John Benjamins Publishing Company

Relative language proficiency affects language production in unimodal and bimodal bilinguals

Janet G. van Hell
Department of Psychology and Center for Language Science, Pennsylvania State University

In their keynote paper, Lillo-Martin, Müller de Quadros and Chen Pichler (2016; henceforth LQC) present the Language Synthesis model to capture language production in unimodal and bimodal bilinguals. Using basic concepts of Minimalism and Distributed Morphology, the Language Synthesis model proposes an architecture in which feature bundles from two languages (roots, functional morphemes, and/or vocabulary items) enter into a single derivation. A basic assumption is that bilinguals differ from monolinguals only in having two sets of items from each language to enter into a single derivation.

A strength of the Language Synthesis model is that it is parsimonious and seeks to explain a range of phenomena in bilingual language production using a minimal set of assumptions. However, the model's assumption that bilinguals only differ from monolinguals in having two systems (rather than one) entering a single output is challenged by a large body of psycholinguistic and neurocognitive evidence. This evidence shows that bilinguals cannot turn off one language and that the co-activation of two languages can emerge in patterns of language processing unique to bilinguals (for reviews, see Li, Legault, & Litcofsky, 2014; Van Hell & Tanner, 2012). The Language Synthesis model further assumes a symmetrical contribution of the two languages to the output, which appears to limit its scope to the small group of balanced bilinguals who are more or less equally proficient in their two languages. The majority of bilinguals are more proficient in one of their two languages, or shift in language dominance in the course of their life, as is the case for many heritage speakers. A large body of empirical evidence indicates that relative proficiency in the bilinguals' two languages affects the nature of cross-linguistic transfer as well as patterns of code-switching. Such proficiency-related

effects on cross-language interactions have been observed in unimodal bilinguals (for a review, see Van Hell & Tanner, 2012), but also in bimodal bilinguals, as will be outlined below.

The empirical basis of the Language Synthesis model is largely constrained to hearing bimodal bilinguals, in particular hearing children who grow up in households where sign language is the main language of communication, but who use spoken language to communicate outside the home. Most of the work discussed by LQC are single- or multiple-case studies, owing to the fact that hearing bimodal bilinguals are a relatively small subset of all bilinguals who use sign language and oral language, including deaf bilinguals. The model's empirical basis is thus somewhat restricted and does not take into account the substantially larger literature that examined the cross-linguistic influence of sign language on written language production in deaf children and adults (e.g., Ivimey, 1981; Taeschner, Devescovi, & Volterra, 1988; Quigley & King, 1980; Quigley, Power, & Steinkamp, 1977; Singleton, Morgan, DiGello, Wiles, & Rivers, 2004; Van Beijsterveldt & Van Hell, 2009; 2010; 2012; Wilbur & Quigley, 1975; Williams & Mayer, 2015; Wolbers, Bowers, Dostal, & Graham, 2014). Not only does this literature provide a more comprehensive empirical basis for cross-linguistic interactions between sign languages and oral languages, it also demonstrates that variations in sign language proficiency modulate patterns of cross-linguistic transfer.

For example, a large-scale study examining morpho-syntactic structures in English written language production by profoundly deaf children aged between 10 and 19 years, conducted in the USA, found that deaf writers tended to omit the article (e.g., 'Boy is sick') or subject and object noun phrases ('John chased the girl and he scared Ø') in contexts where they were obligatory (Quigley & King, 1980; Wilbur & Quigley, 1975). Similar patterns have been found in deaf individuals' writing in Italian (Taeschner, Devescovi, & Volterra, 1988) and in emails written in English by hearing bimodal bilinguals (Bishop & Hicks, 2005). These patterns can be interpreted to relate to transfer from sign language to written language, as American Sign Language (ASL) and Italian Sign Language (LIS) do not use articles and subject and object noun phrases in the same way as spoken/written English and Italian do.

To examine how variations in sign language proficiency modulate cross-linguistic patterns of transfer, Van Beijsterveldt and Van Hell (2009, 2010, 2012) compared the writing of deaf children and adults who differed in sign language proficiency (as measured by sign language proficiency tests). In one study, they compared evaluative expressions in narratives written by 11- and 12-year-old deaf children who were proficient in sign language with those of deaf peers who were low-proficient in sign language, and hearing unimodal bilingual and monolingual peers. Evaluative expression is an important narrative technique in signed

language, and signed language has many channels for conveying evaluation (Reilly, 2001). Van Beijsterveldt and Van Hell found that proficient signers used more evaluative expressions in their written narratives than low-proficiency signers, hearing bilingual and monolingual children did. This finding indicates that only children who are proficient in signed language transfer their knowledge of evaluative expression in signed language to enrich their narratives in written language.

Van Beijsterveldt and Van Hell (2012) also examined the use of grammatical and lexical markers of temporal reference in personal-experience narratives and expository texts written by 76 deaf individuals at different ages (11–12-year-olds, 15–16-year-olds, adults), and their hearing peers. They distinguished grammatical tense marking, which is different in Sign Language of the Netherlands (SLN) and oral Dutch, and lexical marking of temporal reference, which occurs both in SLN and oral Dutch. It appeared that the proficiently signing children omitted obligatory tense marking by dropping finite verbs or using infinitives more often than their low-proficiently signing peers, in both narratives and expository texts. In addition, the proficient signers made more errors in tense agreement between temporal adverb and finite verb than their low-proficiently signing peers. In contrast, proficient and low-proficiency signers (and hearing writers) did not differ in the use of lexical markers of temporal reference, i.e., the structure that occurs both in SLN and oral Dutch.

Since Grosjean's (1989) seminal paper stating that a bilingual is not two monolinguals in one, a large body of empirical studies has shown that bilingual language processing is not characterized by merely combining two languages. Rather, bilinguals' unique patterns of language use are often driven by variations in language proficiency in their two languages, and this has been found for both unimodal and bimodal bilinguals. Not taking variations in relative language proficiency into account limits the scope and explanatory power of the Language Synthesis model. If the model "is intended to capture a wide range of bilingual effects across any language pair" (p. 1, abstract), the model needs a mechanism to account for the impact relative language proficiency has on unimodal and bimodal language production by, for example, adding proficiency-related weights to the L1 and L2 input that enters the language output.

Acknowledgements

References

Bishop, M., & Hicks, S. (2005). Orange eyes: Bimodal bilingualism in hearing adults from Deaf families. *Sign Language Studies*, 5, 188–230. doi: 10.1353/sls.2005.0001

Grosjean, F. (1989). Neurolinguists, beware! The bilingual is not two monolinguals in one person. *Brain and Language*, 36, 3–15. doi: 10.1016/0093-934X(89)90048-5

Ivimey, G.P. (1981). The production and perception by profoundly deaf children of syntactic time cues in English. *British Journal of Educational Psychology*, 51 (1), 58–65. doi: 10.1111/j.2044-8279.1981.tb02455.x

Li, P., Legault, J., & Litcofsky, K. A. (2014). Neuroplasticity as a function of second language learning: Anatomical changes in the human brain. *Cortex*, 58, 301–324. doi: 10.1016/j.cortex.2014.05.001

Lillo-Martin, D., Müller de Quadros, R., & Chen Pichler, D. (2016). The development of bimodal bilingualism: implications for linguistic theory. *Linguistic Approaches to Bilingualism, 6*(6), 719–755. doi: 10.1075/lab.6.6.01lil

Quigley, S.P., & King, C.M. (1980). Syntactic performance of hearing-impaired and normal hearing individuals. *Applied Psycholinguistics*, 1, 329–356. doi: 10.1017/S0142716400000990

Quigley, S. P., Power, D. J., & Steinkamp, M. W. (1977). The language structure of deaf children. *Volta Review*, 79, 73–84.

Reilly, J.S. (2001). From affect to language. Development of evaluation in narrative in spoken English and American Sign Language. In L. Verhoeven, & S. Strömqvist (Eds.), *Narrative development in a multilingual context* (pp. 399#x2013;416). Amsterdam: John Benjamins. doi: 10.1075/sibil.23.15rei

Singleton, L., Morgan, D., Di Gello, E., Wiles J., & Rivers, R. (2004). Vocabulary use by low, moderate, and high ASL-proficient writers compared to ESL and monolingual speakers. *Journal of Deaf Studies and Deaf Education*, 9, 86–103. doi: 10.1093/deafed/enh011

Taeschner, T., Devescovi, A., & Volterra, V. (1988). Affixes and function words in the written language of deaf children. *Applied Psycholinguistics*, 9, 385–401. doi: 10.1017/S0142716400008079

Tur-Kaspa, H., & Dromi, E., 2001, Grammatical deviations in the spoken and written language of Hebrew-Speaking children with hearing impairments. *Language, Speech and Hearing Services in Schools*, 32, 79–89. doi: 10.1044/0161-1461(2001/007)

Van Beijsterveldt, L.M., & Van Hell, J.G. (2009). Evaluative expression in deaf children's written narratives. *International Journal of Language and Communication Disorders*, 44, 675–692. doi: 10.1080/13682820802301498

Van Beijsterveldt, L.M., & Van Hell, J.G. (2010). Lexical noun phrases in texts written by deaf children and adults with different proficiency levels in sign language. *International Journal of Bilingual Education and Bilingualism*, 13, 439–468. doi: 10.1080/13670050903477039

Van Beijsterveldt, L.M., & Van Hell, J.G. (2012). The development of deaf writers' tense marking in narrative and expository text: a bimodal bilingual perspective. *Bilingualism: Language and Cognition*, 15, 128–144. doi: 10.1017/S1366728910000465

Van Hell, J.G., & Tanner, D. (2012). Second language proficiency and cross-language lexical activation. *Language Learning*, 62, 148–171. doi: 10.1111/j.1467-9922.2012.00710.x

Wilbur, R.B., & Quigley, S.P. (1975). Syntactic structures in the written language of deaf children. *Volta Review*, 77, 195–203.

Williams, C., & Mayer, C. (2015). Writing in young deaf children. *Review of Educational Research*, 85, 630–666. doi: 10.3102/0034654314564882

Wolbers, K.A., Bowers, L.M., Dostal, H.M., & Graham, S.C. (2014). Deaf writers' application of American Sign Language knowledge to English. *International Journal of Bilingual Education and Bilingualism*, 17, 410–428. doi: 10.1080/13670050.2013.816262

Author's address

Janet G. van Hell
Department of Psychology and Center for Language Science
Pennsylvania State University
414 Moore Building
University Park, PA 16802
USA

jgv3@psu.edu