

Age effects in “returnee” bilingualism: Problematizing their conflation as *prima facie* evidence for linguistic maturation.

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The keynote article, *What returnee bilinguals may teach us about language attrition, language stabilization and individual variation* by Flores and Snape (2025), henceforth F&S, takes the reader through a full-bodied and thought-provoking accounting of the linguistic trajectories of “returnee bilinguals” (RBs)—individuals who, after spending formative years “abroad” in linguistic immersion of a distinct societal language, return to their (family’s) country of origin. While work on RBs has increased in recent years, it remains understudied and, thus, for some readers the very construct of RBs as a distinct type of bilingual will be entirely new. With this in mind, F&S do a service to the broader field via a stellar summarizing and framing of the questions posed as well as the available data and argumentation drawn from them in this growing literature. Moreover, they highlight and critically evaluate the many opportunities that research in the unique, naturally occurring RB laboratory affords for addressing long-standing theoretical and practical issues in the language sciences. To be sure, there is much to be applauded in F&S’s coverage and discussion. As to be expected, there is, nevertheless, room for query with the goal of clarification and, thus, maximization of the potential contribution epistemological work such as this can have.

Drawing from empirical and longitudinal studies, F&S explore four research themes: (1) the role of age and maturation in language attrition, (2) the contribution of returnee research to modeling individual variation, (3) the vulnerability of different linguistic domains to attrition, and (4) the potential for language re-stabilization. Each of these themes can and should be commented upon, as no doubt colleagues will do in their commentaries. Given space limitations, we focus solely on theme (1) where issues worthy of serious theoretical pondering, in our view, arise from F&S’s argumentation. Our query relates mainly to the very notion of maturation itself, with trickle-down effects for RB evidence specifically and for language acquisition/processing more generally. More precisely, we query whether work from RBs can truly provide insights for long-standing debates related to so-called linguistic maturation? If so, in what ways? Concentrating our discussion on this aligns well with the overall focus of F&S on the attrition of the early-acquired diasporic majority language after return migration, especially when this language is no longer reinforced in the return context. In line with Schmid & Köpke (2017), F&S define attrition as a decline in language skills due to reduced use and conceptualize it as part of a continuum of bilingual development. F&S argue that RBs are ideal for studying attrition because their shift from high to low input typically occurs suddenly and completely, offering cleaner starting points for investigating change. There is no doubt that RB research documents novel, asymmetric trajectories in attrition patterns that (tend to) correlate to age. In this respect, we concur that RB data embody otherwise missing observations that should be considered and shed some novel light on attrition proper. However, it is not clear to us how RB data provide unique, much less maximally relevant data specifically for linguistic maturation per se, which we will spend the remainder of our commentary contextualizing.

Let us begin with a summary of some particularly pertinent observations that F&S demonstrate. RB findings show that children who return before puberty are especially vulnerable to rapid attrition, particularly in lexical retrieval and morphosyntactic domains. This is supported by case studies F&S detail, showing sharp declines in productive skills within

months of return. However, attrition outcomes vary widely depending on other factors beyond age of return, namely proficiency, literacy levels and, crucially, continued exposure. Some returnees maintain high L2 proficiency, particularly when L2 education or media exposure continues after return, as observed in Japanese–English returnees, in contrast to Portuguese–German and Turkish–German returnees. Moreover, irrespective of language combination, when apparent attrition obtains linguistic domains are differentially affected: vocabulary and morphosyntax tend to show early attrition, while core syntactic and phonological structures are more resilient. This prompts F&S (page 7) to write:

Why do outcomes differ so dramatically across these two groups, and how do these differences contribute to our understanding of attrition effects in language development? Crucially, the contrast lies not in the linguistic properties of the languages itself, but in its sociolinguistic status in the homeland. Languages like English may continue to play a role in returnees' lives via school, pop culture, or digital media, while languages like German in Portugal or Turkey may become entirely irrelevant in the new context. As a result, only in cases of complete loss of input — as often (but not exclusively) seen with German returnees — can the effects of age at input loss be isolated from other confounding factors, like reduced exposure. These cases provide clearer insight into maturational effects on attrition (emphasis our own). In contrast, returnees from English-speaking contexts allow us to explore how variations in exposure modulate retention when age effects are no longer the sole determinant.

While we agree with much of what is stated above, we question how the context of complete language loss can specifically illuminate maturational effects on attrition—let alone do so with greater precision. If what F&S meant by maturational effects is simply patterned age-related tendencies, then we see the point and concede that the available observations do indeed play out in this direction. However, one should ask what value such tendencies related to (younger) age have beyond observational correlation? True as such observations are, they could have several, potentially non-mutually exclusive, reasons behind them that have little or nothing at all to do with actual maturation per se.

It is worth unpacking what maturation is meant to refer to, at least within the literature that proposed it as a constraint on language acquisition in the first place. Maturation relates to the construct of a critical period (or multiple sensitive periods) for language learning, initially proposed by Penfield and Roberts (1959) in the late 1950s and codified as part of the Critical Period Hypothesis by Lenneberg (1967). Given that F&S explicitly refer to this work as the provenance of maturation, we assume they take the general proposal as their working hypothesis of what maturation entails in the relevant sense. Lenneberg proposed the idea of a critical period for language development, which suggests that there is a limited window of time during early childhood when the brain is most receptive to acquiring language. He proposed that, during this critical period, the brain is highly neuroplastic, meaning it has a greater ability to reorganize and adapt in response to experiences and stimuli. With increased age, particularly past puberty, the critical period for language passes as a result of neurological maturation, that is, a developmentally determined decrease in the brain's neuroplasticity. The hypothesized reduced neuroplasticity would result in challenges and limitations in language learning as the brain would become less adaptable and responsive to new language input. By extension to the case of attrition, maturation in the guise of greater or less neuroplasticity could translate to inverse success in language retention by age: severe reductions in access to input and opportunity to use language before puberty would mean

that the brain is more apt to greater attrition precisely because it is more malleable and, thus, sensitive to input and use for maintaining stabilization.

While observations of age effects in language are ubiquitous, it is not at all clear that they are best understood as conditioned by brain maturation. In fact, since the advent of neuroimaging technologies (for example, MRI did not even exist before the late 1970s), contemporary neuroscience has made it abundantly clear that the brain remains highly plastic across the lifespan, supporting a wide range of skill acquisition. Bilingualism-related neuroscientific research—whether using MRI, MEG, or EEG—provides compelling evidence that, whatever explains age-correlated differences in language acquisition and processing, maturational limits on neuroplasticity are not among the factors (Deluca et al., 2019).

With the above in mind, one wonders what F&S mean when claiming that RB evidence of a particular type, if at all, is especially insightful for maturational effects on attrition? We might ponder further what maturational effects on attrition are intended to refer to at all? In our view—and this point extends well beyond F&S—the conflation of “maturational effects” with “age effects,” as if they were synonymous or merely terminological substitutes, is not only imprecise but also misleading. Whereas maturational effects invoke biological constraints, age effects may instead reflect social, experiential, and/or cognitive factors correlated with age. As alluded to above, there are many reasons why age effects as those documented could—should predictively in actuality—be observed without signalling anything related to maturation in the original sense of the term. For example, younger age is confounded with periods of entrenchment and solidification of the grammar. An RB who leaves at a young age will have a less entrenched grammar by definition. We also know that language acquisition and especially stabilization of particular domains of grammar have distinct time courses, whereby some properties are much later acquired/stabilized than others (Tsimpli, 2014). And so, a younger individual will be disadvantaged in maintaining linguistic representations or accessing them in the presence of severe input shift—especially complete loss as in the case of German described by F & S—as a function of their weaker proficiency and/or stabilization of grammar. The fact that, as F&S show, not all domains of grammar are equally subject to attrition effects notwithstanding age and other factors adds credence to this idea precisely because it is these “very late” stabilized parts of grammars that are the most vulnerable. Moreover, one cannot ignore the fact that younger RBs, unlike older ones in later teenage years and early adulthood (20s), are not yet at peak cognitive abilities, especially for executive functions that interact with bilingual language control and are, thus, especially important for language processing and production. To the extent that higher cognitive functions—especially inhibitory control, working memory, and attentional control—predict language maintenance and thereby the degree of attrition, younger returnee bilinguals are at a disadvantage, given the developmental immaturity of these domains at the point of severe language shift. Finally, it is worth mentioning that some of the very observations noted by F&S would lead towards these alternatives being more explanatory than appealing to maturation in the traditional sense, perhaps most saliently the evidence they go over related to re-stabilization. Were it the case that the brain has matured to a point where language (re)-learning is truly problematic, we might not expect such successes, nor might we expect the degree of success documented in older RBs in the continued development of their HL as it becomes their dominant language over time (Treffers-Daller et al., 2016).

Perhaps it was never the intention of F&S to equate maturation with observed age effects. If so, we would welcome clarification on this point. Age effects reflect systematic correlations between age and linguistic outcomes; they can be identified observationally

but require further analysis to determine the underlying mechanisms. Maturation, by contrast, refers to specific mechanisms assumed to undergo qualitative change over time and, therefore, cannot be inferred from correlational age patterns alone. If F&S intended, and still intend, to invoke maturation per se, then we ask: what specific mechanisms are being referred to, and in what ways are they understood to mature?

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