

J.E. Flege (2007). "Language Contact in Bilinguals" in J. Cole and J.I. Hualde Laboratory Phonology 9 (Berlin, Mouton)

Comments on this article by Jim Flege:

I had never attended a "laboratory phonology" meeting during my academic career in the United States, but did so when invited to the LabPhon meeting held in Champaign, IL in 2005, the year in which I retired. It was a good meeting, frequented almost exclusively by linguists. The scientific content of most presentations was good, and the organizers produced an excellent book which archived the more interesting presentations. Congratulations to them!

The overriding topic of the meeting, as I recall, was language contact. For this reason the title of my contribution was chosen to echo the title of the seminal study by Uriel Weinreich, a linguist who attempted to characterize the influence of various Swiss German dialects on one another. [*Languages in Contact: Findings and Problems*. New York, 1953. Reprinted by Mouton, The Hague in 1963, ISBN number 90-279-2689-1]. Weinreich is credited with being the first to recognize the phenomenon of inter-language. Ever since my days as a graduate student in the Linguistics Department at Indiana University in Bloomington, I have considered L2 speech acquisition is simply a variant of cross-dialect contact phenomena written with large brushstrokes. [see: Munro, M., Derwing, T., & Flege, J. (2000). Canadians in Alabama: A perceptual study of dialect acquisition in adults. *J Phonetics*, 27, 385-403.]

This chapter focuses on contact between Korean and English. The "contact" that is described arose through the acquisition of English as an L2 by Koreans who immigrated to the United States. The study of Yeni-Komshian et al. (2000) is cited prominently. Ratings of overall degree of perceived foreign accent in sentences ("FA" for short) revealed that the later in life Koreans immigrated to the U.S., the stronger were their Korean FAs in English and the weaker were their American FAs when speaking their native language, Korean.

This finding seems to demonstrate that cross-language interference is a two-way rather than a one-way street, that is, learning an L2 leads to both L1-on-L2 and L2-on-L1 influence rather than just the "interference" of previously learned L1 structures on L2 learning or the "transfer" of phonic elements from the L1 to an L2 learned later in life. As far as I know, the Speech Learning Model was the first formal model of L2 acquisition to predict a bi-directional influences, and also to propose mechanisms through which this occurs (see below). Perhaps users of this site can inform me if the concept of "bi-directional" interference has been incorporated into other existing models/approaches to L2 acquisition.

I suspect that the interpretation just given is correct, but the reader is advised that there is another plausible interpretation that has never been subject to empirical scrutiny. The native Korean participants who arrived in the U.S. as young children, but who were young adults when recorded in the U.S. after having lived there for a minimum of 8 years (ave. = about 15 years, as I recall), clearly spoke Korean with an American FA. But why? Because English phonetic input "influenced" their Korean, as stated earlier? Or was it because of the lack of opportunity to fully develop their L1? Isn't it possible that once the young Korean immigrants began absorbing the English sound system through massive everyday input – which necessitates the recognition and the production (articulation) of many thousands of L2 words – the young immigrants had less opportunity, need, and perhaps even the desire to absorb the Korean sound system than would same-aged Korean monolinguals who never left Korea.

We know that the native language phonological and phonetic systems of monolinguals develops rapidly in the first 3 years of life, but that it continues to be refined for at least a decade thereafter. What native Korean listeners rated as a "foreign" (i.e. American) accent in the Korean sentences recorded by the participants living in the U.S. may have been the presence of a kind of "childish" (i.e., not fully developed) pronunciation of the Korean sentences rather than a "foreign" accent. [See: Flege et al. (2006). Degree of foreign accent in English sentences produced by Korean children and adults. *J Phonetics*, 34, 153-175.] I'm not sure how one would go about discarding this alternative interpretation if, indeed, it is incorrect. Any ideas out there?

After reviewing already-published FA ratings, the chapter briefly summarizes two experiments that were not previously published. One used listener ratings to gauge Korean immigrants' accuracy in producing a number of English vowels. The results obtained for the production of individual vowels were similar to the results obtained for assessments of FA in sentences. This finding replicated results obtained earlier for Italian immigrants to Canada, and suggests that a large part of what we call "foreign accent" resides in the pronunciation of vowels. (Many other dimensions contribute as well, of course. As to whether age-related effects differ across various phonetic dimensions is an open question.)

The chapter then briefly reports another previously unpublished study. This study made use of acoustic phonetic measurements rather than listener ratings. The focus: production of word-final English stop consonants. Here it was shown that the age at which L2 learning began (indexed here by AOA) exerted little effect on differential vowel duration (a term used to denote the fact that vowels are longer preceding /b d g/ than /p t k/). However, large age-related (AOA) effects were observed on the extent to which the Korean participants distinguished voiced from voiceless English stops by the presence of *glottal pulsing* (voicing) in the closure intervals of final stops. This finding suggests, to me at least, that the acquisition of a temporal cue to phonetic contrasts that is used in the L2 but not the L1 was easy for all of the Korean participants to acquire, regardless of their age of L2 learning [see: McAllister et al. (2002). The influence of the L1 on the acquisition of Swedish vowel quantity by native speakers of Spanish, English and Estonian. *J Phonetics* 30, 229-258]. However, it appears that acquisition of the gestures needed to sustain glottal pulsing in final tokens of /b d g/ was strongly related to age of L2 learning. In this regard, it might be useful to consider:

Flege, J. (1989). Chinese subjects' perception of the word-final English /t-/d/ contrast: Performance before and after training. *JASA* 86, 1684-1697;

Flege, J. (1988). The development of skill in producing word-final /p/ and /b/: Kinematic parameters. *JASA* 84, 1639-1652.

Flege, J. & Wang, C. (1990). Native-language phonotactic constraints affect how well Chinese subjects perceive the word-final English /t-/d/ contrast. *J Phonetics* 17, 299-315.

The chapter goes on to demonstrate the existence of "confounds" between immigrants' age of L2 learning (as indexed by chronological Age of Arrival, AOA, in an L2-speaking community) and variables not related to chronological age. An important research question is whether age-related effects on ultimate success in acquiring an L2 are due to factors closely linked to normal maturation (possibly some measure of neural "plasticity") or if these effects can be attributed to factors that are loosely associated with the chronological age at the time immigrants are first fully immersed in an L2 speaking community (e.g., the typically more abundant L2 native-speaker input experienced by "early" than "late" learners).

The chapter goes on to offer reasons why an acceptance of the "critical period" explanation for age effects on L2 acquisition might be questioned. This section reprises some observations I first made in an article published in 1987 [Flege, J. (1987). A critical period for learning to pronounce foreign languages? *Applied Linguistics*, 8, 162-177.]. Soon after this article was published I was soundly criticized by someone writing a "response" that was published in the same journal. As I recall, the author felt that I was denying the very existence of age-related effects. Put another way: the existence of "age" effects proves that a critical period for L2 acquisition exists. I don't accept this view. To me, the burden of proof is on those who wish to support a "Critical Period" hypothesis. I remain open to the possibility that certain aspects of the process of learning speech changes as the result of neural maturation. But this needs to be demonstrated, not assumed.

The results of still another previously unpublished study is summarized briefly. This study showed that Koreans immigrants who learned English as children were judged to produce certain Korean consonants less adequately than did Koreans who learned English as adults. This seemed to me to be another example of an "L2 effect on L1", and

thus to support the view that the L1 and L2 phonetic systems influence one another because they co-exist together in a “common phonological space”.

Terminology: By “phonological” space I am thinking of the system of contrasts that might be deployed to distinguish lexical items, whereas my use of the term “phonetic system” ‘makes reference to the details of how the more abstract phonological contrasts are represented in long-term (perceptual) memory representations and are articulated via fine-grained spatial-temporal movement patterns which are represented in “motor” as opposed to “sensory” memory. My question to users of this site: Is this conceptualization justifiable? Why/why not?

Although the findings cited here are clear, questions remain. One might reasonably ask: “Exactly how do the “L1” and the “L2” phonetic subsystems “contact” one another? What are the mechanisms? Is it through segmental representations that, although less abstract perhaps than a “phoneme”, are nonetheless still quite “abstract”? Or, is it always through the mediation of the lexicon, that is, common “pieces” of words units(e.g., the [p] portion of thousands of words like “pace”, “spice” and “supper”)? Another valid question is “How strong are the effects?” Are L1-on-L2 effects always strong than L2-on-L1 effects? Or, can L2-on-L1 effects be stronger in certain circumstances, for example, in the case of early learners whose dominant language is the L2?

Next, the chapter lays out the fundamental tenets of the Speech Learning Model (SLM). This treatment must be regarded as definitive inasmuch as it is the last definition of the SLM offered by me and I have no intention to further develop the SLM. For those wishing to evaluate the validity of the SLM through original empirical research, it would be better to cite this chapter than to cite work published earlier, for example, the 1995 chapter in Strange (1995).

Finally, and most importantly, the chapter provides evidence in support of the SLM’s claim that two different mechanisms influence how the L1 and L2 phonetic systems “contact” one another: cross-language phonetic assimilation, in cases where new categories have not been formed for sounds found in the L2 but not the L1, and cross-language phonetic dissimilation, in cases where new categories *have* been formed for L2 sounds.

I suspect that having identified these two mechanisms is likely to be the most durable aspect of the SLM. We’ll see.

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