

Reflection on the LAD and big data in human adult L2A of phonology

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To reflect on the LAD (Language Acquisition Device) and big data in human adult L2A of phonology, the current study reposes a question of why it is difficult or even impossible for adult L2 (second language) learners to attain native-like pronunciation, as one of the most obvious differences between success in L1 (first language) and L2 acquisition is found in phonology (White 1989: 42). This question triggers us to ponder on differences between human and AI's language production concerning phonology. Scovel (1969) noted a native Polish speaker who learned English at the age of eighteen 'demanded almost no grammatical editing, and yet his strong foreign accent prevented him from lecturing publicly in English (p. 247).' On the contrary, AI seems to have no accent issue in terms of native-likeness. AI's speech capacity appears far beyond human learnability of L2ers; accordingly, it is questioned what contributes to the difference.

The reflection adopts J.-Y. Kim (2010), the experimental study with data collected from thirteen English- and fifteen Finnish-speaking adult L2 learners of Korean, considering that the Finnish stops are either unaspirated or voiceless whereas English either aspirated or voiced, based on the consideration of Lado's (1957) classic work, maximum learning difficulty. Ten native Korean speakers were included as the control group. In the experiment, three distinctive types of Korean stops - i.e. slightly aspirated plain stops [p, t, k], unaspirated tense stops [p', t', k'], heavily aspirated aspirated stops [p^h, t^h, k^h] - were exploited in the tasks of 'stop discrimination' for perception, 'picture naming' and 'flash card reading' for production, which dealt with Korean-specific phonological rules, so called tensification and intervocalic voicing, as well as involving the distinctive feature [sg] (K.-H. Kim 1987) and the matter of geminate. Korean stops are dealt with as independent segments in the stop discrimination task. However, Korean stops had to be produced in the utterance-initial position in the picture naming task, and on word boundaries in the task of flash card reading. Involving the reading task, orthographic influence is then taken into account to analyze the collected data.

Discoveries from the task of stop discrimination indicate that the English (67.52% correct) and the Finnish speakers (62.72% correct) performed better in discerning geminates from non-geminate segment in general. On the other hand, the Korean stops distinguished by the feature [sg] alone have appeared to be the most difficult for the L2 learners of Korean to acquire. However, differences between the two language groups were also found in the acquisition of Korean stops. The different patterns of error types are caused by the absence or presence of the geminate in the learner's L1. The results from the task of picture naming demonstrate that the English speakers (81.77% correct) unfamiliar with geminates were slightly less successful in producing Korean tense stops than the Finnish speakers (87.30% correct) struggling with the Korean geminates in the word-initial position. According to the results from the task of flash card reading, both English (36.15% correct) and Finnish (33.57% correct) speakers showed that they were facing the same challenge of learning the Korean-specific rule in their beginning stage of learning. One of the reasons was deemed orthographic influence. Regardless of the two language groups' similarly poor results in performance on the tensification rule, only Finnish speakers were concluded to have acquired the Korean-specific rule, due to positive L1 transfer.

Grounded on the discoveries from the experiment dealing with at the factors of L1 transfer, orthographic influence, feature representations and tensification & intervocalic voicing rules, it is asserted that the human L2A of phonology requires cognitive process of learning the complexity of phonetic and phonological rules, which takes place by the LAD that Chomsky (1965) defines as innate neural mechanism unique to humans. For adults, L1 transfer as well as orthography are also concerned in the mind of L2A. Nonetheless, L2 learners manage to set the phonetic and phonological rules of their target language in the form of interlanguage, on the basis of limited primary data. Furthermore, 'positive' evidences tend to cause negative effects on human L2 phonology (Young-Scholten 1995). On the other hand, AI, known as imitating the human brain's neural system, generates speech relying on finely-tuned big data. Consequently, it is in question whether adult L2A can be activated more effectively in a manner similar to AI's language learning. In other words, can the success of L2 pronunciation be attained if the amount of input is provided to L2 learners as much as to AI? Is the exceptional success in L2 pronunciation dependent on extraordinary learnability related to the LAD or on enormous amount of data the learner copes with? The reflection concludes that the human mind is unique, and the human language acquisition still remains unraveled, unlike AI's language learning that is completely explicable.

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