

Connections between Aspects of Cognitive and Linguistic Abilities of Bilingual Children and Some Major Issues in Second Language Acquisition

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This paper discusses a number of articles on bilingual children. These articles focus on two main issues : 1) the kinds of cognitive processes (as well as other processes) that may affect a bilingual's acquisition of a second language and 2) the kinds of effects bilingualism may have on the cognitive processes of bilinguals. These studies shed light on the acquisition process of a second language and lend support to some of the major issues in the field of second language acquisition.

If the content of the articles is to be comprehensible, a few of the terms used in the field of second language acquisition must be defined. The abbreviations L1, L2, and TL will often be used in this paper. L1 refers to a person's first language and L2 refers to a person's second language. TL (target language) refers to the native language that is spoken in a community. The TL is the language the second-language learner is striving to learn. These definitions are straightforward and should not cause any confusion.

This paper is about bilinguals, so a working definition of the term bilingual should be attempted. There are social, political, and individual factors related to bilingualism which create difficulties in forming precise definitions. Nevertheless, one satisfactory way of defining this term is to state what it is not. A bilingual is *not* a person who has an equal level of ability in two languages. The levels of ability are unequal because a bilingual uses each language in specific situations, with certain people, and to discuss certain topics. Consequently, a bilingual is said to have a dominant language in which he or she is more proficient. An acceptable definition, although not without its problems, may be that bilingualism involves the daily use (to some relative degree) of two languages (Harding and Riley, 1986, p.22, pp.31-32).

A discussion of the term bilingual would not be complete without the mention of manner of acquisition. *Simultaneous acquisition*, a term most often used in reference to bilinguals, refers to learning two languages at the same time. This type of acquisition is said to start at birth. *Successive acquisition* on the other hand, refers to learning a second language after the first language has been learned or at the time the first language is being learned. Successive acquisition can take place in various contexts and involves people of all ages (Harding and Riley, 1986, pp.40-42 ; Bialystock, 1991, p.1). In most cases, the articles discussed in this paper deal with bilinguals who have acquired or are acquiring their second language successively.

Some of the major issues in the field of second language acquisition have direct bearing on the content of the articles. One issue of controversy is whether or not first and second language acquisition processes are the same. There are two main theories concerning this issue. One theory is the "transfer" position, which states that there is "interference" from the first language when the second language is being learned. As proficiency in the second language improves, elements of the first language that caused interference "gradually" disappear. According to this theory, "negative transfers" result in errors, while "positive transfers" result in a match between the elements of the first and second languages. In effect, the transfer position states that the two acquisition processes of the first and second languages are not exactly the same. Another theory is the "developmental" position. This theory states that the acquisition processes of the first and second languages are governed by the same processes. Accordingly, there is a correspondence between the developmental stages and techniques used in first and second language acquisition. Given the fact that research conducted to support these theories has been inconclusive, many theorists subscribe to a more sensible view, and that is some aspects of L1 and L2 acquisition can be explained by the transfer position and some by the developmental position (Harding and Riley, 1986, pp.64-65 ; Klein, 1986, pp.24-25).

Implicit in the discussion of the two theories is the issue of similarities and differences in first and second language acquisition. The second language acquisition process of an adult has the following characteristics: 1) difficulty in learning a language, often leading to imperfect pronunciation skills ; 2) "conscious" effort to learn a language; 3) the use of advanced cognitive skills ; 4) relatively high motivation ; and 5) an "artificial" language-learning context. The characteristics of the first language acquisition process are somewhat dissimilar: 1) ease in learning a language, leading to perfect pronunciation skills ; 2) "unconscious" learning of a language ; 3) cognitive skills still in development; 4) motivation unnecessary; and 5) a "natural" language-learning context. There are similarities between the two acquisition processes. Both first and second language learners make use of similar strategies and cognitive processes (Titone and Danesi, 1985, pp.89-90).

Major cognitive processes involved in second language acquisition are worth mentioning as well. Brown (1987) states cognitive processes, which all people possess, play a major role in language acquisition (p.60,p.79). He outlines eight types of learning linked to second language acquisition. (Seven of these will be mentioned.) The first type is *signal learning* : the exposure to language brings upon a reaction. The second type is *stimulus-response* : sounds and words are gradually learned by the correction of errors and by "conditioning." The third type is *Chaining*: more complex sound and sentence patterns are learned. The fifth type is *multiple discrimination*: various meanings of a word are distinguishable and grammatical rules are altered for the

second language. The sixth type is *concept learning* : “linguistic concepts” (rules of a language) are learned through the interaction between language and cognition. The seventh type is *principle learning*: a “linguistic system” is formed which involves the integration of language rules. The eighth type is *problem solving* : in the process of learning how to use and to understand a language, the learner makes use of the learning strategies just mentioned (pp.80-81). What is evident from this description is that cognitive processes are involved in the developmental stages of second language acquisition. This is not a complete list, however. Other cognitive processes are involved as well.

One of the other cognitive processes Brown (1987) mentions is “transfer.” This term was mentioned earlier, but perhaps it was not made clear that this is a cognitive process. Newly acquired knowledge is connected to what one already knows, which can have negative or positive consequences. Transfer, then, is a universal cognitive process (p.81).

In her article, Wong Fillmore (1991) addresses the issue of variation in second language acquisition. She uses her research on bilingual children as groundwork for her model of language acquisition. This model allows for the inclusion of various complex factors and gives insightful answers to the issue of learner variation. (Since space is limited, only the major aspects of each article will be presented in this paper.)

Wong Fillmore’s (1991) model of language acquisition involves the interaction of three components and three processes. The three components can be thought of as prerequisites for second language learning : 1) the motivated language learner ; 2) the TL speakers who will supply the language learner with language input ; and 3) a social setting where interaction between the learner and speaker is possible (p.52).

The three processes involved in L2 acquisition are social, linguistic, and cognitive. Social processes involve the cooperative efforts of the L2 learner and the TL speaker that will ensure interaction. Linguistic processes refer to “assumptions” TL speakers make about their language so as to present the L2 learner with comprehensible input and the “assumptions” L2 learners make about the language to make sense of what they hear. Wong Fillmore (1991) believes cognitive processes are crucial in the language learning process. In this process L2 learners learn “...the system of rules the speakers of the language are following, synthesize this knowledge into a grammar, and then make it their own by internalizing it” (p.57). Through “general cognitive mechanisms,” all aspects of language pertaining to structure and social use are learned (pp.56-57).

These three processes are affected by the three components in various ways. Wong Fillmore (1991) discusses the ideal types of social settings, learners, and TL speakers that will best support second language acquisition. In general, the acquisition process of a second language

is aided when the language learner has regular contact with TL speakers; when TL speakers are helpful by supplying comprehensible input; and when the L2 learner is motivated and uninhibited (pp.63-66).

In addition to presenting a model of language acquisition, Wong Fillmore (1991) submits a hypothesis concerning cognitive processes. Differences between L1 and L2 acquisition can be explained, in part, by the existence of two cognitive mechanisms. One cognitive mechanism designed for language learning is the L.A.D. ("language acquisition device," a term coined by Noam Chomsky). Then, there are "general cognitive skills" which are not specifically related to language learning. L1 and L2 learners have access to these two kinds of cognitive mechanisms but to a greater or lesser degree. L1 learners will have greater access to the L.A.D. and L2 learners will have greater access to general cognitive skills. This explains why children acquire their first language easily. With regard to variation in L2 acquisition, Wong Fillmore states social and personality factors cannot be disregarded, but the fact that some L2 learners can make better use of general cognitive mechanisms while others cannot explains variation in the second language acquisition as well (pp.58-59 ; p.61).

The picture Wong Fillmore (1991) draws for the process of second language acquisition is a complex and intriguing one. She certainly gives a clearer idea of the cognitive processes involved in second language acquisition.

Cummins (1991) studied the language skills of immigrant children to discover the effect of first language skills on second language skills. He is particularly interested in "decontextualized" and "contextualized" language skills. "Decontextualized" language is language dissociated from the "communicative context" and represents academic skills such as reading and writing. "Contextualized" language is context-dependent and related to conversational skills (pp.70-71).

Cummins (1991) reaches some interesting conclusions based on his review of studies on the relationship between L1 and L2 contextualized and decontextualized skills of immigrant children. One major conclusion is that if immigrant children can read and write well in their first language, then they can develop a similar level of skills in their second language. In other words, decontextualized skills in both languages are correlated. The reason for this correspondence between L1 and L2 academic skills is that similar cognitive processes play a role in their development (pp.84-86).

Snow et al. (1991) report on bilingual children's ability to give formal definitions in their first and second languages. In constructing good definitions, decontextualized language must be used. Furthermore, formal definitions reflect the use of metalinguistic abilities, which bilinguals are said to have more access to. They conducted research to test three hypotheses : 1) bilingual

children will be better at giving definitions ; 2) children who are good at giving definitions might be better second language learners ; and 3) the ability to give good definitions in a second language is related to the language learned at school (pp.91-92).

Students at the United Nations International School (in New York) were tested on their ability to give formal definitions in two languages. The main conclusions Snow et al. (1991) reached were that some of the students could give good definitions in the second language they learned at school. This finding, they believe, suggests there is a transfer of decontextualized language skills between the first and second language "...if a fairly high level of L2 proficiency is achieved." Their findings also supported the second hypothesis but not the first (pp.98-109, p. 100).

The findings of Wong Fillmore (1991), Cummins (1991), and Snow et al. (1991) all support the notion that general cognitive processes are involved in second language acquisition as evidenced by the transfer of L1 skills to L2 skills.

Bialystok's (1991) interest lies in the metalinguistic abilities of bilingual children. To give a clear explanation of the term metalinguistic, she discusses two kinds of cognitive processes essential in the acquisition of language, "analysis of linguistic knowledge" and "control of linguistic processing." Analysis "...is a processing component that allows changes in mental representations so that they become structured, more explicit, and more interconnected" (p.116). In other words, when language is analyzed for its "formal categories," this process has taken place (Bialystok, 1994, p.159). Depending on the language task, differing levels of analysis will be required. Written language, for example, will require high levels of analysis (p.159). The second component, control, "...is the process of selecting, with or without awareness, the information that will be attended to" (Bialystok, 1991, p.119). That is, out of a number of possible mental representations, attention is focused on one representation. This process is evident in reading where attention must be focused on structure and meaning (Bialystok, 1994, p.160).

The components of analysis and control can be used to explain the development of language proficiency, which advances from oral skills, then literate skills, and finally to metalinguistic abilities. As the language learner proceeds from one level to the next, higher levels of analysis and control are required. From this description, a more precise definition of the term metalinguistic can be given. Metalinguistic skills, which represent the highest level of language proficiency, are defined as "language uses" focused on the structure of the language and that make use of optimum levels of analysis and control (pp.124-134, p.130).

Her review of the literature on the metalinguistic abilities of monolingual and bilingual children reveals two major conclusions : 1) bilinguals can make better use of the control

component and 2) biliterate children can make better use of the analysis component. These findings support Bialystok's (1991) notion that bilinguals have higher levels of metalinguistic abilities (p.134, pp.138-139).

In a more recent article, Bialystok (1994) relates the two cognitive components of analysis and control to some of the major issues in the field of second language acquisition. Two of the issues she mentions will be discussed here.

Similarities and differences in first and second language acquisition can be explained, in part, by analysis and control. These two components are integral cognitive processes in L1 and L2 development and this explains what is similar. The differences between L1 and L2 acquisition lie in the fact that mental representations are affected by "cognitive" development. Older second language learners can make use of advanced cognitive skills, while first language learners have "innate" abilities to learn a language (p.162).

A relationship exists between different kinds of L2 variation and the two components. One kind of variation, "synchronic," refers to "variability in language use" at any given point in time. The language learner may know a rule but still makes mistakes occasionally. This occurs because the control component has malfunctioned. That is, attention is not given to a rule when it is required. "Diachronic" variation refers to "variability in language learning" over a longer period of time. The development of a learner's "rule system" is related to the development of analysis skills. Therefore, variability in language learning can be explained by the extent to which analysis skills have developed (pp.165-166).

Malakoff and Hakuta (1991), like Bialystok (1991), focus on cognitive abilities of bilingual children. Their interest lies in the translation skills of bilinguals. Malakoff and Hakuta's (1991) review of the literature on translation shows that most bilinguals have the ability of "natural translation". Simply put, this term refers to the bilingual's ability to translate without the help of training. They call natural translation a "translinguistic ability," since metacognitive and communicative skills are involved. This translinguistic skill, then, involves two levels: first, understanding the meaning of the sentence to be translated and second, using the appropriate words and sentence structure to make the meaning comprehensible (pp.143-144, pp.149-150). Other aspects relating to translation are reviewed as well, but for the purposes of this discussion, these will be omitted.

Based on their study of a group of Puerto Rican children enrolled in an American elementary school, Malakoff and Hakuta (1991) conclude that, in general, the children translate well and that this skill is a generalized ability in this particular group of children (p.154,p.161).

The studies of Bialystok (1991) and Malakoff and Hakuta (1991) expose the possibility that bilingualism affects certain cognitive processes, namely, metalinguistic abilities.

One criticism which can be made regarding these studies concerns the opaque nature of cognitive processes. The external aspects of language are used to interpret the workings of the mind. Nevertheless, research on second language acquisition can only proceed in this fashion and the interpretations of cognitive processes have explanatory value.

If indeed, cognitive processes play a major role in language acquisition, one wonders whether such processes can be improved. Put another way, can a second language learner hone his or her cognitive skills to become more successful at learning a second language? The authors do not directly address this issue, but Bialystok (1991) hints at this possibility in her discussion of the metalinguistic skills of bilinguals.

The issue of similarities and differences in first and second language acquisition was discussed at the beginning of this paper. Regarding similarities, I stated that both first and second language learners use similar general cognitive abilities. Some of the authors support this view: Bialystok (1991,1994) states cognitive mechanisms play a role in L1 and L2 acquisition; and Cummins (1991) and Snow et al. (1991) show that similar cognitive processes are involved in the acquisition of decontextualized skills. As a corollary to the issue of similarities, most of the authors would support the view that positive transfer between L1 and L2 cognitive skills occurs.

Differences between first and second language acquisition are highlighted by a few of the authors. Wong Fillmore's (1991) view that two kinds of cognitive skills are used in varying degrees by L1 and L2 learners and Bialystok's (1994) view that analysis and control interact with differing mental representations support the notion that L1 and L2 learners have different starting points in cognitive development.

With respect to the issue of variability in L2 acquisition, Bialystok (1994) and Wong Fillmore (1991) reach similar conclusions. Older second language learners do not seem to have equal access to general cognitive abilities, resulting in differing levels of second language proficiency.

In putting together a puzzle, one must find the appropriate pieces and put them in the right place. The study of second language acquisition is similar to this process. In studying the language abilities of bilinguals, new ideas can be explored which may fit the ultimate puzzle of second language acquisition. Though the complete process may never be understood, each new finding provides a richer understanding of second language acquisition.

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