Is It Easier for Children to Learn English If Their Native Language Is Similar to English?

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1. Introduction

In an increasingly globalized world, command of multiple languages is increasingly important. This is particularly true for children who are being educated in a second language. Even in the United States – often caricatured as monolingual – the proportion of school-aged children (aged 5 to 17) who speak a non-English language at home increased from 18.4% in 2000 to 22.6% in 2019 (U.S. Census Bureau, 2000, 2019). Similarly, the proportion of students in the United Kingdom who spoke English as an additional language in primary school rose from 8.7% in 2000 to 21.3% in 2020 and from 8% in 2000 to 17.1% in 2020 for secondary school learners (Department for Education, 2020). Simultaneously, there has been a rapidly growing global demand for children's English instruction (J'son & Partners, 2021), whether for educational purposes, social assimilation, or better opportunities.

It is important to know how linguistic similarity, in particular, affects second language acquisition because the results can inform teaching practices. For instance, being able to effectively help English Language Learners (ELLs) at an English-medium school attain proficiency in English is crucial for their academic success as they will no longer be held back from performing at the same level as their native English-speaking peers. Acquiring basic communicative skills typically averages around two years for ELL students, and acquiring the more abstract, context-reduced academic language skills typically takes five to ten years, thus placing ELL students at a disadvantage linguistically and academically (Collier & Thomas, 2002; Cummins, 1979). A study by Ardasheva et al. (2012) compared the English proficiency levels of 558 current ELLs and 500 former ELLs who had graduated from language support services against 17,470 native English-speaking (NES) students in the United States and found that the former ELL group achieved significantly better results than current ELL and NES students on measures of reading and mathematics. Indeed, some studies find the performance gap on standardized tests between ELL students and non-ELL students is similar to the gap between students with learning disabilities and students without learning disabilities (Abedi, 2002).

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1.1. Whether and Why Similarity between L1 and L2 affects Children's Learning

Not all children face the same challenges when it comes to acquiring a second language. For instance, of children acquiring English in regions where English is not the dominant language, it is widely observed that Europeans – especially Dutch and Swedish speakers – are reliably more successful (Education First, 2021; J'son & Partners, 2021).

Intuitively, it seems easier to learn a second language (L2) that is similar to your first (L1), which could account for better learning by Indo-European speakers and Germanic speakers in particular. Indeed, Schepens, van Hout, and Jaeger (2020) found a strong clear correlation between non-native Dutch proficiency and the linguistic similarity between Dutch and the speaker's native language.

Several theoretical frameworks predict and explain the effects of linguistic similarity between the L1 and L2 on L2 learning in slightly different ways. Cummins' (1979, 1981) Linguistic Interdependence Hypothesis argues that the L1 affects L2 learning because elements from both the L1 and the L2 can influence L2 learning, as the two languages are interdependent and draw on the same underlying language proficiency mechanism. In contrast, Lado (1957) focuses on the transfer of linguistic knowledge from the L1 to the L2, which can either support the L2 (where the L1 and L2 match in linguistic detail) or cause interference (where they do not). An example of positive transfer is when Spanish speakers add the plural -s morpheme to nouns in English because plurality is denoted by the same inflection in Spanish. Conversely, an example of negative transfer is when Japanese and Korean speakers pronounce the English phonemes /l/ and /r/ as the same phoneme because their languages do not distinguish between the two. The degree to which learners must be explicitly aware of the similarities and differences is debated (Genesee et al., 2006). In any case, the relative proportion of positive transfer to negative transfer will necessarily be larger for more closely-related languages. Alternatively, the role of linguistic similarity may be more indirect. When the L1 and L2 share etymologically related vocabulary – which is more likely with closely-related languages – these cognates in the L2 can be easily identified and used to enhance L2 vocabulary acquisition (Brenders et al., 2011; Chen et al., 2012; Hancin-Bhatt & Nagy, 1994; Schwartz et al., 2007).

For a variety of reasons, researchers predict a greater effect of the L1 on the L2 for older learners. This is a natural prediction since older learners have acquired more of their L1 and thus have more to transfer (see also Melby-Lervåg & Lervåg, 2011). Cummins (1979) goes further in arguing that children need to pass a certain threshold level of linguistic competence in their L1 to develop L2 proficiency. This is consistent with several preliminary reports that older children learn second languages faster than younger children (Collier, 1989; Snedeker et al., 2012; Snow & Hoefnagel-Höhle, 1978) and that late learners of L1s – who typically do not fully acquire their L1 – are differentially impaired on second language learning (Mayberry & Kluender, 2018).

However, findings that more similar languages result in better L2 learning are confounded by other factors, such as cultural variation in language pedagogy and frequency of contact with the non-native language. In any case, these results may not generalize to children. Unlike adults, who have similar levels of mastery of their respective L1s by virtue of experience, children begin to learn an L2 at different ages and are, therefore, equipped with varying levels of L1 knowledge that differentially affect their L2 acquisition. Similarly, children vary in how their Age of Acquisition (AOA) compares to any critical period(s), affecting their learning trajectory (for review, see Hartshorne, 2020).

Moreover, the published research has taken a piecemeal approach that provides little support for broad conclusions. Studies typically focus on the cross-linguistic transfer of specific components of language, such as specific aspects of morphology, phonology, syntax, or vocabulary (Akbarov & Đapo, 2016; Chan, 2004; Hayashi & Murphy, 2013; Ionin & Montrul, 2010; Montrul, 2000; O'Grady et al., 2009; Pasquarella et al., 2011; Ramirez et al., 2010; Ramirez et al., 2011; Robertson, 2000; Salaberry & Shirai, 2002; Schwartz et al., 2007; Schwartz & Rovner, 2015; Westergaard, 2003; White et al., 1999; Zhao, 2012). Representative examples include targeted studies of learning psych verbs (White et al., 1999), articles (Ionin & Montrul, 2010; Robertson, 2000), scope (O'Grady et al., 2009), and tense-aspect morphology. Even where the stimuli are broader, the typical study considers only one or two L1-L2 pairs (e.g., McDonald, 2000).

The resulting picture is fuzzy at best. Japanese speakers may have difficulty acquiring English psych verbs (White et al., 1999) but relatively little difficulty with tense-aspect morphology (Collins, 2004); what does this mean for their overall rate of acquisition compared to, say, French L1 speakers, for whom acquisition of English psych verbs has not yet been measured? In short, the data needed to support broad generalizations like "children find it easier to learn an L2 that is more similar to their L1" simply do not exist. Certainly, we cannot quantify *how much* easier the learning is.

Ideally, studies would compare many L1-L2 pairs on a broad measure of L2 linguistic knowledge. The closest is the study reported by Schepens and colleagues (2020), which considered adult learners of Dutch who had one of 62 diverse L1s, finding that similarity between the languages predicted learning success. However, this study did not control for the learning environment or pedagogical practices, had no measure of the age at which learning began, and ultimately focused on adults.

1.2. The Current Study

The current study aims to investigate how the similarities of students' various native languages to English affect how easily they learn English – specifically, if it is true that a closer proximity is associated with faster learning (assuming that the faster the rate of learning, the easier it is to acquire the language). Critically, we focus on ELLs enrolled in international English-medium schools. This population has the distinct advantage of having a very similar history with English regardless of L1. All the students get the bulk of their English input in school, and

the whole point of international English-medium schools is that they are fairly homogenous regardless of location. Moreover, ELL students in these schools have their English knowledge assessed regularly using comprehensive standardized tests, giving us a much more robust measure of English proficiency than is usually attainable in a more time-constrained laboratory setting. Finally, focusing on ELL students in private international academies tends to homogenize socioeconomic status – critical, since evidence suggests that the higher the SES, the stronger the L1 foundation, which may itself lead to better L2 learning (Cummins, 1979; Melby-Lervåg & Lervåg, 2011).

2. Method

2.1. Sample

The final sample comprised K-12 children attending 28 English-medium schools across 22 countries worldwide. To be considered eligible, they needed to be successive bilinguals and have at least one WIDA test score (see below). We excluded learners who had two or more native languages (such that English was at least their third, not second, language), who began learning English before the age of 3 years, or who were identified by the school as having learning disabilities or special educational needs (n = 1654). The final sample comprised 855 students and 1,071 WIDA scores. We added an additional 827 "synthetic" WIDA scores: the minimum scaled value dated to the student's documented AOA. The mean age of acquisition (AOA) was 5.4 years (*SE* = 1.8), though there was still a reasonable number with AOAs ≥ 10 (n = 27). A total of 30 L1s are represented, though seven languages comprise the bulk (Fig. 1).

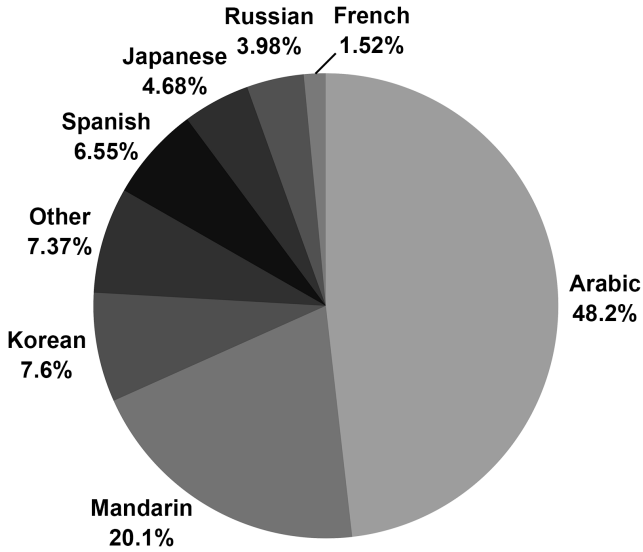

Figure 1. Native language backgrounds of students in our sample

2.2. Measures

We utilized the WIDA MODEL and Screener assessments, which are standardized English language proficiency tests designed by the WIDA Consortium, an educational organization formed of U.S. states and territories that has designed a rigorous system to comprehensively track the progress of school-aged ELL students (WIDA, 2022). The MODEL tracks progress or assesses students' readiness to exit from the language support program; the Screener is used for placement. These tests assess skills in the four language domains, including listening, speaking, writing, and reading. The raw scores on each domain are converted into their corresponding scale scores, which contribute to the overall scale score. This composite score accounts for oral skills (listening scores and speaking scores each contributes 15%) and literacy skills (writing scores and reading scores each contributes 35%). For our analyses, we used scale scores, which are independent of grade level (after an adjustment that takes into account the difficulty of items used for children of different ages), allowing straightforward comparison of students of different ages (WIDA, 2021). Each successive grade has an increasingly higher minimum or maximum composite score to adjust for the appropriate difficulty level at different grades (for example, the minimum composite score is 161 in the second grade, compared to 155 in the first grade).

We also obtained or derived two additional demographic variables: Age of Acquisition (AOA) and English Exposure, which approximates the time (in months) since AOA.

Finally, we used two estimates of linguistic similarity, both of which are based on Levenshtein distances in word lists: Beaufils and Tomin's "genetic scores" (n.d., 2020), which are based on an 18-item word list, and "lexical distance" scores from the distance matrix generated using the Automated Similarity Judgment Program (ASJP) Database, which is based on a 40-item word list (Wichmann et al., 2020).

2.3. Analysis

We ran a multiple linear regression on WIDA scores with English Exposure, AOA, Linguistic Similarity, and their interactions as predictors. Because WIDA scores appeared to increase logarithmically with time, we used a log transformation on English Exposure, with an additive constant of 1 to prevent log(0). Analyses were conducted on the composite score as well as on the separate literacy and oral scores.

3. Results

Using genetic scores to estimate linguistic similarity, the critical three-way interaction of similarity, English exposure, and AOA was significant for oral scores (b = -0.03, $t(1878)$ = -1.98, p = .047), and in the same direction but not

significant for literacy scores (b = -0.01, t(1876) = -0.94, p = .349) or composite scores (b = -0.02, t(1883) = -1.41, p = .160) (Figs. 2 & 3).

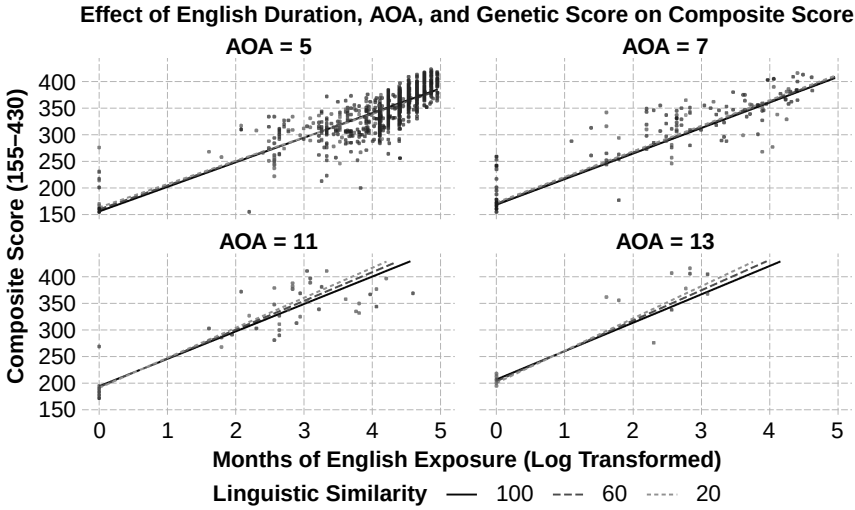

Figure 2. How the duration of exposure to English, age of acquisition of English (AOA), and linguistic similarity of the native language from English predict composite English proficiency scores for child second language learners. <u>Smaller</u> linguistic similarity scores indicate closer proximity to English.

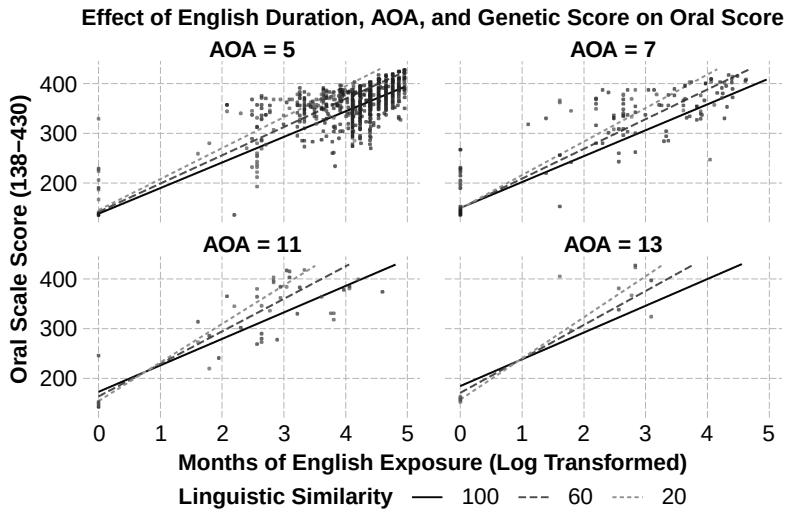

Figure 3. How the duration of exposure to English, age of acquisition of English (AOA), and linguistic similarity of the native language from English predict oral English proficiency scores for child second language learners. <u>Smaller</u> linguistic similarity scores indicate closer proximity to English.

Specifically, there appears to be an effect of linguistic similarity such that the more similar the L1 to the L2, the faster learning was, but that this effect appears only in children with later AOAs. To look at it from a different angle, even for learners whose L1 was highly dissimilar from English, there was a trend towards faster learning with later AOAs – the slopes of the solid lines in Fig. 2 increase from 46.2 at AOA 5 to 48.0 at AOA 7, 51.6 at AOA 11, and 53.3 at AOA 13 – but this was more pronounced for those whose L1 was highly similar to English (slopes of 43.9, 48.0, 56.4, and 60.6 for AOAs of 5, 7, 11, and 13, respectively).[1] A *post hoc* grouping of students into older (AOA = 10-16, n = 27) and younger learners (AOA = 3-9, n = 828) shows a strong interaction of English exposure and linguistic similarity for the older learners (b = -0.34, $t(77)$ = -2.14, p = .036) but not the younger learners (b = 0.03, $t(1806)$ = 1.05, p = .292) in the composite scores. Both the oral and literacy scores show clear interactions of English exposure and linguistic similarity for the older learners (oral: b = -0.46, $t(76)$ = -2.35, p = .022; literacy: b = -0.30, $t(76)$ = -1.95, p = .055). For the younger learners, the effect is much smaller but still significant for oral scores (b = -0.13, $t(1802)$ = -3.69, $p < .001$) and actually in the opposite direction for literacy scores (b = 0.11, $t(1800)$ = 3.38, $p < .001$).

We found complementary results using the ASJP linguistic similarity scores. The three-way interaction was in the same direction and significant for oral scores (b = -0.12, $t(1878)$ = -3.10, p = .002) and not significant for literacy scores (b = 0.01, $t(1876)$ = 0.49, p = .621) or composite scores (b = -0.02, $t(1883)$ = -0.86, p = .391). The two-way interaction of English exposure and AOA was significant for the oral scores (b = 12.63, $t(1878)$ = 3.44, $p < .001$) but not the literacy or composite scores (ps > .18).

4. Discussion

This study explored the effects of a variety of L1s on children's L2 acquisition of English. Consistent with some smaller prior studies (Collier, 1989; Snow & Hoefnagel-Höhle, 1978; Snedeker et al., 2012), older learners learned faster. However, this effect was concentrated among learners whose L1s were most similar to English. This effect was only strictly significant for the oral scores, suggesting that the effect may be attenuated or even non-existent for the self-paced, more deliberate use of language that characterizes reading and writing.

These results extend prior findings that success in L2 learning of Dutch by adults is predicted by the similarity between the L1 and L2 (Schepens et al., 2020). Importantly, the strength of these findings is improved by our focus on English-medium international schools, which allowed us to minimize confounds of L1-correlated differences in the input, pedagogy, and other environmental variables.

[1] The two-way interaction of English Exposure and AOA was significant for oral scores (b = 3.11, $t(1878)$ = 2.94, p = .003), literacy scores (b = 2.25, $t(1876)$ = 2.69, p = .007), and composite scores (b = 2.39, $t(1883)$ = 3.00, p = .003).

Critically, by showing that this effect emerges relatively late in development (around age 10), we constrain potential theoretical explanations. If the advantage gained from L1-L2 similarity is due to transfer, it is apparently not enough to merely know the relevant linguistic components in one's L1; even 5-year-olds know quite a lot about their L1. Instead, it appears that either the critical effects are on fairly late-learned aspects of language or that transfer requires not just knowing the linguistic components but having them quite thoroughly ingrained from years of practice. This latter idea would be consistent with Cummins' (1979, 1981) Threshold Hypothesis and Linguistic Interdependence Hypothesis, which suggested that successful L2 acquisition depends on a strong L1 basis.

Interestingly, we find very little evidence that older learners acquire an L2 any faster if the L2 is very different from their L1. This suggests that prior findings of faster learning by older learners are due, not to cognitive maturity, but linguistic transfer.

Our findings also speak to recent work suggesting that critical periods for second language learning may be quite a bit later than usually suggested – as late as early adulthood for syntax (Chen & Hartshorne, 2021; Hartshorne, 2022; Hartshorne, Tenenbaum, & Pinker, 2018). We find that in the teenage years, children are not learning language more slowly but are, in fact, gathering speed (compare with Johnson & Newport, 1989). While this has been observed previously (Collier, 1989), prior data was limited; confirmation helps to underscore this finding as something theories of second language learning must account for.

Beyond theoretical implications, there is a straightforward practical conclusion: Educators should expect to spend relatively more time helping students whose L1s are more distantly related to English, particularly if the student began learning English after the age of 10 or so.

5. Limitations

There are a number of limitations both in the nature and scope of this investigation that must be taken into consideration during interpretation. First and most obviously, while our dataset contains 30 L1s, it investigates only a single L2. Replication for additional L2s is critical.

Second, although the sample size was relatively large for a study on child language acquisition (n = 853), it was skewed towards children who started learning English at the age of 5 and who spoke one of a small number of languages (principally Arabic, which constituted 48.3% of the data). Thus, our critical results – which depend on the older learners – are less robust and may not generalize well beyond the more heavily-sampled L1s. Related to this, most schools stop testing students once they graduate from ELL, and thus our data only cover the first four years of learning (less so for populations that learn faster and graduate more quickly).

Third, the robustness of our measure of linguistic similarity is uncertain. While comparisons of lexical lists remain the current state of the art (e.g., Gray & Atkinson, 2003) – indeed, there is not currently a real alternative – using lexical

measures limits our ability to identify a mechanism. For instance, is it easier to learn an L2 with a similar vocabulary because languages with similar vocabularies tend to be historically related and share aspects of syntax as well, or is the effect indirect, with similar vocabulary to promote the acquisition of other aspects of language as well, such as syntax (Brenders et al., 2011; Chen et al., 2012; Hancin-Bhatt & Nagy, 1994; Schwartz et al., 2007)?

Indeed, while lexical similarity is a good predictor of phylogeny within a language family (Gray & Atkinson, 2003), it is also affected by historical contact – something which may be even more important for languages in different families. Note that this consideration may simply mean there is extra noise in our measurements, and the effects would otherwise be more robust.

Fourth and relatedly, the standardized tests we used do not provide a breakdown by linguistic domain (syntax, phonology, vocabulary), much less something more fine-grained. Thus, we cannot know whether our findings are specific to one of these (e.g., vocabulary).

Finally, there are several sources of noise or potential bias that are unlikely to substantially distort the results but should be considered. A significant portion of the test scores come from the COVID-19 pandemic era, during which learning has generally been slower than normal.[2] This may depress or even distort effect sizes. Similarly, we did not have a good way of identifying or accounting for breaks in the child's exposure to English (e.g., summer vacation or a sojourn in a non-English school) or additional afterschool ("cram school") English education. International schools are similar but not identical. One systematic variation is whether they follow the International Baccalaureate, British, or American education systems. Less systematically, they vary in how much "foreign language" instruction is included, which results in varying the exact amount of English instruction. Our data consist of high-stakes test scores, and thus if test anxiety correlates with L1 (e.g., for cultural reasons), this could result in a confound.

6. Conclusions

We find that older children acquire English faster, but that this effect is modulated by – and, in fact, almost entirely due to – similarity between the first and second language.

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[2] Some participating instructors specifically reported this.

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