Are these approaches incompatible?

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The dialog between emergentist and nativist approaches to mental function has continued unabated across centuries. It has stimulated thinking and research in areas as diverse as infant locomotion, auditory processing, and moral judgment. The rich and insightful analysis presented here by Schmid and Köpke (2017) (S&K) shows how this dialog can be extended to the area of language attrition. To lay the groundwork for this discussion, S&K present two contrasting views of the mechanics of attrition, and they highlight some of the major empirical findings needed to evaluate these positions. Despite the fact that these two accounts arise from very different frameworks, I believe that their accounts of attritional processes are not as incompatible as one might think. Moreover, I will suggest that the real problem in understanding age-related factors for attrition is one that has not yet been properly treated by either approach.

First, I would like to question whether Lardiere's Feature Reassembly (FR) account is incompatible with the Competition Model (CM). As S&K note, nativist approaches emphasize domain-specific mechanisms, whereas emergentist approaches emphasize domain-general mechanisms. However, when we look at the details in the FR account from Putnam and Sanchez (2013; P&S) for patterns in attrition, we see an analysis that is highly compatible with the CM. There are specific aspects of the FR account that are identical with those in the usage-based, emergentist account of L1 grammatical pattern learning summarized in MacWhinney (2014) for syntactic patterns and in MacWhinney (1989) for lexical competitions. Like P&S, the CM assumes that categories are composed of features. Within the CM theory of item-based learning, featural comparison occurs between lexical bundles, relying on cue validity support for feature confirmation (MacWhinney, 2005). The operation of featural decomposition in L2 transfer is discussed in MacWhinney (in press-b). This same processing stream of feature confirmation through cue validity support can also be used to account for patterns in L1 attrition, such as the case discussed by S&K for the impact of German past tense marking on attrition of L1 English or the feature reassembly for V2 patterns found in Dutch-German bilinguals.

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To account for quantitative patterns in data, the CM relies on a series of assumptions regarding basic cue processing. One such assumption is that the stronger the linkage between a feature (or cue) and a category, the stronger the transfer. This factor favors the transfer of unmarked patterns, because these are the strongest. Second, as S&K note in their summary, the CM holds that the strength of a feature (or cue) is a function of its reliability. Third, the correction of errors in transfer depends on the ability to detect or notice the errors and the ability or opportunity to use this detection to guide conscious detection. It is this latter feature that leads to the close association of professional use of language with resistance to attrition effects.

When nativist accounts attempt to predict detailed quantitative patterns, they often rely on similar assumptions (Yang, 2016), thus finding themselves increasingly close to the emergentist position. Once a nativist account no longer relies on parameters, modules, critical periods, stable final states, and a decoupling of competence from performance, it then approaches compatibility with emergentist formulations. However, this does not mean that the dialog between these two approaches will disappear, because nativist constructs such as parameters, modules, critical periods, and stable states are still widely accepted by many researchers. For example, if P&S were to argue that the features involved in FR derive from an innate, universal set, then that claim would not be compatible with emergentism. However, it is not clear that P&S's analysis requires such a claim. Moreover, for an emergentist account to work, it is sufficient for a feature such as plurality to be partially mapable between languages without requiring absolute identity (Goldstone, Feng, & Rogosky, 2004).

It is equally true that emergentist approaches may incorporate assumptions that are not inimical to nativist theory. For example, the CM postulates a series of linguistic levels (audition, articulation, morphology, syntax, lexicon, mental models, conversation) for structuring learning and processing. In accord with evidence from neuroscience, these levels are viewed not as encapsulated modules, but as interactive systems. In accord with developmental biology, they are viewed not as innately determined, but as emergent during L1 development. Furthermore, in accord with evidence that cortical areas possess largely similar computational resources, emergentism holds that domain-general processes such as item-based learning, generalization, and association apply across each of these levels.

Emergentist accounts of this type may be compatible with some, but not all, structuralist approaches. For example, Sorace (2011) attributes differential patterns of attrition to the structural resistance of language-internal interfaces to attrition. However, these effects could well be due to other factors. S&K note that it could be that attrition impacts syntax and morphology less because these systems do not permit the type of graded and acceptable language approximation that can

be found in lexicon, phonology, and pragmatics (MacWhinney, in press-a). In addition, the resistance of certain morphological patterns to attrition-related transfer can be attributed to the lack of mapability between L1 and L2 (MacWhinney, in press-b), and the resistance of syntactic patterns to attrition can be attributed to their high level of entrenchment.

Emergentist theory is not without its own challenges. Perhaps, the biggest challenge facing emergentist theory is the need to account properly for age-related changes in language learning success and attrition. If there is indeed some genetically-programmed mechanism for language learning that expires after a certain critical period, this would seem to support the view of language as on instinct. Although there is no sharp age-related decline in language learning ability (Birdsong, 2005), there is a clear gradual decline in language learning success with age. Emergentists have attempted to attribute this decline to the growing power of entrenchment (Hernandez, Li, & MacWhinney, 2005). However, a comparison of language attrition in children and adults calls this account into question. Once child adoptees under age 7 begin to adapt to their new community, they lose their ability to speak their L1, although residues of perceptual learning may persist (Pierce, Klein, Chen, Delcenserie, & Genesee, 2014). This occurs despite the fact that the many years spent learning and using L1 must have led to full entrenchment. On the other hand, when older children or adults leave their native land, they maintain a nearly full ability to speak their L1, even when it is only seldom used in practice. Critical period theory cannot be used to account for this disparity, because it only predicts age differences in the ability to learn a language, not age differences in attrition.

To account for this disparity, one needs to consider the possibility that adults and children differ in the ways in which they consolidate linguistic knowledge. For a child, language learning relies heavily on the storage of a rich inventory of language usage episodes. Each of these episodes encodes the paralinguistic, intonational, lexical, and syntactic forms used in at a single time and place with a single communicative intent. From this rich database of experiences, children extract all manner of linguistic and social patterns. However, children do not attempt to organize these experiences in terms of their linguistic structure, relying instead on implicit patterns in their rich and fresh episodic memories. As language users move into adolescence and adulthood, they begin to impose a tighter organization on language patterns. This structuring can be encouraged through pressures from literacy, the need to memorize material, attempts to minimize certain language errors, appreciation of puns and word play, and the spontaneous detection of linguistic relations. As these reflective processes advance, they produce a consolidation of language ability that goes beyond the basic level of episodic and usage-based entrenchment found in children. The consequence of this additional

processing that occurs in older learners is that their L1 is increasingly less susceptible to attrition.

These claims regarding differences in memory consolidation patterns between children and adults are admittedly highly speculative. However, they illustrate the ways in which an emergentist model such as the CM can account for an increasingly wide range of patterns in language attrition. It will be interesting to see how nativist accounts can be extended to account for these same patterns.

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