

Babbling In Bilingual Infants: Is There Evidence of Code Switching?

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Abstract

Code switching has been studied predominantly in adults and children over the age of three. Research in younger children is scarce. The present study was conducted as a single case study on the babbling of a one-year-old who is being raised bilingually (Spanish/English). The aim of the study was to determine whether the baby babbled differently depending on the language of the interlocutor and the context. The interlocutors involved follow a one person – one language strategy of interaction with the baby. The child's spontaneous speech was recorded during interaction with his mother (English) and with his grandmother (Spanish). So as to make the contexts as clear-cut as possible, the recordings took place while the child was alone with each interlocutor at their respective homes. Samples were recorded at the age of 1;2, 1;3, and 1;4 in order to check whether the phenomenon under investigation varied as the child approached the one-word stage. The utterances were transcribed by a bilingual teacher specialized in phonetics. The data is analysed and the use of Spanish/English is discussed from a sociolinguistic perspective.

Key words

Bilingualism, language differentiation, babbling, code switching

Introduction

In the last century many have been the voices for and against bilingualism, and researchers, as well as laypeople, have shown concern about the influence of early/simultaneous bilingualism on children. While parents have been worried about the possibility of a delay in the onset and rate of language development, researchers have concentrated on the issue of language differentiation (Poulin-Dubois, D. & Goodz, N. 2001). The focus on differentiation arises from the fact that bilinguals often mix elements (phonological, lexical, and morphosyntactic forms) from their two languages within a conversation.

Until the late 1980s, code switching¹ in children was considered a negative effect of bilingualism, and interpreted as the inability of a child to separate

the two linguistic systems. More recent research has challenged the previous view and supported an early-differentiation hypothesis. Several studies have focused on the emergence and use of vocabulary and syntax (Deuchar and Quay, 1999, Lanza, 1992; 2001) and shown that even at the age of two a child can choose the appropriate linguistic form to suit a specific language context.

But how far back can code switching be traced? Is there evidence of code switching in babbling? Researchers have based this possibility on studies of the perceptual sensitivities of neonates and infants. Two-day-old monolingual babies show a preference for listening to their native language (Moon et al, 1993 in Werker & Tees, 1999) and they are able to discriminate excerpts from different language families (Mehler et al 1988, Mehler & Christophe 1994 in Werker & Tees, 1999). During the first year of life, babies' perceptual sensitivities become more language specific; they prefer phonetic patterns which are highly frequent in their native language, and their discriminatory abilities also show a narrowing to match the contextual distribution of phonetic information in their input (Werker & Tees, 1999). This would suggest that infants already have a 'file' for their native language and another one for foreign languages. In a study with bilingual babies, Bosch & Sebastián-Gallés (2001) also found evidence for early differentiation of two languages of exposure in bilingual environments, with no delay in the process compared with monolingual infants.

Production seems to start at a slower pace due to physical constraints, such as the immaturity of the vocal tract and related muscles (Kent & Murray, 1982 in Werker & Tees, 1999). The maturational process that affects the vocal apparatus spans until the age of five or six (Boysson-Bardies, 1999). The first stages – crying, cooing and babbling – appear to be characterized by universals; monolingual babies across linguistic communities seem to produce similar sounds (Hetherington, 2002; Werker & Tess, 1999).

Moreover, babbling and early speech (12 – 18 months), which encompass the age of the child under study, have been described as sharing a great deal of characteristics (MacNeilage et al., 2000). They both involve a rhythmic alternation between consonants and vowels, which derives in syllables. During these two stages, syllables tend to be open, that is to say they begin with consonants and end with vowels. The experimental and developmental nature of these stages is evident in that the consonants that are most frequent are those considered basic and bio mechanically easy to produce, namely plosives and nasals. As regards the place of articulation, a universal preference for certain consonant-vowel combinations has been established through cross-linguistic studies: dentals/alveolars + front vowels; labials +

central vowels; and velars + back vowels.

So then, when do children stop being universal and start producing their native language?

The findings derived from the aforementioned perception studies have led researchers to believe that early production must also be influenced by the linguistic environment. This belief, known as the babbling drift hypothesis, states that infant babbling progressively resembles the features of the language to which a child is exposed. Recent research suggests that such drift towards the infant's native language is present by ten months of age (de Boysson-Bardies et al, 1989; de Boysson-Bardies & Vihman, 1991 in Poulin-Dubois, D., & Goodz, N. 2001; Levitt et al, 1992; Whalen et al, 1991 in Werker & Tees, 1999).

In contrast, other studies have failed to find support for the babbling drift hypothesis (refer to Thevenin et al, 1985; Oller et al., 1997 for a review). For example, a study conducted by Thevenin et al (1985), modelled on Boysson-Bardies' adult judgement experiments, found that both monolingual and bilingual judges were unable to identify the language background of samples recorded even during the late babbling period (11 – 14 months).

Specific data on babbling in a bilingual context is scarce. In a study of monolingual and bilingual infants, Oller et al. (1997) concluded that the age of onset for canonical babbling and the quantitative measures of vocal performance were similar for both groups.

Another study, conducted by Poulin-Dubois & Goodz (2001), addressed the issue of whether bilingual infants babble differently depending on their interlocutor's native language. The data collected showed that the twelve-month-old children babbled in the same way regardless of the contexts. The utterances resembled the babbling of monolingual infants. Hence, infants showed a preference for one language by neither switching nor fusing their languages.

To account for the bilingual children's linguistic choices, the explanations have focused on different variables such as input, context and language competence, among others.

De Houwer (1995) reviews different positions dealing with the role of input patterns, i.e. whether the two languages are completely separated or not by participant or situation. She concludes that the relation between input and acquisition patterns cannot be clearly explained without further research.

Lanza (1992, 2001) discusses code mixing from a sociolinguistic approach. She argues that children learn to use language according to the demands of

each situation. Thus if, for example, a child is socialized into using language A with parent A and language B with parent B, little or no mixing will be the pattern of those interactions. On the other hand, if a child perceives the context with each parent to be bilingual, code mixing will likely occur.

Language competence or dominance is also offered as an explanation. Scholars have noted that bilingual children tend to use more mixed utterances when they are using their non-dominant language. (Genesee, Nicoladis and Paradis 1995; Goodz 1994 in Poulin-Dubois, D., & Goodz, N. 2001).

The present study aims to determine whether a 14-month-old infant who is being brought up bilingually babbles differently depending on the context and the language of the interlocutor, i.e. whether he modifies the place and manner of articulation of his sounds to suit the pronunciation of each language. According to the babbling drift hypothesis, evidence of the infant's two first languages should be noticeable by this time. The phonetic differences between English and Spanish should yield a clear sample to test the effects of each language (Thevenin et al, 1985). Thus, the focus of analysis in this study will first be on the differences between these two languages. The samples will also be analysed from a sociolinguistic perspective. Code switching in proficient language users constitutes a choice made for linguistic, stylistic or attitudinal reasons and developed through life. The earliest systematic type to appear in children's language seems to be code switching which is dependent on the situation and the participant, according to McClure (1981) and Fantini (1985) as cited in Lanza (1992). The longitudinal analysis aims at checking whether the phenomenon under investigation varies as the child gets closer to the one-word stage.

Method

Subject

The infant

Santiago, the baby under study, was born on May 17th, 2002. He was adopted by a couple who lives in the southern suburbs of Buenos Aires, the capital city of Argentina, and has been with them since he was a day old.

His biological mother lives in Formosa, a province in the north of Argentina. She speaks Spanish, but no one in her family or close circle speaks English. As far as the adoptive parents know, the other language that could have been part of Santiago's pre-natal period is Guaraní.

His parents

Both adoptive parents, G and N (the author), are Argentinean, and their

first language is Spanish. The father, G, has a generally effective command of English, but uses Spanish (except for the odd word or expression) to address Santiago. He also interacts with his wife in Spanish. He is keen on music and usually listens to songs in English.

The mother's first language is Spanish. The language of interaction in her house has always been Spanish, but as her father's first language was English, certain words and expressions, such as "Sugar, please", "Good night", have always been said in English. N's grandmother and aunts addressed her in English but she usually answered in Spanish. Throughout her schooling, N had an English curriculum covering an average of twenty hours a week. She later graduated from Teacher Training College as a teacher of English and she is currently finishing a university degree. She teaches English at a bilingual school, at a teacher training college and at university.

His grandmother

Santiago's grandmother, his other caregiver, speaks Spanish. She learnt English when she was a teenager and understands it well but has always tried to avoid speaking it, possibly out of embarrassment.

At the time of the study Santiago lived alone with his parents. The language of the community where they live is Spanish. Since the very beginning Santiago has been exposed simultaneously to Spanish and English. The parents have followed a one person-one language strategy of interaction with the baby; the mother speaks English, and the father speaks Spanish. N has always sung to him and also read stories in English. When they are alone, N tries to create a kind of English "background noise" by playing music or having the TV on with cartoons or any other programme which features SAP. Santiago has always asked for music or to be sung to, but, at least at the time of the study, he did not show much interest for TV.

At that age Santiago had an average of 77 hours of waking time a week. He spent about 26 of those hours (34%) alone with his mother, and 12 and a half (16%) with his grandmother. He spent the rest of his waking hours (50%) with at least 2 people, namely mother/father, mother/grandmother, mother/friends/relatives. On these occasions, N addresses Santi in English and the rest of the interlocutors in Spanish to stick to the rule of Grammont (Genesee, 1988; Comeau et al., 2003).

The interlocutors to be used for the study were determined on the basis of this ratio of exposure to one or two languages. The fact that G spends no systematic time alone with Santiago ruled him out. Having granny as a caregiver, on the other hand, made her an excellent choice.

Materials

The babbling samples were recorded on TDK A60 cassettes using a Sanyo M7110K tape recorder with an in-built microphone.

Procedure

The study was conducted as a single case study on the babbling of a one-year-old who is being raised bilingually. The data come primarily from recordings of Santiago's interaction with his mother and grandmother. Comments and notes taken by N, his mother, have also been considered as secondary data.

Santiago was recorded during normal interaction with his English-speaking mother and with his Spanish-speaking grandmother within two or three days of each other. In order to activate the participant's monolingual language mode (Grosjean, 1999), the recordings took place while the child was alone with each of the interlocutors at their respective homes. The relevance of the setting or location has been reported by Deuchar and Quay (1999). In their study a bilingual child was video recorded in interaction with an English speaker or a Spanish speaker. Most recordings were made at the child's home, where Spanish was usually spoken. This, according to the researchers, may have influenced the results of the study because the setting always pointed towards one language, independent from that of the interlocutor's.

The interlocutors were not given any specific instructions on how to act, and they determined which activities to record. In general, these were mainly free play, book reading and cooking.

The samples were recorded at approximately one-month intervals, starting at the age of 14 months. At the time of the first recording, Santiago was 1;2.8; at the time of the last recording, he was 1;4.9. Six recordings of approximately 20 minutes each were completed.

The tapes were transcribed by a bilingual English-Spanish teacher trained in phonetics. Orthographic transcription was used for the adults' utterances and broad phonetic transcription for the baby's production, using the International Phonetic Association alphabet. The samples were analysed impressionistically. The researcher is aware that the same samples measured instrumentally could have yielded different results, which are indistinguishable even to the most trained hearers (Watson, 1991).

Results

Results of recordings at age 1;2

In the recording with his mother, Santi predominantly produces CV syllables, with a combination of reduplicative and variegated babbling – babbling in which the sounds of successive syllables are the same or different, respectively. There are instances of plosives and nasals. While he favours [t] and [b], he also produces [d], [m] and [n]. An affricate sound [tʃ] appears in Santiago's babbling when he is not addressing his mother, but rather, seems to be playing with his lips [bʊtʃə] [bʌtʃə] [wɒtʃə] [bətʃa]. His vowel repertoire includes mainly [ɑ], [æ], [ə], plus some instances of [ɪ], [e], [o], [ʊ], [ʌ].

When he interacts with his grandmother, Santi produces lots of velarized sounds when he tries to roar like a lion or rumble like a car. Syllables tend to be V. He uses few CV syllables, which include [n], [m] and an example of [k]. He also produces [t], but without the muscular tension of the [t] used with his mother. His vowels are mainly [i] and [a].

Results of recordings at age 1;3

In this recording of Santiago's babbling in interaction with his mother, there are samples of the six English plosives. He also produces the fricative [ʃ] in final position. There is an interesting instance when he imitates the word 'bathroom' [bɑ:θrm]. According to his mother's notes, he later simplified the pronunciation to [bɑ:ʔm], emphasising the [m] as if it were an independent syllable. Vowels are the same as at age 1;2.

In the Spanish context, Santiago shows a preference for vowel sounds, as in the previous recording. In general, his utterances consist of [a], but there are also examples of [e], [i], [o], [u]. Santi's consonants are limited to [m], [n], [p] and [t]. Both plosives are produced with less release of air in this context than in the English one.

Results of recordings at age 1;4

The pattern of Santiago's babbling in the English context is different from the one in the previous two months. His prevailing sounds are [æ], [ə], and some examples of [ɪ]. As for consonants, he favours [p] and [t]. Instances of [b], [d], [g] also appear.

The Spanish sample also breaks the pattern this month. [a] is again his chosen sound for interaction. [e], [u] and [m] also occur. However, towards the end of the recording, he produces a few instances of consonant variegation, alternating [p], [t] and [b] with their English value. In addition, there are

two instances where he produces dental [t] and the affricate [tʃ] in [bʊtʃə]

Discussion

Is there evidence of Santiago's first languages in his babbling? Does he codeswitch?

A confrontation of English and Spanish would reveal differences in areas such as phonemic oppositions, phonetic features, frequency of occurrence, distribution, and syllable structure among others (Finch and Ortiz Lira, 1982). Babbling being an early stage in the development of language, it does not lend itself to such an exhaustive study. Consequently, the focus will be on the relevant points of the data available.

Santiago seems to be using different ranges in the two contexts. He produces English sounds according to their value in that language. His vowels reflect the complexity of the English system, and his plosives and nasals in the English context seem to have a stable value throughout the study. For example, the [t] sound is articulated in the alveolar region and carries the strength of English consonants. There are no instances of dental [t], the typical Spanish articulation, in this context. On the other hand, this sound can be found in the Spanish recordings. A similar remark could be made regarding [p]. While both languages realize this sound as a bilabial, Spanish [p] is much softer than its English counterpart. Again, this type of [p] appears only in the Spanish context. The range of Spanish vowels is also covered. Thus, he gives the impression of keeping sounds separate to match those produced by his interlocutors. However, in the last recording with his Spanish-speaking grandmother, he suddenly produces several syllables containing three English plosives.

In other words, he produces English and Spanish sounds according to their value in each language and mixes phonological elements only when he is interacting with his grandmother at the age of 1;4. This is in line with the argument that bilingual children tend to mix more when they are using their non-dominant language (Genesee, Nicoladis and Paradis, 1995; Comeau et al., 2003).

So far sounds have been analysed in isolation, but possibly what is more noteworthy is Santiago's performance as a whole with each of his interlocutors. His use of language is different; he babbles differently in each context.

The sounds produced by Santiago in the English context reflect the typical performance during babbling (MacNeilage et al., 2000). He displays

both V and CV syllables combined in a reduplicative and variegated way. The majority of his sounds are plosives and nasals, with a preference for alveolar and labial consonants. In the last recording there seems to be a regression in the sense that he produces less sounds than in the two previous months. MacNeilage et al. (1997) have reported a similar pattern in a study of four infants, where three of the infants used more labial than alveolar consonants in first words as compared to pre-speech babbling. The authors suggest that this regression towards what they consider simpler consonants enables infants to experiment with new, more complex vowel sounds. Santiago seems to have turned to a simpler vowel range as well. It should be kept in mind that Santiago was 1;4 at the time of this last recording, while MacNeilage places the first words period at about 1;6, when infants produced around 50 words. Santi's constant use of [ɑ] could be due to other reasons. It is worth mentioning that the last recording sessions were the most difficult to carry out because he seemed to be rather self-conscious and unwilling to speak.

During interaction with his Spanish-speaking grandmother, Santiago shows a more limited performance. His range of sounds is narrower and even his syllables tend to be V rather than CV or VC. VC syllables seem to be isolated. Interestingly, the Spanish recordings were consistently longer than the English ones. Thus, lack of opportunity does not seem to be the reason for a simpler sample of sounds. It is only at the end of the third recording that he produces strings of CV syllables, and in so doing, he produces consonants in English with a few instances of their Spanish counterparts.

A possible explanation would be that at the beginning of the study Santiago feels confident producing Spanish vowels but not other sounds. Schnitzer and Krasinski (1996) suggest that the bilingual child they studied did not venture into new sounds until he felt he could produce them correctly. Santiago already produces [p] and [t] profusely in English, so he could be avoiding the use of these sounds in Spanish because he can't produce the Spanish version – which involves a dental sound [t̪] – and he might be aware of the fact that the sounds he articulates are not the ones he hears when he is with his granny, they do not belong in this context. There are isolated instances of [t̪] at 1;2 and [t̪] and [p] at 1;3. When he is 1;4 he appears to be less cautious and produces Spanish and English [t̪], [p], and [d̪]. This could be interpreted as the unstable realisation of sounds, which is typical at this early age (Schnitzer and Krasinski, 1996)

Another explanation could be attempted through Lanza's model (1992; 2001). Briefly, she states that children mix codes following their socialization pat-

terns. If interlocutors switch languages themselves or use strategies that promote or accept switches, then children will do so too. Santiago's grandmother tries to engage him in conversation. She asks questions, makes comments when he is silent, and when he says something she responds to it and continues with the conversation. His mother, on the other hand, interacts with him in a relaxed way; she lets him lead the conversation, say whatever he wants to say. When he produces an indefinite sound, she asks for repetition or clarification, giving the impression that she has not understood what he said. In her study of a two-year-old, Lanza (1992; 2001) refers to this as 'minimal grasp strategy', and the grandmother's 'move on strategy' after Ochs' terminology (1988). In her analysis of parental discourse strategies, each of these stand at opposite ends of the monolingual-bilingual context continuum; the 'minimal grasp' encourages a monolingual context, the 'move on' a bilingual one, where code switching is acceptable. I am not concluding that the child is aware of his languages, but he could take his mother's use of the 'minimal grasp strategy' as implying that there has been a breakdown in communication. The bilingual three-year-olds and two-year-olds studied by Comeau et al (2001) and Lanza (2001) showed the ability to repair communication breakdowns that were due to language choice. It could then be argued that Santiago might have developed this ability and tries to articulate his sounds in a way that his mother will understand him. He might not feel this way when he talks to his grandmother, as she appears to be a more cooperative interlocutor.

Conclusion

Santiago is consistent in his use of English sounds when he interacts with his English-speaking mother. In the Spanish context he displays a smaller range of Spanish sounds and mixes elements from his English repertoire. So it could be said that at 1;2 this infant seems to be able to babble differently depending on the context and the language of his interlocutors. However, due to the limited instances available for comparison and considering the exploratory nature of this stage as far as sounds are concerned, no comment is meant to be conclusive or to be taken as a generalization.

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