

BILINGUAL FIRST LANGUAGE ACQUISITION¹

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This chapter focuses on the simultaneous acquisition of two languages from birth, or what is generally referred to as bilingual first language acquisition (BFLA). A major question in studies of BFLA, and a focus of our review, is whether the developmental path and time course of language development in BFL learners is the same as that of children learning only one language. Underlying this question is the theoretical issue of whether children's ability to learn language is challenged in any way by the acquisition of two languages at the same time. Evidence that the rate of language development is slowed down in BFL learners in comparison to monolingual learners would argue that the ability that all children have to learn language is compromised by the challenge of learning more than one language at the same time. An additional issue is whether exposure to two languages simultaneously influences the pattern of development so that it differs from that observed in monolingual learners. Evidence that the patterns are different could give us insights as to how the processes that underlie language acquisition cope with dual language input.

The study of bilingual first language acquisition (BFLA) has had a remarkably long history. In 1913, Ronjat published a detailed description of his son Louis' simultaneous acquisition of French and German. Louis showed remarkable progress in both his languages and little sign of confusion. Ronjat attributed Louis's lack of confusion to both parents' use of only one language with him. This conclusion was brought into doubt in 1949 when Leopold published the last volume of a detailed diary of his daughter's (Hildegard) simultaneous acquisition of

¹ Genesee, F., & Nicoladis, E. (2006). Bilingual acquisition. In E. Hoff & M. Shatz (eds.), *Handbook of Language Development*, Oxford, Eng.: Blackwell.

English and German. Leopold claimed that the parents were insistent on a one parent-one language rule. Yet Hildegard passed through a stage when she used words from both languages, a fact that Leopold interpreted as a sign that she had confused her two languages and was functioning as a monolingual. These diarists set the tone for the study of BFLA to this day. That BFL learners might go through an initial monolingual stage, as initially proposed by Leopold, is but one instance of the more general concern that BFLA strains the child's language learning capacity, leading to delayed and even impaired forms of language development (e.g., see Smith, 1935, for an early expression of this view). This concern has been expressed in a number of ways: BFLA might result in impaired cognitive, as well as linguistic, development (Bialystok, 2001); bilingual education puts children at risk for academic failure or delay (e.g., Macnamara, 1966); or BFL learners will be socio-cultural misfits, identifying strongly with neither language group (Diebold, 1968).

Different criteria have been proposed to distinguish simultaneous from successive dual language learners. DeHouwer (1995) has proposed the stringent cut-off of exposure to two languages within one month of birth, while McLaughlin (1978), in an early review of bilingual acquisition research, proposed the much more lenient cut-off of exposure to two languages before 3 years of age. Whether acquisition of an additional language within one, two, or three years of birth entails different processes and outcomes is an empirical question with important theoretical implications. We limit our discussion to simultaneous acquisition from birth to about four years of age. Even with these limits, there is considerable heterogeneity among BFL learners because BFLA is impacted by all those factors that can affect monolingual acquisition as well as bilingual-specific factors, such as different language combinations and differences in the amount, consistency, and contexts of language exposure.

Our review of the research on BFLA is organized around three topics: (1) the development of mopho-syntax, the lexicon, and phonology, (2) code-mixing, and (3) communicative competence.

THE DEVELOPMENT OF TWO LANGUAGES SIMULTANEOUSLY

Much of the research on the development of two languages simultaneously has been motivated by the unitary language system hypothesis according to which children exposed to two languages go through an initial stage when the languages are not differentiated (Leopold, 1949; Volterra & Taeschner, 1978; see Genesee, 1989, for a review). The most explicit formulation of this hypothesis was presented by Volterra and Taeschner (1978, p. 312):

“In the first stage the child has one lexical system which includes words from both languages., in this stage the language development of the bilingual child seems to be like the language development of the monolingual child. In the second stage, the child distinguishes two different lexicons, but applies the same syntactic rules to both languages.
In the third stage the child speaks two languages differentiated both in lexicon and syntax....”

Volterra and Taeschner’s hypothesis, in effect, proposed that the initial state of the developing bilingual child is essentially monolingual. A corollary issue is whether the two languages of bilingual children develop autonomously or interdependently (Paradis & Genesee, 1996). Interdependent development would result from systemic influence of one language on the development of the other, resulting in patterns or rates of development that differ from what would be expected in monolingual children.

These theoretical and practical concerns have resulted in research that compares the development of bilingual children to that of monolingual children acquiring the same languages. On the one hand, this may be an inappropriate frame of reference because it stigmatizes bilingual patterns of development and risks attributing differences that bilingual children exhibit to deficits

in children's capacity to acquire two languages at the same time (Cook, 2002). Alternatively, the linguistic competencies of bilingual children, like those of bilingual adults, should be examined and evaluated on their own merit (Grosjean, 1997). On the other hand, such comparisons are widespread in clinical and lay-communities and, thus, can have important real-world implications. Scientific comparisons between bilingual and monolingual children can reveal the extent to which BFLA actually differs from monolingual acquisition and, most importantly, what such differences mean.

Morphosyntax

Most of the research on BFLA of morphosyntax has examined production rather than perception (see Gerken, this volume, for research on related aspects of early monolingual language development). Contrary to the claims of the unitary language system hypothesis, there is widespread agreement that BFL learners acquire language-specific properties of the target languages early in development and these correspond, for the most part, to those exhibited by same-age monolingual children (see Genesee, 2001; De Houwer, 1990, 2005; Deuchar & Quay, 2000; Meisel, 2001, for reviews). Paradis and Genesee (1996), for example, found that 2-3 year old French-English bilingual children: (1) used finite verb forms earlier in French than in English²; (2) used subject pronouns in French exclusively with finite verbs but subject pronouns in English with both finite and non-finite verbs, in accordance with the status of subject pronouns in French as clitics (or agreement markers); and (3) placed verbal negatives after lexical verbs in French (e.g., "*n'aime pas*") but before lexical verbs in English ("*do not like*"). These patterns characterize the performance of monolingual children acquiring these languages. Findings from research on BFLA also generally indicate that bilingual children exhibit the same rate of

² Finite verb forms are marked for tense (e.g., he goes) and non-finite verb verbs are not (he go). English and French learning children usually use non-finite forms before they use finite forms

morphosyntactic development as monolingual children, at least in their dominant language (see reviews in De Houwer, 2005; Nicoladis & Genesee, 1997; Paradis & Genesee, 1996; but see Oller, this volume, for different results). This is evident even in bilingual children who are identified as having a specific language impairment. More specifically, Paradis, Crago, Genesee, and Rice (2003) found that French-English bilingual children in Quebec with specific language impairment exhibited the same pattern and degree of impairment in each language as similarly impaired monolingual English and French children of the same age.

At the same time, there is evidence of cross-linguistic transfer of specific morphosyntactic features from one language into the other (Döpke, 2000; Hulk & van der Linden, 1996; Müller, 1999; Nicoladis, 2002, 2003; Paradis & Navarro, 2003; Yip & Matthews, 2000). Döpke (2000), for example, found that Australian children learning English and German simultaneously used -VO word order much more in all verbal clauses in their German than native, monolingual speakers of German. German uses both -VO and –OV word order: -VO in main clauses and both –VO and -OV word order in subordinate clauses; English, in contrast, uses –VO order in main and subordinate clauses. Working within the competition model of Bates & MacWhinney (1987), Döpke argued that her young subjects were prone to overgeneralize -VO word order in their German because the -VO order was reinforced on the surface of both the German and the English input they heard whereas –OV order appeared in only a limited number of subordinate German clauses. Working within a UG framework, Hulk and Müller (2000, p.229) have similarly argued that “there has to be a certain overlap³ of the two

³ Number (singular, plural) and counting in English and Japanese are examples of forms that do not overlap. Number in English is marked by a [-s] suffix on nouns, and if you count the noun, you put the numeral word in the noun phrase, e.g. “[three pencils] are on the desk”. In Japanese, the noun does not take any plural marking, and you cannot put a numeral word in the noun phrase. In Japanese, you need to add a new phrase to the sentence, with a classifier word appropriate for the noun for pencils. In Japanese, you would say something like, “[pencil], [three long pointy things] on the desk are”.

systems at the surface level” for cross-linguistic syntactic transfer to occur. These explanations have been questioned, given that children sometimes show signs of cross-linguistic transfer for non-overlapping morphosyntactic structures (Nicoladis, 2002).

A mitigating factor in cross-linguistic transfer could be language dominance. Children might be more likely to incorporate structures from their dominant into their weaker language, than vice versa (Döpke, 1998; Yip & Matthews, 2000; Petersen, 1988). For example, Yip and Matthews found evidence of transfer from Cantonese to English in a Cantonese-English learning child during a period when he was dominant in Cantonese. Matthews & Yip (2003) have suggested another mitigating factor, namely asynchronous development of two languages with respect to specific features (e.g., relative clause constructions in Chinese and English) might also result in transfer of a structure that is normally acquired earlier in one language (e.g., Chinese) to the language in which the corresponding structure is normally acquired later (e.g., English) (see also Gawlitzek-Maiwald & Tracy, 1996; Paradis & Genesee, 1996). Dominance alone cannot explain all manifestations of cross-linguistic transfer observed thus far (Müller, 1999; Nicoladis, 2002). Instances of cross-linguistic transfer that have been reported are restricted. They pertain to specific aspects of the child’s developing grammars and they appear to occur only under certain circumstances, as noted previously.

Lexicon

Studies that have examined age of first word production report that bilingual children produce their first words at about the same age as monolingual children – 12 to 13 months (Genesee, 2003; Patterson & Pearson, 2004). Other milestones of lexical acquisition in bilingual and monolingual children are also similar -- bilingual children’s rates of vocabulary acquisition generally fall within the range reported for same-age monolinguals, as long as both languages are

considered for bilinguals (Pearson, Fernández, & Oller, 1993), and the distribution of lexical categories (e.g., noun, verb, etc.) in the early lexicons of bilingual children is similar to that observed in monolingual children (Nicoladis, 2001). The relative amount of time spent in each language can affect the relative vocabulary size in each language of a bilingual (Pearson, Fernández, Lewedag, & Oller, 1997).

It is well established that monolingual children's acquisition of new words is guided by the principle of mutual exclusivity, or the assumption that new words tend to refer to new referents (Markman, Wasow, & Hansen, 2003). Bilingual children's acquisition of translation equivalents (words in each language that have the same referential meaning) is of interest because, *prima facie*, this would violate the principle of mutual exclusivity. However, evidence that bilingual children acquire translation equivalents could be used to argue that they are not acquiring one language, but two (Patterson & Pearson, 2004). A number of researchers have reported that bilingual children produce translation equivalents from the time they first begin to speak (Pearson, Fernández & Oller, 1995) or at least by 8 months on (Deuchar & Quay, 2000; Genesee, Paradis, & Wolf, 1995; Nicoladis, 1998; Nicoladis & Genesee, 1996; Quay, 1995). Lanvers (1999) and Nicoladis and Secco (2000) found further that bilingual children used relatively few translation equivalents before the age of 1;5, but the percentage of translation equivalents in their two languages jumped subsequently to around 20-25% of their total vocabulary words thereafter. The high rate of translation equivalents, a clear violation of mutual exclusivity, suggests that at least from this age on children have two distinct lexical systems. It is possible that the ability to violate mutual exclusivity may be learned through experience of interpreting people's intentions about what words mean (Deuchar & Quay, 2000).

Phonology

Researchers have been interested in whether children with simultaneous dual language exposure exhibit the same patterns of development and at the same ages as children with monolingual exposure, both in terms of perception and production (see also, Polka, Rvachew & Mattock, and Gerken, this volume, for further discussion of related issues). A corollary issue in the production studies has been when children with dual language exposure give evidence of having two phonological systems. Most of the research on phonological development has been carried out in the last ten years and must be interpreted with caution because it is diverse in linguistic focus and in the ages of the children who have been studied. Nevertheless, the picture that is emerging indicates that bilingual children show a tendency for different patterns of development in both prosodic (at the level of the syllable, such as rhythm) and segmental (at the level of the phoneme, such as phonemic discrimination) phonology in comparison to monolingual children (Vihman, 1996).

Research on speech perception during the pre-verbal stage of development has shown that monolingual infants can differentiate between their native (input) language and a “foreign language” (Mehler, Dupoux, Nazzi, & Dehaene-Lambertz, 1996) if the languages belong to different rhythmic groups (e.g., French and Russian), and they can differentiate between languages within the same rhythmic group (e.g., Spanish & Catalan) by 4.5 months of age (Bosch & Sebastian-Galles, 1997; see Polka, et al., this volume). Bosch & Sebastián-Gallés (1997) have found that 4- month old infants exposed to both Spanish and Catalan have similar language differentiation abilities, indicating that reduced exposure to each language does not delay the emergence of this ability in bilinguals (see Sebastián-Gallés & Bosch, in press, for a detailed review of these studies). The ability to distinguish between two languages early in

development provides an important part of the foundation for building separate linguistic systems.

Research that has examined the early perception of segmental features of speech has found that children with dual language exposure from birth exhibit the same abilities as monolingual children but at a somewhat later age (see Polka et al. and Gerken, this volume). Monolingual infants' are initially able to discriminate phonetic contrasts that are not necessarily phonemic in their native language (see Vihman, 1996, for a review). However, their discrimination abilities become language-specific during the second half of the first year of life so that they continue to discriminate contrasts that are phonemic in their native language, but cannot discriminate contrasts that are not phonemic. Vowel contrasts are perceived phonemically earlier (by 6-8 months of age; Bosch & Sebastian-Galles, 2003; Kuhl et al., 1992) than consonant contrasts (by 8-10 months of age; Werker & Tees, 1984). BFL children go through a similar reorganization in speech perception but exhibit language-specific effects somewhat later than has been reported for monolinguals – by 12 months of age for vowel contrasts (Bosch & Sebastián-Gallés, 2003) and by 14 to 21 months of age for consonant contrasts (Burns, Werker, & McVie, 2002).

Children with dual language exposure have similarly shown a delay in the ability to use phonetic contrasts in word learning. More specifically, Fennell, Polka, & Werker (2002) found that while monolingual children were able to associate new words that differed by a minimal consonant contrast (i.e., /bih-dih/) with novel-shapes at 17 months of age, bilingual children were able to do so only by 20 months of age. In contrast, research on word segmentation by Polka & Sundara (2003) found that French-English bilingual children were able to segment words from continuous speech in both their native languages by 7 months of age, like monolingual children.

At the same time, early recognition of word forms in bilingual (and even monolingual) children may be sensitive to amount of exposure. Vihman and her colleagues report that 11-month old bilingual Welsh-English children in Wales failed to show differential preference for familiar over unfamiliar words in a headturn preference study, while monolingual English children of the same age did (Vihman, Lum, Thierry, Nakai & Keren-Portnoy, 2005). Vihman also reports that 11-month old monolingual Welsh-speaking children failed to demonstrate a preference and suggests that the bilingual and monolingual children's performance with respect to Welsh might be due to the relatively low status and associated lower level of usage of Welsh in comparison to English.

Turning to production, Oller, Eilers, Urbano, & Cobo-Lewis (1997) found that the age of onset of canonical babbling was the same (i.e., around 27 weeks of age) for a group of bilingual English-Spanish children and English monolinguals, and Maneva & Genesee (2002) report evidence of differentiated babbling by a 10-15 month old French-English bilingual child that corresponded to patterns attested in monolingual French and English babbling. These researchers analyzed prosodic features of babbling, such as utterance length and syllable structure (e.g., open/closed syllables). In contrast, Poulin-Dubois & Goodz (2001) failed to find language-specific differences in the babbling of French-English bilinguals of the same age when they examined segmental features (i.e., differences in place and manner of articulation). When BFL children start producing words, they sometimes show signs of prosodic differentiation from quite early in development. For example, Paradis (2001) found that 2-year old French-English bilinguals were more likely to omit syllables from novel four-syllable words in each language based on the typical stress patterns of that language.

Whether and/or when BFL children have two language-specific segmental phonological repertoires is not clear. In some studies, bilingual children's segmental phonology has been

reported to be similar to same age monolingual children throughout the preschool years with respect to phonetic substitutions (e.g., substituting [l] for [r] in the Spanish word “cruz”; from Barlow, 2002; Bell, Müller, & Munro, 2001; Holm & Dodd, 1999), voice onset times (Johnson & Wilson, 2002; Kehoe, Lleó, & Rakow, 2004), and consonant harmony and syllable reduplication (Brulard & Carr, 2003; Johnson & Lancaster, 1998; Schnitzer & Krasinski, 1996). Other studies have pointed to delays or differences relative to monolingual children on some of the very same measures (Deuchar & Clark, 1996; Johnson & Wilson, 2002; Schnitzer & Krasinski, 1994).

The variability observed in the phonological development of BFL learners could be linked to multiple influences, some that are the same as those that influence monolingual phonological development and some that are particular to BFLA. Those that are the same include general developmental factors that are maturationally-based (e.g., maturation of articulators that are linked to the onset of canonical babbling) and individual differences (compare Schnitzer & Krasinski, 1994 and Schnitzer & Krasinski, 1996; see also Kehoe et al., 2004). Those that are particular to BFLA include unequal or limited exposure to or practice with each language (e.g., Arnberg, 1981; Bell, Müller, & Munro, 2001; Paradis, 2001), asynchronous development that reflects normal language-specific differences in the pattern of emergence of phonological abilities (Matthews & Yip, 2003, have proposed this for morpho-syntax), cross-linguistic transfer (Holm & Dodd, 1999; Paradis, 2001), and idiosyncracies in the distributional and/or qualitative properties of bilingual speech input (Sebastián-Gallés & Bosch, in press; Polka, et al. this volume)

CHILD BILINGUAL CODE-MIXING

Code-mixing is ubiquitous among bilinguals – adults and children alike. It is the use of elements (phonological, lexical, morphosyntactic) from two languages in the same utterance or stretch of conversation. It can occur within an utterance (intra-utterance mixing – e.g., “see *cheval*”[horse]) or between utterances (inter-utterance mixing). Rates of code-mixing in children vary depending on the form of mixing (intra versus inter-utterance), the nature of the mixed element (function versus content words), the language of the conversation (the child’s less versus the child’s more proficient language), and the context (with interlocutors who are bilingual versus those who are monolingual, for example). Individual differences in both rates and style of mixing are widely reported, even within the same family (see Vihman, 1998). Adult bilinguals also code-mix (Myers-Scotton, 1993; Poplack, 1980), and research has shown that adult bilinguals code-switch for a variety of meta-communicative purposes; for example, to mark ethnic identities or affiliations, to negotiate social roles and status, and to establish interpersonal intimacy or distance (Myers-Scotton, 1993; Poplack, 1987), and their mixing is grammatically constrained. In brief, code-mixing is a useful, sophisticated, and rule-governed feature of language use among adult bilinguals. In contrast, child bilingual code-mixing has often been interpreted as a sign of incompetence and even confusion (e.g., Volterra & Taeschner, 1978). Research on child bilingual code-mixing has been pursued with two primary goals in mind – to identify its grammatical and its functional properties in order to determine if it is rule-governed or a sign of confusion.

Grammatical Properties

When two languages are used in the same utterance, grammatical incompatibilities between the languages could arise (e.g., different word orders); these in turn could result in

patterns of language use that are awkward or illicit. Indeed, the commonly held perception of code-mixing is that it is an ungrammatical form of language use. Although this is not an appropriate characterization of adult code-mixing, questions remain about child bilingual code-mixing. In particular, are there grammatical constraints on child bilingual code-mixing? What form do they take? and When in development are they evident? In order to code-mix in ways that respect the grammars of the participating languages the child has to acquire language-specific grammars and must also be able to co-ordinate them during production. Thus, evidence of grammatical constraints on the code-mixing of young bilingual children would provide important insights into their capacity to learn and use two languages at the same time. If constraints are operative from the outset of two and multi-word productions and if they are essentially the same as those attested in adult code-mixing, this would suggest that code-mixing grammatically emerges with bilingual grammatical development.

Researchers have examined grammatical constraints on intra-utterance code-mixing by bilingual children learning a number of different language pairs: French and German (Köppe, in press; Meisel, 1994), French and English (Sauve & Genesee, 2000; Paradis, Nicoladis, & Genesee, 2000); English and Norwegian (Lanza, 1997a); English and Estonian (Vihman, 1998), and Inuktitut and English (Allen, Genesee, Fish, & Crago, 2002). These researchers all conclude that child bilingual code-mixing is grammatically constrained because children usually mix the two languages at points in an utterance where the grammar of both languages is concordant; they seldom mix at points where the grammar is not concordant.⁴ Most researchers also report that the constraints that operate on child bilingual code-mixing are essentially the same as those that

⁴ A concordant grammatical structure is one that is the same in both languages (e.g., in both English and French articles appear before nouns); a non-concordant structure is one that differs in the two languages (e.g., in English object pronouns occur after the verb (“he likes them”) but before the verb in French (e.g., (Il les aime.” [he them likes]))

have been reported in adults (except see Meisel, 1994; and Köppe, in press). Meisel and Köppe argue that the constraints that operate on child bilingual code-mixing reflect their level of grammatical development and, thus, might differ from those that operate in adult bilinguals (see Lanza, 1997a, for an alternative view). More specifically, they argue that the operation of constraints based on abstract notions of grammar is most evident in bilingual children once they exhibit such knowledge in their actual language use (as marked by agreement, for example), usually around 2;6 years of age and older for children learning English, while the operation of constraints that reflect surface features of grammar (such as word order) are evident even earlier in development. There does not appear to be a stage in development when grammatical constraints do not operate, albeit the nature of the constraints may change as their grammars change. These findings reinforce results reviewed earlier indicating that, for the most part, bilingual children acquire language-specific morpho-syntactic properties in each language early in development and, moreover, they can access these constraints simultaneously during production.

Functional Properties

If code-mixing is not due to lack of differentiation of the two languages, the question remains: why do bilingual children code-mix? Research on the functional properties of child bilingual code-mixing indicates that there are multiple explanations that are often related to performance factors.

Gap-Filling. A common explanation of child bilingual code-mixing is that it serves to fill gaps in the developing child's lexicons and grammars. On this view, code-mixing reflects the developing bilingual child's use of all linguistic resources to express him or herself when mastery of each language is incomplete. According to the lexical-gap hypothesis, bilingual

children mix words from language X when using language Y because they do not know the appropriate word in language Y. In support of this possibility, , it has been found that young bilingual children mix more when they use their less proficient than their more proficient language (Genesee, Nicoladis & Paradis, 1995; Lanvers, 2001). In a direct test of the lexical gap hypothesis, Genesee, Paradis and Wolf (1995) found that two young BFL learners (MLU ranged from 1.09 to 1.55) were more likely to code-mix words for which they did not know translation equivalents -- this was true for Wayne 100% of time and for Felix 65% of the time (see also Nicoladis & Secco, 2000). While mixing to fill lexical gaps because of incomplete mastery of their languages is one explanation of child code-mixing, it can also be true for otherwise fully proficient, older bilinguals because lexical knowledge in both languages of the bilingual is seldom equivalent, as noted previously.

Evidence for grammatical-gap filling comes from Petersen (1988) and Lanza (1997b) who report that bilingual children often mix function words and inflectional morphemes from their more proficient language with content words from their less proficient language, but seldom the reverse, and from Gawlitzeck-Maiwald & Tracy (1996) who argue that young bilingual children use syntactic patterns from their stronger language to bootstrap into the grammar of their less proficient language. Both lexical and morpho-syntactic mixing attest to the young bilingual child's ability to access and use creatively the lexical and morpho-syntactic resources of both languages on-line during language production.

Context-Sensitivity. There is considerable evidence that bilingual children's code-mixing is sensitive to contextual variables, including those related to interlocutor (Deuchar & Quay, 2000; Genesee, Nicoladis & Paradis, 1995; Genesee, Boivin, & Nicoladis, 1996; Lanza, 1997b; Meisel, 1990; Vihman, 1998; among others), topic (Lanvers, 2001), and the purpose of the

interaction (Vihman, 1998). Evidence that child bilingual code-mixing is sensitive to interlocutor variables is well documented. Most researchers report that bilingual children tend to use their languages appropriately with different interlocutors so that, for example, children who are raised in bilingual homes where parents tend to use only their native/dominant language with the child generally use more of each parent's language with that parent than with the other parent (e.g., DeHouwer, 1990; Deuchar & Quay, 2000; Genesee, Nicoladis, & Paradis, 1995; Lanza, 1997b; Vihman, 1998). Additional evidence of context-sensitive use of code-mixing is presented in the next section.

There is also evidence, from somewhat older bilingual children, that their use of code-mixing is sensitive to situational factors. Sprott & Kemper (1987) found that 3- and 6-year old Spanish-English bilingual children were significantly less likely to code-mix with an adult during an interview to screen the children for participation in the study, based on their language ability, and more likely to mix when playing with other children, drawing pictures of their homes and families. Vihman (1998) notes that her two bilingual children's (2;8 to 9;10) code-mixing was sensitive to the presence of parents or the tape recorder and suggests that they used English and Estonian to mark the purpose of an activity as either "fantasy play" or "business matters, respectively.

Pragmatic and Symbolic Functions. Code-mixing has also been associated with a variety of pragmatic functions, even in quite young bilingual children. Lanvers (2001) reports that her two German-English children (1;6 to 2;11) used language for emphasis (see also Goodz, 1989) and appeal, to quote a parent, and for topic shift (see also Vihman, 1998). It has also been noted that bilingual children make choices between their languages for what might be considered symbolic-identity reasons. Thus, Vihman (1998) notes that the unmarked language choice for her bilingual

children when playing together was a mixture of English and Estonian, arguably a reflection of their dual identity with the Estonian and English speakers in their lives. In contrast, Estonian tended to prevail when with their parents, the primary sources of input in that language. In a related vein, in a study of 10 Mandarin-English bilingual children (4;0 – 6;0) in the U.S., Pan (1995) found that, when interacting with their parents, the children tended to switch more frequently from Mandarin to English than did their parents and, moreover, they were more likely to maintain the switch to English than were their parents. Pan conjectures that differences in the children's and parents' switching patterns could be linked to their differential identity with and efforts to maintain Mandarin in contrast to English, the language of wider communication in the community. Pragmatic and symbolic functions that have been noted in these cases are often characteristic of somewhat older children (Zentella, 1999). Developmental studies with larger sample sizes are needed to document and clarify these developmental trends.

COMMUNICATIVE COMPETENCE

Bilingual children face the same communication challenges as monolingual children; namely, production of target-like language forms that are comprehensible to others; getting one's meaning across when language acquisition is incomplete; and use of language in socially appropriate ways. At the same time, the ability to communicate appropriately and effectively in two languages entails an understanding of interpersonal communication that exceeds that required for monolingual communication, including, among others, that breakdowns in communication may be due to language choice. Examining the development of communicative competence in bilingual children provides a window into their cognitive capacities as well as their linguistic competencies insofar as these bilingual-specific abilities implicate cognitive-developmental issues that go beyond strictly linguistic ones. In question is how bilingual

children accommodate the specific demands of bilingual communication and when in development they do so.

Fundamental to bilingual communicative competence is the ability to make appropriate language choices with different interlocutors. BFL learners have been shown to possess such competence in a variety of ways. As noted previously, bilingual children in the one- and early two-word stages of development are able to use their languages differentially and appropriately with parents who habitually speak different languages with them (Nicoladis & Genesee, 1996); they demonstrate similar sensitivity when interacting with strangers with whom they have had no prior experience (Genesee, Boivin & Nicoladis, 1996); and they can adjust their rates of code-mixing to match those of unfamiliar interlocutors who change rates of mixing from one occasion to another (Comeau, Genesee, & Lapaquette, 2003; see Petitto, Katerelos, Levy, Gauna, Tetreault, & Ferraro, 2001, for similar evidence from children learning oral and sign languages simultaneously). Responsiveness to the linguistic preferences or proficiency of unfamiliar interlocutors indicates that bilingual children's ability to use their developing languages appropriately reflects true communicative competence; that is, the ability to make on-line adjustments to accommodate interlocutors' language preferences and/or abilities without the benefit of previous experience or learning.

The question arises how do young bilingual children know which language is appropriate; and what does this tell us about their cognitive capacity to manage the additional demands of bilingual communication. Lanza (1997a, 2001) argues that bilingual children's understanding of appropriate language choices in the home arises from the same fundamental processes of language socialization that have been shown to influence the development of communication skills in monolingual children (Döpke, 1992). In particular, parents who adopt what Lanza dubs

“bilingual discourse strategies”, such as “move-on” or “expressed guess” strategies that imply that the parent has understood what the children are saying when they code-mix, tolerate and encourage further code-mixing. In contrast, parents who adopt monolingual strategies, such as requesting clarification of an utterance in the non-target language, in response to their child’s mixing are likely to discourage their children from code-mixing. Indeed, in a longitudinal study of an English-Norwegian bilingual 2-year-old, Lanza notes that the child mixed her two languages more with her Norwegian-speaking father, who used bilingual strategies when she mixed, than with her English-speaking mother, who often pretended not to understand when the child spoke Norwegian (see Kasuya, 1998, for similar findings with English-Japanese bilingual children; but, Nicoladis & Genesee, 1998, failed to find such a relationship). Similarly, in a study of English-German families in Australia, Döpke (1992) noted that families that were successful at getting their children to use German despite their tendency to favor English used explicit discourse strategies that obliged the children to use German. Parental discourse strategies may, therefore, be one way in which children learn to make appropriate language choices, at least with familiar interlocutors, and as well offers an explanation of some of the variation that characterizes children in different families. Language socialization is also a likely explanation of variation in code-mixing patterns in bilinguals who are raised in communities with different norms for code-mixing (see Poplack, 1987, and Myers-Scotton, 1993, for examples based on adult language patterns). Studies of language socialization of children in communities with different code-mixing norms are lacking at present.

However, language socialization cannot explain children’s performance with unfamiliar interlocutors where prior experience and knowledge are lacking and yet, as noted previously, bilingual children can exhibit appropriate language choices with strangers and they can match

their rates of mixing with those of strangers. Comeau, Genesee & Lapaquette (2003) report that bilingual children may use a language-contingent strategy to match language choices with unfamiliar interlocutors. Evidence for this comes from a turn-by-turn analysis of bilingual children's language choices with an unfamiliar interlocutor who changed her rates of mixing from 15% to 40% and back to 15% over three successive sessions. The children tended to switch languages in the turn after the interlocutor had switched languages and, thus, were able to achieve a rate of mixing that closely matched that of their conversational partner. The results of this study are of additional interest in that they indicate that BFL children can track language choices by their interlocutors and can alter their language choices accordingly.

Bilingual children are also responsive to feedback from interlocutors about the appropriateness of their language choices. Comeau & Genesee (2001) report that English-French BFL learners (average mean ages of 2;7 and 3;1) translated their message following a request for clarification from an unfamiliar adult interlocutor whenever they used an inappropriate language with her. Most of the children's changes in language were made following implicit requests for clarification that did not specify the source of the breakdown (e.g., "what?"). Moreover, the children, even the youngest ones, virtually never changed languages when repairing a breakdown that was due to reasons other than language choice (e.g., inaudible utterance or incomprehensible word choice). It is noteworthy that the base (or "appropriate") language of the interaction was the less proficient language of the children so that using the appropriate language meant using their less proficient language. These findings suggest that 2 -to 3- year old bilingual children can infer the meaning of non-specific feedback regarding the appropriateness of their language choice, and they can use such feedback as cues to the appropriacy of their language choices.

CONCLUSIONS

In the previous sections, we have reviewed findings that indicate that BFLA is the same in some significant respects as monolingual acquisition and different in others. In this section, we explore explanations of the similarities and the differences. Starting with the similarities -- in spite of less exposure to each language, bilingual children reach a number of important milestones within the same age span as their monolingual peers, such as the onset of canonical babbling (Oller et al., 1997), first words (see Nicoladis & Genesee, 1997), and overall rate of vocabulary growth (Pearson et al., 1997). As well, their morpho-syntactic development resembles that of monolinguals for the most part and appears to occur within the same timeframe, at least in their dominant language (Paradis & Genesee, 1996). These aspects of language development may be relatively robust in the face of considerable variation in input because biological or cognitive maturation plays an important role in these developmental milestones (Oller et al., 1997; Wexler, 1998).

Nevertheless, some differences between bilingual and monolingual children have been observed. Differences in vocabulary size in each language are most likely attributable to differences in frequency of exposure and, in some cases, differences in context of exposure (Pearson et al., 1997). Children who receive primary input in each language from different interlocutors (e.g., mother, father, siblings) may acquire different lexical repertoires in each language because different people talk about different things (De Houwer, 1990). In a related vein, Sebastián-Gallés and Bosch (in press) have suggested that delays in bilingual children's discrimination of some segmental features may be attributable to the distributional properties of the input that arise when children are exposed to two closely-related languages. BFL learners may not be exposed to clearly discernible phonemic contrasts in the input because the features in

question (e.g. /e-E/) form a unimodal distribution in the input (see Polka, et al, this volume).

BFL children hear less of either language than monolinguals, which could lead to delays relative to monolingual children in any aspect of acquisition that is frequency-dependent (e.g., Marchman, Martínez-Sussman, & Dale, 2004)

It is also noteworthy that BFL learners acquire the additional skills that are required to manage and use two languages for communicative purposes. From a very early age, they know when to use each language and when to code mix and how much, even with unfamiliar interlocutors. They are also able to identify breakdowns in communication that are due to inappropriate language choice; they can do so even if feedback is implicit and unspecified; and they have strategies for repairing such breakdowns. As Lanza (1997b) has pointed out, bilingual children's use of their two languages is subject to the same socialization processes as monolingual children.

Other differences appear to be linked to transfer. Transfer itself can be linked to structural differences, surface level or abstract, of the target languages that are ambiguous from a learnability point of view. The probability that such structural differences result in transfer may be heightened if the child is dominant or more proficient in one language (Gawlitzek-Maiwald & Tracy, 1996; Paradis & Genesee, 1996; Matthews & Yip, 2003; cf. Müller, 1999; Nicoladis, 2002). Dominance is also implicated when BFL learners use lexical items (Nicoladis & Secco, 2000) from one language when speaking the other in order to fill gaps in vocabulary knowledge. To date, transfer has often been applied post hoc as an explanation of atypical morpho-syntactic patterns in individual BFL learner's development. Predictive studies in which children are learning languages that are conducive to transfer are called for if we are to get beyond post hoc explanations.

Whether one focuses on the similarities or differences between BFL learners and monolinguals, the picture that emerges depicts BFLA as an active, creative process that draws on the linguistic, communicative, and cognitive resources of the developing child (Genesee, 2003a). BFL learners' resourcefulness is evident in their code-mixing to fill lexical gaps in their developing competence; in their transfer of morpho-syntactic structures from one language to another in grammatically constrained ways; and in their competence in managing their two languages for communicative purpose.

There is much more to be learned, of course. We still need to learn much more about the first two years of development and, in particular, early speech perception and production; we need studies with larger sample sizes with detailed descriptions of language input that will permit us to examine the role of input more carefully; we need studies with more language combinations that will permit us to explore the limits and nature of transfer; we need studies of children who are at-risk for language delay or impairment for specific linguistic reasons or cognitive reasons (Genesee, 2003b); and we need more research that maps out their development from the pre-school to school years.

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