1. INTRODUCTION

One of the most influential models of second language speech perception is Flege’s (1995) Speech Learning Model (SLM). He argues that during initial stages of second language acquisition, second language (L2) phonological categories that share the same acoustic space as pre-existing first language (L1) categories will map onto those categories. In addition, Flege and Hillenbrand (1987) claim that acquiring a phonetic category that is similar to an LI category can result in averaging the distance between the L1 and L2 categorical centres.

In addition, a distinction is made in the degree of difficulty learners face in acquiring specific L2 categories (Flege, 1995). Those L2 categories that share perceptual space with an existing L1 category are easiest to learn; those that are distinct from L1 categories or ambiguous are more difficult to learn. While comparisons of L2 productions with native-speaker means have been made (Chen, Robb, Gilbert & Lerman, 2001) few studies have compared L2 productions with productions of similar LI categories.

This study examines the productions of English /u/ and /U/ categories by Mandarin LI learners of English. Maddieson (1984) describes the Mandarin vowel inventory as including /u/ but not /U/. SLM would predict that English /u/ will map to an existing Mandarin /u/ category, while /U/, because it does not exist in Mandarin, will require the formation of a new category.

2. METHOD

The data used in this study were collected as part of a larger longitudinal study of the development of English language proficiency by recent immigrants to Canada.

2.1 Participants

Eight female and two male Mandarin L1 learners of English were selected on the basis of being newcomers to Canada with low English language proficiency. All participants were enrolled in a full-time ESL program at a local college. They ranged in age from 26-39 years.

2.2 Data Collection

Recordings of each participant’s English productions were made six times over the course of one year, using a minidisc recorder with a sampling rate of 44,100 Hz.

As predicted, Mandarin L1 learners of English
the English /u/, which is perceptually similar to a Mandarin category. Of greatest interest is that the mean and range of the F1/F2 values for the Mandarin /u/ category is clearly different from the same speakers' productions of English /u/.

Figure 1 below plots the Mandarin speaker productions in a two dimensional space.

![Figure 1](image)

Fig. 1. F1/F2 values of English /u/ and /u/ and Mandarin /u/

Figure 2 illustrates the difference in category centres between NS and NNS productions, comparing these with the centre of the Mandarin /u/ category.

![Figure 2](image)

Fig. 2. Mean F1/F2 values of NS and Mandarin L1 production of English /u/ and /u/ and mean of Mandarin /u/.

4. DISCUSSION

What is most striking about these results is the difference between the acoustic properties of Mandarin /u/ following a bilabial compared to those produced by the same speakers in response to English /u/ stimuli. Since the means and ranges are different, it is clear that in producing an English /u/, Mandarin speakers do not simply map to an exact replica of the prototypical Mandarin category, as might have been predicted. Rather, it seems they are sensitive to crosslinguistic differences and are developing an English-specific representation.

The small overlap between the upper edges of the Mandarin /u/ productions and the same speakers’ English L2 productions suggests that if any categorical mapping is taking place, it is to non-prototypical exemplars of the L1 category; that is, to allophones of the Mandarin category that are closest to the English equivalent. This may explain why acquiring an L2 phonetic category that is similar to an L1 category often results in averaging the distance between the L1 and L2 categorical centres. As the learner is exposed to L2 vowels that are non-prototypical members of the L1 category, he/she still recognizes them as belonging to the L1 category. The frequency of the rare allophones at the L1 category’s edge is strengthened by this L2 input. To truly acquire a native-like representation of the English /u/ vowel, however, Mandarin L1 learners need to develop greater sensitivity to differences between similar L1 and L2 categories by noticing L2 exemplars that are less similar to their L1 counterparts. In the case of the English learners in this study, a sensitivity to English /u/ seems evident. The greater difficulty associated with acquiring English /u/ may then be a result of its similarity to English /u/ as much as its closeness to the Mandarin /u/ category.

REFERENCES


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