



**Title of Project:**

Age and Knowledge of Morphosyntax in English as an Additional Language: Grammatical Judgment and Error Correction

**Researcher:**

Muhammad Asif Qureshi  
Assistant Professor  
English and Writing Studies Program  
Zayed University, Abu Dhabi, UAE  
[muhammad.queshiasif@gmail.com](mailto:muhammad.queshiasif@gmail.com)



Muhammad Asif Qureshi

**Research Supervisor:**

Mary McGroarty  
Northern Arizona University

Luke Plonsky  
Northern Arizona University  
[luke.plonsky@nau.edu](mailto:luke.plonsky@nau.edu)

---

**Project Summary**

Research on age and second language (L2) development has mainly been motivated by the Critical Period Hypothesis (CPH), which postulates that language acquisition becomes extremely difficult after the onset of puberty. Numerous studies have explored effects of age of exposure (AoE) on second language development; however, their findings remain inconclusive. Research in second language (SL) contexts generally supports the “younger is better” theory; however, exceptions exist (c.f., Bialystok & Hakuta, 1994). On the other hand, studies that investigate the rate of learning a language (i.e., how fast learners acquire language) and those studies conducted in foreign language (FL) settings favor late starters over early beginners. To advance our understanding of the effects of AoE on L2 development, this study explored how exposure to English as a medium of instruction (EMI) at different academic levels (i.e., elementary, high school) affects learners’ grammatical knowledge as assessed on two tasks: (1) a grammaticality judgment task (GJT) and (2) an editing task, which required participants to correct morphosyntactic errors. An editing task was included to examine if participant’s performance on the GJT matches their performance on the editing task. GJTs are widely used in L2 research. A meta-analysis Qureshi (2016) found that 20 out of twenty six studies that investigated age effects on second language acquisition (L2A) used some type of GJTs. Results of GJTs, however, can be simply intuition based and may not mirror the exact nature of L2 learners’ language ability.



GJTs also limit our understanding of learner's true grammatical ability. For example, in a GJT task, a learner is restricted to identify a sentence either as correct or incorrect. Their choices are dichotomous and they do not have the option to provide alternative corrections. In an editing task, on the other hand, the same error may be corrected in multiple ways. For example, the following sentence "The biggest problem facing Africans today is the *continue* threat of wars" may be corrected in several ways. Some possible corrections include:

- (a) The biggest problem facing Africans today is the *continuing* threat of wars.
- (b) The biggest problem facing Africans today is the *continued* threat of wars.
- (c) The biggest problem facing Africans today is the *continuous* threat of wars.

In this study, 'early' and 'late' learners were those participants first exposed to EMI in grades 1 and 11, respectively. They were all Third Language (L3) learners of English. Specifically, the study explored the following research questions:

- 1) To what extent do early-L3-learners (EL3Ls) differ from late-L3-learners (LL3Ls) in their
  - a) judgment of grammaticality, and
  - b) editing/correcting morphosyntactic errors in a written passage?
- 2) To what extent does L3 learners' knowledge vary
  - c) across morphosyntactic features between and within groups, and
  - d) across task types (i.e., GJT and editing task)?

Three hundred and thirty five undergraduate and graduate students from two universities in Pakistan voluntarily participated in the research. Results of the group comparisons showed no statistically significant differences between early and late learners on the GJT; however, on the editing task, a modest but significant difference was observed between the two groups, with late learners scoring higher.

On individual morphosyntactic features in the GJT, a significant difference was observed between the two groups on past tense and third person singular. The effect sizes supported an edge for late learners. In contrast to the GJT, on the editing task all morphosyntactic features (a total of eight features) except adverb suffix, present progressive, and past tense showed a significant difference ( $p < .05$ ), again favoring late learners. In terms of task difficulty, both groups attained higher scores on the GJT and lower scores on the editing task. Overall, results showed that early learners did not have an edge over late learners in their morphosyntactic proficiency in this English as an additional language context. These findings are consistent with other studies conducted in similar contexts (e.g., Al-Thubaiti, 2010 in Saudi Arabia; Larson-Hall, 2008 in Japan; Muñoz, 2006, 2011 in Catalonia (Spain); Pfenninger, 2011, for Switzerland; Unsworth et al., 2012 for the Netherlands).

Because this dissertation examined effects of exposure to EMI at two different academic levels (i.e., elementary and high schools), findings of the study have implications for language-in-education policies in Pakistan, and perhaps elsewhere, with similar contexts. Early learners in



the current study did not achieve higher scores on either the GJT or the editing task. This was despite the fact that they were exposed to EMI for approximately 19,200 hours as compared to late learners who received English instruction for roughly 7,320 hours only. This outcome is consistent with findings of other studies in FL contexts where early learners did not outperform late learners on a narrative task even when they were exposed to the target language for various lengths of time, for example 200, 416, and 720 hours in Álvarez (2006); on grammar and composition tasks after 564 hours in Cenoz (2002); on a GJT after 4.5 years in Larson-Hall, and a general proficiency test (Oxford Placement Test) after 2400 hours in Muñoz (2011).

There is a widely held belief that “younger is better,” which is true for second language (SL) contexts, where learners are exposed to a target language both formally and informally. But the preponderance of evidence suggests the case to be different for FL contexts where a similar exposure to the target language is missing outside the classroom. Hence, in FL contexts, introducing FL programs at an earlier age is a misapplication of L2 research (Spada, 2015). As an implication of the findings of the current study, governments that plan to introduce a foreign language as a medium of instruction (MOI) might consider practical reality of their contexts – late starters can attain better grammatical proficiency in English as a target language.



## References

- Abrahamsson, N. (2012). Age of onset and nativelike L2 ultimate attainment of morphosyntactic and phonetic intuition. *Studies in Second Language Acquisition*, 34, 187-214.
- Abrahamsson, N., & Hyltenstam, K. (2009). Age of onset and nativelikeness in a second language: Listener perception versus linguistic scrutiny. *Language Learning*, 59, 249-306.
- Al-Thubaiti, K. A. (2010). *Age effects in a minimal input setting on the acquisition of English morphosyntactic and semantic properties by L1 speakers of Arabic* (Unpublished doctoral dissertation). University of Essex, Wivenhoe, UK.
- Asher, J. J., & Garcia, R. (1969). The optimal age to learn a foreign language. *The Modern Language Journal*, 53, 334-341.
- Asher, J. J., & Price, B. S. (1967). The learning strategy of total physical response. *Child Development*, 38, 1219-1227
- Álvarez, E. (2006). Rate and route of acquisition in EFL narrative development at different ages. In C. Muñoz (Ed.), *Age and the rate of foreign language learning* (pp. 127–155). Clevedon, UK: Multilingual Matters.
- Ball, J. F. (1996). *Age and natural order in second language acquisition* (Unpublished Doctoral dissertation). Rochester, NY: University of Rochester.
- Bialystok, E. (1979). Explicit and implicit judgments of L2 grammaticality. *Language Learning*, 29, 81–103.
- Bialystok, E., & Hakuta, K. (1994). *In other words. The science and psychology of second-language acquisition*. New York, NY: Basic Books.
- Bialystok, E., & Miller, B. (1999). The problem of age in second language acquisition: Influences from language, task, and structure. *Bilingualism: Language and Cognition*, 2, 127–145.
- Birdsong, D., & Molis, M. (2001). On the evidence for maturational constraints in second-language acquisition. *Journal of Memory and Language*, 44, 235-249.
- Bongaerts, T. (1999). Ultimate attainment in L2 pronunciation: The case of very advanced late L2 learners. In D. Birdsong (Ed.), *Second language acquisition and the critical period hypothesis* (pp. 133-159). Mahwah, NJ: Erlbaum.
- Bott, S. M. (1993). *Speech intelligibility and bilingualism: The effects of age of acquisition* (Doctoral dissertation, University of Illinois at Urbana-Champaign). Retrieved from <https://illiad.nau.edu/illiad/>



- Boudreault, P., & Mayberry, R. I. (2006). Grammatical processing in American Sign Language: Age of first-language acquisition effects in relation to syntactic structure. *Language and Cognitive Process, 21*, 608-635.
- Cenoz, J. (2002). Age differences in foreign language learning. *Review of Applied Linguistics, 13*, 125-142.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York, NY: Lawrence Erlbaum.
- Curtiss, S. (1977). *Genie: A psycholinguistic study of a modern-day 'wild child.'* New York, NY: Academic Press.
- De Groot, A. M. B. (2011). *Language and cognition in bilinguals and multilinguals: An introduction.* New York, NY: Psychological Press.
- DeKeyser, R. (2000). The robustness of critical period effects in second language acquisition. *Studies in Second Language Acquisition, 22*, 499-533.
- DeKeyser, R. (2003a). Implicit and explicit learning. In C. Doughty & M. Long (Eds.), *The handbook of second language acquisition* (pp. 313-348). Malden, MA: Blackwell.
- DeKeyser, R. (2003b). *Confusion about confounding: The critical period and other age-related aspects of second language learning.* Paper presented at ELIA VIII. (Encuentros de Linguística Inglesa aplicada), "El factor edad en la adquisición y enseñanza de L2", Seville.
- DeKeyser, R. (2006). A critique of recent arguments against the critical period hypothesis. In C. Abello-Contesse, R. Chacón-Beltrán, M. D. López-Jiménez, & M. M. Torreblanca-López (Eds.), *Age in L2 acquisition and teaching* (pp. 49-58). New York, NY: Peter Lang.
- DeKeyser, R. M. (2013). Age effects in second language learning: Stepping stones toward better understanding. *Language Learning, 63*, 52-67.
- DeKeyser, R., Alfi-Shabatay, I., & Ravid, D. (2010). Cross-linguistic evidence for the nature of effects in second language acquisition. *Applied Psycholinguistics, 31*, 413-438.
- Diab, M. N. (2010). Effects of peer- versus self-editing on students' revision of language errors in revised drafts. *System, 38*(1), 85-95.
- Douglas, D. (2001) Performance consistency in second language acquisition and language testing: A conceptual gap. *Second Language Research 17*, 442-456.



- Ellis, N. (2008) Implicit and explicit knowledge about language. In J. Cenoz & N. Hornberger (Eds.), *Encyclopedia of Language and Education* (pp. 119-131). New York, NY: Springer.
- Ellis, R. (1991). Grammaticality judgments and learner variability. In H. Burmeister & P. Rounds (Eds.), *Variability in second language acquisition: Proceedings of the tenth meeting of the Second Language Acquisition Forum* (pp. 25–60). Eugene, OR: Department of Linguistics, University of Oregon.
- Ellis, R. (2005). Measuring implicit and explicit knowledge of a second language. A psychometric study. *Studies in Second Language Acquisition*, 27, 141-172.
- Ellis, R., Loewen, S., Elder, C., Erlam, R., Philp, J., & Reinders, H. (2009). *Implicit and explicit knowledge in second language learning, testing and teaching*. Bristol, UK: Multilingual Matters.
- Evans, S., & Morrison, B. (2011). Meeting the challenges of English-medium higher education: The first-year experience in Hong Kong. *English for Specific Purposes*, 30, 198-208.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191.
- Ferris, D., & Roberts, B. (2001). Error feedback in L2 writing classes. How explicit does it need to be? *Journal of Second Language Writing* 10, 161–184.
- Flege, J. E., & Liu, S. (2001). The effect of experience on adults' acquisition of a second language. *Studies in Second Language Acquisition* 23, 527-552.
- Flege, J. E., Yeni-Komshian, G., & Liu, S. (1999). Age constraints on second language learning. *Journal of Memory and Language*, 41, 78–104.
- Francis, N. (2012). *Bilingual competence and bilingual proficiency in child development*. Cambridge, MA: MIT Press.
- García Mayo, M. P. (2003). Age, length of exposure, and grammaticality judgments in the acquisition of English as a foreign language. In M.P. García Mayo & M. L. García Lecumberri (Eds.), *Age and the acquisition of English as a foreign language* (pp. 94-114). NY: Multilingual Matters.
- Gass, S. (1983). The development of L2 intuitions. *TESOL Quarterly*, 17(2), 273-291.
- Granena, G. (2012). *Age differences and cognitive aptitudes for implicit and explicit learning in ultimate second language attainment* (Doctoral dissertation, University of Maryland, College Park). Retrieved from <http://libproxy.nau.edu/docview>



- Granena, G., & Long, M. (2013). Introduction and overview. In G. Garnena & M. Long (Eds.), *Sensitive periods, language aptitude, and ultimate L2 attainment* (pp. ix-xv). Philadelphia, PA: John Benjamin.
- Gutiérrez, X. (2013). The construct validity of grammaticality judgment tests as measures of implicit and explicit knowledge. *Studies in Second Language Acquisition*, 35, 423-449.
- Hamid, M. O. (2011). Planning for failure: English and language policy and planning in Bangladesh. In J. Fishman & O. Garcia (Eds.), *Handbook of language and ethnic identity: The success-failure continuum in language and ethnic identity efforts*. (pp. 192-203). New York, NY: Oxford University Press.
- Han, Y. (2000) Grammaticality judgment tests: How reliable and valid are they? *Applied Language Learning* 11, 177-204.
- Han, Y., Ellis, R. (1998). Implicit knowledge, explicit knowledge and general language proficiency. *Language Teaching Research* 2, 1-23.
- Harley, B., & Hart, D. (1997). Language aptitude and second language proficiency in Classroom learners of different starting ages. *Studies in Second Language Acquisition*, 19, 379-400.
- Hellman, B. A. (2008). Vocabulary size and depth of word knowledge in adult-onset second language acquisition. *International Journal of Applied Linguistics*, 21, 162-182.
- Itard, J, M.-G. (1962). *The wild boy of Aveyron (L'Enfant sauvage)*. New York, NY: Meredith.
- Johnson, J. S. (1992). Critical period effects in second language acquisition: The effect of written versus auditory materials on the assessment of grammatical competence. *Language Learning*, 42, 217-248.
- Johnson, J. S., & Newport, E. (1989). Critical period effects in second language learning: The influence of the maturational state on the acquisition of English as a second language. *Cognitive Psychology*, 21, 60-99.
- Johnson, J. S., & Newport, E. (1991). Critical period effects on universal properties of language: The status of subadjacency in the acquisition of a second language. *Cognition*, 39, 215-258.
- Kim, R. (1993). A sensitive period for second language acquisition: A reaction time grammaticality judgment task with Korean-English bilinguals. *Issues and Developments in English and Applied Linguistics*, 6, 15-28.
- Krashen, S. D., & Harshman, R. (1972). Lateralization and the critical period. *UCLA Working Papers in Phonetics*, 23, 13-21.
- Krashen, S. D., Long, M.A., & Scarcella, R.C. (1979). Age, rate, and eventual attainment in second language acquisition. *TESOL Quarterly*, 13, 573-582.



- Larson-Hall, J. (2008). Weighting the benefits of studying a foreign language at a younger starting age in a minimal input situation. *Second Language Research*, 24, 35-63.
- Lenneberg, E. H. (1967). *Biological foundations of language*. New York, NY: Wiley.
- Linebarger, M. C., Schwartz, M. F., & Saffran, E. M. (1983). Sensitivity to grammatical structure in so-called agrammatic aphasics. *Cognition*, 13, 361-392.
- Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.
- Loewen, S. (2009). Grammaticality judgment tests and the measurement of implicit and explicit L2 knowledge. In R. Ellis, S. Loewen, C. Elder, R. Erlam, J. Philp, & H. Reinders (Eds.), *Implicit and explicit knowledge in second language learning, testing and teaching* (pp. 94–112). Bristol, UK: Multilingual Matters.
- Marinova-Todd, S. H. (2003). Comprehensive analysis of ultimate attainment in adult second language acquisition. *Dissertation Abstract International*, 64 (08), 2814A. (UKI No. 3100151).
- McDonald, J. L. (2000). Grammaticality judgments in a second language: Influences of age of acquisition and native language. *Applied Psycholinguistics*, 21, 395-423.
- McDonald, J. L. (2006). Beyond the critical period: Processing-based explanations for poor grammaticality judgment performance by late second language learners. *Journal of Memory and Language*, 55, 381-401.
- Morgan, G. A., Leech, N. L., Gloeckner, G. W., & Barrett, K. C. (2011). *IBM SPSS for introductory statistics: Use and interpretation* (4<sup>th</sup> ed.). Mahwah, NJ: Lawrence Erlbaum.
- Moyer, A. (2004). *Age, accent and experience in second language acquisition: An integrated approach to critical period inquiry*. Clevedon, UK: Multilingual Matters.
- Moyer, A. (2006). Language contact and confidence in L2 listening comprehension: A pilot study of advanced learners of German. *Foreign Language Annals*, 39, 255–275.
- Moyer, A. (2009). Input as a critical means to an end: Quantity and quality of experience in L2 phonological attainment. In M. Young-Scholten & T. Piske (Eds.), *Input matters in SLA* (pp. 159–174). Bristol, UK: Multilingual Matters.
- Muñoz, C. (2003). Variation in oral skills development and age of onset. In M. P. García Mayo & M. L. García Lecumberri (Eds.), *Age and the acquisition of English as a foreign language: Theoretical issues and fieldwork* (pp. 161-181). Clevedon, UK: Multilingual Matters.





- Muñoz, C. (2006). The effects of age on foreign language learning. In C. Muñoz (Ed.), *Age and the rate of foreign language learning* (pp. 1–40). Clevedon, England: Multilingual Matters.
- Muñoz, C. (2008). Age-related differences in foreign language learning. Revisiting the empirical evidence. *International Review of Applied Linguistics in Language Teaching*, 46, 197–220.
- Muñoz, C. (2011). Input and long-term effects of starting age in foreign language learning. *International Review of Applied Linguistics in Language Teaching*, 71, 197-220.
- Muñoz, C., & Singleton, D. (2007). Foreign accent in advanced learners: Two successful profiles. *The EUROL2A Yearbook*, 7, 171–190.
- Navés, T., Torras, M. R., & Celaya, M. (2003). Long-term effects of an earlier start: An analysis of EFL written production. *EUROSLA Yearbook*, 3, 103-129.
- Oswald, F. L., & Plonsky, L. (2010). Meta-analysis in second language research: Choices and challenges. *Annual Review of Applied Linguistics*, 30, 85-110.
- Patkowski, M. (1980). The sensitive period for the acquisition of syntax in a second language. *Language Learning*, 30, 449–472.
- Pfenninger, S. E. (2011). Age effects on the acquisition of nominal and verbal inflections in an instructed setting. *Studies in Second Language Learning and Teaching*, 1, 401-420.
- Purpura, J. (2004) *Assessing grammar*. Cambridge, UK: Cambridge University Press.
- Qureshi, M. A. (2016). A meta-analysis: Age and second language grammar acquisition. *System*, 60, 147-160. doi: <http://dx.doi.org/10.1016/j.system.2016.06.001>
- Schachter, J., & Yip, V. (1990). Grammaticality judgments: why does anyone object to subject extraction? *Studies in Second Language Acquisition*, 12, 379-392.
- Seol, H. (2005). The critical period in the acquisition of L2 syntax: A partial replication of Johnson and Newport, *Educational Psychology*, 24, 77-97.
- Shim, R. J. (1993). Sensitive period for second language acquisition: A reaction time study of syntactic processing of English by Korean-English bilinguals. *Ideas and Developments in English and Applied Linguistics*. 6, 43-64.
- Singleton, B., & Muñoz, C. (2011). Around and beyond the critical period. In E. Hinkel (Ed.), *Handbook of research in second language teaching and research* (vol. II) (pp. 407-425). New York, NY: Routledge.



- Slavoff, G. R., & Johnson, J. S. (1995). The effects of age on the rate of learning a second language. *Studies in Second Language Acquisition*, 17, 1–16.
- Snow, C., & Hoefnagel-Hohle, M. (1978). The critical period for language acquisition: Evidence from second language learning. *Child Development*, 49, 1114–1128.
- Spada, N. (2015). SLA research and L2 pedagogy: Misapplications and questions of relevance. *Language Teaching*, 48 (1), 69-81.
- Storch, N. (2002). Patterns of interaction in ESL pair work. *Language Learning* 5(1), 119–158.
- Storch, N. (2007). Investigating the merits of pair work on a text-editing task in ESL classes. *Language Teaching Research*, 11(2), 143-159.
- Torras, M., & Celaya, M. (2001). Age-related differences in the development of written production. An empirical study of EFL school learners. *International Journal of English Studies*, 1, 103-126.
- Unsworth, S., de Bot, K., Persson, L., & Prins, T. (2012, December 13). Foreign languages in primary school Project. *Proceedings of the Foreign Languages in Primary Schools Projects: Presentation Results FLiPP-Research*. Amersfoort, Netherlands.
- Vogt, W. P. (1999). *Dictionary of statistics & methodology: A nontechnical guide for the social sciences*. Thousand Oak, CA: Sage.