Influence of bilingualism on phonetic imitation in children: a preliminary study

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This work examines how bilingualism (early exposure to a true voicing heritage language) may affect children's imitation of specific phonetic features (presence/absence of prevoicing and duration of aspiration) in English stops. We predicted that the heritage speakers of "true voicing" languages (e.g. Spanish, Polish, Tagalog) would show more accurate imitation of prevoicing, based on its contrastive status in the phonology of their heritage language (vs. its noncontrastive status in English), and also that they might show overall greater imitation ability for both features based on previous work showing better imitation by bilinguals.

English-speaking children (8 to 10 years old) who were either monolingual or heritage speakers of true voicing languages played an "alien space mission" game involving imitation and discrimination (ABX) of pairs of English words. Each pair was manipulated from a single token to differ minimally in one acoustic feature: 1) **presence vs. absence of prevoicing** on phonologically voiced stops (e.g. 'boat' with or without prevoicing on the [b]); or 2) the **duration of aspiration** in phonologically voiceless stops (e.g. 'pool' with 60 vs. 160 ms of aspiration). There were 6 pairs of words for each feature; each pair was imitated once and discriminated twice. The game consisted of two blocks, one for each feature. In each block (Figure 1), participants were introduced to aliens who spoke differently, and were 1) exposed to the differences, 2) asked to discriminate the differences, and 3) asked to imitate the differences. There was also an initial picture-naming phase to elicit baseline productions of words. Recordings were annotated for presence/absence of prevoicing on voiced stops and aspiration duration on voiceless stops.

Preliminary results from 68 children (50 monolingual, 18 bilingual) are shown in Figure 2. Neither group showed evidence of successful imitation of prevoicing: there was no difference in the amount of prevoicing when imitating prevoiced vs. non-prevoiced tokens. Both groups did show significant imitation of aspiration differences, producing longer aspiration when imitating lengthened vs. shortened stimuli, and this effect was greater for the bilingual than for the monolingual group. Discrimination was at chance across the board (though bilinguals trended above chance), indicating that the differences may not have been robustly perceived. In contrast, a control group of adult monolinguals (not shown here) showed above-chance discrimination and imitation of both features. The current imitation results are consistent with previous work showing more imitation in bilinguals (e.g. [1]), but not with the specific prediction based on language-specific phonological influence. This is consistent with some previous work showing lack of L1 transfer in imitation in another language [2,3] but could also be due to lack of sensitivity/attention to the prevoicing difference by children in the context of this paradigm.

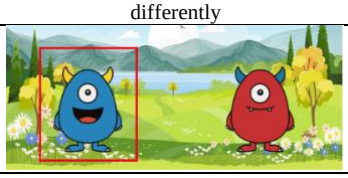
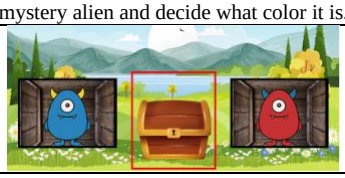
EXPOSURE	DISCRIMINATION	IMITATION
Listen to the blue and red aliens talk! Pay attention to how they say the words differently	An alien is trapped in a box – which one? Listen to the two aliens. Then, listen to the mystery alien and decide what color it is.	Listen to each alien talk and repeat what they said. Try to make it sound exactly like they said it.
		

Fig. 1. Summary of procedure and instructions

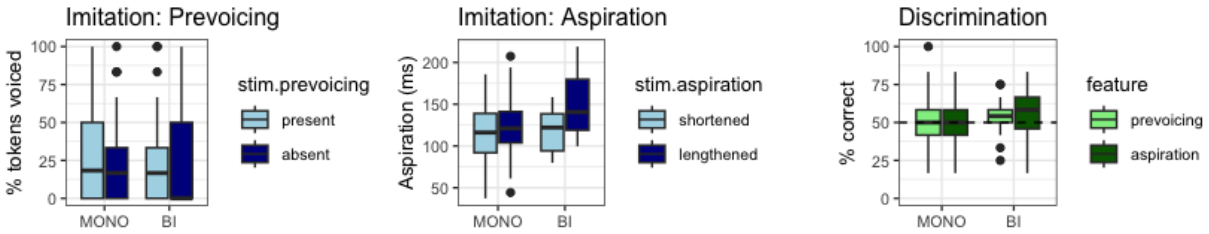


Fig. 2. Left: Monolinguals' and bilinguals' values of voicing and aspiration duration when imitating stimuli with/without prevoicing and with shortened/lengthened aspiration and discrimination. Right: Discrimination accuracy for minimal pairs differing in each feature. Boxplots show distributions of by-participant means.

References

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