



Title of Project:

Assessing English Writing in Multilingual Writers in
Higher Education: A Longitudinal Study

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Final Report

Motivation for the Research

The population of multilingual students (i.e., students who are proficient in more than one language) in higher education has become larger and more complex (Ferris, 2016). In the United States, international students (i.e., individuals enrolled in higher education who are on temporary student visas; Andrade, 2006) have been increasing (Institute of International Education, 2016). Furthermore, a greater number of U.S.-educated multilingual students, including immigrants and Generation 1.5 students (i.e., the children of first-generation immigrants), have begun to attend U.S. institutions of higher education (Ferris, 2016; Roberge, Siegal, & Harklau, 2009).

English writing skills are important components of multilingual students' successful academic performances in English-medium higher education. Despite the essential roles of writing skills and an increasing number of multilingual students enrolled in higher education, surprisingly little research has been conducted on how multilingual students develop their multilingual writing skills over time in higher education. In addition, less attention has been drawn to the roles of cognitive skills (e.g., attention) and language features (e.g., lexical sophistication) on the longitudinal development of multilingual writing. Furthermore, recent and sophisticated writing models (e.g., Hayes & Berninger, 2014) have not been assessed in multilingual contexts. Additionally, the longitudinal development relationship among writing, reading, and vocabulary knowledge in English in multilingual writers is not clear.

To address these research gaps, the purpose of the dissertation was to investigate the longitudinal development of English writing for multilingual students in higher education in relation to language skills and knowledge (vocabulary and reading), cognitive skills and knowledge (attention, working memory, and general knowledge), and language features (academic word use and language burst lengths [i.e., the number of characters produced between pauses]). The dissertation was informed by a recent model of writing (i.e., Hayes & Berninger, 2014).

Research Questions

The dissertation addressed three main research questions.



1. How do initial levels of general cognitive/language resources and years of English immersion instruction predict the initial level of English writing scores and changes in English writing scores in multilingual undergraduate students?
2. What are the longitudinal relationships among English writing scores, burst length, and academic word use in multilingual undergraduate students?
3. What are the longitudinal relationships among English writing, reading, and vocabulary in multilingual undergraduate students?

Research Methodology

Participants. A total of 77 undergraduate multilingual students from a research-oriented university located in the U.S.A. participated. Participants were from various countries around the world, such as Colombia, Ethiopia, India, Iran, Mexico, Pakistan, Venezuela, Viet Nam, and Zimbabwe. Forty-six students were international students, while 31 students were non-international students (i.e., citizens and residents).

Procedure and measures. The dissertation used longitudinal data (i.e., two sources of data that were collected over a six-month interval): Time 1 and Time 2. In Time 1, participants attended one session that lasted around two hours. In this session, participants provided demographic information (i.e., age, major, and gender) and English learning backgrounds. Participants then completed a set of six test batteries in a counterbalanced order: an English reading comprehension test, an English writing test, an English vocabulary test, an attention test, a working memory capacity test, and a general knowledge test. In Time 2, participants attended one session that lasts around 1.5 hours. In this session, they took a set of three test batteries (i.e., English vocabulary, reading, and writing tests) in a counterbalanced order.

Second language (L2) writing skills were based on holistic scores of writing quality using writing prompts written for the Scholastic Aptitude Test. Student essays were evaluated using a 6-point rating scale developed for the SAT. Five general cognitive resources based on the Hayes-Berninger model (2014) were measured: attention (measured by a Stroop test; Stroop, 1935), long-term memory related to general knowledge (Roscoe, Crossley, Snow, Varner, & McNamara, 2014), vocabulary knowledge (measured by vocabulary sections of Gates-MacGinitie Reading Skill tests, Level 10/12, Fourth Edition; MacGinitie, MacGinitie, Maria, & Dreyer, 2002), working memory (measured by a running span task; Kim, Payant, & Pearson, 2015), and reading skills (measured by reading comprehension sections of Gates-MacGinitie Reading Skill tests, Level 10/12, Fourth Edition; MacGinitie et al., 2002).

Statistical analysis. Latent change score models (McArdle, 2009) were used, which create and test latent change scores using observed scores repeatedly measured over time.

Summary of Findings

Five main findings are discussed. First, multilingual students' gains in writing scores tended to rise as a function of lower initial levels of English writing scores, English reading scores, general knowledge scores, and academic word percentages found in essays. That is, greater gains in writing scores were related to multilingual students who received lower writing scores, lower reading scores, and lower general knowledge scores and who produced lower percentages of academic words at the initial time of measurement. This finding supports a "poor get richer" scenario rather than "rich get richer" (i.e., the Matthew effect; Stanovich, 1986), such that initial lower levels may leave greater potential for growth in better producing persuasive essays in the process of being immersed in English academic contexts in higher education.



Second, multilingual students' gains in English writing scores co-occurred with their increases in academic words and their gains in English reading scores. This finding expands previous cross-sectional research that has reported the importance of L2 reading in L2 writing (Belcher & Hirvela, 2001; Carson et al, 1990; Pae, 2018) and the importance of the use of academic words in academic writing (Coxhead 2012; He & Shi, 2012). This dissertation reports that greater gains in writing ability tend to go hand-in-hand with greater gains in reading ability and greater gains in the use of academic words.

Third, in relation to cognitive resources and writing score gains over time, working memory predicted writing score changes, such that higher levels of working memory capacity tended to relate to greater gains in writing scores. This indicates that higher working memory capacity may help students quickly learn how to coordinate writing processes including planning, sentence generation, and reviewing, which may facilitate better writing performance over time (Hayes, 2009; Kellogg, 2008).

Fourth, no role of years of English immersion years was found in predicting initial English writing scores or English writing score changes in multilingual undergraduates who included both international students and Generation 1.5 students. Thus, when defining L2 learners in terms of writing ability, using a simple distinction between international students and Generation 1.5 students may not be the best approach because longer years of English immersion instruction do not imply higher levels of English writing ability in producing persuasive essays. As L1 speakers need to learn academic writing (Connerty, 2009; Hulstijn, 2015), multilingual writers also need to learn academic writing regardless of their years of English immersion instruction.

Lastly, the presence of a latent variable of English literacy informed by English writing, reading, and vocabulary was supported over time. In addition, no gains in the latent mean scores were found, though writing scores showed an increase over time. Thus, while writing scores increased over time, reading and vocabulary scores remained the same. This may be because taking academic courses in higher education may facilitate students' learning of English writing skills (specifically in producing persuasive essays) but may not facilitate English reading skills and vocabulary knowledge.

Implications

Based on findings of the dissertation, two main pedagogical implications are discussed. First of all, findings suggest the importance of diagnosing multilingual undergraduates' writing skills after matriculation so that the multilingual students who have lower levels of English writing skills can benefit from writing instruction in their earlier academic years. To do so, the first necessary step would be for institutions to assess all incoming multilingual students' writing ability after matriculation. Assessing all multilingual students, including Generation 1.5 and international students who have been educated in the English language, is important because longer lengths of English immersion instruction do not guarantee proficient English writing skills as found in this dissertation. Thus, institution-level support systems that can cater for various multilingual students' needs in academic writing would be important (Andrade, 2006; Lee, 2018).

Second, given that writing score gains are related to reading score gains and academic word percentage gains, multilingual writing classes may do well to focus not only on English writing itself, but also reading and academic vocabulary. For example, writing assignments can include reading elements. Also, explicit teaching of academic words may help students make the greater use of academic words (Laufer, 1994). In addition, considering that higher English writing scores were predicted by greater English vocabulary knowledge and greater general knowledge, multilingual students may benefit from learning more English vocabulary and having more general knowledge (including that related to English-related literature and history) for more effective use of knowledge resources stored in long-term memory (Chenoweth & Hayes, 2001).



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