

How Do Different Processes of Speaking and Writing affect Syntactic Complexity in Child Second Language Production?

Haerim Hwang, Hye Young Jung & Hyunwoo Kim
University of Hawai'i at Mānoa
haerim@hawaii.edu, hyjung@hawaii.edu, hyunwoo2@hawaii.edu

Keywords: corpus linguistics, child second language acquisition, production modality, syntactic complexity, proficiency

Background: This study investigates how different processes involved in writing and speaking affect child second language (L2) learners' sentence production. Despite numerous learner corpora studies on the assessment of syntactic complexity in writing^{[1],[2],[3]}, less is known about how syntactic complexity in learners' production varies depending on production modalities, i.e., writing versus speaking. Moreover, most studies measuring syntactic complexity in L2 written production have focused on advanced-level adult learners. The current study addresses these gaps by comparing syntactic complexity in written and spoken data collected from child L2 learners of English with beginning-level proficiency.

Writing allows a more efficient control of planning and production and requires less cognitive load compared to speaking^{[4],[5]}. Drawing on such differences in cognitive mechanisms between the two production modalities, we ask how they affect child L2 learners' syntactic complexity in writing and speaking, and whether syntactic complexity features in written production better predict learner proficiency than those in spoken production.

Method: Seventy-six beginning-level Korean-speaking child L2 learners of English (mean age: 11.26) completed two production tasks where they described their teacher or friend, one in writing and the other in speech. Productions from each task comprised written and spoken corpora, respectively. Participants' proficiency was assessed through an independent test developed based on the yearly assessment implemented by Korea Institute for Curriculum and Evaluation. For the written and spoken corpora, seven syntactic complexity indices^[2] were analyzed: mean length of sentence (MLS) as a measure of length of production, clauses per sentence (C/S) as a measure of sentence complexity, dependent clauses per T-unit (DC/T) as a measure of subordination, coordinate phrases per T-unit (CP/T) and T-units per sentence (T/S) as measures of coordination, and complex nominals per T-unit (CN/T) and verb phrases per T-unit (VP/T) as measures of particular structures. These measures were computed using the Tool for the Automatic Analysis of Syntactic Sophistication and Complexity^[6].

Results: To compare how syntactic complexity measures differ between the written and spoken corpora, linear mixed effects regression was conducted on each complexity measure, with modality (written vs. spoken) as a fixed effect. Results showed that learners used longer sentences (MLS: $p < .05$), more subordination (DC/T: $p < .001$), and more verb phrases per T-unit (VP/T: $p < .001$) in writing than in speaking. These results indicate that writing involved longer and more complex structures than speaking. In contrast, a greater number of coordination was found in speaking than in writing (CP/T: $p < .001$). Such more coordination appears to stem from the learners' processing strategy of using *and* to make a syntactic unit larger under much cognitive pressure associated with speaking activities. Next, to examine which production modality better explains learner proficiency, a step-wise multiple regression model was fitted to each of the written and spoken corpora, including complexity measures as predictors of participants' proficiency scores. Results showed that the model for the written corpus ($R^2 = .197$) explained a greater amount of variance in proficiency scores than the model for the spoken corpus ($R^2 = .048$). These findings indicate that the different cognitive processes underlying writing and speaking influence the way that beginning-level child L2 learners produce sentences in writing and speaking tasks.

References

- [1] Cumming, A., Kantor, R., Baba, K., Erdosy, U., Eouanzoui, K., & James, M. (2005); [2] Lu, X. (2011); [3] Wolfe-Quintero, K., Inagaki, S., & Kim, H.-Y. (1998); [4] Andringa, S. J., de Glopper, C. M., & Hacquebord, H. I. (2011); [5] Grabe, W., & Kaplan, R. B. (1996); [6] Kyle, K. (2016)