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Parental language input patterns and children's bilingual use

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ABSTRACT
This article reports on a study that addresses the following question: why do some children exposed to two languages from early on fail to speak those two languages? Questionnaire data were collected in 1,899 families in which at least one of the parents spoke a language other than the majority language. Each questionnaire asked about the home language use of a family consisting of at least one parent and one child between the ages of 6 and 10 years old. The results show that the children in these families all spoke the majority language, but that minority language use was not universal. Differences in parental language input patterns used at home correlated with differences in child minority language use. Home input patterns where both parents used the minority language and where at most one parent spoke the majority language had a high chance of success. The "one parent–one language" strategy did not provide a necessary nor sufficient input condition. Implications for bilingual families are discussed.

Children who grow up in a bilingual environment from an early age do not necessarily learn to speak the two languages they are hearing, and may speak only one, even with a parent who speaks another language to them (Lyon, 1996; Sirèn, 1991; Yamamoto, 2001). This can be quite a baffling experience to parents and educators, who often take it as a matter of course that children will learn to speak the languages spoken to them. As Wong Fillmore (2000) and Portes and Hao (1998) have argued, it may be quite detrimental to children and their families if children do not learn to speak a home language that is often the only language in which the parents can adequately communicate. This may make it difficult for parents to fulfill their role as primary agents in the socialization process, and may have a negative impact on the closeness and intimacy between parents and children. Wong Fillmore's concerns found large-scale empirical grounding in Tseng and Fuligni's (2000) survey of over 600 adolescents from immigrant families in the United States. The authors of this study concluded that "Adolescents who conversed with their parents in different languages felt more emotionally distant from them and were less likely to engage in discussions with them than were youths who shared the same language with their parents" (p. 473).

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The central question addressed in this article is why some children raised in a bilingual setting speak two languages and others do not. Previous research on intergenerational language maintenance and/or loss that has looked at parental language use has found that it was a major contributing factor (Hakuta & d'Andrea, 1992; Portes & Rumbaut, 2001; Veltman, 1981).[1] Portes and Hao (1998) examined the language use of almost 5,000 adolescents from diverse immigrant backgrounds in the United States and found that, whereas all the children in their sample spoke English, only 40% of them said they knew a language X other than English (whether "knowing" means speaking is not clear). Family socioeconomic status (SES) had no effect on home language retention, but parental input clearly did. Non-English home language retention was highest when both parents used language X at home. However, it should be noted that the authors only made a distinction between families where both parents spoke language X at home and those where they did not; possibly included in the sample are children who heard only English at home.

Sirèn (1991) studied a much smaller sample than Portes and Hao but took a more developmentally oriented approach. Her sample consisted of nearly 600 couples sharing the same home in Sweden who had at least a 4-year-old child and where at least one parent spoke a language other than Swedish, the majority language. Sirèn's analyses focused on maternal and child language use, on the one hand, and paternal and child language use, on the other hand. She found that "If a mother or a father chooses to use both languages with the child . . . the chances of the child becoming actively bilingual are not great" (p. 160). Chances were greater if parents spoke just the minority language.

Yamamoto's (2001) study of families residing in Japan looked at the influence on child language use of language use patterns within the parent pair (an analysis that Sirèn did not do). In the 111 families in her sample with at least one parent who spoke the minority language (English) at home, all 200 of the children spoke the majority language (Japanese), but not all spoke English. The children who spoke no English were not evenly distributed among the five possible parental input patterns. A reanalysis of Yamamoto's (2001, p. 101) data shows that there were more children who spoke English if both parents spoke it at home, or if both parents spoke English and just one parent spoke Japanese as well ($p < .01$, $\chi^2 = 7.645755$). In those families all the children spoke English (as well as Japanese). The three remaining parental input patterns were as follows: (a) both parents spoke both the minority and the majority language at home; (b) both parents spoke the majority language and one parent also the minority language; (c) one parent spoke the majority language and the other parent the minority language. In all three of these conditions, there was a drop in child minority language use.

It should be borne in mind that Yamamoto's study referred to a relatively small sample and to one particular pair of languages. In addition, the data were not analyzed in terms of families, but in terms of parent–child interactant pairs. However, the differential findings for different parental input patterns are intriguing.

My own research, reported here, is based on a sample that includes information on 3,677 parents and 4,556 children in 1,899 families. It also includes many different language pairs. In this article, I examine the extent to which different parental language use patterns can be related to child language use. "Use" here refers solely

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to whether children (or parents) speak a particular language or not. For children actually speaking two languages, more detailed input effects, such as parental use of particular grammatical constructions (De Houwer, 1997; Paradis & Navarro, 2003), or specific linguistic activities such as book reading (Patterson, 2000), or parental mixing (Mishina, 1999; Nicoladis & Genesee, 1997) can be investigated. That being said, the most basic issue remains what determines whether children will be actively bilingual in the first place.

PARENTAL AND CHILD LANGUAGE USE SURVEY

The setting

The data were collected in Flanders, the officially Dutch-speaking region of Belgium. Dutch is also the majority language. It is used in public life, in all nonprivate schools, in health care, and in most of the media. However, there is a great ethnic variety in Flanders today, and many young people are "second-generation" immigrants. It is also relevant that Flanders has a long linguistic contact history with French.

There were no data available on home language use in Flanders prior to the present survey (De Houwer, 2003).

Data collection procedure

The principals of Dutch-medium primary schools throughout Flanders were contacted by telephone and asked whether they were willing to cooperate with a survey of home language use. If they were, a set of questionnaire forms were sent to the principals, who then organized the distribution of the forms to each student in first, second, and third grade (children aged 6 to 10). The children were asked to take the questionnaire home, have their parents fill it out, and return the form to the school. Schools then sent the completed questionnaires back to the investigator.

All completed questionnaires thus report on families in Flanders with at least one child aged 6 to 10. All school-aged children in the sample hear Dutch at school. Most children in Flanders start going to preschool at age 2.5 years.

The questionnaire

The questionnaires consisted of a single page form in Dutch. They required as little knowledge of Dutch as possible.

The information requested on the form concerned the following: (a) the family's place of residence, (b) the language(s) spoken at home by the mother, father, and each child living in the home (space for up to five children), and (c) family members' ages and citizenship. The results reported here focus on the language(s) spoken at home. The role of sibling status will also be briefly discussed.

It should be noted that the questionnaire did not enquire about the respondents' language use outside the home: for instance, a parent who reported speaking only language X at home did not necessarily also use that language outside the home.

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Yield and data subset

A total of 18,046 families filled out and returned the single-page survey questionnaires. Of these, nearly 11% reported that at least one family member spoke a single language other than Dutch at home. (For information on the 308 additional families listing two to three languages other than Dutch, see De Houwer, 2004.) The 1,942 questionnaires from these bilingual families listed approximately 73 different languages other than the majority language, Dutch. These languages will collectively be referred to as "language X." Eight of the X languages were spoken by at least 200 people in the sample. They were French, Turkish, English, Arabic, Berber, German, Spanish, and Italian (De Houwer, 2003). The other X languages were spoken by substantially fewer speakers.

In 43 of the bilingual families, only children spoke language X. Because the aim of this study was to investigate the role of the input to children in their use of a language that they did not learn at school, these families were discarded from further analysis.[2]

In the remaining 1,899 families in which at least one parent spoke a language X at home, either to the exclusion of the majority language Dutch, or in addition to it, there were a total of approximately 4,500 children. Children aged 1 to 9 accounted for approximately 67% of the sample, children aged 10 to 19 for 30%, and children over 19 for 3%.

RESULTS

Two sets of results are reported. The first set describes the basic findings about child and parental language use in the sample made up of the families with language X input, and compares them with each other. The second set describes the children's language use in terms of characteristics of home language input.

Study 1

Child language use in bilingual families and sibling status. An investigation into the possible role of parental input patterns on child minority language use assumes that these patterns impact on the language use of all the children in a particular family. If children in the same bilingual family generally were to differ from each other in their language use this would constitute an argument against the importance of parental input patterns. A first line of investigation, then, was to determine to what extent siblings in the bilingual families exhibited the same language use patterns.

Usually all children in the same family showed the same language use pattern. At home, they all just spoke Dutch, all just language X, or all language X and Dutch. Only in 6.52% of the 1,520 families with more than one child did the children differ from each other in their language use patterns (Table 1). Although this finding in itself does not provide evidence for a strong role of parental input patterns, it does warrant the family-based analysis adopted in the remainder of this paper.

In just over three-quarters of the bilingual families, at least one of the children also spoke language X. In nearly one-quarter of the families with parental language

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Table 1. *Child language use in bilingual families*

Multichild families ($N = 1{,}520$)	
Children who speak the same language(s) at home ($N = 1{,}421$)	93.48%
Including language X ($N = 1{,}063$)	74.81%
Only Dutch ($N = 358$)	25.19%
Children whose home language use differs from each other ($N = 99$)	6.52%
Families with language X input ($N = 1{,}899$)	
Families where at least one child spoke language X at home ($N = 1{,}456$)	76.67%
Of these families, those with singletons ($N = 294$)	20.19%
Families where no child spoke language X at home ($N = 443$)	23.32%
Of these families, those with singletons ($N = 85$)	19.19%

X input, none of the children actually spoke language X. Instead, these children only spoke Dutch (Table 1).

The proportion of families with singletons is virtually identical in the "successful" families (with language X transmission to at least one child) and the "unsuccessful" ones (without language X transmission; Table 1). Sibling status, then, is an unlikely explanatory factor.

Parental language use. In the 1,899 families studied at least one of the parents spoke language X at home. This does not mean that all parents in the sample used language X. For the 121 single-parent families in the sample (110 single mothers, 11 single fathers), however, use of language X is a defining feature. Forty-six of the 121 single parents spoke just language X at home. The other 75 used both language X and Dutch.

Most of the families in the sample (1,778) had both a mother and a father in the home. Unlike the single parent families, mothers or fathers in the double parent families may speak only Dutch at home. Close to 16% of the individual parents actually did. Nearly half of the parents spoke both language X and Dutch at home, and a little over a third used just language X.

More than 9 out of 10 children with siblings showed the same language use pattern as the other child(ren) in their family. This similarity or entire overlap in language use was only seen in about half of the 1,778 parent pairs; both parents either spoke just language X at home (422 pairs), or they both used language X and Dutch (562 pairs). In the other half of parent pairs, one parent spoke language X, and the other one language X and Dutch (243 pairs), or one parent used Dutch, and the other parent Dutch and language X (353 pairs). This partial overlap was no longer seen in what could be characterized as "one person, one language" situations, where one parent spoke Dutch at home, and the other parent just language X (the remaining 198 pairs; see Table 2).

Language use by the individual types of speakers. Nearly one-quarter of all bilingual families in the sample had no children who spoke language X. At the parent level, all the families spoke language X. Thus, there is a large discrepancy between parental input and child language use when we compare them at the level of the family. Table 3 shows the language use of all the individuals in the sample.

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Table 2. *Parental home language use in 1,899 bilingual families*

Single parents ($N = 121$)	
Language X only	38.02%
Language X + Dutch	61.98%
Parent pairs ($N = 1{,}778$)	
Entirely overlapping (both X, or both X + Dutch)	55.34%
Partially overlapping (X & X + D; D & X + D)	33.52%
No overlap (one parent X, one parent D)	11.14%

Note: D, the majority language, Dutch; X, any language other than Dutch.

Table 3. *Home language use by individual mothers, fathers, parents, and children in 1,899 bilingual families*

	Mothers	Fathers	Parents	Children	All
Dutch only	15.94%	13.97%	14.98%	25.42%	20.76%
X only	34.11%	38.46%	36.23%	21.22%	27.92%
Dutch + X	49.95%	47.57%	48.79%	53.36%	51.32%
Totals	1,888	1,789	3,677	4,556	8,233

Note: D, the majority language, Dutch; X, any language other than Dutch.

Mothers and fathers showed fairly similar proportions of use of the three individual home language use patterns, that is, Dutch only, language X only, and language X and Dutch. Both mothers and fathers used the latter bilingual pattern most often, but all monolingual usage (of either Dutch, or language X) accounted for just over half the cases for both mothers and fathers. The data for mothers and fathers as done in the third data column ("parents") in Table 3 was combined because both types of parents shared similar patterns.

Parents and children differed substantially in their language use. Bilingual usage by the children of Dutch and language X (i.e., they speak both languages at home) accounted for more than the two monolingual usages combined (Dutch only, or just language X). Much more dramatic, however, was the decline of the use of language X by itself. Parents showed this language pattern in well over a third of the cases, but we found it in only just over a fifth of the children. The decline in the monolingual use of language X from 36.23% by the parents to 21.22% by the children hardly seemed to be counterbalanced by its bilingual use (rise from 48.79 to 53.36%). Rather, the sharp decline of the children's monolingual use of language X compared with that of the parents appeared to be offset by the substantial rise of their monolingual use of Dutch from 14.98% (by the parents) to 25.42%.

Another change in the children's language use compared to that of the parents was that among the parents, monolingual use of language X occurred nearly 2.5 times more than monolingual use of Dutch (36.23/14.98%), whereas among the

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Table 4. *Parental and children's individual language use compared*

	Parents	Children	Difference	Factor
Dutch only	551	1,158	+110.16%	2.1 times more
X only	1,332	967	−27.40%	1.38 times less
Dutch + X	1,794	2,431	+35.51%	1.36 times more
Total	3,677	4,556	+23.91%	1.24 times more

Note: X, any language other than Dutch.

children, monolingual use of Dutch (25.42%) actually surpassed their monolingual use of language X (21.22%; Table 3).

The differences between parents and children are even more dramatic when we look at the raw numbers for each. As is clear from Table 4, there was more than a 110% increase in the use of monolingual Dutch by children compared to parents. Because there were (only) about 24% more children than parents, we would expect only a 24% increase. The bilingual use of Dutch and language X comes the closest to what would be expected based on the proportion of parents and children in the sample (an increase of ca. 35%, or a factor of 1.36). Because there were more children than parents in the sample, one would expect an increase in the monolingual use of language X, but in fact, there was a decrease of over 27%.

The findings in this section confirm that the children in the sample differed substantially in their active language use at home from their parents. In addition, it is the minority language that showed a sharp decline in use across generations, in favor of the majority language. Thus, there is ample evidence that input in language X at home does not necessarily lead to children's active use of language X. Study II investigates to what extent child language use can be related to the particular input patterns used by parents.

Study 2

The role of gender in language transmission. It is commonly said that children in bilingual families will tend to learn the mother's language in favor of the father's (see also Veltman, 1981). Sirèn claimed in her 1991 study of nearly 600 bilingual families that it was maternal language use that was critical for language X transmission. However, a reexamination of her data (p. 159) showed no differences in whether children spoke language X between homes where just mothers spoke language X and those in which just fathers spoke language X ($\chi^2 = 1.113587$, *ns*).

The findings from the current study of 1,899 bilingual families also failed to show any evidence of parents' gender as a determining factor. Excluding the data from the 121 single parent families, we found that fathers who spoke a language X at home had as much chance at having at least one of their children speak X as did mothers who spoke a language X at home (Table 5). There were no differences between mothers and fathers on this measure, neither for those who spoke just language X, nor for those who used Dutch as well as language X.

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Table 5. *Mothers' versus fathers' success in language X transmission (1,778 parent pairs)*

	Speak Only X at Home		Speak Dutch + X	
	Mothers	Fathers	Mothers	Fathers
Child(ren) X	94.03%	91.65%	73.34%	71.13%
Child(ren) no X	5.97%	8.35%	26.66%	28.87%
Totals	603	683	874	845
	ns ($\chi^2 = 2.351104$)		*ns* ($\chi^2 = .945312$)	

Table 6. *Parental input patterns in the 424 families where the children only speak Dutch*

Parental Input Pattern	Explanation	Proportion
(X + Dutch) & Dutch	One parent speaks Dutch and language X; the other parent speaks only Dutch	53.54%
2× (X + Dutch)	Both parents speak language X and Dutch	27.59%
X & Dutch	One parent speaks Dutch & the other one language X	12.03%
(X + Dutch) & X	One parent speaks Dutch and language X; the other parent speaks only language X	3.77%
2× Language X	Both parents speak only language X	3.06%

Another similarity between fathers and mothers was that for both, their individual use of just language X at home led to 20% more success in language X transmission than the use of language X in combination with the use of Dutch.

Language transmission in single parent families. Single parents in the sample did not all have children who spoke language X: in 15.70% of the 121 single-parent families the children spoke only Dutch at home. This percentage is lower than the proportion of double-parent families whose children did not speak language X (23.85%).

In 15 of the 19 families with only Dutch-speaking children the single parent used language X as well as Dutch.

Language transmission in double parent families. In Study 1 above I have shown that parents within parent pairs where at least one of the parents spoke at least language X exhibited all the five logically possible language choice patterns. Close to one-quarter of the parent pairs who used language X at home had no children who did so. Upon closer examination we see that the children in these nontransmitting families were not evenly distributed according to the five parental language use patterns. More than half of the families where the children did not speak language X despite hearing it at home were families where one parent spoke Dutch, and the other parent language X and Dutch. In over one-quarter of the nontransmitting families both parents spoke language X as well as Dutch. The other three input patterns occurred much less frequently (see Table 6).

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Table 7. *The effect of language input patterns in the parent pair on children's use of language X*

Input Pattern	No Child Speaks X	At Least One Child Speaks X	*N*
1a: 2× Language X	3.08%	96.92%	422
1b: (X + Dutch) & X	6.58%	93.42%	243
2a: 2× (X + Dutch)	20.82%	79.18%	562
2b: X & Dutch	25.76%	74.24%	198
3: (X + Dutch) & Dutch	64.30%	35.70%	353
All patterns combined	23.85%	76.15%	1,778

Note: For an explanation of the input patterns, see Table 6.

When we look at the data as a function of the parental input patterns, a very clear picture emerges. Variation in the parental language choice patterns was clearly related to children's home language use. Depending on which of the five language choice patterns were used, families had a language X transmission success rate varying between a low 35.70% and a high 96.92%.

As Table 7 shows, the two most successful parental input patterns were those where each parent spoke just language X at home and those where one parent spoke just language X, and the other parent language X and Dutch (the differences between these two, Patterns 1a and 1b, are not significant, $\chi^2 = 3.737801$). With these input patterns, families had a better than 9 out of 10 chance of raising children who spoke language X.

Where both parents spoke language X as well as Dutch (Pattern 2a), the children had a four out of five chance of actively speaking language X. When one parent spoke just Dutch, and the other one just language X (Pattern 2b), there was a one in four chance that children would fail to speak language X. The differences between Patterns 2a and 2b are not statistically significant ($\chi^2 = 1.79739$).

By far the least successful pattern was the one where one parent speaks Dutch and language X (Pattern 3), and the other parent Dutch (a two out of three chance of not having any children who speak language X).

The differences between Patterns 1a and 1b and Patterns 2a and 2b are statistically highly significant ($p < .01$, $\chi^2 = 92.252428$), as are the differences between Patterns 1a, 1b, 2a, and 2b and Pattern 3 ($p < .01$, $\chi^2 = 394.23319$).

DISCUSSION

The findings from this family-based survey of language use confirm what all studies looking at intergenerational language transmission have found. Children growing up with two languages invariably learn to speak the majority language. The minority language is the one that is at risk of not being spoken. The novelty of the present study is that it shows a very distinct influence of particular

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parental language input patterns on whether children speak the minority language. A supporting factor is not only whether both parents speak the minority language (Portes & Hao, 1998), but also whether only one parent speaks the majority language: if both parents speak both languages, chances for the children to speak the minority language drop from well over 9 out of 10 to just 8 out of 10. We can only speculate on the possible reasons for this difference. Some might suggest that with both parents speaking both languages, there is lower frequency of input for the minority language. This would only be generally true if the total amount of input, regardless of language used, is a constant that is identical for all families. Hart and Risley (1995) have shown in a monolingual setting that this is not the case. In addition, a strong frequency-based argument cannot explain why two-parent families where both parents speak both languages have the same chance of raising actively bilingual children as a single parent using both languages. One would expect a disadvantage for the single parents, because there is only one parent to offer input in the minority language. At the same time, the 46 single parents who just spoke language X at home had somewhat fewer children who spoke it (42/46 families or ca. 91%) than two-parent families who spoke just language X (nearly 97%), thus supporting a frequency of input argument. The possible role of frequency of input deserves specific research attention in the future.

One might argue that the parental use of the majority language in itself threatens minority language transmission. The findings here do not support that notion; there was no difference between families where parents used only a minority language and families where, in addition to both parents speaking the minority language, one parent also spoke the majority language. It is the particular combination of how the two languages are used by the parents that can account for differences in children's minority language use.

In the past, parents in a bilingual setting have often been advised to use a one person–one language input condition. This, it has been argued, is a necessary condition for children to learn to speak two languages. As many parents have unfortunately found out, and as the results of this study show, the one person–one language situation appears to be neither a necessary nor a sufficient condition (see also De Houwer, 1995; King & Fogle, 2006; Yamamoto, 2001).

In the one person–one language families where, despite one parent offering monolingual input in the minority language, the children do not speak it there must be many conversations in which the parent speaks the minority language and the child uses the majority language. In such situations, the parents are using what Lanza (1997) has termed "bilingual discourse strategies," in which they allow the presence of two languages within one conversation. Such bilingual discourse strategies may play an important role in children's lack of minority language use. De Houwer (1999), Pan (1995), Pan and Gleason (1986), and Sirèn (1990) have also stressed the role of what happens at the discourse level to explain a lack of intergenerational language transmission.

Yamamoto (2001) has proposed the "principle of maximal engagement with the minority language," which assumes that more input in the minority language and the familial expectation that it is to be used in the home leads to its use by children: "the more engagement the child has with the minority language, the greater her or his likelihood of using it" (p. 128).

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Frequency of input, discourse strategies and "engagement" may indeed explain much of the variation in the bilingual homes in which there is substantially less than a 9 out of 10 chance of raising actively bilingual children. These factors could also explain why we still see 3 to 6.5% of families in the sample where, despite exclusive or predominant use of language X at home, the children did not speak language X (Patterns 1a–b). If, in such families, frequency of language X is very low, for instance because both parents work long hours outside the home as in Wong Fillmore's (2000) example of a Chinese immigrant family in California, then the children may not have enough chance to learn the minority language. Still, Pattern 1a–b was usually quite successful, even though there is likely to have been a great deal of variation in the sample with regard to frequencies of use.

This survey has only investigated language use, not degree of language proficiency or language comprehension. However, we can assume that most children at least understood the minority language (De Houwer, 2006). This receptive bilingualism offers hope for active bilingualism. Hurtado and Vega (2004) have empirically shown that receptive bilingualism can become active bilingualism in the same population. A few case studies on early bilingual acquisition have reported on children who were, initially, virtually passive bilinguals but who turned into active bilinguals (Jisa, 2000; Leopold, 1970; Meisel, 2007). The change occurred after relatively brief periods in which it had become necessary to speak the language that up until then had not or hardly been produced. Unfortunately, we do not know enough about the levels of bilingual understanding a child needs to have or variations in the social context that might explain the timing and/or extent of children's subsequent active bilingual production.

CONCLUSION

Raising children to speak a single language has a 100% success rate except in some cases of impairment. Raising children to speak two languages only has a 75% success rate. Parents often find it a difficult process that requires a lot of hard work (Okita, 2002). Other parents seemingly pay no special attention to their children's language learning and have actively bilingual children, apparently without much effort.

The findings from this survey have shown that successfully raising children to speak two languages very much depends on the parental language input patterns. This means that language choice patterns can be planned ahead of time and modified to suit families' needs. For instance, parents who might have decided to each use both languages might be well advised to restrict the use of the majority language so that only one of them uses it. Families where parents would normally both use the majority language and where one of them would also speak the minority language could perhaps "upgrade" to a one person–one language situation that would give them a greater chance of success.

There is no question that additional factors besides parental language use play a role in intergenerational language transmission. Societal influences, for instance, can work against parents' interests and ability to raise actively bilingual children (Hammer, Miccio, & Rodriguez, 2004; Portes & Hao, 1998). In the face of such contrary forces that work against minority language use, parents need support in

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their efforts to raise bilingual children (Wastie, 1994). For instance, parents can enlist the help from minority language-speaking relatives (Bayley & Schecter, 1996) and, if suitable, child care providers (Sánchez, 2005). The findings from this survey, however, show how important the parents themselves and their own language use patterns are. Thus, parents have a major role to play in making their bilingual families' experience a positive one.

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NOTES

1. In many studies of language loss, however, parental language use is treated as only one among many factors (including, for instance, language attitudes and the linguistic environment outside the home), and is not given much detailed attention (see, e.g., Alba, 2002, Finocchiaro, 2004). Sometimes, parental language use is not even specifically investigated (see, e.g., Landry & Allard, 1996). For recent reviews of some of the major sociolinguistic literature on intergenerational language loss, as well as on some of its many negative consequences, see Guardadao (2002), Krashen (2000), and Hurtado and Vega (2004).
2. There are various reasons why we would find these 43 families; for instance, they could be reconstituted families, with children speaking a language X in one of their homes but not in the other; the children concerned could be adopted and still speaking their previous language; or, we could simply be dealing with oversights or errors.

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