

## AUTONOMY IN SIMULTANEOUS BILINGUALISM: EVIDENCE FROM AN ENGLISH-SPANISH BILINGUAL CHILD

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### ABSTRACT

This study examines the simultaneous bilingual acquisition of English and Spanish by a boy from age 1;2.0 to 2;3.3. Transcripts and diary recordings were examined in order to establish the way in which phonological, lexical, morphological, syntactic, and pragmatic skills developed in the child's speech. The child's development was contrasted to that in monolingual English and Spanish-speaking children of comparable ages, and the results evidenced an analogous progress at the phonological and morpho-syntactic levels, which suggests language autonomy. The child's rate of translation equivalents was also analyzed, as well as his rate of mixing and whether these were grammatically constrained. The boy started making use of translation equivalents as soon as these were available in his speech, and by and large, his mixing resulted from lack of equivalents in the two languages. He always used more of the interlocutor's language and was able to correct himself and to use the appropriate language after his interlocutor prompted him to do so. Furthermore, the child's mixing never evidenced any violations to the grammatical constraints that apply to adult language mixing. The latter observable facts also suggest an autonomous development of the two languages.

**Key Words:** simultaneous bilingualism, child language development, English-Spanish bilingualism, code switching, language mixing.

### RESUMEN

Este estudio examina la adquisición bilingüe simultánea del inglés y del español en un niño entre los 1;2.0 y los 2;3.3 años de edad. Transcripciones y records diarios fueron examinados exhaustivamente para determinar el desarrollo fonológico, léxico, morfológico, sintáctico y pragmático en el lenguaje del niño. El desarrollo del niño se comparó con aquel de niños monolingües del inglés y del español de edades similares y se evidenció un progreso muy análogo a nivel fonológico y morfo-sintáctico, sugiriendo autonomía del lenguaje. El número de palabras equivalentes en ambos idiomas también fue analizado, así como la incidencia de mezcla de los dos idiomas y el respeto a reglas gramaticales en tales construcciones. El niño utilizó equivalentes en cuanto estos aparecieron en su lenguaje y, en su mayoría, la mezcla resultó por falta de equivalentes en los dos idiomas. Él utilizó mayormente el lenguaje de sus interlocutores y mostró habilidad de auto-corregirse utilizando el idioma apropiado después de que el interlocutor lo instara a hacerlo. Además, la mezcla encontrada nunca evidenció violaciones a las reglas gramaticales que aplican a la mezcla en el lenguaje de adultos bilingües. Estos últimos datos también sugieren autonomía en el desarrollo de los dos idiomas.

**Palabras clave:** bilingüismo simultáneo, desarrollo del lenguaje infantil, bilingüismo inglés-español, intercambio de códigos, mezcla de idiomas.

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## 1. Introduction

Research on simultaneous bilingualism, the early acquisition of two or more languages from birth, has mainly been concerned with whether or not young bilinguals provide evidence for two separate language systems from the onset. By and large, language autonomy has been determined based on the extent to which the bilingual child mixes phonological, morphological, lexical, and syntactic elements from the two languages within and across utterances. Linguists such as Fantini (1985), Redlinger and Park (1980), Vihman (1985), and Volterra and Taeschner (1978) have argued that children have a unified language system until they are able to separate their two lexicons and syntactic systems. They also claim that before this separation occurs, bilingual children mix their two languages indiscriminately. This proposition is referred to as the *Unitary Language System Hypothesis*. In contrast however, numerous studies by Allen, Genesee, Fish, and Crago (1999), Quay (1995), Deuchar and Quay (2000), Genesee, Boivin, and Nicoladis (1996), Paradis and Genesee (1996), Genesee, Nicoladis and Paradis (1995), Lanza (1992), Mahlau (1994), Meisel (1994), and Koehn (1994) have shown that bilingual children evidence two separate language systems from the onset. Furthermore, most of these latter studies demonstrate that, although most bilingual children do mix elements from the two languages, there is evidence to suggest that this mixing does not follow from the Unitary Language System (ULS) hypothesis nor from confusion. Several of these studies show that children's code mixing is not random but rather, that it respects the pragmatic and grammatical rules respected in adult bilinguals (Allen, Genesee, Fish, and Crago, 1999, Paradis and Genesee, 1996, and Meisel 1994). In addition, a few of these studies show that the rate at which bilingual children acquire their languages is very comparable to that at which monolingual children acquire theirs (Deuchar and Quay, 2000, Paradis and Genesee, 1996).

Despite the numerous studies on child bilingual acquisition, most such studies have focused on a single component of bilingualism;

only a few have involved English-Spanish bilingual children (Fantini, 1985 & Deuchar & Quay, 2000). The present study offers a comprehensive analysis of the simultaneous bilingual acquisition of English and Spanish by a young boy, B, during a period of approximately 14 months, starting at the age 1;2. In concrete terms, the paper includes a description of the rate and pattern of development of various linguistic and extra-linguistic skills. Firstly, the child's language development is compared to that by English and Spanish monolingual children of comparable ages. Second, evidence for two independent language systems is analyzed at different levels (i.e.; phonology, morphology, syntax, lexicon, and pragmatics). Third, the contexts in which the child mixes the two languages are examined and possible reasons for language mixing are put forward. Finally, whether the child's mixing is grammatically constrained in the same way as adult mixing is examined. The term *language mixing* is used here to refer to the co-occurrence of elements from two languages within a single utterance (*intra-sentential mixing*) or from one utterance to another (*inter-sentential mixing*) in the same conversation.

## 2. The Unitary Language System hypothesis

The main proponents of the ULS hypothesis are Volterra and Taeschner (1978), who studied the simultaneous acquisition of Italian and German by two sisters from ages 1;0 until 3;6. Volterra and Taeschner (1978) studied the children's lexical and syntactic development, as well as the development of translation equivalents in the two languages. They also looked at language mixing and at the contexts in which mixing occurred. Overall, Volterra and Taeschner identified three stages in the bilingual development of the two children: 1) During the first stage (approximately between ages 1;0 and 1;6) the children had a single lexicon made up of words from both languages (no translation equivalents), and the few two and three word utterances found in their speech included words from the two languages. 2) During the second stage (approximately between

ages 2; 0 and 2;9) these children were able to differentiate the two lexicons, but “applied the same syntactic rules to both languages” (p.312.); they also continued mixing words from the two languages. 3) During the third stage (starting approximately at the end of the second year and the beginning of the third year), the children were finally able to differentiate both lexicons and syntactic systems; they had two separate language systems. Volterra and Taeschner claimed that the mixing found in these children’s early speech, as well as their lack of translation equivalents at the beginning stages evidenced their failure to keep the two language systems separate. However, this view can be questioned on conceptual grounds, as it is inaccurate to claim that the bilingual child does not have two separate lexicons simply because such separation cannot be perceived in the form of translation equivalents. Furthermore, the interpretation of mixing as a result from a ULS has been questioned on empirical grounds by Genesee (1989), who asserts that “in order to uphold the unitary-system hypothesis, one would need to establish that, all things being equal, bilingual children use items from the two languages indiscriminately in all contexts of communication” (p.165).

Redlinger and Park (1980), who also supported the ULS, examined the speech of four young bilingual children (two French/German bilinguals, a Spanish/German bilingual, and an English/German bilingual, aged 2;4.8, 2;8.19, 2;0.1, and 1;11.22 respectively). They found that the four children tended to mix their two languages, and that the mixing rates “decreased with advancing linguistic development” (p.344); this presumably provided evidence for a Unitary Language System. Redlinger and Park claimed that one of the children had a single lexicon because, although he had a substantial number of translation equivalents at the beginning of the study (about 16% at age 2;1), the child “seemed unable to draw a clear-cut distinction even by the end of the observation” (p.340). However, they admitted that the parents of two of these children failed to maintain the two languages separate themselves, which questions their claim for a single lexicon. Similarly, although one of the

children in this study had a high rate of mixing, almost half of the mixed utterances included the same lexical item, namely the use of the German article *ein* (‘a’) in English contexts (p.342).

Another researcher who argued for a ULS was Fantini (1985); he studied his son’s bilingual acquisition of English and Spanish. Data were collected from the time Mario, the child, was a newborn until age 6. Mario spent most of his time with Spanish-speaking caregivers such as his mother and nursemaids, and he was “Spanish dominant upon entering kindergarten” (p. 29) As a result, he appeared to have an integrated phonology; that is, one phonological system clearly interfering with the other; by age 6;0, his Spanish phonology was interfering with his English phonology. Similarly, his morpho-syntactic development was clearly limited. For example, although his first use of verb forms in Spanish happened at age 1;11, “for several months they were used within frozen expressions” (p. 163). Most of the child’s verbs were marked with an apparent default marker (3<sup>rd</sup> person singular), and all his verbs were only inflected for the present tense until the end of his third year when the child started to use regular and irregular past forms. According to Fantini, Mario also had a few plural endings, but he was overregularizing Spanish forms onto English constructions (e.g., *I have toys horses*, p.169), where the child applied the Spanish rule and pluralized both the adjective and the noun. In general, Fantini showed that the child was transferring morphemes (e.g., *can you desentie* –‘untie’), agreement rules (e.g., *I have too manys cars*), and word positioning (e.g., *glue put mama*), as well as integrating loanwords (e.g., *I’m saking* –from Spanish *sacar* ‘to take out’) well after age 6;0 (p.172). Furthermore, Fantini showed that at the early stages of acquisition, Mario freely mixed both languages within the same utterance even when he had translation equivalents for the mixed items. In fact, Fantini stated that it was not until age 2;8 when Mario gradually started to use the appropriate language according to the interlocutor, which presumably marked the beginning of his slow language separation. Although Fantini’s data appear to strongly support a ULS hypothesis, such results should

not be applicable, as the subject in this study was clearly not a simultaneous bilingual.

A similar case was reported by Vihman (1985) on the acquisition of Estonian and English by her child, Raivo. At the beginning, this child heard mainly Estonian at home; from age six months on, he spent his week-day mornings at a daycare where only English was spoken. Most of the recordings were made in Estonian contexts until 2;8, when recordings included conversations of the child interacting with his English-speaking peers. Vihman looked at the child's lexicon divided into word categories, as well as at the number of translation equivalents in the two languages. She found that at the early stages Raivo was dominant in Estonian, although by age 1;8, his linguistic abilities were about the same in both languages. Raivo seemed to follow the three-stage process suggested by Volterra and Taeschner (1978), as he appeared to have made a gradual transition from a single lexicon with few translation equivalents in the two languages to "a dual lexicon in which the smaller portion of English terms -- reflecting Raivo's lower exposure to English-- was largely duplicated by Estonian terms" (Vihman, 1985, p.301).

In addition, Vihman examined the child's rate of language mixing according to context. She found that most of the child's mixing consisted of mixing of nouns. Nonetheless, during the early stages, Raivo's use of English function words with Estonian nouns constituted 61% of all mixed utterances, which Vihman attributed to morphological and phonological<sup>1</sup> immaturity. The child ceased mixing words from both languages once he had achieved a fairly complete balanced lexicon, at about age 2;0 (at that point, he had Estonian equivalents for 76% of his English vocabulary). Now the child was also able to restrict his utterances to one language at a time according to the interlocutor, and he had started to use Estonian word-order and morphology correctly in negative phrases while all his English utterances continued to be simpler.

Although both Fantini (1985) and Vihman (1985) claimed that the children in their studies supported the ULS, their claims cannot be generalized to all bilingual children, taken

that the children in these studies were clearly dominant in one of the languages during the first stages --Raivo was Estonian-dominant until age 1;8 and Mario had little exposure to English until he was 2. The same is true about the study by Redlinger and Park (1980), as argued above.

Even though these four studies looked at language mixing and language dominance, none of them looked at how the language development of the children in these studies compared to that of their monolingual counterparts. Furthermore, the studies that looked at language mixing did not analyze the extent to which such mixing is grammatically constrained.

### **3. Evidence for language separation**

#### **3.1. Language autonomy**

In contrast to the studies supporting the ULS hypothesis, studies carried out by Quay (1995), Deuchar and Quay (2000), Genesee, Nicoladis, and Paradis (1995), Genesee, Boivin, and Nicoladis (1996), Paradis and Genesee (1996), Paradis, Nicoladis, and Genesee (2000), Lanza (1992), Meisel (1994 a), and Mahlau (1994) show evidence, from different standpoints, that bilingual children have two different language systems from very early stages, and that they are able to keep them separate. These studies consider language separation at the lexical, phonological, morphological, and syntactic levels. Researchers such as Swain (1972), on the other hand, (reported in Paradis and Genesee, 1996) and Vihman (1982) have argued for the possibility that "the burden of acquiring two languages could slow down the acquisition process in bilinguals, causing them to be behind monolinguals in their overall progress in grammatical development" (Paradis and Genesee, 1996; p.82).

Quay (1995) studied the lexical development in a simultaneous English-Spanish young girl from ages 1;1 to 1;10. She found that the first English-Spanish equivalent appeared at age 1;0; at age 1;4, two more words had equivalents, and the number of equivalents continued to grow steadily so that at age 1;10, the child had a total

of 54 words with equivalents in each language. After this age, about 13 new pairs of equivalents appeared each month. Furthermore, the child was using translation equivalents appropriately from very early on. Quay's results clearly contradict the claim by Volterra and Taechner (1978) that bilingual children have a single lexicon during what they referred to as Stage 1.

Deuchar and Quay (2000) studied the acquisition of language-specific phonology (vowel and consonant sounds) by the same bilingual English-Spanish child. They report that from early on the girl was producing the consonants common to both languages and those acquired early by monolingual English and Spanish-speaking children.<sup>2</sup> The child was generally producing English-specific consonant sounds /v/, /ʃ/, and /θ/ and the Spanish-specific consonant sound /ɲ/ appropriately. Nonetheless, since most of the sounds in the child's speech were common to both languages, these researchers chose not to argue either for a unitary or for two separate consonant systems. Similarly, regarding the child's vowel sounds, she had acquired the same vowels found in monolingual English and Spanish children and was normally producing English or Spanish-specific vowel sounds. However, Deuchar and Quay stated that it was impossible to say that the child had two language-specific vowel systems, as they did not know "if her phonological representations were linked to specific words rather than the two languages" (p.34).

Deuchar and Quay also studied the child's morpho-syntactic development and found that the earliest signs of the development of morpho-syntactic rules occurred when two-word utterances were produced, at age 1;7 (MLU of 1.06). At this stage the child was producing verbs, nouns, and adjectives *appropriately* inflected for person and number in Spanish; her first English verb inflections appeared at age 1;10 (the *-ing* form). Overall, the child's morphology in each language developed very similarly to that of monolingual English and Spanish children.

Regarding word order, Deuchar and Quay reported that the examples of adjectival phrases, as well as the examples of possessive phrases found in the child's speech from age 1;10, showed

the correct language-specific word order, as in 'zapato rojo' (*red shoe*), 'mamá cansada' (*tired mommy*), 'daddy's key', 'M's bath', and 'M's book' (p.86). However, unfortunately the authors did not discuss whether the child ever mixed any of these constructions, nor did they discuss whether the child respected the grammatical constraints proposed for adult mixing by Poplack (1980) and Myers-Scotton (1993).

Language autonomy was further evidenced in the DUFDE study,<sup>3</sup> which included five children between ages 1;0 and 5;0 (reported in Meisel, 1994b). Upon analysis of the speech by one of these children, Ivar, evidence for language-specific features was found from very early on. For instance, Meisel reports that although in the German data early verb forms were not initially marked for agreement, and pre-verbal subjects were normally missing, the child consistently produced predicates in final position from age 1;10,30 as required by the German grammar.<sup>4</sup> The first finite German verb form was recorded in Ivar's speech at age 2;0,29, although Meisel claims that it was probably an imitation of the adult form.<sup>5</sup> Productive use of finite verb forms was evidenced at age 2;1, age at which grammatical subjects normally agreed with the verb. Meisel reports that agreement errors were virtually non-existent after this point; furthermore, subject-like elements began to be consistently placed before the verb as soon as finite verb forms were attested, and null subjects disappeared almost instantaneously. In addition, finite verbs always preceded the negation marker *nicht* in main clauses. Meisel argues that all these factors have been associated with the acquisition of finiteness.

Regarding the child's acquisition of French, Meisel argues that only non-finite forms<sup>6</sup> appeared before age 2;0 (i.e.; only adjectives were combined with subjects in early multi-word utterances, and the few verb forms identified --e.g.; *parti* 'gone'-- were adjectival elements). According to the study, the first examples of verb forms appeared at age 1;5, but they were analyzed as rote-learned forms; furthermore, subjects were "extremely rare" (p.94) during this period of time. Between ages 2;2 and 2;4, Ivar started making

productive use of subject clitics. In addition, by age 2;5 Ivar had acquired verb inflections, as subject clitics of 1st – 3rd person were being combined with verbs. Similarly, modals started to appear in combination with infinitival verb forms, past participles began to be preceded by auxiliaries, and irregular forms started to emerge. Similarly, there were virtually no errors in agreement markings of person. At around age 2;4 the child also started making use of the negative marker *pas* with finite verbs preceding it and non-finite verbs following it. Overall, the language-specific patterns identified in Ivar's speech strongly point to language autonomy from very early on despite the fact that he was just starting to develop underlying grammatical representations.

Another study that looked at syntactic acquisition in bilingual children was that carried out by Paradis and Genesee (1996). They point out that while French monolinguals produce many inflected (finite) verbs from age two; finite verbs emerge later in child English, namely at around age 3;0. As a result, they argued, one might expect that the acquisition of finiteness in a French-English bilingual might be accelerated due to the influence from French. After examining all finite utterances produced by three French-English two- and three-year-old bilinguals, they found that each child produced a higher percentage of finite utterances in French than in English. These researchers also analyzed negative constructions and the use of pronominal subjects by the three children in order to study the possibility of syntactic transfer. The position of the negator to the right of the finite verb in English would be syntactic evidence that these children were transferring French syntactic rules, as French requires verb-raising. These children were generally using verb-raising in French negative utterances. In contrast, post-verbal negators were not present in the English data, which indicated that transfer from French to English did not occur. Regarding the children's use of pronominal subjects, Paradis and Genesee reported that these children always correctly produced finite pronominal subjects in French, which evidenced the children's awareness that French pronominal subjects are clitics; in English, these children

were producing a similar proportion of finite and nonfinite utterances containing pronominal subjects. If there had been transfer from English into French, the children would have produced many utterances where the clitic would have appeared with a nonfinite verb. The two researchers concluded that these children “were developing along a timetable within the range of monolingual children, although not at the upper bound of that range” (p.14) with regards to the acquisition of finiteness, negation, and pronominal subjects, and that the three children were acquiring French and English autonomously.

Mahlau (1994) studied the bilingual acquisition of one Castilian Spanish-Basque bilingual child from ages 1;7 to 2;06. He showed that this child was making appropriate use of finite and non-finite verb forms in Spanish from the beginning, the first form being produced at 1;08. Mahlau adopts the proposal by Radford (1986) that initially children lack INFL. According to Mahlau's analysis, the child in this study did not show evidence for INFL in Spanish until age 1;11.03; the first finite verbs in his speech were frozen forms. In Basque, the child acquired INFL at around the same age, 1;11.06, when multiple forms of a single verb were identified. Although word order differs between the two languages (while Spanish has a general SVO word order, Basque has a typical SOV word order), language-specific word order was used correctly from the beginning. Furthermore, in Basque the child was correctly producing auxiliary inversion in negation, which he was not doing in Spanish, as it is not allowed by its grammar. Mahlau stated that, “...already before two and a half years of age, the child has two codes that the child has already established [*el niño ya antes de los dos años y medio de edad dispone de dos códigos, que el niño tiene decididamente establecidos*]” (p.107), as well as the ability to accurately separate the two languages according to context.

### 3.2. Language mixing

Genesee (1989), argues that in order to uphold the ULS hypothesis, one would have to

show evidence that bilingual children *indiscriminately* mix both languages in all contexts. He states that although the mixing of phonological, morphological, and lexical elements, as well as mixing of phrasal structures is evident in all bilinguals, children's mixing should not be interpreted as a sign of language fusion or confusion but rather as a result of incomplete linguistic systems. According to him, at early stages, bilingual children do not have translation equivalents for many lexical items in each language resulting in high rates of language mixing; once the child has a larger lexicon, the incidence of language mixing declines.

Many other researchers have further analyzed the role of language mixing in child bilingualism in relation to context. For example, Lanza (1992) looked at whether bilingual two-year-olds can mix their two languages in the same way adult bilinguals do. Her analysis was based on the speech by a Norwegian-English bilingual child, Siri, from ages 2;0 to 2;7. She examined multi-word mixed utterances as well as single-word utterances and analyzed the distribution of lexical and grammatical morphemes in the child's mixed utterances. Lanza stated that, in contrast to adult grammatical mixing which mainly includes mixing of content words, Siri seemed to mix functor words (defined as a closed class lexical items) more often than content words, a phenomenon that does not appear to be common according to what has been reported in most studies on bilingualism (although this phenomenon was also reported by Vihman; 1985). The child in this study used Norwegian grammatical morphemes, bound morphemes and function words with English words, although bound English morphemes only co-occurred with English words. This grammatical mixing was interpreted as a sign of language dominance, Norwegian being the dominant language. Lexical mixing, however, could not be explained in terms of language dominance. Instead, it was explained based on the extent to which the interlocutor negotiated a monolingual context with the child. For example, while the mother always insisted on a monolingual context, the father often accepted a bilingual context, facilitating language mixing. Nonetheless, Lanza reported that Siri was able to

adjust her speech according to the language of the context from early stages, and that this ability matured with age.

Deuchar and Quay (2000) analyzed the mixed utterances produced by the child in their study, and they argued that mixing reflected a lack of sufficient lexical resources since the child was missing translation equivalents for many of the words in the two languages. They also argued that the child was clearly able to use more of the interlocutor's language. Unfortunately, this study did not examine whether the child's speech was grammatically constrained.

Genesee et al. (1995) examined the extent to which five bilingual French-English children at the one and two-word stages were able to use their languages separately in different situations; the children were observed from ages 1;10 to 2;2. In addition to recording the interactions between the children and their parents, two of the children were observed as they played with a monolingual English speaker who was unknown to them. The goal of these latter recordings was to determine whether the children could use the appropriate language in an environment new to them. Although all the children in this study code-mixed both inter- and intra-sententially, they appropriately used more English-only utterances with their mother, and more French-only utterances with their father, even in contexts where both parents were present. Furthermore, the two children observed interacting with monolingual strangers engaged in little mixing and were able to use much more of the interlocutor's language. Genesee et al. also reported that the children's inter-sentential mixing was related in part to their language dominance, as the children tended to mix more while using their non-dominant language. They concluded that language differentiation according to the interlocutor did not appear to be "a reflexive language habit arising out of past experience with familiar interlocutors but rather an adaptive response to their immediate language context" (p.627).

Genesee et al. (1996) conducted a follow-up study in order to test the limits of bilingual children's communicative competence by examining their ability to modify their language use with monolingual strangers. Four two-year-old

French-English bilingual children were observed during play sessions while interacting with their mothers alone, with their fathers alone, and with a person unknown to them. The results showed that these children (at the one-word stage) were not only able to adapt their languages to that of the monolingual stranger, but also that they used the stranger's language more frequently with him than with the parent who also spoke that language. This presumably indicated that the children were able to judge the stranger's level of proficiency; the children did not assume that the stranger was able to speak their two languages, which was true of their parents.

### 3.3. Grammatical constraints in children's language mixing

Some researchers (Meisel, 1994, Paradis and Genesee, 1996, and Paradis and Genesee, 2000) looked at children's language mixing regarding the extent to which it respects various grammatical constraints proposed for mixing in adult bilinguals.

For example, Meisel (1994a) proposed the *grammatical deficiency* hypothesis, which implies that children's early speech cannot be grammatically constrained because they still lack elaborate grammatical knowledge about their languages; grammatical constraints on language mixing should only begin to be observed once the children's grammars contain INFL. According to Meisel, finite verbs play an important role in defining constraints on code-switching because functional categories such as inflection crucially define coherence (Meisel, 1994b). If a sequence of elements has strong coherence, it is very likely that mixing will not occur within that sequence or utterance.

Meisel (1994a) examined data gathered from two simultaneous bilingual French-German children beginning at ages 1;3 and 1;4, and he determined that even though the children code-mixed, most examples of mixing found at early stages only involved bare nouns. The study reported that one of the children "occasionally" (Meisel 1994a, p.435) combined German verb stems with French affixes.<sup>7</sup> Nonetheless, between

the ages of 2;4 and 2;6 when the markings for INFL noticeably appeared in the children's speech, both children were able to use inflectional morphology productively and henceforth, they consistently avoided violations of the constraints on language mixing. This supported Meisel's hypothesis that grammatical mixing is unconstrained before INFL is acquired.

Paradis and Genesee (1996) examined one of the grammatical constraints proposed by Poplack (1980) for adult code-switching, namely the *Free Morpheme Constraint*. This constraint predicts no mixing of bound inflectional or derivational morphemes. The analysis by Paradis and Genesee was limited to mixed utterances containing pronominal subjects; they found no evidence of French subject clitics, which are bound morphemes, appearing with a nonfinite English verb. In other words, these researchers found no violations to Poplack's Free Morpheme Constraint.<sup>8</sup>

Paradis, Nicoladis and Genesee (2000) looked at structural constraints in the mixing of young bilingual children. They analyzed the mixed utterances produced by 15 French-English bilinguals aged 2;0 to 3;6, focusing on those utterances relevant to the constraints in the *Matrix-Language Frame Model* (MLF model) proposed for adult code-mixing by Myers-Scotton (1993). The main elements of this model are the Matrix Language (ML) and the Embedded Language (EL). The ML is the language that determines the morpho-syntactic frame for a given sentence, while the EL is the language whose lexical or morpho-syntactic elements are inserted into the ML. The constraints in this model are regulated by a set of principles: 1) The System Morpheme Principle, whereby all syntactically or externally relevant morphemes come from the ML. 2) The Morpheme Order Principle whereby the surface word order is determined by the ML. 4) The ML Blocking Hypothesis, whereby the insertion of an EL content morpheme not congruent with the corresponding ML is blocked.

Paradis et al. analyzed the System Morpheme Principle, and they found an overall rate of violations to this principle of 18.1%. They presented two main possibilities for the relatively high rate of violations to this principle:

lexical gaps (i.e.; lack of translation equivalents for every morpheme) and unequal morpho-syntactic development (INFL develops earlier in French than in English). Next, they looked at the Morpheme Order Principle (MOP); more specifically, they analyzed three structures where word order differs in the two languages: possessive phrases, adjective phrases, and negative constructions. None of the possessive phrases violated the MOP, and only one example of adjective phrase constituted a violation of the MOP. Finally, they examined congruency, the System Morpheme Principle, and ML Blocking regarding the acquisition of pronominals. While French has two types of pronominals, pronominal subjects which are clitics and strong pronouns which are free-standing pronouns, English only has free-standing pronouns. Paradis et al. found that the vast majority of mixed utterances involving pronominals were acceptable in the Matrix-Language Frame Model. They concluded that bilingual children appear to process language-specific syntactic knowledge from the early stages of language development, even during an early period of development where the use of INFL-related morpho-syntax is variable in the two languages, and despite the fact that the mastery of such morpho-syntactic features is delayed in one of the languages.

In sum, Quay (1995) showed that bilingual children may have two active lexicons (translation equivalents) from early stages, and Deuchar and Quay (2000) showed that the child's morpho-syntactic and phonological systems developed the same as they generally do in the child's monolingual counterparts. This contradicts the claims by Swain (1972) and Vihman (1982) that bilingual children's morphological and syntactic development is delayed. Meisel (1994b), Paradis and Genesee (1996), and Mahlau (1994) further showed evidence for autonomous language development in bilingual children (independent inflectional systems, independent word order, and no evidence of transfer of any of these structures). Additionally, Lanza (1992), Deuchar and Quay (2000), and Genesee et al. (1995 & 1996) demonstrated that early language mixing is mainly related to either immature lexicons or

to language dominance. They further showed that bilingual children are able to adjust their speech to that of their interlocutors in different language contexts. In similar studies, Meisel (1994a), Paradis and Genesee (1996), and Paradis et al. (2000) provided evidence that, overall, the mixing found in the speech of young bilinguals does not violate the grammatical constraints proposed for adult bilingualism (code-mixing).

#### 4. Aims and implications of this study

Most of the studies that provide evidence for two separate language systems have focused on isolated aspects of child bilingualism, and only one has included bilingual English-Spanish children (Deuchar and Quay, 2000). Although Deuchar and Quay carefully analyze the bilingual development of an English-Spanish child and contrast her development with that of monolingual children, they do not look at whether the child's mixing was in any way constrained by the same grammatical rules that constrain adult mixing. Moreover, even though the child in their study is an English-Spanish bilingual the same as the child in this study, the context in which bilingualism develops in the two children is significantly different. Specifically, in Deuchar and Quay the mother is the English source and the father is the Spanish source; the opposite is true in the current study. Similarly, the language spoken at home in Deuchar and Quay's study is Spanish, and English is the language of the community; in the present study, English is the language of the home (between the parents) as well as that of the community.

In an attempt to offer a more exhaustive analysis of child bilingual development, this paper examines evidence for autonomous development at the phonological, morphological, syntactic, and pragmatic levels. In addition, it contrasts the child's bilingual development to that of monolingual English and Spanish-speaking children of similar ages as a way to further examine language autonomy. The study looks at the proportion and possible causes for language mixing in the child's speech and at whether such mixing

respects the grammatical constraints proposed in Poplack (1980) for adult mixing. Overall, the study has a descriptive nature, although it also provides a theoretical analysis of the data.

In particular, this case study addresses four questions:

- 1) How do phonological, morphological, syntactic, lexical, and pragmatic systems develop in this child's speech, and how does such development compare to that found in monolingual English and Spanish-speaking children of comparable ages?
- 2) What is the evidence that the child has two autonomous systems and at what levels and ages is such evidence found?
- 3) In what contexts does he mix elements from the two languages and what might be the reasons for such mixing?
- 4) What evidence shows whether or not grammatical constraints of both languages are respected in the child's mixing?

## 5. Methodology

### 5.1. Subject

This case study is based on the simultaneous bilingual acquisition of English and Spanish by a boy, B. The mother's first language is Spanish and that of the father is English, and both parents are bilingual in the two languages. The language of the home and that of the community (including daycare, family, and friends) is English, whereas B is only exposed to Spanish when he interacts with his mother and in a few instances when he watches Spanish television or plays computer games in Spanish.<sup>9</sup> By and large, both parents use the one-parent-one language approach described in Romaine (1995) and in Döpke (1992), whereby each parent exclusively addresses the child in his/her native language. Whereas the father rarely speaks his non-native language around B, the mother often speaks English in the presence of the child. Overall, during the observation period the child spent about 35% of his waking hours in a monolingual Spanish context (mostly with his mother), about 30% in a

monolingual English context (with his father or at daycare), and the remaining 35% in a bilingual context (with both parents).<sup>10</sup>

As a way to reinforce language separation and to avoid language mixing, B's parents encouraged him to respond to them by using the appropriate language, English with the father and Spanish with the mother. Whenever B used the 'inappropriate' language, his parents either pretended that they did not understand what he was saying until he used the correct language, provided him with translation equivalents if he needed them, or responded to him with 'I don't understand' or 'what did you say?' According to Döpke (1992) and Juan-Garau & Pérez-Vidal (2001), these techniques are commonly used in bilingual families.

## 5.2. Data collection

### 5.2.1. Audio-recordings

The child was audio-recorded during natural play sessions at regular intervals from ages 1;2.0 to 2;3.3. The recordings averaged two thirty-minute sessions a week during the first seven months of data collection and one a week thereafter. The child was generally audio-recorded as he interacted with his mother or with his father.<sup>11</sup> About 7% of the English recordings consisted of the child's interactions with monolingual English speakers other than his father, and only three recordings of the child interacting with other monolingual Spanish speakers were conducted. All recordings were transcribed including both the child's and the adult's conversational turns. Phonetic transcriptions were provided for the child's utterances during the first eight months of transcripts, as at this early stage of development B's pronunciation differed from adult standards due to his use of reductions and simplifications.

### 5.2.2. Diary

The mother also kept a diary with a record of new words as they appeared in the child's lexicon.

Each word was added to the diary only after the child showed evidence of using it consistently on at least two separate occasions, one of which was not an immediate repetition of the adult's model. The vocabulary lists did not include proper names, and it is important to acknowledge that a small number of words might not have been recorded. Although at the beginning of the study it was fairly easy to record every single word that the child acquired, towards the end of the study when he was learning new words very rapidly, it was very difficult to record all of them, especially in English contexts as the mother was not always around B; the figures provided for the size of the child's lexicon constitute a close estimate.

In the diary, special note was also taken about the ages when translation equivalents in both languages appeared. The diary further contained information about words that were persistently being used in the inappropriate language context despite having a translation equivalent (special instances of mixing).

### 5.2.3. Mean Length of Utterance (MLU)

A way of measuring a child's morpho-syntactic development is the Mean Length of Utterance (MLU), which allows one to estimate a child's syntactic development independent of his age, as each new meaningful element or morpheme adds length to a child's utterance (Brown, 1973, Berko Gleason, 1997). Although the way of calculating MLU values in English is straightforward, this procedure is much more complex in highly inflected languages such as Spanish (Pizzuto and Casselli, 1992, and 1994). As a result, MLUs were not used here to compare the child's syntactic complexity in the two languages, but as a source for further comparison with English and Spanish monolingual children.

By and large, all the criteria for MLU calculations suggested in Brown (1973) were used. However, since this study is based on the speech of a bilingual child, specific criteria were used regarding mixed utterances, ambiguous words, and proper names:

1. Inter-sentential mixes and utterances<sup>12</sup> containing intra-sentential mixes were excluded from MLU calculations. This was done on the premise that MLU should be based on a set of consecutive utterances in a *single* language. Mixed utterances, however, were analyzed separately in order to establish possible reasons for mixing, as well as the extent to which grammatical constraints proposed for adult mixing were respected.
2. Proper names were counted in the context in which they appeared. Nouns such as 'aunty', *papi* ('daddy'), 'grandpa', and *mami* 'mommy' were classified as proper names because the child used them to refer to particular persons in both English and Spanish contexts; these words substituted for these people's proper names.
3. Words such as 'car/carro', 'helicopter/helicóptero', and 'hippopotamus/hipopátamo', which were pronounced the same in both language contexts, were labeled ambiguous, as it was impossible to determine whether they belonged to one language or to the other. Such words were counted as words of whichever language was being spoken in the context, it be English or Spanish.<sup>13</sup>

In addition, since in highly inflected languages such as Spanish it is difficult to determine the point of acquisition of a given morphological inflection (i.e., when it is being used productively), the suggestions by Pizzuto and Caselli (1994) were followed. Specifically, the point of acquisition of a given verbal inflectional morpheme was determined when the same root form appeared correctly in at least two distinct inflected forms and when the same inflection was used with at least two different verbs. Pizzuto and Caselli (1994) postulate that the first inflected verb forms that appear in child language are possibly frozen forms.

In order to compare the child's morpho-syntactic growth in the two languages combined, an analysis based on the percentage of Multi-Morphemic Utterances (MMU) was carried out. This procedure is suggested in Genesee et al.

(1995), and it consists on calculating the percentage of multi-morphemic utterances found in the child's speech. MMUs were based on two consecutive recordings (one in each language) at various ages throughout the study.<sup>14</sup> The reason for using two consecutive recordings was that each recording was done in a single language; in order to establish a comparison, one recording from each language context had to be analyzed. The percentage of multi-morphemic utterances was established based on the overall number of utterances found in the two sessions, divided by the combined number of multi-morphemic utterances.

### 5.3. Data analysis

The analysis was based on the transcripts as well as on the data included in the diary. The transcripts were carefully analyzed in order to examine the development of phonological, morphological, syntactic, and pragmatic features in the child's speech. MLUs and MMUs

were also established throughout the study (provided in Tables 1 and 3). The data were carefully examined in order to determine the extent to which the child was able to adjust his speech according to the interlocutor. Language mixing was studied according to the context, and possible reasons were provided as to why the child mixed. Instances of language mixing were further analyzed in light of grammatical constraints.

The data contained in the diary was used primarily to observe the overall growth of the child's lexicon, since it included the words that the child acquired in chronological order. Furthermore, since several researchers have suggested that translation equivalents are good indicators of a bilingual child's ability to maintain both systems separate, close attention was paid to this phenomenon in both the transcripts and the diary.

The data used in this analysis is presented in Table 1 below. It includes the child's age at the time of each recording, the total number of

TABLE 1  
Total number of utterances and corresponding MLU value for each English and Spanish transcript

English data			Spanish data		
Age in years, months, and weeks.	Total # of English-only utterances	MLU	Age in years, months, and weeks.	Total # of Spanish-only utterances	MLU
1;02.0	14	1.0	1;02.0	19	1.0
1;02.1	17	1.0	1;02.3	18	1.0
1;03.1	19	1.0	1;03.1	21	1.0
1;03.2	22	1.0	1;04.2	30	1.0
1;03.3	23	1.0	1;05.1	26	1.03
1;04.0	19	1.0	1;05.2	24	1.04
1;04.3	27	1.0	1;06.2	30	1.03
1;07.2	28	1.03	1;07.1	39	1.08
1;07.3	30	1.06	1;07.2	40	1.13
1;08.1	33	1.09	1;07.3	31	1.12
1;08.3	37	1.08	1;08.2	39	1.20
1;10.1	50	1.17	1;09.1	46	1.27
1;10.2	56	1.25	1;10.0	53	1.28
1;11.1	77	1.31	1;10.1	58	1.32
1;11.3	84	1.57	1;10.3	69	1.42
2;00.1	96	1.84	1;11.0	90	1.38
2;00.2	93	1.82	1;11.3	94	1.43
2;01.0	98	1.86	2;00.2	99	1.60
2;01.2	102	1.96	2;00.3	95	1.82
2;02.1	108	2.08	2;01.3	104	1.83
2;02.3	102	2.76	2;02.0	101	1.86
2;03.0	114	2.82	2;02.2	106	2.19
2;03.3	119	2.96	2;02.3	109	2.36
			2;03.2	111	2.43
			2;03.3	105	2.53

utterances (excluding mixed utterances), and the MLU value for each transcript. The ages at which MLU values were calculated in each language are different because each English and Spanish recording was normally carried out on a different date.

## 6. Results

The child's language development was analyzed into various linguistic and extra-linguistic components:

- 1) Phonological development: a careful analysis of the ages at which specific phones appeared in the child's speech, as well as syllable structure and other phonological phenomena such as homonymy.
- 2) Lexical development: rate and patterns in the child's lexicon at various ages.
- 3) Morphological development: ages at which the child started using inflectional morphemes in each language.
- 4) Syntactic development: size of the child's utterances in terms of MLU and MMU, and types of constructions found in his speech (adjective phrases, possessive phrases, and *wh*-questions).
- 5) Translation equivalents: age and rate of translation equivalents throughout the study and extent to which the child used them appropriately.
- 6) Language mixing: rate of language mixing and possible causes for mixing, as well as grammatical constraints proposed for adult mixing.

The child's phonological, morphological, and syntactic developments were compared with the normal development in monolingual children of similar ages.

The child's speech developed gradually, and important changes seemed to be evidenced at various levels (number of words per utterance, syllable complexity, rate of translation equivalents, and degree of mixing), suggesting three main stages in the child's language development.

## 6.1. Phonological development

### 6.1.1. Acquisition of phonemes

The English and Spanish vowel systems are significantly different. On one hand, while Spanish only has five vowel sounds, namely /a, e, i, o, u/, American English has at least eleven vowel sounds, namely /a, æ, ə, i, ɪ, o, ɔ, e, ε, u, ʊ/ (Deuchar and Quay, 2000); the Spanish vowel inventory is a sub-set of the English vowels.

In the current study, the vowel sounds that B produced between ages 1;02 and 1;05 were either reduced in what sounded like a schwa /ə/ or elongated in the form of long vowels [a:, i:]; hence, it was impossible to ascribe them to a particular language. However, as early as at age 1;06, several English vowel sounds appeared to be language-specific. Furthermore, these English-specific vowel sounds were being used appropriately (i.e.; B was using /æ, ʊ, ɪ, and ɔ/ only when pronouncing English words), as illustrated in the following examples:

- |                 |                     |
|-----------------|---------------------|
| 1. hand /æ:n/   | 6. ball /bɔ:l/      |
| 2. aunty /æni/  | 7. bunny /bʌni/     |
| 3. apple /æpɔ:/ | 8. working /wɔ:kɪŋ/ |
| 4. corn /kɔ:/   | 9. book /buk/       |
| 5. hot /ɔ:t/    | 10. jump /dʒʊp/     |

Similar results were reported in Deuchar and Quay (2000). They found that the child in their study always produced vowel sounds in a language-specific manner. However, they suggested that children this young might simply be repeating memorized chunks instead of using these segments productively. Although it is possible that the child in the current study might simply be reproducing the adult model, the significant number of words containing language-specific vowels is not inconsistent with there being two autonomous systems.<sup>15</sup> Furthermore, another possibility is that the child had a single vowel inventory, namely the English vowel system, as Spanish vowels fall under the English vowel system; they are a subset of the English vowel system.

Previous studies on the acquisition of English vowel phonemes by monolingual children reveal that the first vowels to be acquired are normally [i, a, u, o, and ʌ], most of which are also part of the Spanish phonological inventory and are the least marked vowel segments cross-linguistically (Stoel-Gammon and Herrington, 1990). These vowel segments are typically followed by [a, u, ɔ, ə, e, ε, and ɪ], and then the r-coloured vowels.

With regards to consonant sounds, although in English and in Spanish most of these segments are identical, an important number are specific to each language. For instance, the sounds /ð/, /θ/, /v/, and /ʃ/, do not exist in the Spanish dialect being acquired by this child. Similarly, the Spanish sounds /ɲ/, /r/, and /β/, which are part of the Spanish phonological inventory, do not exist in English.

All consonant sounds found in the child's speech during the first three months of data collection (between ages 1;02 and 1;05), namely [k, g, t, d, tʃ<sup>16</sup>, l, b, m, w, f, and n] were non-language specific, as all of them belong to the phonological inventories of both languages. In their study on bilingual English-Spanish acquisition, Deuchar and Quay (2000) also found that initially all consonants in that child's speech were found in the inventories of both languages; it was impossible to determine whether they were language-specific.

Between ages 1;05 and 1;11, however, several new consonant sounds were identified in B's speech, namely [j, p, s, ʃ, ɲ, h, ʒ, and ɲ], and a small number of them were language-specific. The Spanish-specific phoneme /ɲ/ started to be evidenced in several words at age 1;06.2. The two English-specific phonemes /ʃ/ and /v/ were found in multiple examples at ages 1;10.0 and 1;11.3 respectively; they had been acquired by these ages.

Most of the consonant sounds in the child's speech were common to the two languages; yet, it was evident that by age 1;11.3 he was producing language-specific sounds appropriately, as shown in the following examples:

<i>English</i>	<i>Spanish</i>
11. 'push' /pʊʃ/	18. <i>muñeca</i> /móɲi/ ( <i>doll</i> )
12. 'shoe' /ʃu/	19. <i>señor</i> /ɲo/ ( <i>Mr./man</i> )
13. 'fish' /pɪʃ/	20. <i>pañó</i> /áɲo/ ( <i>towel</i> )
14. 'love' /lʌv/	
15. 'TV.' /ti vi/	
16. 'Razvan' /vʌn/	
17. 'very' /veli/	

By the end of the study (age 2;03.3), some of the consonant segments found in adult English and Spanish were still missing in B's phonological inventory. These include the Spanish trill /r/, the English voiced labiodental /ð/, the English voiced alveolar fricative /z/, and the voiceless alveolar fricative /θ/. The Spanish trill was normally substituted with /dʒ/ or /l/, while English /z/ was substituted with the voiceless fricative /tʃ/; /ð/ was replaced by the voiced alveolar stop /d/, and /θ/ was replaced with either /s/, as in 'teeth' /ti:s/ or /f/, as in 'three' /fri:/.

This child's acquisition of consonant phonemes was very similar to that reported for monolingual children. For example, Ingram (1981) and Stoel-Gammon (1985) report that between ages 1;05 and 2;02, monolingual English-speaking children have typically acquired the following consonant sounds: [p, b, t, d, k, g, m, n, f, s, h, and w]; B had acquired all these sounds by age 2;02. Macken (1978) reports that at age 1;09, Spanish-speaking monolingual children have already acquired the following consonant sounds: [p, t, k, m, n, w, j, and h]; all these phonemes were in B's inventory by age 1;09, as well. The rhotics [r, and r] are typically the last phonemes to be acquired by Spanish monolinguals; they are normally acquired after age 3;0 (Jiménez, 1967, and Macken, 1978). It is not surprising then that by the time the study concluded at age 2;03.3, B still had not acquired any of the Spanish rhotics.

### 6.1.2. Syllable structure

During the first three months of data collection, most words were pronounced as monosyllabic in the two language contexts, even when they were multi-syllabic in the adult language. This is a general characteristic found in early

child language, as observed by Smith (1973) and Ingram (1986). They state that young children in general tend to reduce consonant clusters, delete final consonants, and delete unstressed syllables, generally pronouncing only the most prominent syllables.

Between ages 1;05 and 1;11, if a word was made up of one or two syllables, B always pronounced the entire word, although he simplified some of the sounds that he was still unable to produce. During this same period of time, for words made up of more than two syllables, B normally pronounced only the most prominent syllables, as illustrated in the following examples (the enunciated syllables are shown in bold):

Word	Syllable count in adult speech
21. <b>delicious</b> [li:ʃʊ]	(3 syllables)
22. <b>tortuga</b> ( <i>turtle</i> ) [túia]	(3 syllables)
23. <b>caracol</b> ( <i>snail</i> ) [kol]	(3 syllables)
24. <b>lagarto</b> ( <i>alligator</i> ) [á:to]	(3 syllables)
25. <b>alligator</b> [géllo]	(4 syllables)
26. <b>flamingo</b> [mígo]	(3 syllables)

Before age 1;11 B's words always contained fewer syllables than did their adult counterparts; B normally simplified or deleted the non-salient syllables in multi-syllabic words.

By age 2;03.3, B was enunciating most syllables in each word; he was now able to enunciate up

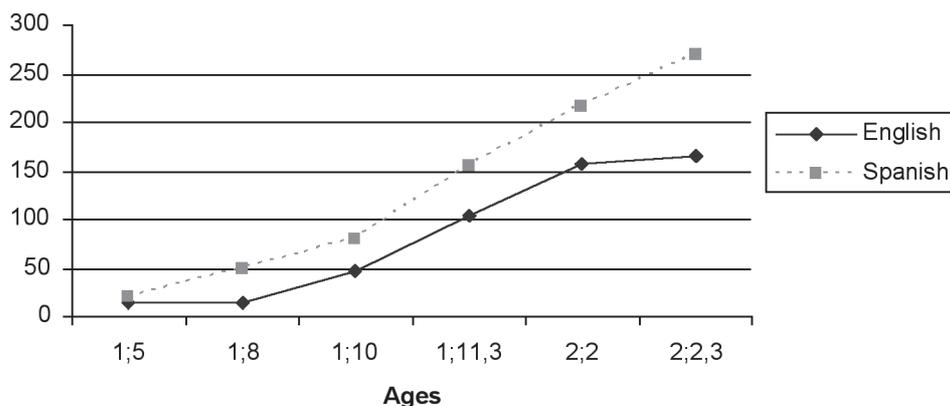
to four syllables, although words such as Spanish *hipópoto* were still being shortened.

## 6.2. Lexical development

### 6.2.1. Rate and size

The child's speech in the first two months of audio-recordings mostly included babbling and interjections. By and large, in contexts where the person interacting with the child did not ask questions or make an attempt to initiate a response from him, B did not seem to produce much language on his own. Furthermore, most of the child's utterances produced during the first three months of the study consisted of countless repetition of the few words in his lexicon, as illustrated in the excerpts provided in Appendix A. Before the child reached age 1;05, practically all words in his lexicon were nouns referring to objects that surrounded him such as toys and food items; however, a Spanish adverb *más* 'more', and four English expressions: 'all gone', 'bye-bye', 'the other one', and 'yellow car' were also identified. The latter phrases were initially analyzed as single lexical items because the child did not show evidence of using the words that made them up productively. In the example 'yellow car', although B did say 'car' in many instances, he never combined it with another adjective, and he used it to refer to any color car,

Figure 1  
Rate of Lexical Growth in the Two Languages



not just to ‘yellow’ cars; the word ‘yellow’ was never used with a noun other than ‘car’. Overall, the child’s Spanish lexicon during these first months was larger than his English lexicon, as can be seen in Figure 1.

During the following seven months of language development (1;05 – 1;11), the child’s lexicon continued to be larger in Spanish, and both lexicons included mainly nouns, although a few verbs, adjectives, adverbs, pronouns, and articles were evidenced as well. By age 1;11, function words (articles, pronouns, and prepositions) made up approximately 8% of the child’s total lexicon, whereas 71% of his words were nouns. B’s lexicon continued to grow very rapidly and during the last three months of data collection (1;11.0-2;03.3) his lexicon included many articles and adjectives, a few prepositions, and a few modal auxiliaries, as well as many new nouns (see figure 1 below for a detailed representation of the child’s lexical development throughout the study). Many new verb forms started to appear during the last four months of the study, and some *wh-* words, mainly in English contexts, were also being used quite frequently. In addition, by age 2;00 a lot of the new English words in B’s lexicon were in fact whole phrases such as ‘I see you’ and ‘here it goes’. Although B had already acquired some of the words that made up these expressions, these were entered in the diary as single items because they seemed to be frozen forms.

Figure 1 compares the rate and size of the child’s lexicon in the two languages throughout the study.

### 6.2.2. Onomatopoeia

During the first three months of data collection (1;02.0 – 1;05.0), many of the child’s words were in the form of *onomatopoeic sounds*, that is, the child used animal and object sounds to refer to particular animals or objects, as illustrated in the following examples,

<i>Sound</i>	<i>Noun</i>
27. kak kak [ka: ká:]	chicken/ <i>gallina</i>
28. moo [mu:]	cow/ <i>vaca</i>

29. rwaaa [ruá:]	lion/ <i>león</i>
30. meow [miá:u]	cat/ <i>gato</i>
31. choo-choo [tʃu tʃú:]	train/ <i>tren</i>

Such sounds were always used as lexical items because each one consistently referred to a single animal or object; when asked to name a particular animal the child always responded by producing the sound made by that animal. Moreover, the fact that he never used the same sound to refer to more than one animal or object indicated that each one of those sounds substituted for a particular noun; each onomatopoeic sound represented a lexical item.

By age 1;05.0 the child had started using the adult nouns to refer to most animals and objects; hence, onomatopoeic sounds were replaced with actual nouns.

### 6.2.3. Homonymy

B’s early vocabulary contained a large number of words with different meanings but identical pronunciation. Ingram (1986) has referred to this phenomenon as *homonymy*, and he claims that homonymy is a relatively extensive phenomenon in early child language that results from the young child’s small and immature phonological system. In the current study, the child was initially unable to pronounce entire words and mainly pronounced the stressed syllables<sup>17</sup> in each word, resulting in what looked like repetitions of the same word, as the following examples illustrate.

<i>Word</i>	<i>Pronunciation</i>
32. ball/bola	[bə]
33. book	[bə]
34. bus/bus	[bə]
35. tapa ( <i>lid</i> )	[ta]
36. truck	[ta]

By age 1;10, the pattern of homonyms had practically disappeared, although there were two examples found in the Spanish data. The first example was the pair *mono* (‘monkey’)/ *moto* (‘motorcycle’); both words were pronounced [móno].

The second example was the pair *pelo* ('hair')/*perro* ('dog'), both being pronounced [pélo]. Regarding the first example, the child was able to pronounce the /t/sound in word initial, word final, and word-medial position. However, the words *moto* and *mono* were phonetically realized exactly the same. Regarding the pair *pelo/perro*, the trill sound was never phonetically realized in the child's vocabulary, hence he was unable to pronounce the trill in the second word at this early stage.<sup>18</sup> Despite the child's inability to differentiate these items at the phonological level, anecdotal evidence recorded in the diaries revealed that in one occasion B's mother was holding a toy motorcycle and asked him to look at the *mono*; the child then laughed and indicated with his head that that object was 'not a *mono*'; similar incidents were recorded for the pair *pelo/perro*. This indicates that the child was aware of the difference in meaning of the words in each pair; some of these words might be production homonyms and not true homonyms.

#### 6.2.4. Ambiguity

Pairs such as 'car/carro' [ka] and 'ball/bola' [ba] were very common during the first three months of data collection (15% of the total lexicon). These pairs of words were considered to belong to the lexicons of both languages because they were pronounced the same in the two language contexts;<sup>19</sup> they were ambiguous. By age 1;06, and as a result of a more mature phonological ability, the number of ambiguous words diminished significantly, although there were at least three pairs attested: *elefante/elephant*, *hipopótamo/hippopotamus*, and *helicóptero/helicopter*. These words were quite long (more than three syllables) and the child was only able to pronounce the most prominent syllables. Based on the child's pronunciation alone, it was impossible to determine whether these items were English or Spanish; the first pair was enunciated [e pan], the second pair [po pon], and the last pair [kótiko].

By age 2;02, the only words that were ambiguous in the child's lexicon were 'taxi' and 'pizza', which have the same pronunciation in adult speech in the two languages.

#### 6.2.5. Translation equivalents

Although from the beginning of the study the child was producing words that could have been interpreted as translation equivalents, such words were ambiguous because only the stressed syllable was normally enunciated (examples included *car/carro* and *ball/bola*) The first true (i.e.; unambiguous) pairs of translation equivalents started to be evidenced in the child's speech at age 1;05.1. However, between this age and age 1;11.3, approximately 63% of the English words in the child's lexicon had no Spanish equivalents, and 61% of his Spanish words did not have an English equivalent either. Most of the English words that lacked a Spanish translation equivalent during this period of time were words and expressions that B had learned from family and friends outside the home (mainly at daycare). Some examples include 'here he comes', 'no touch'<sup>20</sup>, and 'all done'. Conversely, the Spanish words that had no English equivalents throughout these six months referred to items in picture books, which B had learned while playing with his mother. Such words included *sapo* ('toad'), *árbol* ('tree'), *pasa* ('raisin'), *culebra* ('snake'), and *delfín* ('dolphin').

By the time the child was 2;03.3, most of the English words in his lexicon had Spanish equivalents, but about 16% of them did not. Most of these consisted of fixed phrases that B had learned at daycare or from monolingual English-speaking relatives and friends such as, 'I do it' (meaning 'I want to do it myself'), 'who's that?', 'here you go', 'come here', and 'bye, I'll see you'. B had Spanish equivalents for some of the words that made up these phrases, for instance 'here', 'go', and 'bye'; however, these appeared to be frozen expressions as B always used the whole English expression in Spanish contexts instead of translating parts of it.

In contrast, although compared to English contexts a larger percent of the words in his Spanish lexicon lacked an English equivalent by the end of the study (approximately 31%), most of these were individual lexical items related to foods, household activities, and play items (see Appendix C for a list of the translation equivalents as they appeared in the child's speech).

It is important to point out that B generally used translation equivalents as soon as they were available in his lexicon, although in a small number of instances, he used the incorrect language, as will be seen in the section on language mixing below.

### 6.3. Morphological development

Spanish and English contrast significantly with regards to inflectional morphology. Whereas all Spanish verbs are inflected for person, tense and number, English verbs only require tense inflections and a third person singular marker. Similarly, while Spanish obligatorily inflects articles, pronouns, and adjectives for person and number, these lexical items are uninflected in English.<sup>21</sup>

#### 6.3.1. Verb inflections

From the time the first verbs appeared in B's speech, they showed language-specific characteristics. All Spanish verb forms identified were correctly inflected for person and tense,<sup>22</sup> just as they are for monolingual Spanish-speaking children (as reported by Durán, 2000, Grinstead, 1998, Pérez-Pereira, 1991, López-Ornat, 1994 and 1997, Hernández-Piña, 1984, and Ezeizabarrena, 1997). The first verb forms

are normally evidenced in monolingual children between ages 1;07 and 1;09 (López-Ornat; 1997), and that was the case in B's speech whose first Spanish verb was attested at age 1;07.0, namely *ve* 'see.1st.sg.'

By age 1;10.3 B was producing a significant number of Spanish verbs, all appropriately inflected for person and tense (see Appendix B for examples); however, most of these inflections were not counted as independent morphemes until the acquisition criteria were met<sup>23</sup> (i.e.; the same base form was being used correctly with at least two distinct morphemes and the same morpheme was identified in at least two different verbs). The child started making productive use of the simple present tense and the imperative, as in the utterances *mami come* 'mommy eat.3rdsg. imperative', *mami vea* 'mommy look.3rdsg. imperative', *ve mami* 'mommy see.3rdsg. simplepresent', and *B gusta* 'B. like.3rdsg. simplepresent'; these verb forms were evidenced at around age 1;10.3. By that same age, the first person contrasts were also identified, namely the 2<sup>nd</sup> person singular and the 3<sup>rd</sup> person singular, as in *vea* 'look.2<sup>nd</sup>sg. imperative' and *cae* 'fall.3<sup>rd</sup>sg. simplepresent'. By age 1;11.3, most of the person and verb inflections found in this child's speech were being used productively, although he had not acquired the entire verb paradigm found in adult speech.

All the Spanish verb forms that were acquired by age 2;03.3 are summarized in Table 2:

Table 2  
Spanish verbal inflections that had met the acquisition criteria by age 2;03.3

Person + tense	Age of acquisition	Examples
2nd person sg. simple pres.	1;10.3	oye mami? 'hear mommy?'
2nd person sg. imperative	1;10.3	baila mami 'dance mommy'
3rd person sg. simple pres.	1;10.3	se cae 'it's falling' mono come 'monkey eats'
1st person sg. simple pres.	1;11.0	quiero 'I want' veo 'I see'
3rd person simple progressive	1;11.0	papi [está] trabajando 'daddy [is] working'
1st person sg. progressive	1;11.2	[estoy] comiendo '[I'm] eating'
2nd sg. Simple past	2;01.1	papi comió 'daddy ate'
1st sg. simple past	2;02.2	toqué camión 'I touched truck'
3rd sg. simple perfect	1;11.0	se cayó [el carro] 'the car fell'
3rd sg. BE going to	1;11.1	mono va comer 'monkey is going to eat'

The rate and pattern of acquisition of Spanish verb morphology found in B's speech is very similar to that reported for monolingual children. For example, López-Ornat (1994&97), Ezeizabarrena (1997), and Grinstead (1998) report that the first person inflections to appear in Spanish monolinguals are 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> singular forms,<sup>24</sup> and that the first tense forms to appear are the simple present and the imperative. Similarly, the first verb forms to be evidenced in B's speech were the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> person singular forms, as well as the simple present tense and the imperative. The first contrasts for person were found in B's speech at around the same age as they normally appear in monolingual children, namely between the ages of 1;09 and 1;10 (López-Ornat, 1994).

Similarly, the pattern of acquisition of subject and object clitics found in B's speech is just like that reported for monolinguals. For example, Ezeizabarrena (1997) reports that subject agreement markers, which include the dative form *se*, as in *se cayó* 'DAT.3<sup>rd</sup>.sg fall.3<sup>rd</sup>.sg.simple perfect', appear before object agreement markers, which are typically clitics such as *me*, *te*, and *lo* --1<sup>st</sup> sg., 2<sup>nd</sup> and 3<sup>rd</sup> sg., and neuter respectively. The only object agreement marker found in B's speech, namely *me*, appeared after the subject clitic *se*.

In contrast to the Spanish data, and as has been reported for monolingual English-speaking children (Berko-Gleason, 1997, Brown, 1973, De Villiers and de Villiers, 1973, Peters, 1995, Marchman, Plunkett, and Goodman, 1997, and Hyams, 1992), the first verb inflectional morphology in English contexts was evidenced at a later age. Although the first English verb form was evidenced at age 1;08.0, namely the verb 'go', all the English verbs identified in the data lacked inflection all together. In English contexts, B mainly produced verbs that indicated requests or that referred to the first person singular and plural, which do not require inflection. However, all instances in which the verb required inflection for either past tense or third person singular were uninflected, as shown in the following examples:

37. C [proper name] push car (C is pushing the toy car) 1;10,2
38. He fall (he fell) 1;10,3
39. Teddy want (1;11,03)
40. B [proper name] fall (he fell) 1;10,3
41. M [proper name] no like this 2;1,0
42. it hurt 1;11,3
43. M want ice cream 2;3,2

This is consistent with what has been reported for monolingual children. Brown (1973) and de Villiers and de Villiers (1973) report that in monolingual English-speaking children the simple past marker does not appear until around age 2;0, whereas the third person singular marker *-s* is generally the last inflectional morpheme to be acquired. According to Brown (1973) and Marchman et. al. (1997), monolingual English-speaking children do not acquire full control of the English inflectional system until their MLU is between 3.0 and 4.0.

The first English inflectional marker found in B's speech was the present progressive marker *-ing*, and the first two examples were evidenced at age 1;10.3, namely 'working' and 'shopping'. Brown (1973) and de Villiers and Villiers (1973) report that the progressive marker is normally the first inflectional morpheme to appear in English monolingual children (as early as age 1;09).

Overall, the fact that all verb forms produced by the child throughout the study show the same features as those found in the speech of monolingual children suggests that B was developing two independent verb inflectional systems from the start, even though he still had not acquired the complete inventory of verbs forms in either language.

### 6.3.2. Gender inflections

B was making extensive use of Spanish articles by age 1;8.0 (*la*, *esta*, *uno*, ) and his first Spanish adjectives were evidenced at around that age, as well. From the onset, he was using the correct gender inflections on most adjectives and articles (as illustrated in examples 44-55 below); the only mismatches were between article and

noun. However, since these mistakes continued to increase for about two months as B was applying gender agreement randomly (i.e.; feminine and masculine markings for the same noun, as in *otro*

*vaca/otra vaca*, often within the same transcript), gender morphemes were not counted as independent morphemes until age 2;00; they did not truly meet the acquisition criteria before that age.

#### Articles

44. *otro ojo* (‘another.masc eye’)
45. *otra bebé* (‘another.fem. baby’)
46. *la bebé* (‘the.fem. baby’)
47. *el bebé* (‘the.masc. baby’)
48. *\*uno mono* (a.\*masc. Monkey’)
49. *un libro* (a.masc. book’)
50. *una casa* (‘a.fem. house’)
51. *otro vaca* (‘another.\*masc. cow’)
52. *\*otro tortuga* (‘another.\*masc. turtle’)

By age 2;00.2, B had a default marker, namely the masculine form *-o*, which he occasionally used with feminine nouns. At this age B was using the correct gender agreement in 75% of all his noun phrases, but he was still using a masculine marker with a feminine noun in the remaining 25%. After age 2;00 no examples of the feminine marker *-a* used with a masculine noun were found; this was the indicator that B was using gender inflections productively from that point on.

B’s acquisition of gender markings is comparable to that of monolingual children. According to a study by Hernández-Piña (1984), gender inflections start to appear after the first verb forms have been evidenced, and it takes up to two years for the child to acquire the entire inflectional system. For instance, the child in Hernández-Piña’s study produced the first gender inflectional markings at age 1;09. He produced multiple gender agreement errors between adjectives and inanimate nouns until about age 2;08, and complete control of this morphological rule was not attested until around age 4;00. Similar results were reported in Pérez-Pereira (1991) and López-Ornat (1997). In his study that included children between ages 4;0 and 11;0, Pérez-Pereira found that Spanish monolingual children initially

#### Adjectives

53. *carro loco* (‘car silly.masc.’)
54. *mami linda* (‘mommy pretty.fem.’)
55. *bebé guapo* (‘baby handsome.masc.’)

use a default gender marker, namely the masculine inflectional suffix *-o*; this default marker is used with ambiguous or unclear feminine nouns such (e.g., *llave* ‘key’). As reported above, B also relied on the masculine marker as the default marker.

#### 6.3.3. Number inflection

Plural markers are required in both English and Spanish nouns, as well as on Spanish articles, adjectives, and verbs. Throughout the study, B did not produce any plural markers in either language. This was true despite the fact that he was making use of quantitative expressions in both language contexts, including the numbers from one to ten and the quantifier *más/more*, which were evidenced in his speech from very early on. By age 1;11.0, examples such as *un gato* ‘one cat’, *\*dos gato* ‘two cat’, ‘one car’, and ‘\*two car’ evidenced the absence of the plural marker *-s*. The child’s use of quantitative markers however, suggests that he was separating singular and plural at the semantic level although the actual inflectional marker was missing.

A possibility for the absence of plural markings might be that the /s/ phoneme, which

is the inflection that generally represents plurality in English and Spanish, did not appear in the child's phonological inventory until age 1;10,2. Furthermore, even after the phoneme appeared in the child's speech, it was only enunciated word-initially, never word-finally as required in plural markings, even in singular forms such as 'bus'/bus. Nonetheless, taken that there were no examples of plural verb forms in Spanish, which are not always marked with an *-s* morpheme (e.g.; *bailan* 'dance.3<sup>rd</sup>pl.simplepresent'), a more general explanation for the lack of plurality in the child's speech might be that the syntactic category 'plural' had not been achieved yet.

Studies on monolingual English-speaking children reveal that the plural marker normally appears after age 1;11 (Brown, 1973 and de Villiers and Villiers,1973). The syntactic category for plurality is acquired at a rather late age, and hence it is not surprising that the child in this study might have not acquired it by the end of the study.

## 6.4. Syntactic development

### 6.4.1. MLU

Although during the first three months of data collection the child's speech consisted

mainly of single words, there were at least two examples of two-word phrases, both in English contexts, namely 'all gone'(1;04.1) and 'yellow car' (1;03.3). These phrases however, were initially not analyzed as true two-word utterances but as single chunks because the child had most probably learned them as single units.

Starting at age 1;04, various two-word utterances were identified in B's speech; most of them consisted of a content word and a functor (e.g.; *otro mono*, 'another car', *este bebé* 'this baby', and 'another truck'). By age 1;05, a significant number of the child's two-word utterances contained two content words. The first three-word utterance was identified in the Spanish data at age 1;10.3, namely *mono va pun* 'monkey going.to fall', and the child's utterances continued to become more complex, as can be clearly seen in his MLU values in Table 1.

By age 2;00.1, the child was producing two-, three-, four-, and even five- word utterances, and his MLU changed significantly during the following two and a half months, as can be seen in Table 1 (page 25). The following examples illustrate some of the longest utterances identified in B's speech during the last three months of the study; the number of morphemes in each utterance is indicated in parenthesis:

#### English

- 56. where did it go? (4)
- 57. it's dark in there (5)
- 58. where are you papi? (4)
- 59. papi, giraffe is stuck (3)
- 60. I don't want it (5)
- 61. I want a yellow bus (5)
- 62. papi, where is baby cow? (4)

#### Spanish

- 63. *mami es oscuro aqui* (4) 'mommy is dark here'
- 64. *bus se cae* (4) 'bus REFL.3<sup>rd</sup>.sg fall.pres'
- 65. *chichi se cayó* (4) 'baby REFL.3<sup>rd</sup>.sg fall.past'
- 66. *durmiendo mi casa* (4) (sleep.prog my house'
- 67. *la mamá se cayó* (5) 'the.fem. REFL.3<sup>rd</sup>.sg mommy fall.past.'
- 68. *quiero ver eso* (4) 'want.1<sup>st</sup>.sg. see.INF<sup>25</sup>. that'

### 6.4.2. MMU

Although MLU can tell us about a child's morpho-syntactic growth in a given language, it is inappropriate to use MLU in a comparative analysis of a child's acquisition of two languages.

As pointed out earlier, in languages with rich inflectional systems such as Spanish, it is difficult to establish for certain the exact number of inflectional morphemes and the exact point at which such morphemes should be analyzed as independent; furthermore, it is very likely that the

MLU value would be higher in a richly inflected language than it would be in a language with poor morphology such is the case in English. As an alternative measure, and based on the suggestions by Genesee et al. (1995), a comparative analysis of the child's morpho-syntactic growth in the two languages was based in terms of MMU; that is, according to the percentage of multi-morphemic utterances in each language. This percentage was

calculated based on the total number of utterances produced by the child in two consecutive recordings (one in each language); MMU allows for a much more consistent interpretation. Table 3 illustrates the percentage of MMU utterances in the two languages; calculations were carried out once a month (except between ages 1;05.0 and 1;07.0 when only Spanish recordings were performed):

Table 3  
Percentage of Multi Morphemic utterances from each language at comparable ages (MMU).

Age	Total # utterances from two languages	MMU
1;02.0 (English; 14a)	33	0%
1;02.0 (Spanish; 19)		0%
1;03.1 (English; 19)	40	0%
1;03.1 (Spanish; 21)		0%
1;04.3 (English; 28)	58	0%
1;04.2 (Spanish; 30)		0%
1;07.2 (English; 28)	68	15%
1;07.2 (Spanish; 40)		10%
1;08.1 (English; 33)	72	4%
1;08.2 (Spanish; 39)		11%
1;08.3 (English; 39)	85	35%
1;09.1 (Spanish; 46)		9.4%
1;10.2 (English; 56)	125	11%
1;10.3 (Spanish; 69)		23%
1;11.3 (English; 84)	178	16%
1;11.3 (Spanish; 94)		17%
2;00.1 (English; 96)	195	22%
2;00.2 (Spanish; 99)		25%
2;01.2 (English; 102)	206	48%
2;01.3 (Spanish; 104)		40%
2;02.1 (English; 108)	214	39%
2;02.2 (Spanish; 106)		37%
2;03.3 (English; 119)	224	48%
2;03.3 (Spanish; 105)		46%

a Total number of utterances in each language.

During the first nine months of the study, the Spanish utterances were more complex than the English ones. This is not surprising considering two things: first, the child's lexicon was larger in Spanish; second, there were always more utterances in the Spanish data, which reflected

the fact that the mother generally elicited longer and more complex utterances from the child than did the father. By age 1;11.3, the percentage of multi-morphemic utterances was very similar in both languages. By age 2;01, B was producing a few more complex utterances in English than in

Spanish, which suggests that English is starting to become the dominant language, as might be expected from the fact that the single Spanish model was the child's mother.

In general, MMUs show that the two languages developed at a very comparable pace. Nonetheless, it should be pointed out that MMUs do not tell us about the types of utterances produced by the child in each language or about the difference in length in each of the child's utterances, but about the percentage of utterances containing more than one morpheme (i.e.; while some utterances may have contained two morphemes, some others may have contained six; they both counted as multi-morphemic).

#### 6.4.3. Word order

Although English and Spanish both have a basic SVO word order, there are word order differences at the phrase level. For example, whereas the modifying adjective always precedes the noun in English adjective phrases (APs), in Spanish the adjective generally follows the noun.<sup>26</sup> Similarly, whereas in English the possessor -'s always precedes the possessed item, in Spanish the possessor always follows the possessed item. Since the child was acquiring the two languages simultaneously, all adjective phrases and possessive phrases were analyzed in order to see whether the child used the correct phrase word order in each language, which would suggest language autonomy.

The data evidenced that the child always respected the word order constraints for AP structures according to each language; in English APs, the adjective always preceded the modified noun, whereas in Spanish, the adjective always followed the noun, as seen in the following examples,

<i>English</i>	<i>Spanish</i>
69. big one	74. <i>bebé guapo</i> ('baby handsome.masc.')
70. blue truck	75. <i>mamá linda</i> ('mommy pretty.fem.')
71. yellow car	76. <i>carro correo</i> ('mail truck')
72. blue car	77. <i>carro loco</i> ('silly.masc. car')
73. good boy	

A total of nine different English AP examples were identified, whereas in Spanish there were only six AP examples.

A similar pattern was found regarding possessive phrases. Starting with the first English example found in the data at age 1;10.3, namely 'S' car', in all the English possessive phrases identified, the possessed noun always followed the possessor, even though the child was not using the possessive marking morpheme -s. In Spanish contexts, although the possessive marker *de* was normally missing as well, the possessor always followed the possessed item. Examples 78-83 illustrate the types of possessive constructions identified after age 1;11.3:

<i>English</i>	<i>Spanish</i>
78. aunty car	81. <i>mama DW</i> 'DW's mom'
79. papi car	82. <i>camisa A</i> 'A's shirt'
80. grandpa juice	83. <i>carro de papi</i> 'daddy's car'

Overall, all instances of adjective phrases and possessive phrases found in the data point to autonomous language development.

#### 6.5. Language mixing

Since during the first three months of data collection the child lacked true translation equivalents, it is not surprising that he relied on mixing as a way to make up for the gaps in his small lexicon (this possibility is pointed out in Genesee, 1989). 21% of all utterances produced during the first three months were instances of mixing, all of them instances of inter-sentential mixing (i.e.; single words used in the inappropriate language context). The transcripts only revealed mixing in English contexts, and most examples included the Spanish word *agua* 'water'. However, according to the diary, the child did mix English words into Spanish contexts, as might be expected. A main reason why no examples of mixing were identified in the Spanish transcripts was that most of the potential mixed words were ambiguous words such as 'car'/carro, 'ball'/bola, and 'bus'/bus, and these were interpreted as belonging to

the language context in which they appeared (i.e.; they were not counted as instances of mixing). This might also explain why the percentage of true mixing found throughout this initial stage was not high.

Between the ages of 1;05.0 and 1;11.0 the child started producing intra- as well as inter-sentential mixes. In English contexts, 29 % of all utterances analyzed during this period of time were mixes. Most of the mixes in the English data were intra-sentential, that is, one sentence contained words from the two languages. A smaller percentage of the mixed utterances were instances of inter-sentential mixing. Although the percentage of intra-sentential mixes was rather high (as can be seen in Table 4 below), most of these instances consisted of a single Spanish functor used with an English noun, namely *otro* (*otro car*, *otro truck*). The large majority of mixes during this period of time appeared to result from lack of translation equivalents, although an important number of mixes involved words that had English equiva-

lents. Table 4 shows in detail the percentage of intra- versus inter-sentential mixing, as well as the number of mixes that had English translation equivalents by age 1;11.0.

During the last three months of the study, the rate of mixing diminished significantly in both language contexts. In fact, only 3% of all utterances identified in English contexts were instances of mixing. All instances of inter-sentential mixing, which constituted 71% of the total mixes, consisted of words that had no Spanish equivalent, whereas all instances of intra-sentential mixing (i.e.; the remaining 29%) consisted of the Spanish article *otro* followed by an English noun, as in '*otro* balloon' and '*otro* book'. Interestingly, the child always used the neuter form of the Spanish article when combining it with an English noun. This might show the child's awareness that English articles do not take a gender marking.

Table 4 depicts the rate and types of mixing found throughout the study in English contexts:

Table 4  
Percentage of inter- and intra-sentential mixes found in the English transcripts throughout the study

Age range	Total percentage of mixed utterances	Type of mixing	Percentage
1;02.0 – 1;05.0	21%	Inter-sentential	100%
		Intra-sentential	0%
1;05.1 – 1;11.0	29%	Inter-sentential	38%
		Intra-sentential	62%
2;00.0 – 2;03.3	3%	Inter-sentential	71%
		Intra-sentential	29%

In Spanish contexts, there were no instances of true mixing found during the first three months of data collection. As pointed out above, most of the possible instances of mixing consisted of ambiguous words. Furthermore, the child's lexicon at this early stage was larger in Spanish than in English; the child was able to express himself in Spanish without relying much on English.

Between ages 1;05.1 and 1;11.0, the percentage of mixing found in Spanish contexts was very similar to that in English contexts (i.e.;

26%). The largest portion of the mixes found here were inter-sentential, while only a small portion of them were intra-sentential mixes. During this period of time, most of the mixes in Spanish contexts consisted of single words or phrases for which B had no Spanish equivalent; some examples are 'bunny', 'jump', and 'down'. 70% of the mixes resulted from the lack of a translation equivalent. The remaining 30% did have English equivalents, but most of such mixes included the English words 'yeah' and 'look'. Although B had

acquired the Spanish equivalent for 'yeah', namely *sí* at age 1;10.2, the English word had been in the child's lexicon for at least three months. A possible explanation for the child's persistent use of the English form is that *sí* was the first instance of the /s/ sound in B's vocabulary; the sound was probably not well established in the child's inventory and hence, he chose to use the more easily pronounceable word, 'yeah'. A second possibility is that the child simply had a preference for the English word. What is important to point out here is that by and large, the child was able to correct himself after his mother prompted him to do so, as shown in the following excerpt:

Age: 1;11,0

Context: B and his mother are looking at a book.

...

**M:** un perro, y esto es un pato, ¿y esto es un caballo?

('a dog, and this is a duck, and is this a horse?')

**B:** yeah

**M:** uh?

**B:** yeah

**M:** ¿cómo? ('what?')

**B:** sí ('yes')

**M:** un caballo, sí, ¿y esto qué es? ('a horse, yes, and what's this?')

**B:** pájaro [pa] ('bird')

**M:** un pajarito, sí, y estos son chanchos ('a little bird yes, and these are pigs')

**B:** mamá ('mom')

**M:** la mamá chancha, ¿cuál es el papá chanco? ('the mommy pig, which one is the daddy pig?')

...

**M:** ¿y esto qué es? ('and what's this?')

**B:** es mamá ('is mom')

**M:** ajá la mamá, ¿esa es la mamá de las abejas?

('yes, the mommy, is that the mommy of the sheep?')

**B:** yeah

**M:** ¿qué? ('what?')

**B:** sí ('yes')

**M:** ¿sí qué? ... ¿la mamá de quién? ('yes what?... whose mommy?')

**B:** oveja ('sheep')

...

Regarding the child's persistent use of the English verb 'look' in Spanish contexts, the child had no translation equivalent for this verb until age 1;11.3. This explains why, in a conversation recorded at age 1;11.0, 94% of his intra-sentential mixes consisted of the use of 'look'.

During the last three months of data collection, 7% of the utterances found in Spanish contexts were examples of language mixing, 45% of which were intra-sentential mixes. Most instances of intra-sentential mixing consisted of an English *wh*-word and the auxiliary 'be' followed by a Spanish phrase, as the following examples illustrate:

84. **where is** otro bebé? (*where's other baby?*)

85. **where is** otro caballo? (*where's other horse?*)

86. **where is** papi? (*where's daddy?*)

For example, 71% of all intra-sentential mixes found between ages 2;00.0 and 2;03.3 were of the sort illustrated in the examples above. The Spanish equivalent for 'where are you?', namely *dónde está?* was found in Spanish contexts on several occasions; yet, B used the English construction most of the time. During this period of time, B was producing multiple *wh*-questions in English, whereas only three concrete examples of questions were found in the Spanish data, namely *¿dónde está?* 'where are you?', *¿dónde está?* 'where is it/that?', and *¿qué eso?* 'what that?'. B was not able to substitute the Spanish question words *qué* and *dónde* for each other in order to create new *wh*-questions; apparently, he did not have full command of question formation in Spanish; hence, he resorted to his English *wh*-constructions and used them in Spanish contexts.

In general, all instances of inter-sentential mixes found during this period of time resulted from lack of Spanish equivalents, and many of them consisted of English idiomatic phrases such as 'come here' and 'no way'. Table 5 illustrates the rate and types of mixing found throughout the study in Spanish contexts:

Table 5  
Percentage of inter- and intra-sentential mixes found in the Spanish transcripts throughout the study

Age range	Total percentage of mixed utterances	Type of mixing	Percentage
1;02.0 – 1;05.0	0%	Inter-sentential	0%
		Intra-sentential	0%
1;05.1 – 1;11.0	27%	Inter-sentential	70%
		Intra-sentential	29%
2;00.0 – 2;03.3	7%	Inter-sentential	55%
		Intra-sentential	45%

### 6.5.1. Grammatical constraints

Poplack (1980) proposes two general grammatical constraints for adult bilinguals code-switching. The first constraint, namely the Free Morpheme Constraint, prevents mixing of bound inflectional or derivational morphemes, whereas the second constraint, namely the *Equivalence Constraint*, does not allow mixing in environments where the surface structures of two languages involved differ. Taken that Poplack's constraints were based on her analysis of the speech by Spanish/English bilinguals, B's mixing was analyzed in light of Poplack's grammatical constraints in order to establish whether there were any violations to such constraints.

Despite the inter- and intra-sentential mixing found in B's speech throughout the study, no violations to the Free Morpheme Constraint or the Equivalence Constraint proposed for adult mixing by Poplack (1980) were evidenced. According to the first constraint, no mixes should take place between a root and a bound morpheme (intra-word mixing). Although B made extensive use of morphological inflections, no evidence of mixed bound morphemes was found. The second constraint predicts no mixing between utterances where the two languages have a different word order. B always produced APs and possessive phrases correctly; there was no evidence of violations to the Equivalence Constraint.

### 6.5.2. Special mixed contexts

During the last three months of data collection, and in order to see how well B was able

to adjust his speech according to the interlocutor, he was recorded on three occasions while interacting with both parents at the same time (in a bilingual context). The purpose of these recordings was to determine whether or not he was able to quickly switch from one language to the other. This type of interaction would clearly show whether the child showed confusion upon being addressed in two languages simultaneously. Additionally, this data would show whether the child produced a higher rate of mixing in a mixed context, as proposed in the literature (Grosjean, 1998). An excerpt from one of these conversations is included below.

*Context:* B is playing with his mother and father; each parent is using his/her native language to address B.

*Age:* 2;01,0

...**M:** cuéntame qué están haciendo todos estos animalitos ('tell me, what these little animals are doing')

**B:** durmiendo ('sleeping')

**M:** ¿durmiendo? ('sleeping?')

**D:** what are they doing B?

**B:** woke up

**D:** they woke up, what's he doing?

**B:** sleeping

**D:** ok, but what's this one doing?

**B:** woke up

**M:** ¿se despertó?, ¿todos están despiertos? ('it woke up, are they all awake?')

**B:** sí ('yes')

.....**D:** is that ok B?

**B:** daddy juice

**D:** daddy's juice, that's right

**B:** *papi* juice

**B:** (B turns to address his mother) *papi* jugo ('daddy's juice')

**M:** *el jugo de papi, sí* ('dady's juice, yes')

**B:** *B jugo* ('B's juice')

**M:** *¿ese es el jugo de B?, diga el jugo de B* ('that's B's juice? Say, juice of B' –reinforcing the Spanish proper word order)

**D:** B, what's this? B, what's this?

**B:** juice

**D:** uh huh

**M:** *¿de qué es ese jugo tan rico?* ('what type of juice is that yummy juice?')

**B:** *manzana* ('apple')

**B:** (B turns to his father) *papi* a kiss, *papi* a kiss

**D:** uh huh, can you show mami? ...  
talking to his mother

**B:** *look*, *debajo mesa* ('under table')

**M:** *¿qué?* ('what?')...

**B:** *mira mami, debajo mesa* ('look mami, under table') ...

During the entire conversation, only one true instance of mixing occurred, '*look*, *debajo mesa*'. As was explained before, even at this stage, B preferred to use the English word 'look' over the Spanish counterpart '*mira*'. In this context, however it is possible that B was not able to switch between languages quickly enough in order to adjust his speech while addressing his mother. Nonetheless, B managed to correct himself after his mother questioned his language use by pretending that she had not understood him and asking '*¿qué?*'.

The word '*papi*' used in English contexts was not considered an example of mixing because it was used by the child in both English and Spanish contexts when referring to his father (like a proper noun). Although often times B would use the English 'daddy' in English contexts, using the Spanish word was considered to be acceptable by his parents. The same was true for the Spanish word '*mami*', which is also used by the English-speaking father to refer to the child's mother.

Additionally, although the Spanish utterance '*papi jugo*' was not an instance of mixing,

B used the incorrect word order for possessive phrases in Spanish, which he never did in Spanish-only contexts. In this instance, B used the English word order (the object '*jugo*' followed the possessor '*papi*') instead of using the correct Spanish structure. This might also reflect confusion because B had just said the same sentence in English to his father; there was inter-language interference.

All things considered, however, out of the total 99 utterances produced by B in this conversation, only one true example of language mixing was found, and only one sentence seemed to reflect grammatical confusion. Almost identical results were observed in the other two recordings in mixed contexts. In general, B was clearly able to quickly switch from one language to the other within the same conversation without hesitating or incurring much mixing.

## 7. Discussion

The data analyzed shows that this child's speech developed along the same lines as that of monolingual Spanish- and English-speaking children of comparable ages. Furthermore, although the child mixed between the two languages, most instances of mixing resulted from lack of translation equivalents, and there was very little interference between the two language systems. This suggests that the child's speech developed autonomously.

Specifically, at the phonological level, the child started out by producing consonant and vowel sounds common to both English and Spanish; these are the initial sounds that first develop in monolingual children (Ingram, 1986, Stoel-Gammon, 1985, Stoel-Gammon and Herrington, 1990, and Macken, 1970). As a result, it was impossible to tell whether the child was using language-specific sounds. However, as early as age 1;06.0 when the child started clearly producing language-specific vowel sounds, these were always used in a language-appropriate manner. The same was true for language-specific consonant sounds. The evidence points to two autonomous phonological systems

or, as a minimum, it is not in conflict with the possibility of two separate phonological systems.

Secondly, the morphological features found in the child's speech clearly showed that he was developing the two languages along the same lines as his monolingual counterparts. Spanish verbs were inflected for person and tense from the time they first appeared in the child's speech, at age 1;07, although the complete Spanish verb paradigm was just starting to be acquired. Studies on monolingual Spanish acquisition reported that the first verbal inflections typically appear at around the same age (López-Ornat, 1994 & 1997, Ezeizabarrena, 1997, and Grinstead, 1998). Spanish gender morphology also developed along the same lines as it develops in monolingual children; although the first gender markings were evidenced at around age 1;08.0, by age 2;00.2, B had a default gender marker, namely the masculine inflection *-o* (Hernández-Piña, 1984, found parallel results). Ezeizabarrena (1997) reported that the plural marker normally appears in Spanish-speaking monolinguals when they have an approximate MLU of 2.0; yet, B never produced a plural marker despite having a Spanish MLU of 2.53 by the end of the study; it is possible that this particular syntactic form was delayed in B's speech.

With regards to English morphology, except for the progressive marker *-ing*, the child's English verbs always lacked inflection. This is consistent with what previous studies on the monolingual acquisition of English have shown; namely that English inflectional morphology is delayed in child language acquisition (Brown, 1973, and de Villiers and de Villiers, 1973). The first English inflection to be evidenced in B's speech, namely the progressive form, is also the first inflection to appear in monolingual children (Brown, 1973, and de Villiers and Villiers, 1973). Furthermore, the child in this study started making productive use of the progressive form before the age reported in previous studies; *-ing* was being used productively when B had an MLU of about 1.3, whereas monolingual children typically acquire it around an MLU of approximately 2.5 (Brown, 1973). The same as with Spanish, although the English plural marker is generally

evidenced at around age 1;11, B had not started using this marking by the end of the study. As postulated in the analysis, the most feasible explanation for the absence of a plural marker in B's speech resulted from the fact that he had not acquired the /s/ sound that typically marks plurality in both English and Spanish. Another possibility put forth was that this child had not acquired the syntactic concept of plurality despite having a semantic concept of singularity versus plurality (evidenced in his correct use of numbers and quantitative expressions in the two languages). Koehn (1994) reported about the possibility of developing a semantic concept of plurality without having the syntactic structure for it.

As regards the child's use of translation equivalents, unlike what was reported in Volterra and Taeschner (1978), B started making use of equivalents as soon as these were available in his lexicon, namely at age 1;05; the children in the study by Volterra and Taeschner presumably did not have any equivalents until after age 1;06. In addition, although mixing was certainly evidenced in this child's speech, by and large, it seems to be attributable to his lack of translation equivalents, although some instances were explained in terms of preference. Also similar to what was reported for the bilingual children studied in Lanza (1992), Deuchar and Quay (2000), Genesee et al. (1995), and Genesee et. al. (1996), B always used more of the interlocutor's language. Additionally, B was always able to adjust his language and correct himself after mixing whenever his mother prompted him to do so, provided that he had the appropriate translation equivalent. This child's mixing was not random, which further points to two autonomous systems.

Although the morpho-syntactic differences between the two languages involved in this study offered potential chances to violate the grammatical constraints proposed in Poplack (1980), and despite clear evidence of language mixing in this child's speech, no examples of structural mixing within APs and possessive phrases were found in the data, nor were there instances of intra-word mixing whatsoever. The data suggests that neither the Equivalence Constraint nor the Free Morpheme Constraint proposed by Poplack

(1980) for adult language mixing were violated in this child's speech. Similar results were reported in Paradis and Genesee (1996), who found no violations to the Free Morpheme Constraint in their study with French-English bilingual children.

In contrast to what was proposed in Meisel (1994a), namely that young bilinguals are not subject to grammatical constraints, this child's mixing evidenced no violations to the two grammatical constraints analyzed. It is possible that violations to these constraints might start to be evidenced as the child's speech becomes more complex.

To summarize, although we cannot of course rule out the possibility that later in development counterexamples might arise, there is no evidence in the data analyzed here to support the ULS hypothesis.

## Notas

- 1 According to Vihman, on one hand, some of the Estonian functional words contained segments that were difficult for the child to pronounce (such as the trill /r/, front vowels, and palatal /l/). On the other hand, the child had difficulty producing Estonian functors, many of which involved inflectional morphology; therefore, he preferred to use English functors.
- 2 Consonant sounds common to both languages constituted most of this child's inventory: [p, b, t, d, k, g, m, n, ŋ, f, tʃ, l, w, j, and s], and these were the first consonant sounds to be acquired. The [s] sound was acquired relatively late at age 1;8.16.
- 3 The DUFDE study consisted of a collection of papers on the grammatical development of simultaneous Dutch-French bilingual children at the University of Hamburg.
- 4 Meisel, however, argues that verb-final word order tends to vary from child to child, and that this variation appears to depend on pragmatic factors, an example being that Ivar tended to place the element of focus in final position. Additionally, Meisel argues that knowledge about surface order and even about certain DS ordering regularities need to be extracted from the input; this is presumably also true for morphological forms.
- 5 Meisel proposes that functional categories such as gender and tense markings may be lacking altogether in early child speech. According to him, verbs constitute the "cornerstones of first grammatical structures" (p.92), and once the child has acquired verb inflections there is true evidence for the presence of INFL. In addition, Meisel claims that early sentence structures are VPS, with the subject originating in Spec of VP; his claim is based on the fact that normally only one of the verbal arguments is realized in child speech, yielding mostly SV or OV patterns.
- 6 Meisel points out that overt inflectional markings on verbs are extremely limited in spoken French; hence, subject-like clitics rather than verbal suffixes were taken to indicate markings of grammatical person and number.
- 7 This type of mixing violates the *Free Morpheme Constraint* proposed by Poplack (1980) described below. Meisel (1994a) evaluated the usefulness of the Free Morpheme Constraint in explaining the child's data and stated that it greatly contributes to creating coherence; that is, "the grammatical glue for the lexical elements in VP [verb phrases]" (p.432); nonetheless, Meisel claimed that grammatical constraints should not apply to child mixing during early stages of bilingualism.
- 8 However, see Allen et al. (1999) who report multiple violations to the two grammatical constraints proposed by Poplack (1980). Their study involved two languages that are typologically different, namely English and Inuktitut.
- 9 The only time during the study when B was exposed to other Spanish speakers was during a trip to the mother's native country for eight weeks. During this time, he was only exposed to Spanish, as none of the people that he interacted with spoke English.
- 10 These numbers are based on the assumption that the child spent approximately 30 waking hours a week with his mother alone, approximately 24 waking hours a week with his father alone or at daycare, and approximately 30 waking hours a week in a bilingual context.
- 11 Although it was previously pointed out that the mother occasionally used English around B, most Spanish recordings were carried out in what Grosjean (1998) refers to as a 'monolingual language mode', that is, when the child was only interacting with and listening to his mother. The English recordings were generally carried out when the child was somewhere along the language mode continuum, as the mother was normally around the house when the child was recorded interacting with his father. MLU calculations were based only on those recordings carried out in monolingual contexts, and this was done as a

- way to accurately examine the child's development of *each individual language*.
- 12 Utterance here refers to "a word or group of words with a single intonation contour", as defined in Genesee et al. (1995; p.619).
- 13 Only a total of eight pairs of ambiguous words were identified throughout the study, which did not affect MLU values significantly.
- 14 Although other researchers have suggested the use of MLU in terms of words (MLUw) as a comparative measure between two languages that differ with regard to inflectional morphology (Pizzuto and Casselli, 1992 & 1994, and Juan-Garau and Pérez-Vidal, 2001), this measure was not used in this analysis for several reasons. Firstly, whereas in Spanish overt subject pronouns are normally dropped and they surface in the form of inflectional morphemes (ex. *quiero*), English obligatorily requires overt subject pronouns; these are independent words. Similarly, object pronouns appear as clitics in Spanish, whereas in English they appear as independent morphemes. In addition, English requires dummy auxiliaries such as 'do' in all negative utterances and questions, whereas Spanish does not. Using MLUw as a cross-linguistic comparative measure would have been inaccurate, as it would have provided inflated values for the English data as compared to the Spanish data.
- 15 As pointed out to me by one of my reviewers, it might not be accurate to describe a child's speech as resulting from mere repetition; it is very unlikely that a child would be able to repeat a word in a language foreign to him. This suggests that something about the child's particular language (es) phonology must be involved, not just repetition of any potential input.
- 16 This sound is represented here as a single segment because the child was not producing the voiceless post-alveolar fricative /ʃ/ in any other contexts except when it was combined with /t/ to form the affricate sound.
- 17 A stressed syllable in either language refers to the part of the word which contains a long vowel; this syllable is regularly longer and has a higher pitch in adult speech (Ladefoged, 2001).
- 18 As pointed out above, this is not surprising as the trill is one of the last sounds acquired by monolingual Spanish-speaking children. It is typically acquired after age 4;0 (Jiménez, 1967, Macken, 1978).
- 19 In adult language, the stressed syllables in these pairs of words are very similar in the two languages.

- 20 Despite the fact that it might seem unlikely for these ungrammatical forms to be found in the adult language models, such forms were in fact attested in the speech of the child's relatives.
- 21 Adult English does mark adjectives for comparative and superlative, but these forms were not relevant in this study.
- 22 López-Ornat (1997) and Grinstead (1998) have argued that in Spanish person and tense inflection are 'amalgamated', as they are represented with a single inflection (e.g.; *quiero*; 1<sup>st</sup> person sing. and simple present tense.)
- 23 If verbal inflections had been counted as separate morphemes from the start, the Spanish MLU would have been inflated because the first forms were most likely frozen forms. This possibility was pointed out in Pizzuto and Caselli (1992).
- 24 López-Ornat (1997) points out that although the 3<sup>rd</sup> person singular indicative form appears early on, it has an imperative form (*come/cae* –eat/fall); this makes it difficult to identify the 3<sup>rd</sup> person singular form as a separate from the imperative. For example, a verb form such as *come* can be used as an imperative form or as an indicative form
- 25 Inflectional morphemes marking infinitival forms were not counted as separate morphemes; these had not met the acquisition criteria.
- 26 It should be pointed out that in adult Spanish, adjectives *can* also follow the noun, as in *qué linda casa* ('what a nice house'). These types of constructions however, were not evidenced in this child's speech.

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## APPENDIX A

*Excerpts from initial recordings:* they show the type of utterances found in the child's speech during the first recordings; namely repetitions of the same word and answers to the interlocutor's questions.

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### 1. Age: 1;2.3

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*Context:* B is playing with his mom.

B: alo alo agua alo [aló: aló: água aló:]  
(hello hello water hello)

M: ¿qué pasa? (*what's wrong?*)

B: carro carro brrm [ka: ka: bɪɪɪm]

M: ajá, ¿qué es eso? ¿el dedito? (*yeah, what's that your finger?*)

B: gato [ka:to]

M: no eso, es un camión (*no, that, that is a truck*)

B: **truck** [ta:]

M: ¿y esas qué son?... (*and what are those?*)

B is babbling and screaming...

...

B: más [ma:] (*more*)

M: ya no más (*no more*)

B: más más [ma: ma:] (*more*)

M: por favor, mami más (*please mommy, more*)

B: agua agua agua... [água água água]  
(*water, water, water*)

...

M: aló, ¿con quién hablas? (*hello, who are you talking to?*)

B: papá papá [babá babá] (*dada dada*)

M: aló papá [aló babá] (*hello dada*)

B: aló aló [aló aló]

M: eres un terremotito... (*you're a trouble maker*)

...B: mami [mani]

B: jugo jugo jugo [gúo gúo gúo] (*juice juice*)

B: mami mami [mani mani mamá mani...]  
(*he keeps calling mommy*)

...

### 2. Age: 1;3

*Context:* Daddy is reading to B.

D: what's that?

B: **agua agua** [água água]

D: what do you see B?

B: ball, ball, ball [bɔ bɔ bɔ]

D: where B, where do you see it?

B: ball, ball, ball [bɔ bɔ bɔ]

B: car

D: yeah, do you wanna play with the cars?

B: yellow car [jaba cə]

D: ok, we can play with your yellow car

B: the other one [javau]

## APPENDIX B

Verb forms identified by age 1;11.0

<i>Spanish</i>	<i>English</i>
1. <i>ve mami?</i> (see.1 <sup>st</sup> .sg mommy?) 1;07,0	1. car go ('there goes the car') 1;8,3
2. <i>mami vea</i> ('mommy look.2 <sup>nd</sup> .sg.formal') 1;08,2	2. look aunty 1;9,3
3. <i>mami dame</i> ('mommy give.2 <sup>nd</sup> .sg.me') 1;08,2	3. papi stuck (papi, the toy is stuck) 1;9,3
4. <i>mami vamo[s]</i> ('mommy go.1 <sup>st</sup> .pl') 1;09,1	4. C push car (C. is pushing the toy car) 1;10,2
5. <i>oye mami?</i> ('hear.2 <sup>nd</sup> .sg.informal?') 1;09,3	5. jump papi 1;10,3
6. <i>álzame</i> ('pick.up.2 <sup>nd</sup> .sg.informal.me') 1;09,3	6. B push (B wants to push the toy) 1;10,3
7. <i>te amo</i> ('you.clitic love.1 <sup>st</sup> .sg.pres') 1;09,3	7. I love you 1;10,3
8. <i>mami come</i> ('mommy eat.2 <sup>nd</sup> .sg.informal') 1;10,3	8. B jump (B wants to jump) 1;10,3
9. <i>mono va pun</i> ('monkey be.goingto.3 <sup>rd</sup> .sg fall') 1;11,2	9. he fall (he fell) 1;10,3
10. <i>se cae</i> ('it fall.3 <sup>rd</sup> .sg') 1;10,2	10. is a bus (there is a bus) 1;11,0
11. <i>se cayó</i> ('it fall.3 <sup>rd</sup> .sg.past') 1;10,3	11. Daddy [is] working 1;11,03
12. <i>mami baila</i> ('mommy dance.2 <sup>nd</sup> .sg.informal') 1;10,3	12. Teddy want (1;11,03)
13. <i>¿cómo estás?</i> ('how be.2 <sup>nd</sup> .sg.pres.') 1;10,3	13. B shopping 1;11,03
14. <i>B gusta</i> (B like.3 <sup>rd</sup> .sg.pres.') 1;10,3	
15. <i>papi [está] durmiendo</i> ('daddy sleeping') 1;10,3	

## APPENDIX C

*Pairs of translation equivalents acquired by the child throughout the study.*

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1. truck (1;04,2)	camión (1;05,1)
2. ball (1;01,0)	bola (1;09,1) –pronounced unambiguously
3. car (1;01,0)	carro (1;09,3)
4. bus (1;01,0)	bus (1;11,2)
5. all gone (1;04,1)	nada-nada/todo-todo (1;06,2)
6. bye-bye (1;04,2)	chao-chao(1;07,1)
7. book (1;04,2)	libro (1;10,3)
8. yeah (1;06,3)	sí (1;10,,2)
9. one (1;07,1)	uno (1;06,2)
10. mouth (1;07,3)	boca (1;10,3)
11. bird (1;08,5)	pájaro (1;02,2)
12. eye[s] (1;08,1)	ojo[s] (1;08,1)
13. aunty (1;08,2)	tía (1;09,3)
14. apple (1;08,2)	manzana (1;08,3)
15. cow (1;08,3)	vaca (1;10,3)
16. bear (1;08,3)	oso (1;10,3)
17. up (1;09,1) ('pick me up')	álzame (1;09,3)
18. clown (1;09,3)	payaso (1;09,1)
19. hand (1;09,1)	mano (1;09,2)
20. yucky (1;09,1)	feo (1;10,3)/guácala (1;11,2)
21. look (1;09,1)	ve (1;07,3)/mira (1;11,3)
22. boat (1;09,1)	bote (1;09,1)
23. fish (1;09,1)	pez (1;08,3)
24. more (1;09,2)	má[s] (1;04,2)
25. doggy (1;09,2)	perro (1;10,3)
26. pig (1;09,3)	chancho (1;10,3)
27. book (1;09,3)	libro (1;10,3)
28. lion (1;09,3)	león (1;09,3)
29. other one (1;10,1)	otro (1;08,1)
30. water (1;10,1)	agua (1;1,0)
31. cat (1;10,1)	gato (1;10,3)
32. I love you (1;10,3)	te amo (1;09,3)
33. duck (1;10,3)	pato (1;07,1)
34. kiss (1;10,3)	beso 1;10,3)
35. please (1;10,3)	por favor (1;10,3)
36. this (1;11,00)	este (1;07,3)
37. fish (1;11,0)	pez (1;08,3)
38. chicken (1;11,2)	gallina (1;11,2)
39. door (1;11,2)	puerta (1;08,3)
40. light (1;11,3)	luz (1;10,3)
41. here (1;11,2)	aquí (1;06,2)
42. daddy (1;11,3)	papí (1;01,1)
43. shoe (1;10,2)	zapato (1;02,3)

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44.	turtle (1;7,3)	tortuga (1;08,3)
45.	fall (1;09.1)	se cae (1;09.3)
46.	up (1;09.3)	álzame (1;09.3)
47.	watch (1;11.0)	reloj (1;10.1)
48.	hi (1;10.0)	hola (1;10.3)
49.	egg (2;00)	huevo (1;02.1)
50.	baby (2;00)	bebé/chichi (1;02.2)
51.	goat (2;00.0)	cabra (1;10.1)
52.	house (2;00.2)	casa (1;06.2)
53.	cake (2;00.1)	queque (1;08.1)
54.	table (2;00.0)	mesa (1;10.3)
55.	a lot (1;11.0)	mucho (1;10.3)
56.	corn (1;04.1)	elote (2;00.0)
57.	sit (1;11.1)	sienta (2;00.0)
58.	bunny (1;07.3)	conejo (1;00.1)
59.	mouse (1;11.1)	conejo (2;00.1)
60.	eat (2;00.0)	coma (2;00.0)
61.	under (2;00.0)	debajo (2;00.0)
62.	yellow (1;03.0)	amarillo (2;02.0)
63.	red (2;00.2)	rojo (2;00.2)
64.	green (2;00.2)	verde (2;00.0)
65.	blue (1;09.3)	azul (2;02.0)
66.	toy (2;00.2)	juguete (2;00.2)
67.	grandma (1;09.5)	abuelita (2;02.2)
68.	grandpa (1;10.3)	tito (1;05.3)