The Effect Of Immersion On Second Language Productions: The Acquisition Of American English /r/ And /l/ By Japanese Children

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Abstract: The current study examined the effect of English-language immersion on Japanese children's productions of American English /r/ and /l/. We studied /r/, /l/, and /w/ productions from three age groups (4, 6, and 8 year-olds) and three language groups (English-immersed Japanese children, native Japanese children and native English children). Significant differences in intelligibility were found dependent upon age and language-experience. Furthermore, the children in the three language-experience groups showed different substitution patterns.

1 INTRODUCTION

American English (AE) /r/ and /l/ are difficult for adult native Japanese to perceive and produce, sometimes even after substantial experience and/or intense training (3). Yamada et al. (4) found that English immersion can significantly change Japanese adults' production ability of AE /r/ and /l/. However, the extent of improvement varied from "poor" to "native" AE level, possibly due to age at the time of immersion. Since studies have shown age-related factors in perceiving non-native sounds (1), it is important to investigate directly the acquisition of second language productions by children.

The current study examines the effect of English-language immersion on Japanese children's productions of AE /r/ and /l/. Approximately 90% of native English children still have difficulty with the production of /r/ and /l/ by the age of 48 months (e.g., many substitute /w/ for /r/). It was also reported that Japanese children's mastery of the Japanese flapped /r/ occurred at a somewhat earlier age (2). In order to clarify the acquisition of L2 production systematically, we have analyzed the productions of 3 different language groups, native English, English-immersed Japanese, and native Japanese and compared 3 age groups.

2 METHOD

Participants: The native AE children were eight 4 year-olds (yo), eleven 6 yo, and one group of 7 and 8 yo combined. The native English-immersed Japanese children were twelve 4 yo, ten 6 yo, and one group of 7 and 8 yo combined. The native Japanese children were eleven 4 yo, nine 6 yo, and one group of 7 and 8 yo combined. With the exception of two Japanese children, who were born in the United States, all English-immersed Japanese participants were born in Japan and were currently attending an English-speaking elementary school in the U.S.A. (hence, English immersion).

Procedure: The procedure consisted of perception testing, cued production by pictures, and modeled production. Results of the perception test are not reported in this paper. A phonetically trained AE speaker evaluated 6 minimal word pairs which contrasted /r/, /l/, and sometimes /w/ in syllable initial (ra-la, rain-lane, and write-light-white), initial-cluster (fruit-flute), and final position (bear-bell, door-doll). The productions were randomly sequenced, but blocked by word pair and presented by computer. The productions were evaluated by categorizing them into one of seven categories ("r", "distorted r", "l", "distorted l", "w", "distorted w", and "other"). We defined "distorted" as an approximant of the intended gesture. When "other" was selected, the production was transcribed into AE phonemes. The selected category was compared to the intended gesture to generate percent correct production scores. For incorrect productions, substitution patterns were tallied.

3 RESULTS

In figures 1 & 2, we compared percent correct productions, which included and excluded those productions rated as "distorted". Immersed Japanese children's production ability for all three age groups, collapsed across all positions and phonemes, was significantly lower than that of English children, but significantly higher than that of native Japanese children. For all three language groups; performance appears to improve with age. The patterns of performance are similar, but lower and more exaggerated when "distorted" productions are excluded.
As shown in figure 3, a remarkable overall difference between the primary substitution patterns of English children and Japanese children were found. As expected, the pattern showed that native English children primarily substituted /w/ for /r/, while, in contrast, native Japanese children primarily substituted /N/ for /r/. In examining the English-immersed Japanese children’s productions, the substitution of /r/ to /N/ is at a much lower rate. In addition, like native English children, their substitution patterns are decreasing with age.

4 DISCUSSION AND CONCLUSION

The results indicate that immersed Japanese children in this study still have some foreign accent in their /r/-/N/ productions; their intelligibility was lower than English children and their substitution errors showed a different pattern from English children. However, their intelligibility was significantly higher than native Japanese children and a much lower and different pattern of substitution errors occurred. This suggests English immersion changed the Japanese children’s productions of /r/ and /N/ significantly, however, their productions were still significantly different from native English speaking children. Other studies have shown that the length of immersion in an L2 environment is not a good determiner of success in learning an L2 and that the age at the time of immersion in an L2 is a much better predictor of success (1). Not surprisingly then, in this study the production ability of /r/ and /N/ increased with age. Perhaps the increase of ability with age is due to the development and better control of the articulators. Interestingly, the substitution patterns shown here suggest that the immersed Japanese are beginning to master their /r/’s and their /N/’s, and like young native English children, their /r/’s are beginning to go to /w/’s instead of /N/’s, unlike the non-immersed Japanese children.

REFERENCES