ETS TOEFL

Quality Beyond Measu

Check for updates

TOEFL® Research Report
TOEFL–RR–87
ETS Research Report No. RR–19-17

Is Greater Access to English Language Learning Associated With Better Performance on the *TOEFL Junior*® Comprehensive Test? An Exploratory Investigation

Guangming Ling

Lin Gu

December 2019

The *TOEFL*® test is the world's most widely respected English language assessment, used for admissions purposes in more than 130 countries including Australia, Canada, New Zealand, the United Kingdom, and the United States. Since its initial launch in 1964, the TOEFL test has undergone several major revisions motivated by advances in theories of language ability and changes in English teaching practices. The most recent revision, the *TOEFL iBT*® test, contains a number of innovative design features, including integrated tasks that engage multiple skills to simulate language use in academic settings and test materials that reflect the reading, listening, speaking, and writing demands of real-world academic environments. In addition to the TOEFL iBT, the TOEFL Family of Assessments has expanded to provide high-quality English proficiency assessments for a variety of academic uses and contexts. The TOEFL Young Students Series (YSS) features the *TOEFL*® *Primary*™ and *TOEFL Junior*® tests, designed to help teachers and learners of English in school settings. The *TOEFL ITP*® Assessment Series offers colleges, universities, and others an affordable test for placement and progress monitoring within English programs.

Since the 1970s, the TOEFL tests have had a rigorous, productive, and far-ranging research program. ETS has made the establishment of a strong research base a consistent feature of the development and evolution of the TOEFL tests, because only through a rigorous program of research can a testing company demonstrate its forward-looking vision and substantiate claims about what test takers know or can do based on their test scores. In addition to the 20-30 TOEFL-related research projects conducted by ETS Research & Development staff each year, the TOEFL Committee of Examiners (COE), composed of distinguished language-learning and testing experts from the academic community, funds an annual program of research supporting the TOEFL family of assessments, including projects carried out by external researchers from all over the world.

To date, hundreds of studies on the TOEFL tests have been published in refereed academic journals and books. In addition, more than 300 peer-reviewed reports about TOEFL research have been published by ETS. These publications have appeared in several different series historically: TOEFL Monographs, TOEFL Technical Reports, TOEFL iBT Research Reports, and TOEFL Junior Research Reports. It is the purpose of the current TOEFL Research Report Series to serve as the primary venue for all ETS publications on research conducted in relation to all members of the TOEFL Family of Assessments.

To obtain more information about the TOEFL programs and services, use one of the following:

E-mail: toefl@ets.org **Web site:** www.ets.org/toefl

ETS is an Equal Opportunity/Affirmative Action Employer.

As part of its educational and social mission and in fulfilling the organization's non-profit Charter and Bylaws, ETS has and continues to learn from and also to lead research that furthers educational and measurement research to advance quality and equity in education and assessment for all users of the organization's products and services.

TOEFL Research Report Series and ETS Research Report Series ISSN 2330-8516

RESEARCH REPORT

Is Greater Access to English Language Learning Associated With Better Performance on the *TOEFL Junior*® Comprehensive Test? An Exploratory Investigation

Guangming Ling & Lin Gu

Educational Testing Service, Princeton, NJ

While many researchers have studied the relationship of socioeconomic status (SES) to adult learners' English language proficiency levels, little is known about this relationship for young learners (i.e., teenagers). In this study, we investigated the degree to which access to English language learning, as reflected by learners' SES, is associated with young learners' English language proficiency as measured by the *TOEFL Junior*® Comprehensive test. We analyzed data from 3,053 young English learners (aged 10 – 16 years) from 9 countries. Data included TOEFL Junior scores and self-reported SES-related background information indicating starting age of learning English, number of hours spent learning English in after-school programs, length of stay in an English-speaking country, and typing in and learning English on a computer. We found that the latter three factors were significantly associated with TOEFL Junior scores, with substantial variations among countries. These findings suggest that disparities in access to and opportunities for learning may have an impact on young learners' English proficiency levels. However, such relationships should be interpreted in the context of particular countries to arrive at more accurate interpretations and effective decisions in relation to English learning policies and practices.

Keywords Access to English learning; TOEFL Junior; test performance; socioeconomic status related factor; country; age

doi:10.1002/ets2.12254

With the rise of English as a global language, recent decades have witnessed an increasing need for communication via English, which in turn drives the rising demand for English language learning and instruction for learners at younger ages (e.g., elementary and middle school students). For example, Butler (2004) noted that countries are introducing English as a school subject earlier in their national school curricula to promote exposure to English learning through the public educational system. Besides the public educational system where all students can access English learning, private English learning services outside school (e.g., coaching, tutoring, and test preparation) have also emerged in certain parts of the world (Warschauer, 2000). Ragan and Jones (2013) projected that the market value of global English language learning as a business would increase 25% annually between 2012 and 2017, and this growth would be driven mostly by private business providing English language learning services.

The increasing variety of English learning resources inevitably leads to unequal access to English learning. As previous studies of factors associated with English language learners' proficiency level and growth focused mainly on adult learners (e.g., college students), little information exists targeting the impact of these factors on younger learners (e.g., adolescents). This dearth of information supports the need to examine the impact of access to learning on young learners' language proficiency. We believe that the results of such investigations will inform our understanding of the factors that contribute to language learning in young learners, especially on factors related to accessibility. Understanding the interplay between young learners' access to English learning and language proficiency will also have implications for test score interpretations and uses as well as on educational policy and practice in different countries.

To address this research need, we used a relatively large data set based on an English proficiency test designed for young English learners to explore the extent to which access to English learning is associated with English language skills.

Corresponding author: G. Ling, E-mail: gling@ets.org

Literature Review

Access to learning is often associated with socioeconomic status (SES) and has been studied as the mediator when investigating the relationship between SES and academic achievement or psychological abilities and skills (e.g., Galindo & Sonnenschein, 2015; Kauchak & Eggen, 2014). Access to learning opportunities and other SES-related factors have long been studied on their associations with educational achievement as well. For example, there is ample evidence that verbal and mathematical reasoning abilities/skills as measured by college admission tests like the *SAT*® test are associated with students' SES and access to test-related coaching and learning resources (e.g., Sackett, Kuncel, Arneson, Cooper, & Waters, 2009). A task force set by the American Psychological Association also confirmed the criticality of better understanding the role of SES in educational achievement and psychological skill levels (Saegert et al., 2007).

A large body of literature is also available on the relationship between SES-related variables and language development, predominantly first language (L1) development. These studies have shown a strong and pervasive relationship between SES-related factors and students' L1 skills, from infancy to adulthood. For example, low SES appears to be associated with early difficulties in L1 development for elementary school students (Snow, Burns, & Griffin, 1998). In research based on the Early Childhood Longitudinal Study–Kindergarten, Lee and Burkam (2002) revealed that before kindergarten, children in the lowest SES category scored on average 0.50 standard deviations lower on reading achievement than those in the middle SES category, who in turn scored 0.70 standard deviations lower than those in the highest SES category. Furthermore, such SES-related differences were found to be significantly larger than the differences associated with ethnicity. Similar findings can also be found for students from kindergarten to fifth grade (D'Angiulli, Siegel, & Maggi, 2004), those at the age of 4 years (Nelson, Welsh, Vance Trup, & Greenberg, 2011), and those aged 18 months (Fernald, Marchman, & Weisleder, 2013; Ginther & Stevens, 1998). Kieffer (2010) suggested that students from low-SES backgrounds are at a significantly higher risk for English reading difficulties and that factors related to SES may play a more critical role than English language learning status on English reading difficulties.

In contrast to many studies focusing on the relationship between SES and L1 development, few studies have explicitly studied the association of second language (L2) learning with SES. However, some of the factors that have been found to be associated with L2 learning by previous research can be easily linked to learners' access to learning because they demand extra monetary investment outside of publicly funded education systems. Most of these factors fall into one of six general categories that are related to L2 acquisition (Ellis, 1993, 2008), where at least half of which may be related to learners' SES background (e.g., the way learners are exposed to a second language, social and situational factors related to language learning, and sociocultural factors). The results of these studies are summarized next.

One such factor, extracurricular English language learning, often provided in the form of a private tutor or coaching, was examined in Borjian (2015). On the basis of the results of a survey of English teachers in Mexico, Borjian suggested that English has long been highly regarded in the middle and upper classes of Mexican society, where wealthier parents are often able to send their children to private bilingual and immersion schools with teachers who are highly proficient in English. This in turn gives a greater advantage to these children when trying to gain access to and function in higher education institutions in the United States or other English-speaking countries, typically after a few years of well-grounded English language training.

Another SES-related factor that has been found to relate to L2 learning is access to digital learning resources. Cole and Vanderplank (2016) showed that the use of Internet resources in out-of-classroom and informal learning settings resulted in a steady increase in English language skills. Internet-based autonomous learners scored significantly higher and made fewer fossilized errors (i.e., errors that are made so often over time that they have become a natural part of the person's speech or writing) in high-frequency structures than traditional classroom-based learners. The researchers argued that the Internet-based learning of a foreign language may be more natural and may motivate learners because of its informal context compared to the learning that occurs through classroom-based instruction. Other studies have also found that computers and the Internet were useful and effective sources for accessing English learning materials and providing opportunity for practice (e.g., Benson, 2011; Benson & Chik, 2011; Kusyk & Sockett, 2012; Kuure, 2011; Murray, 2008). Sockett (2014) and Lam (2006, 2013) suggested that learning English online can lead to a lower affective filter by giving users unprecedented control over the choice of content based on personal interests and the dynamics of interaction. Lave and Wenger (1991) found that learning English online can better contextualize the learning process (i.e., a more authentic context of using English in real life) and increase motivation for learning.

Immersion in the target language environment, a type of learning experience that is resource demanding, has also been found to have a positive impact on L2 learning. Some researchers suggested that both studying abroad and participating in intensive immersion courses, or otherwise having foreign language contact in the L1 country (e.g., hearing or using it in daily interactions), can lead to improved English language proficiency overall (e.g., Bae & Bachman, 1998; Dewey, 2004; Morgan & Mazzeo, 1988; Sasaki, 2007). Other researchers have found studying abroad to be associated with improvement in some specific components of English language proficiency, such as fluency, semantic density, and narrative ability (Collentine, 2004); improved oral skills (Freed, Segalowitz, & Dewey, 2004); discrete grammatical and lexical features (e.g., Collentine, 2004); and L2 writing ability and fluency (Sasaki, 2007).

Studies of another SES-related factor, early exposure to English, have provided an unclear picture in terms of its relationship with L2 proficiency. For example, Larson-Hall (2008) found that among 61 Japanese college students who started learning English between the ages of 3 and 11 years, those who started at a younger age tended to score higher on a grammatical judgment task but not on phonemic tasks. Further comparisons showed that earlier starters (i.e., the 61 students who started at the ages of 3 – 11 years) performed better on linguistic measures than did later starters (i.e., 139 students who started learning English at the age of 12 years or older) if the former were exposed to a substantial amount of English language input and instruction. On the other hand, Muñoz (2014) examined the general English proficiency and performance on a lexical test and a phonetic perception test for 160 college students and found non-significant correlations between starting age and general proficiency or lexical test results. Muñoz claimed that starting age does not yield the same type of long-term advantage on L2 acquisition as does a naturalistic language learning setting.

Purpose of the Current Study

As the preceding review shows, previous studies (e.g., Collentine, 2004; Freed et al., 2004; Sasaki, 2007) mostly focused on college students, thus limiting the degree to which the findings can be generalized to younger learners (e.g., adolescents). In addition, many of the participants in these studies were studying English in the United States (e.g., Benson, 2011; Cole & Vanderplank, 2016; Sockett, 2014), which limits the generalizability of the findings to learners who study English in an English as a foreign language environment. Furthermore, the sample sizes in the aforementioned studies are typically small, mostly in the dozens (e.g., Larson-Hall, 2008), although a few studies have relatively larger samples, up to several hundred (e.g., Muñoz, 2014), which precluded the application of statistical procedures that are capable of examining the interaction among factors. Finally, no previous research examined variations among countries in terms of the relationship between access to learning and English language proficiency levels. As country-specific policies and practices may have a substantial impact on learning access, which in turn may affect L2 learning outcomes, we believe such investigation will make a unique contribution to the existing literature.

To address the limitations discussed earlier, in this study, we aimed to investigate whether young learners' opportunities for or access to English learning have any relationships with their English language proficiency levels as measured by the *TOEFL Junior*® Comprehensive (TOEFL Junior) test and whether the relationships between access to learning variables and the language proficiency levels differ among students grouped by countries.

Research Questions

The research questions (RQs) for the study follow:

RQ1. Are young learners' English proficiency levels as measured by the TOEFL Junior test associated with students' access to English learning, such as starting age of learning, hours of learning English at an after-school program, length of stay in an English-speaking country, and time spent learning English on a computer?

RQ2. If an association exists for any of the preceding variables, is the association homogeneous across countries?

Method

Instruments

The TOEFL Junior is designed for English learners of ages 11 years or older who are learning English in a foreign language environment. The test measures students' English communication skills required in English-medium educational settings,

Table 1 Test Structure of TOEFL Junior Comprehensive Test

Section	No. of items	Testing time (min)
Reading Comprehension	36	41
Listening Comprehension	36	36
Speaking	4	18
Writing	4	39
Total	80	124

Table 2 Gender, Age, and Mean TOEFL Junior Scores of Participants by Country

	N	Male %	Age, *M* (*SD*) (years)	TOEFL Junior total score, *M* (*SD*)
China	90	59	14.58 (0.52)	61.85 (22.17)
Brazil	101	52	13.61 (1.56)	85.76 (17.87)
Indonesia	72	44	14.28 (1.47)	72.23 (22.79)
Japan	90	37	13.06 (0.75)	47.55 (27.65)
Jordan	119	0	12.80 (1.06)	29.57 (14.55)
S. Korea	1,775	47	12.45 (1.33)	61.73 (24.55)
Mexico	535	53	12.78 (1.34)	69.30 (21.39)
Egypt	79	48	13.15 (0.85)	53.78 (18.52)
Vietnam	192	33	12.59 (1.13)	88.56 (18.15)
Total	3, 053	45	12.71 (1.37)	66.96 (24.26)

and it includes tasks that involve social and academic uses of English in a school context. The test is computer based and covers four language modalities: reading, listening, speaking, and writing. TOEFL Junior scores are mapped to the Common European Framework of Reference levels (Educational Testing Service, 2015) and Lexile measures (Baron & Tannenbaum, 2011), to support different practical uses.

The reading section includes four sets of items; all items in the same set share the same reading materials. The listening section also includes four sets of items, and all items in the same set share common listening materials. The speaking section consists of four speaking items/tasks, ranging from simpler (reading aloud) to more difficult (listening and speaking). Finally, the writing section comprises four items/tasks, ranging from editing to a listen-and-write short essay. The entire test takes about 2 hours to complete (see Table 1).

Six forms of the TOEFL Junior test were included in this study as part of a global pilot administration. Each form, developed following the specifications described earlier, was taken by about 500 students across nine countries. Total scores for each form were all reasonably reliable, with KR-20 estimates of reliability coefficients between .85 and .93, and with most of the coefficients above .90. The total raw score for each form was equated following a random group design (Komen & Brennan, 2004) and put on a 0–120 scale for interpretation purposes. As the result of equating, the scaled scores from different test forms can be used interchangeably for the purposes of this study.

Participants

A total of 3,053 students participated in the pilot administration, and each took one of the six test forms. The sample included 129, 499, 760, 766, 571, 290, and 38 students at the ages of 10–16 years, respectively. Most of the 10-year-old students came from South Korea and were also included in this study for two considerations. First, the participating pilot schools had reviewed the test specifications and decided it was appropriate for their students prior to the pilot administration. Second, in South Korea, 10- to 11-year-olds were typically in fourth grade in elementary school, thus the 10- and 11-year-olds may be reasonably assumed to be similar to each other in terms of the developmental stages.

Most participants were from South Korea (58%) and Mexico (18%), with smaller samples from seven other countries, including China (3%), Brazil (3%), Indonesia (2%), Japan (3%), Jordan (4%), Egypt (3%), and Vietnam (6%; see Table 2). Overall, there were slightly more females than males (55% vs. 45%). The gender and age distributions varied substantially across the nine countries, with some countries having no male students in the sample (e.g., Jordan), while other countries (e.g., China and Indonesia) had mostly older students (see Table 2).

Table 3 Indicators of Access to Learning

Indicator of access to learning	Mean (*SD*)	Categories of each indicator
Number of years studying English	2.74 (0.81)	1. 1–2 years or less 2. 3–5 years 3. 6–8 years 4. 9 years or more
Number of hours spent studying English every week in after-school programs	2.55 (0.80)	1. 1–2 hours/week or less 2. 3–5 hours/week 3. 6–8 hours/week 4. 9 or more hours/week
Lived in an English-speaking country	1.14 (0.51)	1. never 2. yes, less than 3 months 3. yes, 3–12 months 4. a year or longer
How often typing in English on a computer?	2.46 (0.86)	1. never 2. once a month or less 3. a few times a month 4. a few times a week or more
How often learning English on a computer or the Internet?	3.04 (0.79)	1. never 2. once a month or less 3. a few times a month 4. a few times a week or more

Using Learning Background Variables as Indicators of Socioeconomic Status

Our review of literature revealed the following SES-related factors in the context of L2 development, including extracurricular English language learning, access to digital learning resources, target language immersion, and early access to learning. Informed by the findings of the previous studies, in this study, we selected the following learner background variables as SES indicators: the number of hours spent every week learning English in after-school programs, length of stay in an English-speaking country, and time spent typing in or learning English on a computer. Each of these indicators was recorded on a 4-point scale, with larger number representing *more time spent or more frequent access to English learning* as listed in Table 3. Other general background information, such as age, was also captured in the data. The number of years learning English was used together with age to create a new variable of early access to English learning. Table 3 provides the description of the selected SES-related variables.

Data

Information on SES-related learner background information was collected through a survey the participants took immediately after the test. The starting age for learning English, which was between 2 and 13 years, was approximated by using the interaction between age and self-reported number of years learning English.

Analysis

Preliminary analyses revealed that country and age each alone explained 22% and 12% of the variance in TOEFL Junior scores, respectively, and 25% together. To control these factors and facilitate a better interpretation of the association between TOEFL Junior scores and indicators of access to learning, we entered country as a random factor and age as a covariate in the following analysis using general linear models (GLM).

GLM was applied to address the RQs, where TOEFL Junior total score was used as the dependent variable. To address the first research question, country was entered as the random factor, age was entered as the covariate, and one of the indicators of access to learning was entered as the only independent variable each time, as well as the interactions between country and the access to learning indicator. This model was built to examine whether the main effect associated with each indicator was significant and could account for a significant portion of the variance in TOEFL Junior total scores beyond country and age. Furthermore, the interactions between country and each indicator were evaluated to address the second

research question with regard to between-country variation. The presence of a significant effect associated with such an interaction would suggest that the association between the indicator and TOEFL Junior score differs among the countries.

Finally, in a similar GLM model where country was entered as the random factor and age as the covariate, all indicators that had a significant main effect associated with TOEFL Junior scores were entered together as independent variables along with the two-way interactions between country and each of these indicators of access to learning.

To examine the impact of starting age on English language proficiency, country was entered as the random factor, and age, number of years learning English, and the interactions were entered as fixed factors. We would expect significant interaction effects if earlier starting ages for English learning were associated with higher TOEFL Junior scores than later starting ages, controlling for participants' current age.

Multivariate GLM (i.e., multivariate analysis of covariance or MANCOVA) models were also tested, where the four section scores were treated as the multivariate dependent variables, one of the indicators of access to learning as the independent variable each time, country as the random factor, and age as the covariate. However, the relationship between each section score and the indicator of access to learning did not appear to vary noticeably among the four sections of the test. Thus, in the following pages, we report only the results of the univariate GLM analysis using the total TOEFL Junior score as the dependent variable. The results related to the section scores are available upon request.

It needs to be noted that by testing the interactions between each indicator of access to learning and country, there might be interaction cells containing very few students, which may lead to larger sampling errors that could affect the appropriate interpretations of related effects and trends.

Results

TOEFL Junior Score With Number of Years Learning English and Starting Age

To examine the relationship between TOEFL Junior score and starting age, we entered both age, number of years learning English, and their interactions as the fixed factors in the GLM model, and country was entered as the random factor. It was found that the main effects associated with age and country were significant, $F(3, 2897) = 2.66$, $p < .05$, and $F(8, 2897) = 8.59$, $p < .001$ ($\eta_p^2 = .148$ and .725, respectively). The other significant effect was for the two-way interaction between number of years learning English and country, $F(18, 2897) = 3.05$, $p < .001$ ($\eta_p^2 = .340$). While for most countries, a greater number of years studying English is associated with a greater mean score, there are multiple time points where more years of studying English were associated with lower TOEFL Junior scores in Egypt and South Korea (see Figure 1). Jordan was not included in the plot due to too many missing cases.

No other effect was significant, including the two-way interaction between age and number of years learning English. As seen in Figure 2, a mixed pattern shows that at a particular age, those who studied for more years do not appear to always have a greater score on the TOEFL Junior than those who reportedly studied for fewer years (see Figure 2).

TOEFL Junior Score With Number of Hours Learning English in an After-School Program

The number of hours per week learning English in after-school programs was not significantly associated with TOEFL Junior total score, $p > .05$. The marginal mean scores were 67.82, 65.63, 64.72, and 78.15 for those who reported spending 1 – 2 hours, 3 – 5 hours, 6 – 8 hours, and 9 or more hours per week learning English outside school, respectively.

The interactions between country and number of hours spent learning English in after-school programs were significant, $F(18, 2848) = 1.80$, $p < .05$ ($\eta_p^2 = .011$). As Figure 3 shows, TOEFL Junior scores in general increase with the number of hours spent learning English in after-school programs, with a few exceptions. For example, in Japan, a great leap in TOEFL Junior scores was found between 6 and 8 hours per week and 9 hours or longer per week, while in South Korea, students who reported spending more hours every week studying English in after-school programs scored on average lower than those who spent fewer hours (see Figure 3). Again, Jordan was excluded from this figure due to missing cases.

TOEFL Junior Score With Length of Stay in an English-Speaking Country

Length of stay in an English-speaking country was significantly and positively associated with TOEFL Junior total score, $F(3, 2907) = 8.16$, $p < .001$ ($\eta_p^2 = .396$). Those who reported having never lived in an English-speaking country scored

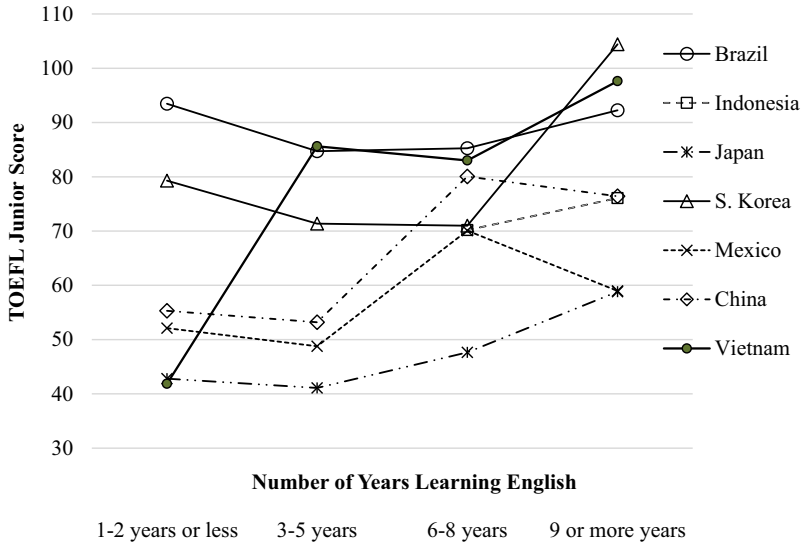

Figure 1 Plot of marginal mean TOEFL Junior scores with number of years studying English by country.

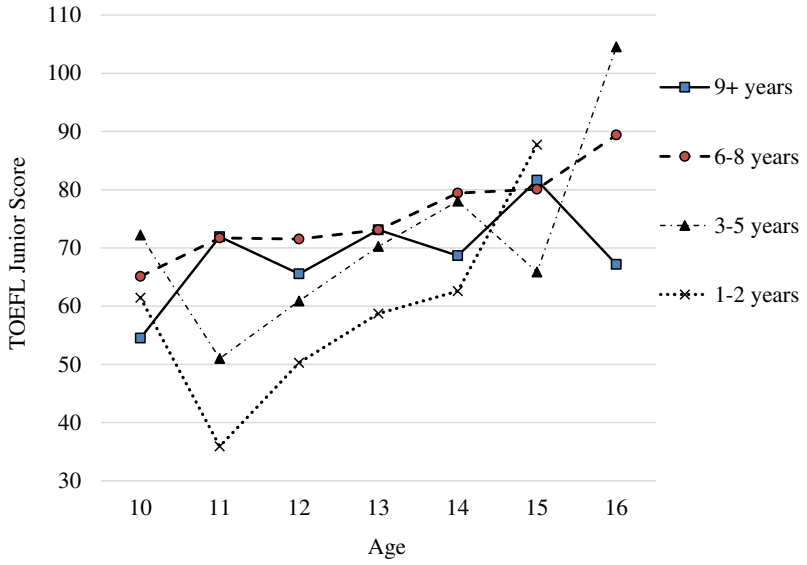

Figure 2 Plot of marginal mean TOEFL Junior scores with number of years studying English.

59.42 on average, in comparison to 79.07, 78.88, and 83.03 for those who had lived in an English-speaking country for 3 months or less, 3 – 12 months, or 12 months or longer, respectively. Further post hoc comparisons suggest the difference between no experience and some experience staying in an English-speaking country was significant, $p < .05$, but the differences among those with varying lengths of stay were not significant, $p > .05$.

The association between length of stay in an English-speaking country and TOEFL Junior score was significantly different among the nine countries, $F(14, 2907) = 2.37$, $p < .05$ ($\eta_p^2 = .011$). Further comparisons revealed that higher TOEFL Junior scores are associated with greater lengths of stay in an English-speaking country in Egypt, South Korea, Mexico, and Vietnam. In Japan, those who stayed in an English-speaking country for a year or longer scored lower on the TOEFL Junior than those who stayed for only 3 – 12 months. Similarly, students from China who had lived for a year or longer in an English-speaking country had lower TOEFL Junior scores on average than those who had lived for less than 3 months in such a country (see Figure 4). Jordan, Brazil, and Indonesia were not included in this plot, as most students were condensed in the *never* category.

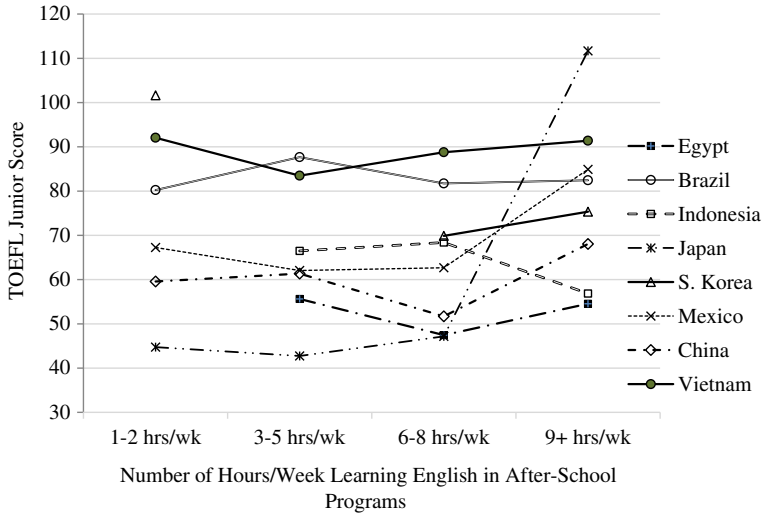

Figure 3 Plot of marginal mean TOEFL Junior scores with the number of hours per week spent studying English, by country. Nonestimable means are not plotted.

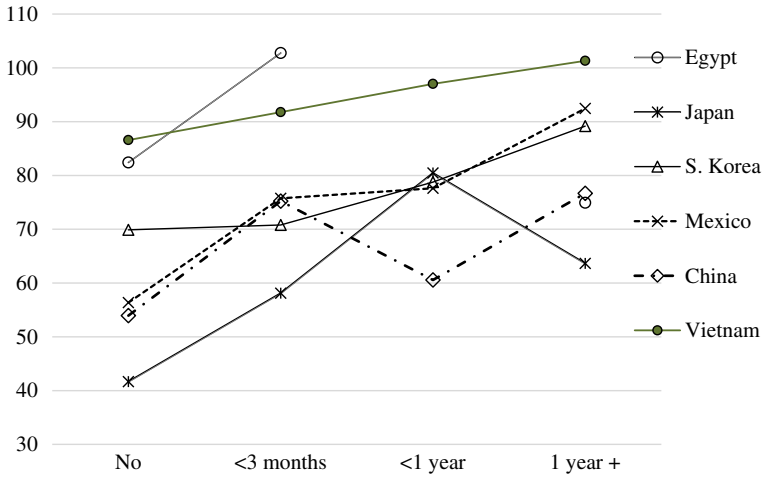

Figure 4 Plot of marginal mean TOEFL Junior scores with length of stay in an English-speaking country by country.

TOEFL Junior Score and Experience Using a Computer to Learn or Type in English

Prior experience typing in English on a computer was positively associated with TOEFL Junior total score, $F(3, 2917) = 6.47$, $p < .001$ ($\eta_p^2 = .297$). Those who reported never typing in English on a computer scored 55.17 on average, in comparison to those who reported typing in English once a month or less (62.92), a few times a month (69.99), and a few times a week or more (70.82). Post hoc comparisons suggest that all pairwise comparisons were significant at the .05 level, except for the difference between once a month and less and a few times a week or more, $p > .05$.

The association between experience typing in English on a computer and TOEFL Junior total score also varied significantly among countries, $F(21, 2917) = 4.56$, $p < .001$ ($\eta_p^2 = .032$). As seen in Figure 5, students who reported typing in English more frequently appear to score higher than those who reported typing in English less frequently. However, the countries may be grouped into three clusters. For example, for students from Brazil, China, and Vietnam, there was a positive association between experiences typing in English on a computer and TOEFL Junior total score, though the increasing pattern appears to be relatively moderate. For students from Jordan, Mexico, and Japan, there was also a positive association, but with a steeper slope, if we exclude students who reportedly had no experience typing in English. Finally, for students from Egypt, South Korea, and Indonesia, there was a mixed pattern of association between experience typing in English on a computer and TOEFL Junior total score (see Figure 5).

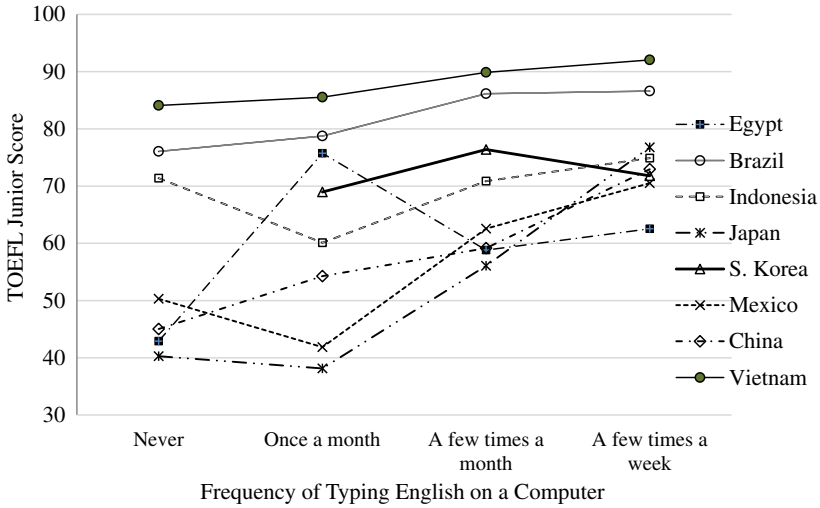

Figure 5 Plot of marginal mean TOEFL Junior scores with experience typing in English on a computer by country.

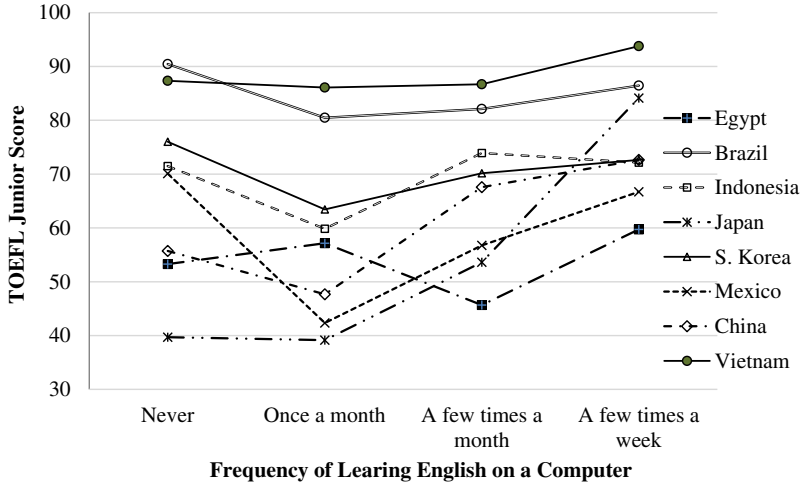

Figure 6 Marginal mean TOEFL Junior scores with experience studying English on a computer by country.

Prior experience learning English on a computer was significantly associated with TOEFL Junior total score, $F(3, 2864) = 6.10$, $p < .001$ ($\eta_p^2 = .290$). The marginal mean estimates of scores for students who reported having never learned English on a computer, having done so once a month or less, having done so a few times a month or less, and having done so a few times a week or more were 68.01, 59.52, 67.07, and 70.83, respectively. Post hoc comparisons showed that the differences among the latter three groups were all significant, $p < .05$.

The interactions between experience using a computer to study English and TOEFL Junior total score was also significant, $F(21, 2864) = 4.43$, $p < .001$ ($\eta_p^2 = .031$). Students from China, Indonesia, Japan, and Vietnam shared a similar pattern, where those with no experience or little experience studying English on a computer scored lower than those who had studied English on a computer more often; the difference was most pronounced among Japanese students and least pronounced among students from Vietnam. Students from Brazil, South Korea, and Mexico who reported no experience studying English on a computer scored higher than those who had such experience, although among the students who reported some experience studying English on a computer, those who did so more frequently scored higher than those who did so less frequently. There appears to be a mixed pattern for students from Egypt, with those who often studied English on a computer scoring the highest and those who sometimes did so scoring the lowest (see Figure 6).

Table 4 Summary of General Linear Model Analysis Results by Socioeconomic Status Indicator

	F-value	Degrees of freedom	η_p^2
Age	2.66*	3, 2,897	0.148
Country	8.59***	8, 2,897	0.725
Number of years studying English	1.08	3, 2,897	0.102
Interactions with country	3.05***	18, 2,897	0.340
Number of hours spent studying English every week in after-school programs	2.47	3, 2,848	0.159
Interactions with country	1.80*	18, 2,848	0.011
Lived in an English-speaking country	8.16***	3, 2,907	0.396
Interactions with country	2.37**	14, 2,907	0.011
How often typing in English on a computer?	6.47***	3, 2,917	0.297
Interactions with country	4.56***	21, 2,917	0.032
How often learning English on a computer or the Internet?	6.10***	3, 2,864	0.290

*$p < .05$. **$p < .01$. ***$p < .001$.

TOEFL Junior Score With Multiple Indicators of Access to Learning

Finally, three of the indicators of access to learning, namely, length of stay in an English-speaking country, experience typing in English on a computer, and experience learning English on a computer, were entered together in one univariate GLM model, where age was set as the covariate, country was the random factor, and the three variables were entered as the fixed factors, as well as the interactions between country and each of these three variables. The country effect was significant, $F(8, 2750) = 12.38$, $p < .001$ ($\eta_p^2 = .816$), as was the main effect associated with age, $F(1, 2750) = 86.80$, $p < .001$ ($\eta_p^2 = .031$), as well as the main effect associated with number of hours typing in English on a computer, $F(3, 2750) = 2.77$, $p < .05$ ($\eta_p^2 = .059$), and experience learning English on a computer, $F(3, 2750) = 2.62$, $p < .05$ ($\eta_p^2 = .019$). The main effect associated with length of stay in an English-speaking country was not significant, $p > .05$. Two country-related interaction effects were also significant: the interaction with length of stay in an English-speaking country, $F(14, 2750) = 3.07$, $p < .05$ ($\eta_p^2 = .010$), and experience typing in English on a computer, $F(20, 2750) = 2.16$, $p < .001$ ($\eta_p^2 = .015$). Further examinations of the marginal mean estimates and interactions suggest that the patterns were in fact very similar to those emerging when each of these variables was entered separately.

Summary

In summary, young learners' English language proficiency as measured by TOEFL Junior scores appears to vary significantly among the nine countries studied and is positively associated with students' age. Though more years of learning English were associated with a higher level of English language proficiency, this association disappeared after controlling for age.

In relation to RQ1, we found that three indicators of access to learning, including length of stay in an English-speaking country, frequency of typing in English on a computer, and frequency of learning English on a computer, were significantly associated with students' English language proficiency levels as measured by TOEFL Junior, after accounting for country and age. When the three significant factors were entered as multiple independent variables in the same model, only the latter two indicators were found to be significantly associated with TOEFL Junior score (see Table 4).

In relation to RQ2, we found that the relationship between each of the three accessibility indicators and the TOEFL Junior score varied substantially among the nine countries. Finally, when all the significant background variables were entered together, the interactions between country and experience staying in an English-speaking country and between country and experience typing in English on a computer were significant.

Discussion

As the trend of using English in global economic and scientific communication continues, the excitement and popularity associated with English learning is also possible to continue, if not increase. One of the major findings of this study is that besides commonly studied background variables such as age and country, a few indicators of young learners' access to English learning were significantly associated with English language proficiency levels as measured

by TOEFL Junior scores. This finding suggests that disparities in access to and opportunities for learning may have an impact on young learners' English language proficiency levels. It also implies that young learners from wealthier families with richer social and financial resources may be provided more English learning opportunities or greater access to learning and therefore attain higher levels of English language proficiency than learners from less privileged environments, although this finding may be strengthened by adding direct measures of family income or parental educational levels into the analysis and examining their relationship with TOEFL Junior scores. Another explanation could be that, compared to learners from low-SES families, privileged learners may have more access to test preparation and coaching, which may not necessarily improve their English proficiency but nevertheless contribute to higher test scores.

Young Learners' English Language Proficiency Levels With (Starting) Age

A few other findings may also have important implications for future explorations of the SES-related access to learning and English language proficiency levels. First, while starting to learn English at an early age may provide an obvious advantage toward achieving higher English language proficiency levels as measured by TOEFL Junior scores, the current findings suggest that this may not necessarily be true. Although more years of learning English do seem to be associated with higher levels of English language proficiency as measured by TOEFL Junior scores, the differences disappeared when controlling for current age. This finding reinforces that of Muñoz (2014), namely, that there is no significant correlation between starting age and general proficiency or lexical test results. It is plausible that in some of the countries in our sample, learning English too early may not easily translate into real gains in English language skills due to various conditions in terms of the intensity (e.g., frequency and time of each learning session), continuity (e.g., number of years), and quality of English teaching and learning.

The age-related improvement in English language proficiency varied substantially among the nine countries, suggesting that differential learning trajectories may exist among students from different countries. Students from Japan appear to have a steeper and consistent gain in English language proficiency from younger to older students, and similar trends were seen in some age groups for students from China and Brazil. On the other hand, students from South Korea and Vietnam showed a much flatter but steady increase in TOEFL Junior scores with age. It is possible that these differences are associated with country-specific English language policies and instructional practices. Countries may place differential emphases on different modalities of English skills. The intensity and coverage within each modality may also differ across countries. Therefore the structure and content of the TOEFL Junior test may not be equally aligned with the English teaching curriculum at different countries. Further exploration on aligning test blueprint with local curriculum at each country may provide additional information to better understand the age-related trend as well as its interactions with country.

Young Learners' English Language Proficiency and Use of Technology to Learn

Technology-related learning access, such as typing in English on a computer and using a computer to study English, was found to have a positive association with TOEFL Junior scores. This coincides with some earlier findings with regard to access to a computer and its impact on English and other academic achievements. For example, Nævdal (2006) found a positive association between access to a computer and the Internet and English language achievement for secondary school students in Norway, especially girls. In another study, Wainer, Vieira, and Melguizo (2015) found a significant benefit of owning a computer from fifth to ninth grade on students' academic achievement, and the benefits were similar across SES groups. With continuing developments and breakthroughs in science and technology, computers or similar devices may play an even bigger role in global communications that require English. The use of computers and the Internet to learn and practice English may become more directly related to future application of English skills, such as reading, listening, speaking, and writing, in our daily lives.

Effect Associated With Experience Staying in an English-Speaking Country

This study also found that young learners' experiences staying in an English-speaking country had a positive effect on TOEFL Junior scores. This is one of the first studies that revealed such impact for young learners, though similar

findings are available for college students and young adults in different languages (e.g., Carroll, 1967; Collentine & Freed, 2004; Freed, 1998). Future research may benefit from including more details about the nature and intensity of learning activities while staying in an English-speaking country. Such kinds of details may provide more useful information to generalize to other immersion contexts.

Number of Hours Learning English in an After-School Program

One of the background variables, number of hours learning English in after-school programs, was not found to be associated with TOEFL Junior scores beyond country and age factors. We think that this may have several explanations. One is that the number of hours spent every week learning English in after-school programs may not accurately reflect the nature and intensity of the extracurricular English learning. For example, such activities could range from finishing English language schoolwork to very intensive curriculum-based English learning activities organized by the after-school programs. By itself, the number of hours spent learning English may not be a sufficiently accurate indicator of the students' learning behaviors.

Limitations

A few limitations of this study should be noted. First, we did not include a direct measure of SES in the current study; rather, we relied on self-reports provided by young learners with regard to their access to learning. While self-reports are often used in research on educational and language learning topics, their accuracy may be threatened by cultural factors that may lead to differential understanding of the same sentence or phrases among students from different countries. Finally, the relation of family SES with English language learning may be mediated by other factors differentially across countries. For example, studies have revealed that schools play a more important role in poor countries and countries with high levels of income inequality, and in some countries, school education was able to mediate the relationship between family SES and students' achievement in general (e.g., Chudgar & Luschei, 2009; Finch & Marchant, 2013; Marchant & Finch, 2016). It should be noted that these studies focused on general educational outcomes. Further investigation is required to examine factors that may mediate the relations between family SES and English language learning in different countries.

Second, because this study was focused on young learners between ages 10 and 16 years, the participants' understanding of the same questions and phrases in the questionnaire may not necessarily be the same across age groups. Third, some of the content in the questions, such as weekly hours spent learning English in after-school programs, is more likely to capture more recent or current patterns of learning English but may be limited in capturing such behaviors a year before (or even longer) when the survey was answered. This may also limit the interpretations of the current findings when comparing students grouped by starting age.

Furthermore, the current findings may be complicated by possible multivariate self-selection issues where students at different ages may differ in their ways of and motivations for learning English; as a result, they may endorse indicators of access to learning differentially among age groups. This may require multiple types of analysis to tease out the differences associated with age-specific English learning activities.

Finally, as mentioned earlier, some of the dramatic increases or decreases in particular countries may result from small numbers of cases in corresponding conditions determined by the interactions between country and the indicators of access to learning. This is possible to limit the generalizability of the current findings to related countries and categories of related indicators of access to learning.

Future Directions of Research

Future research might benefit from obtaining direct measures of SES, such as family income or parental educational level, to further examine the extent to which the access-related background variables may be associated with young learners' English language proficiency level. Future research may also benefit from obtaining a more representative and larger sample of young learners for each country, thus allowing the examination of the relationship between indicators of access to learning and TOEFL Junior scores within each country with greater statistical power. Finally, further research may benefit from employing a more detailed and targeted questionnaire in terms of students' English learning activities as well

as English learning activities in and outside of school to increase the generalizability of related findings. In some cases, it may also prove beneficial to translate related background questionnaires into the L1 of particular students to avoid language-related barriers to comprehension.

Conclusion

Despite the limitations, as an exploratory investigation with a relatively large sample of participants from nine countries, we found that several indicators of access to English learning were significantly associated with young learners' English language proficiency levels as measured by TOEFL Junior scores. In addition, the associations varied substantially among the countries included.

References

Bae, J., & Bachman, L. F. (1998). A latent variable approach to listening and reading: Testing factorial invariance across two groups of children in the Korean/English two-way immersion program. *Language Testing, 15*, 380–414. https://doi.org/10.1177/026553229801500304

Baron, P. A., & Tannenbaum, R. (2011). *Mapping the TOEFL Junior® test onto the Common European Framework of Reference* (Research Memorandum No. RM-11-07). Princeton, NJ: Educational Testing Service.

Benson, P. (2011). *Teaching and researching: Autonomy in language learning*. London, England: Pearson Education.

Benson, P., & Chik, A. (2011). Towards a more naturalistic CALL: Video gaming and language learning. *International Journal of Computer-Assisted Language Learning and Teaching, 1*(3), 1–13. https://doi.org/10.4018/ijcallt.2011070101

Borjian, A. (2015). Learning English in Mexico: Perspectives from Mexican teachers of English. *CATESOL Journal, 27*, 163–173.

Butler, Y. G. (2004). What level of English proficiency do elementary school teachers need to attain in order to teach EFL? Case studies from Korea, Taiwan, and Japan. *TESOL Quarterly, 38*, 245–278. https://doi.org/10.2307/3588380

Carroll, J. B. (1967). Foreign language proficiency levels attained by language majors near graduation from college. *Foreign Language Annals, 1*, 131–151. https://doi.org/10.1111/j.1944-9720.1967.tb00127.x

Chudgar, A., & Luschei, T. F. (2009). National income, income inequality, and the importance of schools: A hierarchical cross-national comparison. *American Educational Research Journal, 46*, 626–658. https://doi.org/10.3102/0002831209340043

Cole, J., & Vanderplank, R. (2016). Comparing autonomous and class-based learners in Brazil: Evidence for the present-day advantages of informal, out-of-class learning. *System, 61*, 31–42. https://doi.org/10.1016/j.system.2016.07.007

Collentine, J. (2004). The effects of learning contexts on morphosyntactic and lexical development. *Studies of Second Language Acquisition, 26*, 227–248. https://doi.org/10.1017/S0272263104262040

Collentine, J., & Freed, B. (2004). Learning context and its effects on second language acquisition: Introduction. *Studies in Second Language Acquisition, 26*, 227–248. https://doi.org/10.1017/S0272263104262015

D'Angiulli, A., Siegel, L. S., & Maggi, S. (2004). Literacy instruction, SES and word-reading achievement in English-language learners and children with English as a first language: A longitudinal study. *Learning Disabilities Research & Practice, 19*, 202–213. https://doi.org/10.1111/j.1540-5826.2004.00106.x

Dewey, D. P. (2004). A comparison of reading development by learners of Japanese in intensive domestic immersion and study abroad contexts. *Studies of Second Language Acquisition, 26*, 303–327. https://doi.org/10.1017/S0272263104262076

Educational Testing Service. (2015). *Preparing for the test*. Retrieved from https://www.ets.org/toefl_junior/prepare/

Ellis, R. (1993). *The study of second language acquisition*. Oxford, England: Oxford University Press.

Ellis, R. (2008). *The study of second language acquisition* (2nd ed.). Oxford, England: Oxford University Press.

Fernald, A., Marchman, V. A., & Weisleder, A. (2013). SES differences in language processing skill and vocabulary are evident at 18 months. *Developmental Science, 16*, 234–238. https://doi.org/10.1111/desc.12019

Finch, W. H., & Marchant, G. J. (2013). Application of multilevel latent class analysis to identify achievement and socio-economic typologies in the 20 wealthiest countries. *Journal of Educational and Developmental Psychology, 3*, 201–221. https://doi.org/10.5539/jedp.v3n1p201

Freed, B. (1998). An overview of issues and research in language learning in a study abroad setting. *Frontiers, 4*, 31–60.

Freed, B. F., Segalowitz, N., & Dewey, D. P. (2004). Context of learning and second language fluency in French: Comparing regular classroom, study abroad, and intensive domestic immersion programs. *Studies of Second Language Acquisition, 26*, 275–301. https://doi.org/10.1017/S0272263104262064

Galindo, C., & Sonnenschein, S. (2015). Decreasing the SES math achievement gap: Initial math proficiency and home learning environments. *Contemporary Educational Psychologist, 43*, 25–38. https://doi.org/10.1016/j.cedpsych.2015.08.003

Ginther, A., & Stevens, J. (1998). Language background, ethnicity, and the internal construct validity of the Advanced Placement Spanish Language Examination. In A. J. Kunnan (Ed.), *Validation in language assessment* (pp. 169–194). Mahwah, NJ: Lawrence Erlbaum.

Kauchak, D. P., & Eggen, P. D. (2014). *Introduction to teaching: Becoming a professional* (5th ed.). Mahwah, NJ: Pearson Education.

Kieffer, M. J. (2010). English proficiency, socioeconomic status, and late-emerging reading difficulties. *Educational Researcher, 39*, 484–486. https://doi.org/10.3102/0013189X10378400

Kolen, M. J., & Brennan, R. L. (2004). *Test equating, linking, and scaling: Methods and practices* (2nd ed.). New York, NY: Springer. https://doi.org/10.1007/978-1-4757-4310-4

Kusyk, M., & Sockett, G. (2012). From informal resource usage to incidental language acquisition: Language uptake from online television viewing in English. *ASp Revue du GERAS, 62*, 45–65. https://doi.org/10.4000/asp.3104

Kuure, L. (2011). Places for learning: Technology-mediated language learning practices beyond the classroom. In P. Benson & H. Reinders (Eds.), *Beyond the language classroom* (pp. 35–46). London, England: Palgrave Macmillan. https://doi.org/10.1057/9780230306790_4

Lam, W. S. E. (2006). Pedagogies: An international re-envisioning of language, literacy, and the immigrant subject in new mediascapes. *Pedagogies: An International Journal, 1*, 171–195. https://doi.org/10.1207/s15544818ped0103_2

Lam, W. S. E. (2013). Multilingual practices in transnatioal digital contexts. *TESOL Quarterly, 47*, 820-825. https://doi.org/10.1002/tesq.132

Larson-Hall, J. (2008). Weighing the benefits of studying a foreign language at a younger starting age in a minimal input situation. *Second Language Research, 24*, 35–63. https://doi.org/10.1177/0267658307082981

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, England: Cambridge University Press. https://doi.org/10.1017/CBO9780511815355

Lee, V. E., & Burkam, D. T. (2002). *Inequality at the starting gate: Social background differences in achievement as children begin school*. Retrieved from https://www.epi.org/publication/books_starting_gate/

Marchant, G. J., & Finch, W. H. (2016). Student, school, and country: The relationship of SES and inequality to achievement. *Journal of Global Research in Education and Social Science, 6*, 187–196.

Morgan, R., & Mazzeo, J. (1988). *A comparison of the structural relationships among reading, listening, writing, and speaking components of the AP French Language Examination for AP candidates and college students* (Research Report No. RR-88-59). Princeton, NJ: Educational Testing Service. https://doi.org/10.1002/j.2330-8516.1988.tb00315.x

Muñoz, C. (2014). Contrasting effects of starting age and input on the oral performance of foreign language learners. *Applied Linguistics, 35*, 463–482. https://doi.org/10.1093/applin/amu024

Murray, D. E. (2008). From marginalization to transformation: How ICT is being used in ESL learning today. *International Journal of Pedagogies and Learning, 4*(5), 20–35. https://doi.org/10.5172/ijpl.4.5.20

Nævdal, F. (2006). Home-PC usage and achievement in English. *Computers & Education, 49*, 1112–1121. https://doi.org/10.1016/j.compedu.2006.01.003

Nelson, K. E., Welsh, J. A., Vance Trup, E. M., & Greenberg, M. T. (2011). Language delays of impoverished preschool children in relation to early academic and emotion recognition skills. *First Language, 31*, 164–194. https://doi.org/10.1177/0142723710391887

Ragan, L., & Jones, S. (2013). *The global English language learning (ELL) market*. Retrieved from http://www.ednetinsight.com/news-alerts/voice-from-the-industry/the-global-english-language-learning--ell--market.html

Sackett, P. R., Kuncel, N. R., Arneson, J. J., Cooper, S. R., & Waters, S. D. (2009). *Socioeconomic status and the relationship between the SAT and Freshman GPA: An analysis of data from 41 colleges and universities* (Research Report No. 2009-1). New York, NY: College Board.

Saegert, S. C., Adler, N. E., Bullock, H. E., Cauce, A. M., Liu, W. M., & Wyche, K. F. (2007). *Report of the APA task force on socioeconomic status*. Washington, DC: American Psychological Association.

Sasaki, M. (2007). Effects of study-abroad experiences on EFL writers: A multiple-data analysis. *Modern Language Journal, 91*, 602–620. https://doi.org/10.1111/j.1540-4781.2007.00625.x

Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

Sockett, G. (2014). *The online informal learning of English*. New York, NY: Palgrave Macmillan. https://doi.org/10.1057/9781137414885

Wainer, J., Vieira, P., & Melguizo, T. (2015). The association between having access to computers and Internet and educational achievement for primary students in Brazil. *Computers & Education, 80*, 68–76. https://doi.org/10.1016/j.compedu.2014.08.007

Warschauer, M. (2000). The changing global economy and the future of English teaching. *TESOL Quarterly, 34*, 511–535. https://doi.org/10.2307/3587741

Suggested citation:

Ling, G., & Gu, L. (2019). *Is greater access to English language learning associated with better performance on the* TOEFL Junior® *Comprehensive test? An exploratory investigation* (Research Report No. RR-19-17). Princeton, NJ: Educational Testing Service. https://doi.org/10.1002/ets2.12254

Action Editor: Donald Powers

Reviewers: Alexis Lopez and Katrina Roohr