# Parental Discourse and Codemixing in Bilingual Children

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## Abstract

Various explanations for young bilingual children's codemixing have been offered, including that it is influenced by the particular discourse strategies parents use in conversation with their children. To date, Lanza (1992) has proposed the most explicit version of this hypothesis. She suggested that certain parental speech acts in response to children's codemixing encourage continued codemixing while others discourage it. The present study was undertaken to replicate Lanza's study. Five French-English bilingual families in Montreal were studied, starting when most of the children were 2;0 and continuing until they were 2;6. Two analyses were performed; one looked at the relationship between parental style of response and children's rates of codemixing and the second looked at the effect of particular responses on children's codemixing in the next conversational turn. The results of both analyses did not support the hypothesis. We suggest that the differences in sociolinguistic context between the two studies may account for the different results.

## Key words

*children*

*codemixing*

*parental*
*discourse*

It is commonly assumed that bilingual children codemix a lot if their parents codemix a lot. Indeed, parents in bilingual families are often counseled to follow a one parent-one language rule in order to minimize their children's codemixing (see, e.g., Grosjean, 1982; Ronjat, 1913). We use the term "codemixing" to refer to the use of two languages within a single unit of discourse regardless of whether or not the use was deliberate, as in codeswitching. However, there is variation among communities with respect to the prevalence of codeswitching and its formal and functional characteristics (Poplack & Sankoff, 1988) and, thus, the relationship between parental and children's rates may not be the same across communities. There is surprisingly little systematic evidence concerning the relationship between parental and children's rates of codemixing. The evidence that exists thus far suggests that the effect of parental codemixing on children's rates of codemixing may interact with children's proficiency in the two languages. For example, one study in Montreal reported significant correlations between child and parent codemixing in half of the eight cases; the four children were followed longitudinally from as young as 1;2 (years; months) to as old as 4;9 (Goodz, 1989). In contrast, another study in the same community, found significant correlations in only two of twelve cases; the children in this study were followed longitudinally from 1;6 to 2;6 (Nicoladis, 1995).

In an attempt to reconcile the discrepant results from these two studies, Nicoladis and Genesee (1997) examined the relationship between child and parental codemixing in seven

| Bilingual Context | Codeswitching |
|---|---|
| | Move on strategy |
| | Adult repetition |
| | Expressed guess |
| Monolingual context | Minimal grasp |

From Lanza (1992, p.649)

**Figure 1**
Parental Discourse-Strategy Continuum

bilingual families when the children were 2;0, 2;6, 3;0, and 3;6. They found that the rates of parental and child codemixing did not correlate at 2;0 and 2;6 but did correlate at 3;0 and 3;6. They argue from these results that inclusion of children from a wide age range may produce positive correlations due to general shifts of language development and use rather than to direct associations between parental and children's rates of mixing. They also showed that children's language dominance (or greater proficiency in one language) was an important factor in their codemixing at all ages. In marked contrast to the Montreal results, one case study in a bilingual community in which codemixing was prevalent showed that the child's rates of codemixing reached similar rates to her parents by around two years of age (Tabouret-Keller, 1963). In this case, we cannot know whether the child's early attainment of similar rates of codemixing to her parents' is due to her relative proficiency in the two languages or the prevalence of codemixing in her environment or some combination of the two factors.

Lanza (1992) has suggested that bilingual children's rates of codemixing may be influenced, not by their prevalence of their parents' codemixing but by the particular discourse strategies they use in conversation with their children. More specifically she has hypothesized that certain parental speech acts in response to children's codemixing might encourage continued codemixing while others might discourage it (see Figure 1). Parents who respond to their children's codemixing using minimal grasp or expressed guess strategies, for example, might indicate that they do not understand the child's codemixed utterance and, thereby, encourage monolingual conversations with their children. In contrast, parents who reveal their understanding of children's codemixing by providing a translation or by codeswitching themselves might indicate their implicit acceptance of children's codemixing. This, in turn, could encourage relatively bilingual forms of communication between parent and child. Lanza (1992) proposed that these parental speech acts could be effective when a bilingual child is as young as two years of age.

The *Parental Discourse Hypothesis* of codemixing (or PDH for short) has considerable merit. Explanations of children's codemixing in terms of parental rates of mixings, as discussed earlier, put the emphasis on parental input as simple modeling and assume that bilingual children monitor, and are sensitive to, rates of codemixing in parental input. In contrast, the PDH suggests that children's patterns of language use grow out of the

essentially interactive or communicative nature of parent-child language use (see also Döpke, 1992b). More specifically, according to the PDH, certain speech acts encourage monolingual conversations because they indicate parental lack of acceptance and/or comprehension of a child's codemixing. In other words, they implicitly indicate that the child's language choice (and, in particular, their use of both languages) is unacceptable or incomprehensible. Moreover, for the putative monolingual speech acts in Figure 1 to have their proposed effect, bilingual children must first understand that it is their language choice that was not "grasped" and not that they had chosen inappropriate words or garbled their pronunciation or that their parents simply did not hear what they said. Children who do not target language choice as the problem point might choose different words (in the same language), change the pronunciation of their words or simply repeat the utterance in its original form. Indeed, these are common strategies used by monolingual children in response to adult requests for clarification (Gallagher, 1977). By about the age of two years, it is clear that monolingual children can respond appropriately to explicit requests for changing formal properties of their language (Scherer & Coggins, 1982; Wellman & Lempers, 1977; Wilcox & Webster, 1980). However, it is not clear that they know how to respond appropriately to implicit requests, such as those assumed by the PDH. For example, when asked "what?" by adult strangers in response to a random utterance, monolingual children sometimes responded by modifying their original utterance, most often by making phonological changes or dropping words (Gallagher, 1977; 1981). Because "what?" was asked randomly, there is no evidence that the modifications made by the children clarified their original utterance to the adults. Another study found that children between 1;5 and 2;0 were more likely to repeat their original utterance than to recode it in response to the ambiguous request "what?"; in contrast, requests that unambiguously indicated lack of comprehension led to more recodings than repetitions (Wilcox & Webster, 1980). Thus, further examination of the PDH will shed light on two-year olds' understanding of the implicatures of some speech acts.

Further examination of the PDH is called for to shed light on two-year-olds' understanding of the implicatures of the speech acts on the PDH continuum. Thus, the purpose of the present study was to replicate Lanza's study with more subjects. The PDH was based on a case study of one Norwegian-English bilingual child, Siri, who was between 2;0 and 2;7, and thus cannot be generalized with certainty. In the present study, five French-English bilingual families were studied, starting when the children were 2;0 and continuing until they were 2;6. Lanza found that Siri used more grammatical mixing (i.e., codemixing with grammatical morphemes) with her mother who spoke the child's nondominant language and more lexical mixing (i.e., codemixing with content words) with her father. She suggested that Siri's grammatical mixing might be due to her dominance while her lexical mixing might be due to her father's use of particular discourse strategies that implicitly allowed codemixing. However, no systematic empirical link was made between Siri's codemixing and her parents' differential use of specific speech acts; the analysis of the mother's and father's discourse styles was qualitative. The present study systematized the analysis of the relationship between the parents' discourse and the children's codemixing. We first examine the children's patterns of grammatical and lexical codemixing to see if they are similar to Siri's. As Lanza did not specify how the effects of the parental strategies would be seen, we examined their effect in two ways: on the children's overall rates of codemixing and on their language choice in the next conversational turn. Lanza proposed

that both parents and children would contribute to language-choice negotiations, however, the focus of this paper is on the effects of the parental discourse strategies on the child.

# Methods

## The children and their families

Five families residing in the area of Montreal, Quebec, participated in the study. Each family had one first-born boy and no other children during the year of observation. The average age of the children at the start of the study was about 23 months (range: 1;9.25 to 2;0.4) and about 29 months at the end (range: 2;4.6 to 2;7.10). All children were learning two languages simultaneously in their homes. All were learning French from their fathers and English from their mothers except Yan, whose mother is francophone and father is anglophone. Two children were enrolled full-time in daycare: Yan in a bilingual daycare and Oli in a French daycare.

To provide an indication of the children's general language development, we examined three indicators of relative language proficiency that have been shown to be useful for children of this age Mean Length of Utterance, word type, and multimorphemic utterance. Multimorphemic utterances were calculated based on the total number of utterances of two or more morphemes in each language as a percentage of the total number of multimorphemic utterances in both languages. Word types were calculated as the total number of different words in each language as a percentage of the total number of words in both languages. These measures have been shown to be useful in determining bilingual children's relative proficiency in their two languages around this age (Genesee, Nicoladis, & Paradis, 1995). Based on these analyses, Mat and Nic appeared to be relatively more proficient in English, their mother's language; Yan appeared to be more proficient in French, his mother's language; and Oli appeared to be more proficient in French, his father's language. Ste appeared to be relatively balanced in both languages after the first session in which he did not use any French.

The parents varied with regards to educational background and employment. All the parents had a minimum of a high school or community college degree. Two mothers also had university degrees. Three of the fathers worked full-time outside of the home; one worked on call; and the fifth stayed at home full-time with his child. Two mothers worked full-time outside of the home; one worked part-time outside the home; one was a student throughout the course of this study; and the fifth was unemployed at the start of the study and then started a full-time job about four months into the study. All the parents had at least some fluency in their spouse's language. While some of the parents reported using only one language with their child and some reported using both languages freely, in fact, all the parents addressed their children in their native language most of the time during our observations sessions. The parents codemixed relatively infrequently with their children. It is common to find that parental reports of language use and actually documented usage differ (Goodz, 1994).

## Procedure

All of the families were visited a total of eight times over the course of the six-month study. For each visit, the parents were simply instructed to do what they normally did in a free play situation; in some cases free play time proceeded naturally into meal time. There were three

different types of sessions: in one session, the child was observed playing with both parents, in another the child played with his/her mother alone, and in the third, the child played with his/her father alone. All sessions lasted between 45 and 60 minutes.

The bilingual observer was the same person in all visits. She was instructed to try to speak primarily the parent's native language and to codemix when she felt it could be done "naturally." We thought this would encourage parents to codemix if they did so when the observer was not there. Most often the observer's codemixing passed unremarked although occasionally the parents corrected the observer's codemixing by providing a translation equivalent in their native language. These corrections fit in with observations from others that codemixing is marked in Montreal (Heller, 1982). There is no guarantee that a single person would have a straightforward and unique effect on the families' behavior, particularly as she developed a relationship with each of the families over time. We nevertheless thought it was important that the same observer visited all the families in order to attempt to control for the possible effect that the observer might have had on the children's (or the parents') language choice (Köppe & Meisel, 1995).

Each child was filmed with both parents at six-month intervals and with each parent alone at two-month intervals (about every seven to nine weeks). The sessions with each parent alone were scheduled as close together as possible, usually within a week. There were approximately three to four weeks between each session with both parents and the next session with a parent alone. Naturally, this schedule was subject to the family's availability. The filming sessions will be referred to by the approximate age of the child in months and a letter indicating which parent(s) were present at that session: "F" for father, "M" for mother and "B" for both parents. Thus "Yan-5B" means the fifth session with Yan with both parents present. Lanza (personal communication) used the sessions with both parents present to determine Siri's rates of codemixing but used the sessions with the parents alone to analyze the family's language-negotiation strategies. For the main analyses, we have followed that methodology, although we also include analyses of other data points so as to be able to consider the generalizability of the results.

## Transcription

Transcripts of the first twenty minutes after the first five minutes of each session were done in accordance with the CHAT transcription system (MacWhinney & Snow, 1990). The first five minutes were not included in order to allow time for the families to become accustomed to the presence of the recording equipment (see Demetras, Post, & Snow, 1986). Transcription of the sessions was done by the bilingual observer who had attended the session, using both the videotape and the audiotape. All transcripts were checked for accuracy by a native speaker of Quebec French who is also fluent in English. The inter-rater agreement of the transcription averaged 92.9% (range: 71.3% to 99.9%). Any discrepancies were resolved by discussion.

## Definition of codemixing

The children's rates of codemixing were calculated as the token number of codemixed utterances out of the total number of utterances addressed to each parent (excluding unintelligible ones). Similarly, the rates of lexical and grammatical mixing were calculated as the token number of lexical or grammatical mixes out of the total number of utterances

**Table 1**

Distribution of Children's Mixed Words by Word Category

| | One-word interutterance | Two-word interutterance | Intrautterance | Lanza (1992, p.640) |
|---|---|---|---|---|
| **Contentives** | | | | |
| Noun | 78 | 111 | 20 | 26 |
| Verb | 9 | 29 | 9 | 7 |
| Adjective | 27 | 18 | 11 | 0 |
| SUBTOTAL | 114 | 158 | 40 | 33 |
| **Functors** | | | | |
| Adverb | 66 | 77 | 34 | 38 |
| Determiner | 0 | 33 | 6 | 15 |
| Pronoun | 11 | 11 | 1 | 73 |
| Preposition | 1 | 4 | 6 | 0 |
| Conjunction/infinitive marker | 0 | 0 | 0 | 1 |
| Modal auxiliary/copula | 0 | 3 | 0 | 8 |
| Interjection/social word | 20 | 36 | 2 | n/a |
| SUBTOTAL | 98 | 164 | 49 | 135 |

addressed to each parent. An utterance was considered to be codemixed in two circumstances: 1) an utterance containing words from both languages addressed to either parent (intrautterance mixing) and 2) an utterance in the inappropriate language for the interlocutor (e.g., a French-only utterance to an English-speaking parent). It is important to classify both categories of utterances as mixed because bilingual children in the one-word stage often produce utterances of a single word but in the inappropriate language of the interlocutor. We refer to this as interutterance mixing. Exclusion of this category of utterances would eliminate almost all of the mixing of these children. Parents' rates were calculated as the number of intrautterance and interutterance mixes as a percentage of their total number of utterances. Our definition is similar to that used by others (e.g., Goodz, 1989; Lindholm & Padilla, 1978; Vihman, 1985).

Lanza (1992) divided Siri's codemixing into two kinds: grammatical and lexical. She further proposed that the PDH could explain only Siri's lexical mixing, or codemixing with content words (see also Vihman, 1985 for a similar proposal). Table 1 contains the number of words falling into these categories, collapsed across all five children, as well as Lanza's data for comparison. In addition to the intrautterance mixing we also categorized the children's interutterance mixing. Most of the children's interutterance mixes (all but 103) were either one- or two-word utterances; we have reported these in Table 1. As can be seen in the Table, there were fairly equal numbers of lexical and grammatical mixing for these children for both inter- and intrautterance mixing. In fact, the distribution between the lexical and grammatical categories was statistically equal, $\chi^2$ (2)=2.23, *n.s.* While this

**Table 2**

Children's Average Rates of Mixing to Each Parent

|  |  | *Lexical* | *Grammatical* | *All* |
|---|---|---|---|---|
| Mat | Father | 8.5 | 30.2 | 47.7 |
|  | Mother | **7.9** | **8.4** | **27.0** |
| Nic | Father | 16.0 | 45.6 | 71.4 |
|  | Mother | **1.5** | **0** | **1.5** |
| Oli | Father | 2.3 | 1.2 | 4.7 |
|  | Mother | **6.4** | **11.6** | **47.7** |
| Ste | Father | 33.4 | 3.7 | 38.6 |
|  | Mother | 4.8 | 2.8 | 19.1 |
| Yan | Father | 7.9 | 4.8 | 21.2 |
|  | Mother | **6.0** | **12.4** | **35.7** |

The data for each child's dominant-language parent is in bold-faced type

holds for all the children together, it should also be noted that no individual child showed the same pattern of mixing as Siri, namely a high use of mixed pronouns.

Lanza (1992) also found that the rate of Siri's lexical mixing was usually higher to her father who spoke her dominant language. Table 2 shows the children's average percentage of lexical, grammatical, and both lexical and grammatical mixes (i.e., an utterance that contained both lexical and grammatical codemixed words) to each parent with the data for the dominant-language parent in bold. Ste did not have a clear dominance, so we have not bolded the data for either of his parents. Unlike Siri, no child in this study used a higher rate of lexical mixing to the dominant-language parent than to the nondominant-language parent. For these children, there was no clear-cut pattern of lexical and grammatical mixing according to their dominance. There was, however, a tendency for the children to use more codemixing overall to their nondominant-language parent, a pattern that has been noted in previous studies (Genesee, Nicoladis, & Paradis, 1995; Nicoladis, 1995; Nicoladis & Genesee, 1996a, 1996b).

## Coding

Every transcribed utterance was coded for the addressee (e.g., mother, father, child himself, family pet, etc.) and the language of the utterance. The following utterance types were included in subsequent analyses: French-only, English-only, and mixed. An utterance was coded as French-only or English-only if, and only if, all the words within the utterance belonged to standard Quebec French or English, respectively. A mixed utterance contained morphemes from both French and English (see Lanza, 1992); for example "doggy *dodo*" ("doggy sleeping") would be a mixed utterance. Two kinds of utterances were excluded from subsequent analyses: both-language utterances and unintelligible utterances. A both-language utterance was composed solely of words that are common to both French and English. This category includes many interjections (oh, eh, uhoh, etc.), most onomatopoeic

words (bang, boing, grr, etc.), and proper nouns (Maman, Jessica, Barney, etc.). When a word of both languages appeared in an utterance that was otherwise in French or English, that utterance was counted as belonging to that language; so, for example, if a child said, "uhoh *chien!*" ("uhoh dog"), the utterance was counted as French. Unintelligible utterances were utterances that could not clearly be coded for language, such as idiosyncratic onomatopoeia or babbling.

Parental responses to their children's codemixed utterances were coded according to Lanza's (1992) scheme (see Figure 1) as follows. Codeswitching (cs) was thought by Lanza to be the most bilingual of the parental strategies. In this category, the parent switched from his or her native language to the language the child had used. For example, in Nic-4F, the following exchange took place between Nic and his francophone father:

Father: [puts a puzzle piece between Nic's toes]

Child: too big.

Father: who's too big?

Lanza reasoned that if the parent codeswitched, the child would understand that the other language was an appropriate means of communication. It should be pointed out that this category does not fit conceptually with the others. From a discoursal perspective, it is nonspecific—parents could use codeswitched utterance to move-on, request clarification, express a guess, repeat what the child had said, and so on. In the example above, Nic's father used a codeswitched move-on. Parental codeswitching thus might encourage codemixing on the children's part, although for reasons other than those proposed by the PDH. We discuss alternative explanations for children's language choice following parental strategies in the discussion.

In the adult repetition (ar) category, the parent simply repeated what the child said in the parent's native language. Lanza thought that this would be a fairly bilingual strategy on the part of the parents because it showed that they had understood the child. In this example from Mat-3F, Mat's francophone father is watching Mat do a puzzle:

Child: [holds a puzzle piece in the air] plane!

Father: eh... *avion!*

"eh... plane!"

In this example, Mat's father shows his understanding of the word "plane" by repeating the word in his language; this might encourage Mat to continue to use that word.

The move-on strategy (mo) was thought by Lanza to fall midway between the extremes of bilingual and monolingual strategies. In this category, the parent continued the conversation with the child without drawing attention to the child's codemixing. For example, this exchange took place between Oli and his anglophone mother in session 1B:

Child: *il est où ma pomme?*

"where is my apple?"

Mother: Mommy put it away in the kitchen.

In this example, Oli's mother showed comprehension of Oli's utterance. This strategy might signal to him that it was acceptable to continue to codemix since he was understood.

The expressed guess strategy (eg) falls on the monolingual side of the language environment continuum. In this category, a parent guessed at what the child was saying using only his or her native language. Thus, for example, this exchange took place between Mat and his anglophone mother in session IB:

Child:   *où* that?

"where that?"

Mother:  who that?

In this example, Mat's mother guessed at what he was trying to say, using only her native English. Note that while it is possible that Mat's mother's guess was correct, the transcript of this session reveals that Mat knew (and liked to use) the French word "où" but did not use the English word "who" at this time. The expressed guess strategy might indicate to the child that the parent's grasp of the other language is weak and thus encourage the child to continue in the parent's stronger language.

The minimal grasp strategy (mg) was considered by Lanza to be the most monolingual kind of strategy. In this category, the parent requested clarification of a child's utterance after the child codemixed. A response was counted as a request for clarification even if the parent did not make it clear that he or she was questioning the language. For example, Yan's francophone mother is talking with Yan in session Yan-2M:

Child:   [points up in the air] down!

Mother: *quoi?*

"what?"

The act of asking for clarification in the parent's native language might indicate to the child that it would be necessary to change the language of his or her utterance in order to be understood.

In addition to the speech acts specified by the PDH, the parents often did not respond to children's codemixing. That is, they used their next conversational turn to laugh (with no evidence of comprehension of the child's utterance), to play with a toy, to speak with someone else in the room, or merely to not respond verbally. These episodes accounted for 26% of the parental responses to children's codemixing. While not responding could clearly influence children's codemixing, we could not predict how, so we did not include these episodes in the analyses. Note that by dropping the no responses, we have effectively turned the analysis into an analysis by conversational turn since, by definition, there would be no response to a midturn utterance. To calculate the parental style score, all utterances that were responses to a child's mixed utterance were counted. To calculate the children's responses to the different parental strategies, when a parent used more than one utterance in response only the last utterance in a parental turn was considered.

The coding of the transcripts was checked for accuracy by the same French speaker who checked the transcription. The interrater agreement of the coding averaged 96.1% (range: 83.4% to 100%).

## Analysis 1: Rates of codemixing

In Analysis 1, we examine the relationship between the parental discourse strategies and children's overall rates of codemixing and lexical rates of mixing on the assumption that children interacting with parents with relatively more bilingual discourse style would codemix more than children interacting with parents with relatively monolingual discourse styles. Alternatively, the effects of parental strategies might be seen on children's choice of language in the conversation turn immediately following the parental response; this possibility is examined in Analysis 2.

Parental strategy scores were calculated by assigning a weight from 1 to 5 to each response type on the continuum — a weight of 1 was given to the most monolingual strategy type ("minimal grasp") and a weight of 5 to the most bilingual strategy type ("code-switching"); weights of 2 to 4 were assigned to the intervening strategy types (see Figure 1). The weighted total of all strategy types was divided by the total number of parental response in order to adjust for differences in frequency of child-initiated codemixed utterances. The above formula yields scores that increase as the parents' use of bilingual strategies increases and decrease as parents' use of monolingual strategies increases.

We then calculated correlations between the parental strategy scores and their respective children's rates of codemixing. It was expected that as parental scores increased (i.e., indicating use of more bilingual strategies), the children's rates of codemixing would also increase, yielding positive correlations. Conversely, as parental scores decreased, children's rates of codemixing would also decrease, also yielding positive correlations. The correlation between the pairs of parental strategy scores in response to children's lexical mixing and children's overall rates of codemixing for each session was significant and negative, $r(25) = -.490$, $p < .05$. The correlation between the pairs of parental strategy scores in response to lexical mixing and the children's rates of lexical mixing was also significant and negative, $r(25) = -.345$, $p < .05$.

To see if these results would continue to hold up when both parents were present, we calculated the correlation between the pairs of parental strategy scores in response to lexical mixes and the children's rates of lexical mixing; the correlation was positive and no longer significant, $r(48) = .277$, $p > .05$. When the both-parent sessions were included in the correlation between the pairs of parental strategy scores and children's overall rates of codemixing for each session, the correlation was no longer significant, $r(48) = .078$, $p > .05$.

## Analysis 2: Codemixing by conversational turn

In Analysis 2, we analyze the effect of each type of parental speech act on the children's codemixing in the next conversational turn, on the assumption that the effects of parental discourse styles might be most evident immediately following the relevant speech acts. More specifically, these analyses sought to examine if the children continued to codemix more after relatively bilingual parental strategies in comparison with relatively monolingual strategies.

All episodes in which the children initiated a lexical codemix were identified and analyzed further; there were 199 such episodes. As noted earlier, in 51 of these cases, the parents did not respond verbally to the children's codemixing. These 51 sequences were dropped from all subsequent analyses because it was impossible in these cases to examine
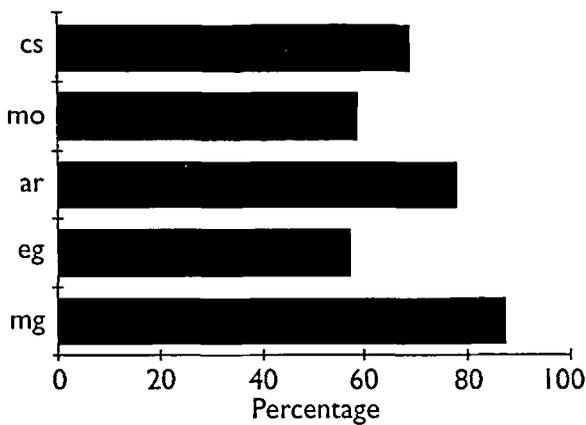
**Figure 2**

Percentage of Children's utterances that were codemixed following each parental strategy.

cs = code-switching,
mo = move-on strategy,
ar = adult repetition,
eg = expressed guess,
mg = minimal grasp

the impact of parental strategy on the children's language choices in the next turns. For the remaining 148 sequences, the children made no rejoinder to 75 parental responses to their lexical mixing. The children's responses in the remaining 73 episodes were classified as either: 1) continued codemixing (i.e., an utterance in the non-native language of the addressee or a mixed utterance) or 2) no codemixing (i.e., an utterance in the parent's language or a both-language utterance). The relative rates of children's codemixing in response to the five parental response types were aggregated across the sessions for all the children because the token number of some strategy types for some parents was very small (see Appendix) and, thus, analyses by individual children or families were likely to yield unreliable patterns.

Figure 2 shows the percentage of children's utterance types that were codemixed immediately following each parental strategy. The PDH predicts that the children would codemix more in response to the bilingual strategies (at the top of Figure 2) and less to the monolingual strategies (at the bottom of Figure 2). The parents' responses to the children's mixing did not show the pattern expected by the PDH. The most marked exception to the PDH is the minimal grasp strategy. Lanza (1992) considered this the most monolingual of parental strategies and yet the children in this study continued to codemix almost 90% of the time. Also, it is important to note that the children's preferred response was to codemix no matter what the parents' strategy; on average, the children codemixed 70% of the time in response to their parents' strategies.

In order to see how generalizable the results were, we also looked at the children's rates of codemixing following a parental strategy in response to their grammatical mixing and their overall rates of mixing. The results of these analyses did not differ remarkably from the children's rates of codemixing following a parental strategy in response to their lexical mixing alone.

## Discussion

The results of this study did not directly support the PDH, either in terms of children's overall rates of codemixing or in terms of their codemixing in the conversational turn following a parental strategy. In the first analysis, we found significant negative correlations

(when the PDH had predicted positive correlations) between parental discourse styles and their children's rates of codemixing within a single observation session. This result could be interpreted to mean that parents are responding to children's high rates of codemixing by using monolingual strategies in an effort to reduce their codemixing. If this were the case, the result would be negative correlations and the effects of the parental strategies might not be seen until later. This interpretation is, however, doubtful because, as can be seen in the Appendix, the parents in this study used a preponderance of the more bilingual strategies. Thus, a more accurate interpretation would be that as the parents used more bilingual strategies, the children in this study codemixed less! In the second analysis, we failed to find the predicted relationship between kind of parental response and the children's codemixing in the next conversational turn.

One possible reason that the results of the present study differed from those of Lanza's (1992) was the difference in sociolinguistic contexts between the two studies. Thus, it is possible that Siri's English-speaking mother may have worried that her child's English proficiency was at risk in Norway and thus encouraged more monolingual ways of communication. In contrast, Montreal is a bilingual community and so the parents in this study may not have worried about their children eventually learning French and English. If this is indeed the case, then it remains to be shown how parents convey their worry of a language-at-risk to their two-year-old children. Clearly, a study looking at the same language pairs in a bilingual community and a monolingual community might shed light on this matter.

Another possible reason for the negative results is that the children in this study may not have understood the subtle implicatures involved in the parental strategies targeting the children's language choice. For example, the children repeated what they said originally 88% of the time in response to a parental minimal grasp after all the children's codemixed utterances, compared 38% after codeswitching, 17% after move-on, 33% after adult repetition, 57% after expressed guess, and 43% when the parents did not respond at all. It would appear from this that the children most often interpreted their parents' minimal grasp of their message not as a request for reformulation of their utterance in the parent's language, but as a request for repetition. In other words, the children did not target the language as the source of the problem. While Lanza (1992) pointed out that minimal grasps could be used to request repetition, it is not clear how children would learn to tell the difference between a minimal grasp that targets the language choice and a minimal grasp that targets pronunciation, semantic coherence or mumbling. On this note, we would like to point out that different kinds of knowledge are required to respond to the different parental strategies. For example, children might respond monolingually to an adult repetition simply because the parent has supplied a word in the "correct" language while they might respond bilingually to an adult codeswitch simply because words were available in the other language. In both these scenarios, it is not necessary for the children to understand that their language choice was ever at issue. In any case, the findings from the present study replicates other research showing that bilingual children do not target language as a source of communication breakdown even when interacting with monolingual strangers at least up to the age of three years (Comeau, Genesee, Nicoladis, & Vrakas, 1997).

The results of this study do not negate the evidence showing that bilingual children show pragmatic differentiation at or around the age of two years (de Houwer, 1990; Döpke,

1992b; Genesee, Nicoladis, & Paradis, 1995; Köppe & Meisel, 1995; Nicoladis & Genesee, 1996a; Quay, 1992). If children are sensitive to the one person-one language rule, then the question arises as to why the children in this study did not switch languages when the parents' discourse strategy may have indicated that they should. We mentioned above that cognitive abilities may play a role in children's ability to respond to subtle implicatures of discourse strategies. Another possible factor is their relative proficiency in their two languages. Some studies have shown that bilingual children are sometimes limited in their ability to show their pragmatic sensitivity by their unequal proficiency in their two languages. Thus, it is possible that the kind of bilingual awareness displayed by the child in Lanza (1992) may require a certain threshold of proficiency in one or both languages. Future studies of how linguistic proficiency interacts with children's ability to respond to the implicatures of parental discourse strategies will be revealing.

While the present study did not support the PDH, it is undoubtedly true in the limit that parental speech acts affect children's codemixing. A case in point is that children raised in different sociolinguistic communities come to use codemixing in different ways (e.g., Poplack, 1988). The present study addressed one specific version of this general hypothesis with one age group. Alternative versions remain to be explicated and explored before we can clarify precisely what aspects of parental language use are influential and how and when they are influential. If future studies show that parents can affect their bilingual children's language choice, the implications are far-reaching and might indicate greater pragmatic sensitivity on the part of young children than has previously been thought (e.g., Volterra & Taeschner, 1978; compare, Genesee, Boivin, & Nicoladis, 1996; Wellman & Lempers, 1977). For example, such results would indicate that parents can shape some surface features of their children's language from a very early age (see also Newport, Gleitman, & Gleitman, 1977, for a similar suggestion with monolingual children). Furthermore, bilingual children would be seen as sensitive to subtle implicatures in parental speech acts (e.g., bilingual children must have a complex understanding of pragmatics in order to switch language in response to a minimal grasp strategy). How children's understanding of speech acts in their input develops would receive some deserved attention (Ninio & Snow, 1996).

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# Appendix

Percentage of Parental Strategies in Response to Children's Codemixing



cs = codeswitching
mo = move-on strategy
ar = adult repetition
eg = expressed guess
mg = minimal grasp