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Individual Differences in First and Second Language Ultimate Attainment and Their Causes

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Individual Differences in Ultimate Attainment

Most language acquisition researchers assume, either implicitly or explicitly, that all first language (L1) learners converge on the same grammar. This outcome contrasts sharply with the outcome of second language (L2) acquisition, which is characterized by large individual differences, particularly in adult learners. Furthermore, adult learners rarely, if ever, attain nativelike competence. These differences between L1 and L2 acquisition have often been attributed to a biologically determined critical period, and there is a large body of research that has attempted to provide evidence for the existence of such a critical period (Abrahamsson & Hyltenstam, 2009; DeKeyser, 2012; Granena & Long, 2013; Hyltenstam & Abrahamsson, 2003). However, many have also problematized this conclusion, emphasizing that patterns seeming to support the existence of a critical period could also be explained from a range of other factors, such as the quality and quantity of the input, changing motivations, and contextual factors (Birdsong, 2005, 2006; Birdsong & Vanhove, 2016;

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Singleton & Munoz, 2011). This special issue brings together a number of articles that each in its own way addresses concerns about ultimate attainment.

A concern that has been discussed quite extensively already in the literature is the concept of nativeness and the role of the native speaker in questions concerning ultimate attainment. There is growing evidence that native speaker convergence is a myth: There are, in fact, considerable individual differences in adult L1 speakers' linguistic competence (Dąbrowska, 2012; Farmer, Misyak, & Christiansen, 2012; Hulstijn, 2015; Misyak & Christiansen, 2012). These are attributable partly to differences in experience, in particular education and print exposure, and partly to learner internal factors such as statistical learning abilities, intelligence quotient (IQ), metalinguistic abilities, and need for cognition. This has important implications for L2 research. First, the vast majority of ultimate attainment studies use highly educated participants (Andringa, 2014). A very different picture emerges from studies that use a native control group that includes lower-socioeconomic-status speakers, which often show many more L2 learners performing within the native range (Andringa, 2014; Dąbrowska & Street, 2006; Hulstijn, 2015). It is unclear whether this is due to the fact that age effects are at least partly attributable to education in the L2 or whether it means that critical-period effects also apply in L1 acquisition.

In this special issue, Hulstijn addresses the problem of defining nativeness and argues that it is important to understand the range of individual difference in native speaker linguistic cognition. He proposes a research agenda for investigating individual differences in native speakers to obtain better yardsticks for subsequent comparisons between native and nonnative speakers. Hulstijn proposes that we determine (a) what it is that native speakers share and (b) which extralinguistic factors (such as degree of bilingualism, literacy, and cognitive abilities) cause individual variation in native speakers' linguistic cognition. Such knowledge could then serve as a yardstick for subsequent comparisons between native and nonnative speakers. The study by Dąbrowska (2019) fits well in this research agenda. Dąbrowska explores the range of individual differences in linguistic competence (grammar, vocabulary, and collocations) in both native speakers and L2 learners, and importantly, she also investigates to what extent several nonlinguistic measures (e.g., print exposure, nonverbal IQ, language analytic ability, level of education, reading habits) were predictive of attainment in both L1 and L2 competence and to what extent this showed overlap. Interestingly, predictors of attainment in grammar, vocabulary, and collocations are largely similar for native and nonnative speakers, although not necessarily equally weighted. Also, predictors unique to L2 learning (such of

age of first exposure and length of residence) do not explain much variance beyond the shared factors.

Brooks and Kempe (2019) come to similar conclusions using evidence from both L1 and L2 acquisition. Contrary to the less-is-more hypothesis, which attempts to explain the childhood advantage for L1 acquisition by appealing to children's limited cognitive capacities (compared to adults), they argue that the overwhelming majority of the relevant research supports a more-is-more view of language development: That is to say, in L1 as in L2, higher IQ, better phonological short-term memory, and better executive functioning lead to better outcomes. Moreover, contrary to the common view that constraints on the hypothesis space are generally beneficial to language acquisition, they show that children instead profit from the fact that they have less prior knowledge, as this gives them more flexibility (compared to adults) in inferring grammatical regularities.

The studies by Curcic, Andringa, and Kuiken (2019); Dąbrowska (2019); Doughty (2019); and Granena and Yilmaz (2019) all deal with the role of aptitude in L2 acquisition. There is every reason for doing so, as a recent meta-analysis found aptitude to be associated with overall L2 learning success (Li, 2014). The second language acquisition field has a long tradition of research attempting to capture the cognitive abilities that underlie a special talent for language learning. Starting with the seminal work by Carroll and the production of the Modern Language Aptitude Test (MLAT; Carroll, 1981; Carroll, 1993; Carroll & Sapon, 1959), aptitude has consistently been seen as a complex of abilities that together constitute aptitude for learning a second or foreign language (Wen, Biedroń, & Skehan, 2017). Over the years, the scope of the construct has been extended to include learning in more naturalistic settings (i.e., settings beyond the classroom). Another important development is the recognition that different cognitive abilities may be at play in different stages of language learning, for different components of the language, and for different tasks or settings (Robinson, 2005, 2007; Wen et al., 2017). While these are important advancements, they also present researchers with the rather daunting task of having to establish which aptitudes support learning in the different stages of acquisition in different settings and potentially for different structures. The aptitude studies in this issue all take steps in this direction.

Doughty (2019) presents important steps in this direction. She presents analyses in which aptitude components of the MLAT and the High-Level Language Aptitude Battery (HI-LAB) are related to language learning success at different proficiency levels. Overall, the data provide confirmation for the hypothesis that the MLAT battery is more predictive for attainment at

lower levels, while the HI-LAB predicts high-level proficiency better, as it was designed to do. The analyses also showed that aptitude is a very strong predictor of proficiency in comparison to other factors such as learners' language learning histories and demographic characteristics, although it is important to note that the group under study was fairly homogenous. While Doughty tries to link components of aptitude with overall attainment, the studies by Curcic et al. (2019) and Granena and Yilmaz (2019) present attempts to link particular components of aptitude to the acquisition of grammar-based predictive processing and to processing explicit and implicit corrective feedback, respectively. Curcic et al. do not find direct links between aptitude and predictive processing; however, they do find that prediction is a function of self-developed awareness for the target structure in the input, and self-developed awareness in turn is associated with learners' analytical abilities and rote memory. This suggests an indirect link between aptitude and determiner-based prediction, not unlike findings reported by Brooks and Kempe (2013). The study by Granena and Yilmaz (2019) is an aptitude by treatment interaction study, as they investigate whether implicit learning ability as measured by a serial reaction-time task (SRT) was differentially involved in learning from implicit and explicit corrective feedback. The learning effects in the study are small, but there is some evidence of a relation between SRT and performance on the implicit feedback condition only, which is consistent with an aptitude by treatment interaction.

One of the more fascinating aspects of this special issue is the role of time or temporal grain size in determining causes of individual differences in attainment. Studies in this issue vary enormously in terms of the time frames they cover. Curcic et al. and Granena and Yilmaz use very brief interventions, while other studies in this issue cover much larger time frames. Lowie and Verspoor's study (2019) investigates learning over the course of 24 weeks. Similarly, Doughty's analyses are performed with learners who engaged in 24 to 88 weeks of training. The effect of time is explicitly addressed in the study by Pfenninger and Singleton (2019), as they aim to determine the effectiveness of early versus late starters (starting at age 8 versus starting at age 12) in foreign language learning programs in Swiss elementary schools. Their participants are measured at 12 (after 6 months of instruction for the late starters) and 18 years old. Interestingly, Pfenninger and Singleton report that by 18, the effects of an early start are largely washed out, except in the group of simultaneous biliterates. The effect of an early start thus varied between groups. Also, in the presence of contextual predictors of success, such as parents' attitudes and support, and number

of books at home, the predictive power of an early start turns out to be weak at best.

Even though the time frames covered by the studies in this issue vary enormously, from about 40 minutes of instruction (Curcic et al.) to 6 years (Pfenninger & Singleton), the same predictors are often used. As noted above, aptitude features in the studies by Curcic et al. (2019), Granena and Yilmaz (2019), Dąbrowska (2019), and Doughty (2019). The first two studies zoom in on very specific language learning processes and conduct very brief, tightly controlled intervention studies to isolate these processes and link them to cognitive abilities. In these studies, aptitude is treated as a cognitive resource enabling a specific feature of the second language to be learned. Dąbrowska and Doughty, on the other hand, assume that aptitude is a stable trait that can predict long-term gain and successfully link aptitude to long-term success using more holistic measures of attainment. It should be noted that there is hardly any overlap in the actual measures of aptitude that are used in these studies, but one may still wonder if, why, and how aptitude could be predictive of both short- and long-term gain and of gain in specific linguistic structures, as well as of overall proficiency.

The study by Lowie and Verspoor (2019) essentially problematizes these questions by making a principled distinction between different dimensions of research. They argue that group studies may be suitable for determining effects of variables at one moment in time but that development of learning over time can only be reliably investigated by using case studies due to ergodicity issues. Lowie and Verspoor demonstrate this tension between group and case study approaches by investigating whether participants matched in terms of a number of predictors of long-term gain exhibit similar development paths. They do not find confirmation for this; rather, they observe substantial differences in the developmental paths of such learners. The entire endeavor is somewhat complicated by the fact that their predictors of individual difference are found to be weakly related to long-term gain, which means that one probably also would not expect them to affect individual trajectories strongly. Nevertheless, the technique presented may be a valuable way of getting a better handle on understanding the relationship between predictors of learning and the time scales on which they operate.

Thus, while the contributions in this issue have approached observed individual differences in L1 and L2 acquisition from different perspectives, taken together they provide some explanations and lay out the challenges before us on the road to understanding the causes of individual differences in ultimate attainment.

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