front vowel, and [s] occurring elsewhere.

d. General phonological principles predict that, in the case of (2bii) above, acquisition will occur in implicationally-related stages, whereby the contrast is acquired in relevant morphologically-composite words only if the contrast is acquired in morphologically-simple words, but not vice versa. However, general phonological principles make no such prediction in the acquisition of the contrast in (2bi), whether the words are morphologically complex or simple.

e. Employing these general phonological principles as the basis for an intervention strategy, we attempted to manipulate the learning and generalization of the /s/ - /š/ and /p/ - /f/ contrast by Korean learners of English. Since these principles do not apply to the /p/ - /f/ contrast because there is no allophonic rule involved, any such manipulation is predicted not to work in the case of /p/ - /f/.

f. Morphologically-basic (henceforth, basic) environments are mono-morphemic words containing the appropriate segments for the application of the allophonic rule in the IL.

g. Morphologically-derived (henceforth, derived) environments refer to words containing a representation to which the transferred allophonic rule would apply, but the segments in question are separated by a morpheme boundary.

h. The hypothesis, to be developed below, is that the acquisition of the contrast in (2bii) will result in staged development, whereas the acquisition of (2bi) will show no staged development relative to morphological structure.

i. The hypothesis predicts that L2 learners' (L2ers) generalization of a target-language phonemic contrast from a position in which the contrast was explicitly trained to another word-position in which the contrast was not trained.

3. The Present Study

a. Allophones in complementary distribution motivate an allophonic rule for the grammar of the NL, which, in the early stages of acquisition, will be transferred into the grammar of the interlanguage (IL).

b. General principles of phonology constrain grammars such that:

i. Representations within the lexicon must be composed only of elements drawn from the phonemic inventory.

ii. Rules applying to, or creating, segments that are phonemes must apply only in derived environments; allophonic rules apply across-the-board.

c. Assuming that Korean L2ers of English will transfer the rule in (2cii) to the IL grammar, and hypothesizing that the general principles in (3b) above also constrain interlanguage grammars, we predict three stages of acquisition:

Stage 1, No Contrast: the rule in (2cii) applies in both basic and derived contexts; the L2er says the pairs *sea – she* and *messing – meshing* homophonously, i.e., incorrectly);

Stage 2, Partial Contrast: the L2er learns the contrast in some words; and (3bii) above constrains the rule to apply only in derived contexts, such that the L2er says *sea – she* correctly, but errs by producing *messing – meshing* homophonously);

Stage 3, Contrast: the L2er has learned to make the contrast, and not apply rule (1cii) in either basic or derived contexts and the L2er says the pairs *sea – she* and *messing – meshing* correctly);

Excluded stage: the L2er learns to make the contrast in some words and applies the rule only in basic contexts such that the L2er says the pairs *sea – she* homophonously, but says *messing – meshing* correctly.

d. The above stages in (3c) can be attributed to the DERIVED ENVIRONMENT EFFECT, according to which an L2er will:

acquire a contrast that involves splitting NL allophones into separate TL phonemes by suppressing the application of the transferred allophonic rule across a morpheme boundary only if the learner is also able to prevent the rule from applying within morphemes.

acquire a contrast that involves splitting NL allophones into separate TL phonemes in derived environments only if that learner has acquired the contrast in basic environments.

e. Hypotheses

i. Acquisition of the production of a contrast such as (2bi) will not be sensitive to morphological structure.

ii. Acquisition of the perception of a contrast such as (2bi) will not be sensitive to morphological structure.

iii. Acquisition of the production of a contrast such as (2bii) will exhibit a derived environment effect sensitive to morphological structure.

iv. Acquisition of the perception of a contrast such as (2bii) will exhibit a derived environment effect sensitive to morphological structure.

f. Evidence of a derived environment effect is the systematic occurrence of the relevant contrast in only a basic environment, or in both a basic and derived environment, but not in a derived environment.

g. Hypotheses (3ei) and (3eii) above are supported if the production (3ei) and perception data (3eii) for the /p/ - /f/ contrast on the baselines and/or the post-test do not vary according to morphological compositionality. Hypotheses (3ei) and (3eii) are falsified if the contrast does show sensitivity to morphological structure.

h. Hypotheses (3eiii) and (3eiv) above are supported if the production (3eiii) and perception (3eiv) data for the /s/ - /š/ contrast on the baselines and/or the post-test evince a derived environment effect. Hypotheses (3eiii) and (3eiv) are falsified if the contrast occurs in only the derived environment.

4. Methods

In order to test our hypotheses, we elicited productions on the three contrasts in question from 48 native speakers of Korean. The research participants from whom we elicited the data were divided into three groups: we elicited productions on the /p/ - /f/ contrast from 10 native Korean speakers; we elicited productions on the /p/ - /f/ contrast from 12 native Korean speakers; and we obtained productions on the /s/ - /š/ contrast from 26 speakers. All of the participants belonged to only one group; there was no overlap of participants among the three groups. The subjects were between the ages of 18 and 36.

The stimuli used to elicit the productions consisted of a set of 90 words for each contrast, 60 of which were targets (listed in the appendix) and 30 were fillers. All are existing lexical items in English, and each target word contained the contrasting segments in three different positions in a morphologically basic word: initial before a high front vowel (e.g., *sip/ship*), medial (e.g., *lesson/ocean*), final (e.g., *pass/crash*) and in one additional position (medial, at the juncture with another morpheme) in morphologically composite words containing either the suffix *–ing* or *–y* (*passing/brushing* or *messy/bushy*).

The stimuli were elicited on two occasions to collect subjects' responses at two points in time: (1) as a pretest, at the beginning of the study before each subject entered the training phase, and (2) as a posttest, after the training had been completed.

Several custom programs were written in MATLAB for the purposes of the present study. A program controlling the recordings displayed on a computer screen a set of pictures, clues, and commands such as "Wait" or "Speak" designed to guide the subject and the experimenter in order to elicit the word in question. Words were elicited, not by giving their spelling, but by displaying an image depicting the action or object in question for both basic (picture, say, of a woman kissing a child to elicit the word 'kiss') and derived forms (same picture, but with the cue, "current action," appearing on the screen one-half second after appearance of the image to elicit the word 'kissing'). The stimuli were presented in a pseudo-randomized order in that all basic forms were elicited before their related derived forms. The elicitations were recorded directly onto a hard disc drive at the sampling rate of 44.1 kHz. Subjects spoke into a head-mounted microphone at a distance of one inch from the lips and produced the set of 90 words twice, both during the same session.

A second program guided the training of the subjects on the production of the words containing the contrasting segments, either /f/ - /v/, /p/ - /f/ or /s/ - /š/ depending on which baseline the subject produced. The training program took the subjects through a series of steps that were somewhat similar to the baseline task. These steps used appropriate pictures and verbal models that were repeated and learned by the subject. Only nonce words were used in the training phase, e.g. *nafe, kefing, hosing, hisi*.

The data were collected at the University of Wisconsin–Milwaukee and then transferred to the Ohio State University via file transfer protocol where they were transcribed by assistants who were blind to the hypotheses. Not only did the transcribers not know what the hypotheses were, they also were unaware of the intended target segments. The transcribers listened to the utterances in question and were focused either on a consonant in word-initial position or a word-medial consonant occurring before the suffix *–ing* or *–y*. The transcriber's task was then to choose from a menu of four choices, a) strong palatal; b) weak palatal; c) non-palatal; or d) unidentifiable segment. The completed transcriptions were then returned to Milwaukee where they were scored.

For the purposes of testing the hypotheses, we considered the basic environment to be exemplified by words containing the segments in word-initial position before a high front vowel, and derived environments to be exemplified by words in which either segment in question occurred before the suffix *–ing* or *–y*, as in *kissing, messy, crashing* or *bushy*. This way of scoring made the basic and derived environments comparable by virtue of having [s] and [š] occur in syllable onset position before a high front vowel in each environment.

For productions in the basic environment, each subject produced a total of ten words with initial [s] and ten words with initial [š]. For productions in the derived environment, subjects produced a total of twenty words in which [s] occurred before the suffix *–ing* or *–y*, and the same number of words in which [š] occurred in the same environment.[1] A subject's performance on the productions had to reach the 80% criterial threshold for both [s] and [š]

in a given environment in order for the subject's interlanguage grammar to be credited with having the contrast in that environment. If a subject's performance reached the criterial threshold on only one of the segments in a given environment, or did not reach criterion on either segment, the subject's IL grammar was scored as lacking the contrast in that environment. For example, a subject had to produce [s] in at least eight of the ten words in which it occurred in initial position before a high front vowel, and likewise for [š], in order for the subject's IL to be given credit for having the /s/ - /š/ contrast in the basic environment.

We also scored the kinds of errors subjects made in the their attempts to produce the contrast. If a subject erred by substituting [š] for [s], we labeled this an NL error, because [š] is the segment that occurs in that environment in the subject's native language. Alternatively, if the subject erred by incorrectly producing [s] in words containing [š], we designated the utterance as a hypercorrection error. Thus, a subject producing the word *sink* as [šɪŋk] is an example of an NL error, whereas the production of *shin* as [sɪn] is a hypercorrection error.

5. Results

a. In production of the baselines and the post-test of the /p/ - /f/ contrast, three of the ten subjects systematically showed the contrast in the morphologically composite environment but did not have the contrast in the basic environment. Therefore hypothesis (3ei) was supported.

b. In the perception task involving the /p/ - /f/ contrast, none of the subjects showed directional sensitivity to morphological structure on either the pretest or the post-test, or in either the 0 dB or −4 dB signal-to-noise ratio (SNR) degradation of the stimulus. These subjects performed similarly to the control subjects on the perception task. Therefore, hypothesis (3eii) was supported.

c. In production of the baselines and the post-test on the /s/ - /š/ contrast, five subjects showed the contrast in neither basic nor derived environments; eight subjects evidenced the contrast in both basic and derived environments; and seven subjects evinced a derived environment effect by having the contrast in basic environments only, on either the pre-test, the post-test, or both. Therefore hypothesis (3eiii) was supported.

d. Of the seven subjects whose IL grammar showed a Derived Environment Effect, we observed the following:

2025 Baseline - contrast in basic, no contrast in derived; post-test - contrast in basic & derived; training in basic.

2027 Baseline - contrast in basic & derived; post-test - contrast in basic, no contrast in derived; training in basic.

2032 Baseline - no contrast in basic or derived; post-test – contrast in basic & derived; training in derived.

2035 Baseline - contrast in basic, no contrast in derived; posttest – contrast in basic, no contrast in derived; training in derived.

2036 Baseline - contrast in basic, no contrast in derived; post-test - contrast in basic, no contrast in derived; training – basic.

2037 Baseline - no contrast in basic or derived; post-test - contrast basic, no contrast in derived; training in derived.

2039 Baseline - contrast in basic, no contrast in derived; post-test - contrast in basic & derived; training – basic.

e. In the perception task, seven of the subjects performed contrary to the Derived Environment Effect, either on the pre-test or post-test (or both) and in either the 0 dB SNR or the −4 dB SNR condition (or both) on the /s/ - /š/ contrast. Therefore, hypothesis (3eiv) is not supported. These subjects performed differently than did the native-speaker controls.

6. Discussion

a. General principles of phonology constrain IL grammars in such a way that that L2 contrasts are acquired according to different paths, some following staged development through basic and derived environments, and others not.

b. This suggests an explanation for the classically-held view (Lado, 1957); Stockwell & Bowen, 1965; and Hammerly, 1982) that splitting NL allophones into TL phonemes constitutes maximal difficulty, perhaps because of the staged development.

c. Also, Flege (1999) has reviewed the literature on the production and perception of L2 phonemic contrasts and reported that production and perception are only weakly correlated. It is suggestive as an explanation of the weakness of the correlation that the Derived Environment Effect pertains more robustly to production than it does to perception. Moreover, this fact is consistent with both Flege's SLM and Best's PAM, both of which are based largely on perception, and do not incorporate derivations.

References

Flege JE. The relation between L2 production and perception. ICPhS. 1999; 99:1273–1276.

Hammerly H. Contrastive Phonology and Error Analysis. International Review of Applied Linguistics. 1982; 20:17–32.

Stockwell, R.; Bowen, JD. The Sounds of English and Spanish. Chicago: The University of Chicago Press; 1965.