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Authors
Chung, Wai Men Noel
Segalowitz, Norman

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Language-Specific Grammatical Attention in Second Language Proficiency

Wai Men Noel Chung (wmn_chun@alcor.concordia.ca)
Norman Segalowitz (norman.segalowitz@concordia.ca)
Department of Psychology & Centre for the Study of Learning and Performance, Concordia University
7141 Sherbrooke Street West, Montréal, QC H4B 1R6 Canada

Introduction
The present study investigated whether attention control for grammatical elements plays a role in second language (L2) proficiency. The meanings of grammatical elements (e.g., grammatical morphemes, inflections, and word order patterns) derive from how they relate various message elements to each other. Unlike nouns, adjectives and other content words, the referents of grammatical elements cannot be "experienced directly in our perceptual, sensorimotor, and practical dealings with the world" (Slobin, 1996, p. 91). For instance, in The teacher was reading a new book, the elements (the/a, was, -ing) refer to definiteness, time, and how the action unfolded. These meanings are not directly available to perception in the same way as are those of teacher, read, new, and book. Because not all languages use grammatical elements in the same way, L2 learners may experience particular difficulty in their use (Slobin, 1996).

Chung and Segalowitz (2003), using a non-matching to sample task, found that L2 proficiency correlated positively with performance in a task of L2 attention control for grammatical elements (pronouns, prepositions, copula forms, and conjunctions). A potential confound, however, was that subjects (Ss) may have used meta-linguistic knowledge about grammatical categories to perform the task, knowledge that may possibly be correlated with L2 proficiency. The present study attempted to replicate that study by removing the metalinguistic confound. In the grammatical condition, only spatial prepositions were used, divided into four subsets (e.g., above/over/...; below/under/...; farbeyond/...; and close/near/...). Two control conditions used non-grammatical words unrelated to language structure: concrete words, subsets of "animal" (cat/dog/...; ant/bee/...; trout/salmon/...; sparrow/eagle/...); and abstract words, subsets of "qualities" (happy/glad/...; smart/clever/...; polite/honest/...; and beautiful/prety/...).

Method
Bilingual undergraduates (n=32; First language (L1) = English; L2=French) performed the following tasks.

Proficiency was operationalized as efficiency of accessing word meaning in a lexical categorization task. In separate L1 and L2 blocks, bilinguals were required to panel press to indicate whether a word referred to a living or non-living object (136 trials in each language). Intra-individual variation in reaction time (based on the coefficient of variation—CV) was the measure of processing efficiency (Segalowitz & Segalowitz, 1993). L2-specific measures were obtained by partialling out L1 from L2 measures.

Attention control was operationalized as efficiency of attention shift judgments in a non-matching-to-sample task. In a Non-Match condition, Ss saw a sample word at the bottom of the screen and 4 display words across the top. They had to press one of 4 buttons to indicate the position of a word belonging to a different subcategory than the sample. L1 and L2 versions of the task were created to measure attention control for grammatical (GRAM), concrete (CONC), and abstract stimuli (ABST) (40 experimental trials each). In a Match condition, Ss had to select a stimulus that matched the sample. CVs provided the measure of processing efficiency. Attention control indices were computed by partialling out Match CVs from Non-Match CVs. L2-specific measures were obtained by partialling out L1 from L2 attention indices.

Results
The data were submitted to hierarchical multiple regression with L2-specific proficiency as the dependent measure. In Step 1, measures of L2-specific attention control for abstract (ABST) and concrete (CONC) stimuli were entered. In Step 2, measures of attention control for grammatical stimuli (GRAM) were entered. For the 16 most proficient Ss, in Step 1 (CONC, ABST), $R^2 = .110 \text{ (n.s.)}$, and in Step 2 (GRAM), $R^2 \text{ change} = .428 \text{ (} p = .005 \text{)}. \text{For the 16 least proficient Ss, total } R^2 = .020 \text{ (n.s.)}$.

Discussion
In more highly proficient bilinguals, efficiency of L2 attention control for grammatical elements accounted for 42% of unique variance of L2 proficiency, after controlling for non-grammatical attention. Because all L2 measures had been residualized against L1, the results reflect a language-specific form of attention, not general processing abilities. This replicates Chung and Segalowitz (2003), without the potential metalinguistic confound.

References
