

# EARLY EXPOSURE TO AN L2 PREDICTS GOOD L1 AS WELL AS GOOD L2 WRITING

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**Abstract.** Recent research shows that bilinguals with relatively advanced skills tend to have cognitive advantages compared to their monolingual peers (Bialystok, 1992; Hakuta, 1986; Ransdell, Arecco & Levy, 2001). The research described in this chapter focuses on the relation between the age of first exposure to an L2 and the development of higher cognitive skills, such as skills used in L1 and L2 writing. Spanish-English, Estonian-English and Polish-English bilinguals were divided into two groups according to the age of their first exposure to their L2. Participants in the early L2 group were first exposed to an L2 before the age of twelve. The late L2 group was comprised of participants who were exposed to an L2 at the age of twelve or older. Both groups wrote two 10-minute essays in a counterbalanced design. One essay was in L1 and the other in L2 (English). Compared with the late L2 group, the early L2 group produced better quality writing with more fluency in both L1 and L2. One explanation for the observed differences is that participants in the early L2 exposure group may simply be more advanced in their English language skills. A second possibility is that early exposure to an L2 enhances general cognitive abilities. The present findings that early exposure to an L2 is correlated with better L1, as well as L2 writing fluency and quality, indicates support for the improvement of general cognitive, as well as linguistic skills.

**Keywords:** bilingualism, critical period, early L2 exposure, cognitive abilities, writing fluency, writing quality.

## 1 INTRODUCTION

L2 studies have shown that cognitive advantage can be linked to bilingual ability (see Hakuta, 1986, for review). Bilinguals have been shown to have advantages over monolinguals in various cognitive tasks, *e.g.*, concept formation, rule-discovery, the allocation of new strategies for specific tasks, verbal originality, divergent thinking, and creative thinking (Hamers, 1996; Nayak, Hansen, Krueger, & McLaughlin, 1990; Ransdell, Arecco & Levy, 2001; Sasaki, 1993). Aronsson (1981) argued that bilingual children develop metalinguistic awareness, the ability to separate language

form from meaning, earlier than their monolingual peers. Bilinguals have the experience of using two different grammars, two different ways of constructing linguistic form and this aids their development. Aronsson found that pre-school bilingual children were more successful than monolingual children when asked to make grammatical corrections and when asked to eliminate syntactic errors. She suggested, as have others, that children become more sensitive to grammatical errors when learning to inhibit the use of one language while using another (Galambos & Goldin-Meadows, 1990). There is also evidence that early exposure to an L2 facilitates many aspects of bilingual development, especially phonological knowledge. The present study investigates the relation between the timing of L2 exposure and subsequent written language production, not only in L2, but also in L1.

### *1.1 Early L2 exposure and L1 skills*

As little as two or more years of formal training in a second language has been linked to superior L1 skills (Bialystok, 1992; Thomas, 1988; Mohanty & Babu, 1983). Bialystok (1992) observed that better control of attention to linguistic input is achieved by bilingual children and suggested that selective attention is enhanced by early experience with two languages. She administered a task to comparable mono and bilingual children between three and five years of age that tested conceptualization of number under a perceptually-distracting condition. Children were presented with towers made out of either Lego or Duplo blocks. Lego and Duplo blocks differ in only one aspect. Duplo blocks are eight times the volume; therefore, a tower made out of Duplo blocks will be twice as large. Children were told that the towers represent apartment buildings and that one family lives in each block (floor) regardless if the blocks are big or small. They were also told that the answer was dependent on the number of blocks, not on the height of the towers. Two apartment towers, one made of Lego blocks and the other made of Duplo blocks, were shown to each child. Children were asked to indicate which tower could hold more families. Bilingual children consistently performed better in this task than do monolingual children. The study suggests that the superior performance demonstrated by bilingual children is attributable to early experience with two languages, the learning of language structure for two different linguistic systems, and increased control of attention to linguistic processing associated with secondary language acquisition (Bialystok, 1992). Bialystok (1992) concluded that bilinguals show cognitive advantages over monolinguals, and that these advantages are linked to the various skills developed in the course of learning a second language. Because bilinguals are used to seeing and hearing the names of things in two different languages, they are better prepared to process arbitrariness found in referential forms of language. Bilinguals are accustomed to communicating with different people in different languages, which may facilitate the access to different language forms that have the same meaning. Bilinguals also experience different customs and social relationships. Using language that is deeply rooted in culture leads to a greater awareness of semantic as well as pragmatic dimensions of word meanings. All of these different experiences potentially give bilinguals knowledge about the structure and function of language earlier than

L1s (Bialystok, 1992). Bialystok (1988) also found bilingual advantage on tasks requiring a high control of linguistic processing. She attributed the results of her study to the early exposure to dual language systems and the bilingual's frequent attention to formal aspects of language. Vygotsky (1962) stated that because bilinguals are able to express the same thought in different languages they can develop a greater awareness of the arbitrary properties of language than monolingual children.

### *1.2 Bilingualism and metalinguistic awareness*

According to Durgunoglu (1997), metalinguistic awareness refers to the attention given to the structural characteristics of a language instead of the utilization of the language for communicative purposes. Mohanty and Babu (1983) attempted to find an effect of bilingualism on metalinguistic abilities in the Kond tribal culture of India. They tested 180 bilingual and monolingual subjects from the same tribal culture and from three different age groups (10-12, 12-14, 14-16). There were 30 bilinguals and 30 monolinguals in each age group. All bilingual subjects were balanced bilinguals, meaning they were highly proficient in both languages, as tested by a translation task. Mohanty and Babu administered two tests to all participants, a nonverbal intelligence test and a metalinguistic ability test to measure three aspects of metalinguistic ability: the understanding of the arbitrariness of language, meaning and referent relationship, and the non-physical nature of words. He found that bilinguals performed better at the three tasks of the metalinguistic abilities test across all age groups. They attributed their findings to the effect that second language knowledge has on thought processes. They stated that bilinguals' ability to encode thoughts in two languages rather than one enables them to develop a different view towards language and its properties.

Mohanty and Babu further cite a study by Ben-Zeev (1977) in which she states that bilingual children develop a different kind of analysis towards language which transfers to other forms of cognitive structures. Nayak, Hansen, Krueger and McLaughlin (1990) stated that multilinguals might have certain skills that may help them in the processing of linguistic stimuli more effectively than monolinguals. They tested 24 multilingual and 24 monolingual adults in tasks involving language-learning strategies using an artificial linguistic system, which consisted of natural language-like grammar structures of varying degrees of complexity. Nayak *et al.* (1990) found that multilinguals performed better than monolinguals in learning the rules for syntax in an artificial language system. They attribute this finding to the experience multilinguals have with different language systems and their willingness and ability to search for rules. They also found a superior cognitive flexibility effect in multilinguals when trying to learn the rules of the artificial language. Multilinguals used a greater variety of strategies to learn the new language system than monolinguals suggesting that their superiority in language learning skills could be attributed to their greater flexibility in switching strategies (Nayak *et al.*, 1990). Nayak quotes a study by Ramsay (1980) in which 10 multilingual adults were compared against 10 monolingual adults in learning of a foreign language unknown to both groups (in this study, French). Ramsay (1980) found that multilinguals were

'successful learners'. They found useful techniques sooner than monolinguals did in learning a new language. For example, multilinguals practiced aloud and verbalized with no hesitation on the mental processes they were using. Thomas (1988) found that English-Spanish bilingual college students showed superiority over English monolingual students when learning French in a formal setting. The bilingual students performed significantly better than monolingual counterparts on tests of vocabulary and grammar. Thomas postulated that this outcome was due to the possibility that bilinguals used their metalinguistic awareness skills to enhance their performance on the assignments focused on language form. Furthermore, bilinguals wrote more understandable essays in French than did the monolinguals. Thomas suggests that metalinguistic awareness in bilinguals facilitated the careful observance of linguistic output focusing their attention on the message. Further analyses by Thomas (1988) revealed that the bilingual students who had studied Spanish in a formal setting for at least two years had advantages over the bilingual students who had learned Spanish informally at home. The former group performed significantly better on the grammar test but not on the vocabulary tests. Thomas (1988) suggests that the experience of language in a formal setting has more impact on the sensitivity to grammar than on the recognition of cognates (vocabulary).

With this past research in mind, the goal of the present study is to investigate the relation between early exposure to a second language and writing abilities in L1, as well as in L2. Experience in more than one language may endow the second language learner with a greater awareness of the structure and function of language than monolinguals (Bialystok, 1992). It is predicted that bilinguals who are exposed to a second language at an early age will write better in quality and fluency than bilinguals who were exposed to a second language later in life.

## 2 METHOD

### 2.1 *Participants*

The study included 40 Spanish-English bilinguals, 40 Polish-English bilinguals and 20 Estonian-English bilinguals. The Spanish sample was composed of student volunteers from psychology classes at Florida Atlantic University. The Polish sample was composed of psychology students from Florida Atlantic University and adults from the Polish community living in South Florida. The Estonian sample was composed of student volunteers from psychology classes at Tallinn Pedagogical University in Estonia. All students, except for some adults from the Polish sample, participated for extra credit in a college class. The average age of participants was 26.7 years. Of the Spanish sample, the average age was 26, and the Polish sample had an average age of 39. Estonian participants had a mean age of 21. The Spanish sample rated themselves as 80% in second language composite skill, which includes rating on how they write, understand, speak and understand written text in a second language (SD = 13.4), the Polish sample rated themselves as 77% in second language composite skill (SD = 15.2) and the Estonian sample rated themselves as 67% in second language composite skill (SD = 18.6).

All participants were divided in two groups based on a median split depending on the age of first exposure to L2. The participants in the early L2 exposure group ( $n = 58$ ) were first exposed to a second language before the age of 11, and the participants in the late L2 exposure group ( $n = 54$ ) were exposed to L2 after the age of 12. In the early L2 exposure group, there were 31 Spanish-English bilinguals, one Polish-English bilingual and 26 Estonian-English bilinguals. In the late L2 exposure group, there were 9 Spanish-English bilinguals, 35 Polish-English bilinguals, and 10 Estonian-English bilinguals. The early L2 exposure group rated themselves as 76% ( $SD = 15.2$ ) in second language composite skill, comparable to the late L2 exposure group, 72% ( $SD = 19.1$ ). Exposure age was determined on the basis of a single question asking participants to indicate how old they were when they 'learned' their L2.

## *2.2 Materials*

Participants were given a self-report of language fluency survey on which they rated their abilities in L1 and in L2 on a 4-point scale with four different dimensions: expressing thoughts in spoken language, understanding written language, understanding spoken language and expressing thoughts in written language. A nonverbal intelligence test was also given, the Cattell Culture-Fair test, which consists of 50 four-choice questions each of which include a series of simple line drawings (Cattell & Cattell, 1963). Estonian, Spanish and Polish translations of the Nelson-Denny Reading Comprehension Subtest, form G, (Brown, Fishco, & Hanna, 1993) were created by professional translators. A program called Fauxword (Levy & Ransdell, 1995) measured writing fluency by capturing each keystroke as the participant types and replaying them on request in real or fast time. The program measures words typed per minute by recording complete words created during writing, even those later deleted and calculating a final word count. Typing to dictation is used as a measure of simple words per minute (wpm) and is used to qualify the obtained writing fluency measure.

## *2.3 Design and procedure*

Testing occurred in one session. Two 10-minute essays were written, in a counter-balanced design, as single tasks, one in L1 and one in L2. During the session, participants signed consent forms in L1 and then completed these tasks in the following order: the Cattell Culture-Fair test for 20 minutes, and the Nelson-Denny reading comprehension subtest in L1 for 20 minutes. After a 5-minute break, they were asked to write two baseline essays, one in L1 and the other in L2. Dependent variables included writing fluency (words per minute) and the quality scores of the essays. Writing fluency was measured by using Fauxword (see Levy & Ransdell, 1995). Writing quality was based on the essay-sorting task described by Madigan (1991), in which each essay is evaluated holistically and rated based on organization, clarity, and development of ideas. Writing quality scores were derived from the average of two peer raters evaluating holistically each essay in English or an English translation. Each rater evaluated 20 essays at a time and re-evaluated them again one

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