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Review

A meta-analysis: Age and second language grammar acquisition



Muhammad Asif Qureshi

Northern Arizona University, Zayed University, Abu Dhabi, United Arab Emirates

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ABSTRACT

Although there are many existing reviews of research on age and second language acquisition (L2A) of morphosyntax, none has benefited from the systematicity that results from quantitative research synthesis and meta-analysis. To address this gap, this research quantifies the impact of age and its moderators (i.e., contexts, testing conditions, and modalities) on second language (L2) morphosyntactic ability. Mean differences were obtained for 26 samples with a group-comparison design and 20 with a correlational design. Consistent with previous research, age groups that were younger or older than 11 years were considered as early and late starters in FL contexts; whereas in SL settings, younger than 15 and older than 16 were grouped as early and late learners, respectively. Results reveal small to medium effect sizes for overall effects of age on L2A ($d = 0.46$ and $Zr = -0.40$). This relationship varies according to several moderators including context (second vs. foreign language) and testing conditions (timed vs. untimed, aural vs. written). In addition to providing methodological implications and guidance for second language policy, the findings point to the need to further refine models of the relationship between age and second language grammar development.

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E-mail address: Asif.qureshi@zu.ac.ae.

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1. Introduction

Research has recognized age of onset (AO) (i.e., the age of significant exposure to a target language) as one of the most important variables, accounting for approximately 30% variance in the ultimate second language acquisition (L2A) (Granena & Long, 2013). This strong age effect has been variously explained by the theories of SLA. Innatists, for example, argue that language acquisition is neurologically programmed, and anyone exposed to a target language in the environment in normal social conditions will acquire it within some critical age (Lightbown & Spada, 2013). Connectionists, on the other hand, emphasize more on the role of environment than any neurologically restricted explanation (ibid). According to connectionists, L2A is largely determined by the frequency with which some linguistic features occur in learners' environment.

Other theorists, such as Krashen (1982) distinguish the type of knowledge L2 learners attain. According to Krashen's (1982) Monitor Model, if an L2 is developed without conscious effort much like we learn a first language (L1), it is 'acquired'. In contrast, if an L2 is developed through conscious effort to the target language form and its rules, it is 'learned'. These 'acquired' and 'learned' distinctions can be observed in two ways. First, in terms of contexts, second language ('SL') and foreign language ('FL') settings provide linguistically different environments. Whereas in the former, learners have an opportunity to immerse in the target language context; in the later, L2 learners' opportunities to learn an L2 are largely restricted to classroom settings, and they have to pay conscious attention to the language form. Second, in terms of learner's age, children are mostly credited with implicit and unconscious language learning while adults are mostly observed paying deliberate attention to the L2 form (DeKeyser, 2012).

To date, approximately more than 100 studies have examined the relationship between learners' AO and their ultimate L2 attainment across SL and FL settings (Long, 2013); however, findings remain controversial. Numerous studies have observed the restrictive role of AO on L2 morphosyntactic acquisition in naturalistic settings (e.g. DeKeyser, 2000; Johnson & Newport, 1989; Seol, 2005). Other studies, however, present contradictory findings (Bialystok & Hakuta, 1994; Birdsong & Molis, 2001). Despite the long history of research on age and L2A, which dates back at least to Lenneberg (1967), our understanding of age effects on the acquisition of L2 morphosyntax is far from conclusive (DeKeyser, Alfi-Shabatay, & Ravid, 2010). Outcomes of research on age within and between diverse contexts, conditions, and task modalities present different, if not controversial, pictures (e.g., DeKeyser et al., 2010; Granena, 2012; Muñoz, 2008). This domain of second language acquisition thus calls for a systematic review of the existing findings both to understand overall findings and to explain variance across studies.

To this end, the current study has the following goals: (a) to determine the overall effects of age on L2A of morphosyntax, (b) to attain a dependable measure of age effects for different contexts of learning (SL and FL), different testing conditions (timed and untimed), and different task modalities (aural and visual), and (c) to synthesize study features of research on age and L2A of morphosyntax. Hence, the type of instruments used in the studies, and reporting practices for outcome measures, such as instrument reliability, outcome mean, and SD are also examined.

2. Literature review

2.1. SL and FL contexts

In SL settings, one of the most cited works in support of age effects for L2A is Johnson and Newport (1989). The study concluded that the impact of age is not limited to first language acquisition but extends to second languages as well. Building upon and extending Johnson and Newport's (1989) work, DeKeyser (2000) attempted to assess the impact of age on L2A through the perspective of the Fundamental Difference Hypothesis (FDH). According to the FDH, adults must rely on their problem-solving capacity and their verbal analytical ability in particular to learn L2 structures. DeKeyser (2000) found that an adult can achieve native-like competence but only through high verbal analytical skills and explicit rule learning. A 2010 study by DeKeyser et al. also found a positive impact of age for younger learners (below the age of 18) and aptitude for young adults (ages 18 to 40). Negative correlations between age (i.e., for mostly < 15) and ultimate attainment in L2 morphosyntax have also been confirmed in numerous other studies in SL contexts (Abrahamsson, 2012; Kim, 1993; Seol, 2005).

In addition to an ultimate long-term advantage for younger learners, studies conducted in SL contexts support an initial rate advantage for older starters (e.g. Snow & Hoefnagel-Höhle, 1978). Snow and Hoefnagel-Höhle (1978) examined the acquisition of Dutch as an L2 by English speakers of different ages. The subjects in the 12–15 age group and the adults were found to have made the fastest progress during the first few months of learning Dutch. At the end of the first year, the 8–10 and 12–15 year-olds had achieved the best control of Dutch. The 3–5 year-olds scored lowest on all the tests employed.

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