

## Infant Bilingualism and the *Pro*-drop Parameter

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### Abstract

No research has been done to assess the occurrence of null and overt subjects in young bilinguals simultaneously acquiring a [+*pro*-drop] and a [-*pro*-drop] language. Previous research indicates that monolinguals set the *pro*-drop parameter at a very early age. Failure to use null and overt subjects language appropriately in this population can be attributed to performance, rather than competence, factors. Research also indicates that bilingual language acquisition is neither significantly qualitatively nor quantitatively different from monolingual language acquisition. However, code-mixing is a phenomenon that characterizes bilingual acquisition. Syntactic code-mixing is extremely rare. Code-mixing does not stem from a lack of language differentiation (the Unitary Language Hypothesis) but is instead attributable to factors such as language dominance, stage of development and sociolinguistic factors. As such, it is predicted that young bilinguals simultaneously acquiring a [+*pro*-drop] and a [-*pro*-drop] language will have similar levels of null and overt subjects to monolinguals acquiring each type of language. However, syntactic code-mixing may lead to a slightly higher incidence of null subjects in the [-*pro*-drop] language than in monolinguals acquiring this type of language. It is proposed that a longitudinal study be carried out to test these predictions.

### 1.0 Introduction

Currently, there is no published research studying the presence and absence of overt subjects in young children simultaneously acquiring a [+*pro*-drop] language, such as Spanish, and a [-*pro*-drop] language, such as English. This paper will examine the literature surrounding both bilingual language acquisition and *pro*-drop with the goal of predicting the behaviour of this bilingual population.

In section 2.0, *pro*-drop and the *pro*-drop parameter will be considered in young monolinguals. Throughout this paper, the continuity hypothesis will be assumed: young children possess all syntactic categories and have similar tree structures to adults.

Bilingualism and its effects on language acquisition will be discussed in section 3.0. It will be shown that, while young bilinguals may occasionally mix syntactic structures and lexical items between their languages, this phenomenon is limited in scope and frequency of occurrence. This code-mixing does not stem from a lack of language differentiation but is instead explicable by a number of other factors.

Based on the information presented in the above two sections, it will be predicted that infants simultaneously acquiring a [-*pro*-drop] and a [+*pro*-drop] language will not behave significantly differently, whether qualitatively or quantitatively, than monolinguals with respect to *pro*-drop.

### 2.0 Pro-drop

Amongst the world's languages, *pro*-drop is a very common phenomenon. The term *pro*-drop refers to a characteristic of many languages in which certain pronouns in tensed clauses can be phonetically null: thus, in these languages, null subjects are grammatical. Spanish and Italian are typical examples of [+*pro*-drop] languages. Examples of *pro*-drop for Italian are given below in a matrix and in an embedded clause:

- (1) a. Sono bravo tato  
am good boy  
"I am a good boy"
- b. Sembra che ama Mary  
seems that loves Mary  
"It seems that she loves Mary"

(source: Valian 1990, 1991)

It is currently widely accepted that a phonetically null noun phrase, *pro*, appears in the Spec of IP position in the sentences in (1) above (see for example Hyams, 1986; Valian, 1990). In consequence, the sentences in (1) are assumed to have the representation given in (2):

- (2) a. *pro* sono bravo tato  
am good boy  
"I am a good boy"
- b. Sembra che *pro* ama Mary  
seems that loves Mary  
"It seems that she loves Mary"

*Pro*-drop is not considered to be an independent phenomenon: it tends to pattern with various syntactic features within a language. For example, [+*pro*-drop] languages do not make use of modals or expletives, freely allow post-verbal subjects and show no that-trace violations (Rizzi, 1982; Valian, 1991).

Additionally, Hyams (1986) has proposed that in *pro*-drop languages another non-overt NP, *PRO*, is found in INFL. *PRO* contains person, number and gender features that match the subject. Hyams specifies that *PRO* governs *pro* but is not itself governed as this would constitute a violation of *PRO* theorem, which states that *PRO* must not be governed.

Hyams' proposal is controversial and will not be accepted for the purposes of this discussion. Firstly, the placement of *PRO*, a maximal projection, in INFL, a head position, is inconsistent with X-bar theory. Secondly, research on acquisition has not supported some of the predictions stemming from this theory (see 2.1; Valian, 1989).

Although *pro*-drop is a complex phenomenon, correlated with various other syntactic features, we will ignore these details for the purposes of this discussion. Our predictions will only concern the appearance of null subjects in the utterances of young bilinguals, and not other aspects such as expletives and modals.

## 2.1 The *pro*-drop parameter

*Pro*-drop is often argued to be governed by a binary parameter. Children are born with a default setting, either to allow *pro*-drop ([+*pro*-drop]) or to prohibit it ([-*pro*-drop]). Certain types of input will trigger the automatic and irreversible resetting of the parameter to its marked value. If no such input is received, the parameter will remain at its default setting. "As a theory of acquisition, parameter-setting portrays the child as a device which, given normal input, automatically and deterministically sets the correct value of each parameter" (Valian, 1990:107). There is much debate surrounding the initial setting of this parameter and the required input to trigger parameter resetting. Hyams (1986; Hyams & Wexler, 1993) believes that the parameter is initially set at [+*pro*-drop], while Valian (1990, 1991) and Bloom (1990, 1993) hold the opposite opinion.

Valian (1990) argues convincingly that the parameter cannot initially be set as to simply permit *pro*-drop<sup>1</sup>. This would force children acquiring a [-*pro*-drop] language, such as English, to somehow observe that they did not hear sentences without overt subjects regularly, a case of negative evidence. Hyams

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<sup>1</sup> Valian does not argue for the default parameter setting to be either [+*pro*-drop] or [-*pro*-drop], but rather for a combination of the two. The subtleties of her arguments are not relevant for this discussion as we accept that, regardless of its initial setting, the *pro*-drop parameter is set early in acquisition.

(1986) maintains that the relevant input to parameter resetting is not the presence or absence of overt subjects, but rather the behaviour of INFL. Since the co-appearance of *PRO* and modals in INFL would constitute a violation of the *PRO* theorem, and *PRO* is present in languages with null subjects, the development of modals will, in theory, trigger the appearance of overt pronominal subjects. However, Valian (1989) found no clear relationship between the emergence of modals and the emergence of lexical subjects in the speech of children. If a child uses lexical subjects, s/he does not necessarily use modals and vice-versa.

Based on this evidence, we will assume that the default parameter setting is [-*pro*-drop], the English-like option; children are born assuming that their language does not permit null subjects.<sup>2</sup> However, regardless of the arguments surrounding the default setting of the *pro*-drop parameter, what is clear is that this parameter is set at an early stage of language acquisition.

## 2.2 Occurrence of overt subjects

Valian (1991) conducted a study comparing the use of overt subjects in American versus Italian children. She found that even among the least linguistically developed participants (MLU 1.53-1.99), "almost 70% of the children's utterances with verbs include subjects--more than double the rate of Italian children" (47). Valian concludes "that at least soon after MLU 2 American children exhibit no competence deficit [in the use of overt subjects]" (48).

While some researchers have found lower rates of overt subjects in English speaking children than did Valian (see for example Hyams & Wexler, 1993), there is no need to doubt Valian's conclusion: the *pro*-drop parameter is correctly set at an early age (in this case, 2;0) and at a low MLU (approximately 2).

## 2.3 Accounting for the absence of overt subjects

If children have the correct parameter setting at an early age, how can the appearance of null subjects in their utterances be accounted for? Several examples of null subjects which would be considered ungrammatical in adult English are cited by Hyams and Wexler (1993) in (3) below:

- (3) Shake hands.  
Turn light off  
Want go get it.  
Show Mommy that.  
Not making muffins.

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<sup>2</sup> Another possibility is that there is no default parameter setting and that children set the parameter fully upon exposure to some minimal amount of input. This possibility will not be considered as long as it will have no bearing on our hypotheses or conclusions.

Performance, rather than competence, explanations can account for these utterances. Bloom (1990, 1993) gives evidence that processing limitations may lead to the deletion of subjects in young children. Gerken (1991) proposes a prosodic explanation for the deletion of certain subjects: initial weak syllables of a metrical foot have a tendency to be omitted.

While children acquiring a [-*pro*-drop] language may occasionally delete subjects, this is not because they believe they are learning a [+*pro*-drop] language. At least from MLU 2, children have correctly set the *pro*-drop parameter. However, before we can consider the implications of this conclusion in bilingual children, it is necessary to examine the issues surrounding bilingual language acquisition.

### **3.0 Bilingual Language Development and Code-mixing**

It has been asserted that half the world's population is bilingual (Grosjean, 1989). Certain studies have indicated that bilingual language acquisition by young children does not differ significantly from monolingual acquisition (Swain, 1972). Bilingual language acquisition is even said to occur at a comparable rate to monolingual acquisition (Padilla & Liebman, 1982). However, there are certain noticeable effects of having two languages in the utterances of bilinguals. Code-mixing is one such phenomenon.

Code mixing refers to "the alternation or mixing of language within discourse" (Lanza, 1992). Genesee, Nicoladis, and Paradis (1995) have further developed this definition for the study of very young children:

The term "mixing" has been used most often to refer to the co-occurrence of elements from both languages in a single utterance (intra-utterance mixing). This definition, however, precludes children in the one-word stage and, therefore, it is useful to extend it to include mixing across utterances (even of the single-word variety) with the same interlocutor, which we will refer to as INTER-UTTERANCE MIXING. This broader definition of mixing permits us to examine mixing in younger children - those in the one- and early two-word stage.

Examples of both types of mixing are presented in Volterra and Taeschner (1978). At 2;2 the Italian-German bilingual Giulia made the intra-utterance mixed form:

- (4) Giulia gemacht a casetta per a böse Wolf.  
"Giulia made a little house for the bad wolf."

Her sister, Lisa (2;5), when speaking with her mother, replies in Italian to a German utterance, an example of inter-utterance mixing.

- (5) M: Was ist das hier?  
"What is this?"  
L: Occhiali  
"Glasses"

Both forms of code-mixing are quite common in infant bilinguals.

The specific nature of code-mixing, its extent and the theory advanced to account for it will be addressed in the following sections.

### 3.1 Occurrence of code-mixing

In children, lexical code-mixing has been extremely well studied. While there are no conclusive norms of the extent to which this type of code-mixing occurs at different ages and developmental stages in young "balanced" bilinguals (those whose two languages are approximately equally developed), a variety of researchers have measured the occurrence of this phenomenon.

Redlinger and Park (1980) calculate the percentage of mixed utterances by dividing the number of mixed utterances by the number of multiple word utterances. They evaluated their four subjects by assessing their level of mixing in relation to Brown's stages (1973). "Stage I mixing levels were between 20% and 30%, Stage II levels tended to be between 12% and 20%, Stage III levels between 6% and 12%, and Stages IV and V between 2% and 6%. Mixing rates were thus seen to decrease with advancing linguistic development."

Genesee et al. (1995) found that their subjects, aged 1;10 to 2;2, showed very low rates of intra-utterance mixing, the highest level being between 6% and 7%. The children demonstrated higher levels of inter-utterance mixing. This appeared to be tied to language dominance, a factor which will be discussed in section 3.2.

Finally, Vihman's (1982) son, Raivo, had 34% mixed utterances at 1;8, 11% at 1;11 and 4% at 2;0.

Syntactic code-mixing occurs less frequently than lexical code-mixing. Meisel (1989) conducted a study on the bilingual acquisition of French and German by two children, aged 1;0 to 4;0. He showed that "bilingual children use different word order sequences in both languages as soon as they begin to produce multi-word utterances" (28). These children also behave language appropriately in terms of subject-verb agreement. As *pro*-drop is a syntactic, not a lexical phenomenon, we would expect it to follow the same patterns observed by Meisel.

### 3.2 The Unitary Language Hypothesis

Before we move on to predicting the behaviour of *pro*-drop in infant bilinguals, it is necessary to address one of the main explanations put forward to account for code-mixing. The Unitary Language Hypothesis (Genesee, 1989) proposes that code-mixing results from a lack of language differentiation at the early stages of bilingual acquisitions: before the age of at least 2;0 (and possibly later), infant bilinguals believe they are acquiring a single language. This hypothesis has been advanced by a number of researchers, including Volterra & Taeschner (1978) and Redlinger & Park (1980). The former authors even contend that lexical differentiation precedes syntactic. If this hypothesis were true, it would be impossible to make reasonable predictions about the behaviour of young bilinguals in the case of *pro*-drop. However, this view has been largely discredited. Meisel (1989; see 3.1) demonstrates that young bilinguals learn syntax at a rate and in a manner comparable to monolinguals and rarely mix their languages. Genesee et. al. (1995) show that young bilinguals predominantly use the appropriate language in conversation. Code-mixing cannot be accounted for by a lack of language differentiation. Therefore, it is necessary to consider the factors which can lead to code-mixing.

All bilinguals, whether simultaneous or sequential, are capable of, and in at least some situations do, code-mix. This applies even to fluently bilingual adults (de Fina, 1989). The extent to which code-mixing occurs depends on a number of factors. Three of these will be considered: language dominance, stage of development, and sociolinguistic concerns. Obviously, this is not an exhaustive list of plausible explanations for code-mixing.

Most bilinguals do not have equal proficiency in both of their languages. Code-mixing often occurs in a child's weaker language due to a lack of lexical and syntactic resources (Lanza, 1992; Genesee et. al, 1995). Missing words and structures may be borrowed from the dominant language. It is unclear whether language dominance would influence the occurrence of *pro*-drop in the bilingual population under discussion.

Code-mixing may also result from incomplete language development: "mixing may decline with development, not because separation of the languages is taking place but rather because the children are acquiring more complete linguistic repertoires and, therefore, do not need to borrow from or overextend between languages" (Genesee, 1989). In support of this, Padilla and Liebman (1982) note that syntactic, morphological and lexical items do not develop at the same time in each of a bilingual's languages. Some code-mixing in infant bilinguals may simply be the result of inter-language borrowing in order to compensate for a not yet developed structure in one language, an option not available for monolinguals. Because the *pro*-drop parameter is set very early, language development may not be a factor in the behaviour of this domain.

Finally, de Fina (1989) discusses a wide variety of sociolinguistic and discourse factors that lead to code-mixing in adult bilinguals. These include quotations, addressee specifications, emphasis and focus, message qualification (elaboration and clarification), topic-shift and mode-shift. Grosjean (1989:9) further identifies a bilingual speech mode "where both languages are activated [and] bilinguals become quite different speaker-hearers [than in the monolingual speech mode]." There is no reason to doubt that some or all of these sociolinguistic and discourse factors may apply to infant bilinguals. Studies on this population have noted definite sociolinguistic effects on code-mixing (see, for example, Lanza, 1992).

#### **4.0 Pro-drop in the Bilingual Infant: Hypotheses**

Having examined both the theoretical and acquisition literature surrounding *pro-drop* as well as the linguistic development of bilingual infants, predictions can now be made concerning the interaction of these two areas. The following facts pertaining to the appearance of null subjects in a young child simultaneously acquiring a [+*pro-drop*] and a [-*pro-drop*] language should be considered:

- 1) *Pro-drop* is a syntactic, not a lexical, phenomenon.
- 2) The *pro-drop* parameter is set very early in language acquisition.
- 3) Bilingual language acquisition resembles monolingual language acquisition.
- 4) Syntactic code-mixing is rare.

Therefore, one would expect that young bilinguals would behave very similarly to monolinguals in their treatment of *pro-drop*. For example, an Italian-English bilingual child should produce null and overt subjects at rates comparable to those proposed by Valian (1991; see 2.2) for Italian and English speaking monolinguals. Again, the young bilingual will show performance difficulties, attributable to factors such processing limitations and prosody (see 2.3).

The hypothesis that young bilinguals will behave like monolinguals in their treatment of *pro-drop* is supported by studies of second language acquisition. Hilles (1986) observes that adult second language learners of a [-*pro-drop*] language whose first language is [+*pro-drop*] proceed through stages of acquisition comparable to those of a monolingual child acquiring a [-*pro-drop*] language. There is no reason to doubt that bilingual children will develop along monolingual stages in each of the languages they are acquiring.

There is a possibility that the type of bilingual infants described above will have a slightly higher incidence of null subjects in their [-*pro-drop*] language than monolinguals learning the same language. This could be due to sociolinguistic factors, such as emphasis or quotation (see 3.2). It is unlikely that a higher incidence of null subjects could be attributed to the *pro-drop* parameter not yet



being set. Valian (1991) argues that this parameter is correctly set by MLU 2 (age 2;0). Prior to this point, it is nearly impossible to assess a child's use of subjects in any language since all their utterances are extremely restricted in both length and surface complexity.

### **5.0 Research Proposal and Conclusions**

It is predicted that infant bilinguals simultaneously acquiring a [-*pro-drop*] and a [+*pro-drop*] language will behave similarly to monolinguals with respect to each language. If infant bilinguals do not behave as hypothesized, all the research that indicates that bilingual language development is comparable in each language to monolingual development will need to be reassessed. A strong interaction between a bilingual's languages is not expected. A much higher occurrence of *pro-drop* in a [-*pro-drop*] language than in monolinguals would certainly hint at this type of interaction.

In order to test the above hypothesis, a study should be conducted on a group of infant bilinguals simultaneously acquiring these two types of language. Participants should be chosen who have *approximately* equal exposure to, and have achieved *approximately* equal levels of development in, their two languages.<sup>3</sup> As discussed in 3.2 above, it is unclear what effects language dominance would have on the appearance of overt subjects in these children.

The participants should be recorded regularly from a young age, certainly no older than 18 months. This would allow the time the *pro-drop* parameter is set in each language to be assessed.

Separate elicitations should regularly be carried out in each of the participants' languages, perhaps alternating weekly. Wherever possible, the person gathering the data should be monolingual. As discussed in section 3.2 above, a variety of sociolinguistic factors influence code-mixing in adult and infant bilinguals. If young bilinguals are highly sensitive to sociolinguistic cues, they may display higher rates of code-mixing (even the rare, syntactic kind) in the presence of a researcher who indicates (whether deliberately or accidentally) that she understands both languages than in the presence of a researcher who cannot understand the language not being tested. The bilingual researcher may well accidentally trigger the bilingual speech mode in the participant so that both her languages are activated (Grosjean, 1989; section 3.2).

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<sup>3</sup> Totally balanced bilinguals may be impossible to find. As Grosjean (1989) emphasizes, the bilingual is not two monolinguals in one person: "... they [bilinguals] will develop a formal competence in each of their languages to the extent needed by the environment" (8). As such, the researcher should attempt to find participants with approximately equal skills in both languages all the while being aware that the participants will most likely not have mirror image abilities in both their languages.

This study should proceed until the participants have achieved an advanced level of linguistic development (MLU 5 and beyond). This would permit the effects of developmental and performance factors to be assessed.

While many aspects of bilingual language acquisition have been studied, it is clear that more research needs to be done on specific areas, such as *pro-drop*. This type of research could help support various theories regarding both bilingual language acquisition and syntactic development.

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