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Introduction

ERIKA HOFF and PEGGY McCARDLE

Many children in the United States and around the world grow up exposed to more than one language. For these children, bilingualism is a fact of life – not an option. Despite its prevalence, however, the phenomenon of bilingual development is neither well described nor well understood. This gap in scientific knowledge creates a practical problem for those who must assess and educate children from bilingual environments without adequate information on the normative course of bilingual development or the educational practices that best serve bilingual children. The current lack of information exists in part because bilingual development is a relatively new field of scientific study and in part because much of the early research in the area – particularly in the US (Hakuta, 1986) – focused on the question of whether bilingualism is good or bad for a variety of linguistic and cognitive outcomes. For children growing up in bilingual environments, the more relevant questions concern the nature of children's language learning experiences in bilingual environments, the course and processes of language and literacy development in two or more languages, and the relation of educational programs to academic outcomes in children exposed to more than one language.

In order to further research on these questions, a workshop on childhood bilingualism was convened in Washington, DC in April 2004, sponsored by the National Institute of Child Health and Human Development (NICHD) and the Office of English Language Acquisition (OELA) and Office of Special Education and Rehabilitation Services (OSERS) of the US Department of Education, with support from the American Federation of Teachers, the International Reading Association, and the American Speech-Language-Hearing Association. International leaders in the fields of bilingual development, language development, and adult bilingualism were brought together to take stock of current knowledge and to identify important areas in which new work is needed in the field of childhood bilingualism. (A summary document of that meeting is available at http://www.nichd.nih.gov/crmc/cdb/Childhood-Bilingualism_2005.pdf).

This volume is a product of that workshop. Its goal is to describe the current state of the science in the field of childhood bilingualism and to propose a research agenda for the future. The papers are organized into four major parts. Part 1 (Processing Two Languages) addresses speech perception and word recognition processes in infants exposed to two

Chapter 5

Social Factors in Bilingual Development: The Miami Experience

REBECCA E. EILERS and BARBARA ZURER PEARSON and ALAN B. COBO-LEWIS

Generations of immigrants to the US have followed the 'three-generation rule.' Adults typically remain monolingual in their heritage language, but their children become fluently bilingual, and their grandchildren largely monolingual English speakers. Thus, typically within three generations, immigrant families are thoroughly anglicized. This process has been documented in great detail for the Norwegian language in the Midwest (Haugen, 1953), and for an array of other heritage languages in America (Fishman, 1966) and elsewhere (Dorian, 1982; Lambert & Freed, 1982). Analyzing data from a large national database, Veltman (1988, 1990) established that the use and reported proficiency of Spanish in the various Hispanic communities in the US was also declining in accordance with the three-generation rule, and that, in fact, in many Spanish-speaking families, Spanish appeared to be disappearing even faster, i.e. within two generations.

In studies of families of five different ethnicities, Lambert and Taylor (1990, 1996) outline three major factors that contribute to language maintenance or loss: (1) parents' commitment to the heritage language, (2) the size and cohesiveness of the immigrant language group, and (3) the openness of the host community to the arrival of the immigrants and to a multicultural ideal. Others identify perceived 'threat' to a community's identity as the most critical factor in minority language maintenance (Southworth, 1980; Eilers *et al.*, 2002). These authors observe that minority languages do not generally disappear when they are actively suppressed by an authority; rather, they may flourish. Catalan in Spain under Franco is a clear example; ancient Hebrew in the diaspora, another.

In Miami, without an explicit threat to encourage speakers to close ranks against English, there was nonetheless another factor in the Cuban exile that may have created an equivalent linguistic response. That is, when the

first large waves of Cuban immigrants arrived in Miami in the early 1960s to flee the revolution of Fidel Castro, they were convinced that Castro would fall quickly and that they would be able to return and pick up their lives in Cuba. Toward that end, they recreated in Miami many of the institutions – schools, banks, trade associations, and even social clubs – that they hoped would be a bridge between their departure and imminent return to Cuba (Resnick, 1988). Those institutions created an Hispanic infrastructure in the community which persists to the present. It creates a strong, though permeable 'ghetto' that serves to bring new immigrants slowly into US society and maintains strong contacts between established members of the community and the newcomers. These factors might make Miami an ideal cultural and linguistic milieu for language maintenance in childhood bilinguals.

Although it is home to primarily Cuban and Central and South Americans who constitute only about 5% of US Hispanics (Boswell, 1998; Pérez, 1998), the structure of the Miami community provides a great range of linguistic options for Hispanic minority language speakers (Boswell, 1998; Boswell & Curtis, 1984). According to sociologists and geographers who study South Florida, the ethnic community there is both cohesive, creating a platform for minority language use, and of high social status, leaving it open to assimilation and access to the majority language from the earliest stages (Boswell, 1998; Boswell & Curtis, 1984). The presence of the Spanish language alongside that of English is very strong in the media, in boardrooms and government offices, and on the street. There is also a large, continuing immigration still in progress. Within the Hispanic community, there is a wide range of SES, home language practices, community language practices, language education alternatives, and language attitudes, to name the most important. It would seem then that a large cohesive minority population that enjoyed high status in its host community might promote greater maintenance of a minority language than would be found elsewhere. Could Miami be an exception to the three-generation rule?

In this paper we examine the efficacy of existing language practices in South Florida for maintaining the heritage language into the third generation. From reports in the literature and in data collected by the University of Miami Bilingualism Study Group (BSG), we seek to identify the factors that contribute to minority language maintenance among the most successful childhood English (majority language) learners of different generational status.

Types of Bilingual Development

Bilingualism can arise in many ways. It can arise in the homes of children while they are in their infancy (early, home or natural bilingual-

ism), or late, upon entry to school in the host country (late sequential or school bilingualism). Commonly, school bilingualism begins at the Kindergarten level, but it may do so at any time during the school years. If children's arrival is late in their formal schooling, e.g. junior high or older, they may be termed 'very late sequential' learners. In addition, the acquisition of the first and second language in bilinguals may interact in important ways. Lambert (1977), characterized the learning of two languages as 'additive' or 'subtractive'. In additive situations, the two languages have sufficient support so that they can both develop without having one language diminish the performance of the other. In subtractive bilingualism, learning supports are withdrawn from the first language and devoted exclusively to the new one, with the result that the second language displaces the first. Finally, bilingual ability is not 'all or none'. In general it exists on a spectrum from limited use of the second language in circumscribed situations to full, interchangeable use of two languages in both public and private spheres. In situations where an individual is most likely to fall on that continuum, Hakuta and D'Andrea found that greater precision than 'generations' was necessary to describe the distinctions they observed. They adopted the concept of 'Immigration Depth' to help reduce sources of confusion based on factors that are tied to age at immigration, such as educational history, language usage in the home, or peer usage. Depths (Hakuta & D'Andrea, 1992: 81) are roughly equivalent to first, second, or third 'generation' but with important subcategories of first generation, as follows:

- Depth 1: children born abroad with age of arrival (AoA) to US > 10 years.
- Depth 2: AoA 6–10 years.
- Depth 3: born abroad, AoA 5 years or younger.
- Depth 4: born in US, both parents born abroad.
- Depth 5: born in US, at least one parent born in US.
- Depth 6: born in US, at least one parent and associated grandparent born in US.

Applied to the terms above, 'early or simultaneous bilinguals' are usually Depth 4 or higher, and sequential bilinguals are usually Depth 1 or 2, although they might be Depth 3 or even 4, depending on parents' depth. Our term 'very late sequential bilingual' (above) appears to be asking for a sub-division of Depth 1, 'born abroad, AoA after age 18'. Even among those with 'AoA after 18' one would need yet another sub-category of Depth 1 according to whether the individual came in time for formal (university) schooling in the new language.

Language alternatives for immigrants

The literature strongly identifies minority language maintenance as the key to effective bilingualism. That is, immigrant children by the end of their schooling, all develop some degree of English fluency – usually quite high – but whether they develop (or maintain) the heritage language is much more variable. At the community level, demographic factors such as those discussed above play deciding roles. At the level of the individual, whether the child will develop two languages involves a complex interrelationship between language attitudes, language use, and language proficiency.

The bottom line for successful bilingualism is whether one uses two languages consistently, and the bottom line for developing two languages is the presence of long-term consistent exposure to two languages. If one's interlocutors can use only one language, then the language of the interaction is more or less fixed and the only choice is whether to speak with them or not. But if one's interlocutors can converse in either language, then the speakers make an abstract choice based on the value they accord to each language in the particular communicative setting. A key question for us in this investigation is how often and in what circumstances that abstract choice is decided in favor of the minority language.

Previous Studies

Hakuta and D'Andrea (1992) carried out a comprehensive investigation to see which were the most important factors in language choice and, where possible, to discern the direction of influences. Their subjects were 308 Mexican-American teenagers in a central California high school. Key variables studied were the proficiencies in Spanish and English, the various settings in which students used their languages, and student and family attitudes toward the two languages. The authors present a chart (p. 81) of their subjects' English and Spanish proficiency measures by immigration depth that reflects the three-generation rule; at Depth 1, Spanish-proficiency was the rule, while by Depth 6, English proficiency (at the expense of Spanish) was the rule. By Depth 5, the third generation, English ability remained similar to individuals at Depths 3 and 4, but Spanish ability had plummeted. Hakuta and D'Andrea (1992: 96) demonstrated a steep increase in English proficiency for the first 1 to 8 years of residency in the US. By contrast, there was nothing to suggest that children with low Spanish proficiency in American high school environments improved their Spanish without a significant change in their home or educational circumstances. Spanish was not absent from the lives of Depth 5 children, but it was restricted to fewer domains. It even shared the remaining domains

with English. Preference for English increased systematically across depth. Maintenance of Spanish proficiency, on the other hand, was primarily tied to the adult language usage of the home. As adults in the family became more proficient in English, inside and outside the home, students' choice and use of language shifted rapidly toward English. The extent of the shift was not related to the students' Spanish fluency, but instead to their attitudes toward the two languages.

Lambert and Taylor (1996) studied junior high students and their families (56 high-SES and 56 low-SES) and extended Hakuta and D'Andrea's results, especially with respect to attitudes. They found attitude differences that were predictive of language choice to be strongly associated with mothers' social class. For working-class mothers, the emphasis was on encouraging their children to learn English in order to succeed in America, especially in school. For these mothers there was little explicit concern that emphasizing English would diminish Spanish use and Spanish identity. They seemed to have implicitly accepted a decline in Spanish to support English, what Lambert (1977) called a subtractive bilingualism and biculturalism. Children's advances in English in those families appeared to be at the expense of Spanish fluency and heritage culture maintenance. In contrast, middle-class mothers' conception of success for themselves and their children was associated more with the encouragement of Spanish competence, along with English. They showed a concern that the heritage language and culture be protected in the process of Americanization. In interviews, they articulated an additive form of bilingualism as a goal. In the working-class families, the mothers' language behavior had no effect on their children's Spanish, but a strong effect on their reported proficiency in English. By contrast in the mid-SES sample, mothers' language choice had little effect on the children's English, but a strong positive effect on their Spanish.

Together these two studies show the importance of the three major variables: generation (or depth), social class, and language attitudes, against a backdrop of minimal institutional support for the minority language. However, each study has tended to focus on a subset of these important variables. Lambert and Taylor (1996) studied largely Depth 4 individuals, limiting the explanatory power of Depth, while Hakuta and D'Andrea (1992) had little discussion of SES.

Spanish Maintenance by Generation: Miami Studies

The studies of the BSG, benefiting from the previous research, attempted to address all three factors – depth, attitudes, and SES. We report here on four studies carried out by the BSG that bear on the question of language

maintenance: one each with toddlers, elementary school children, junior high, and college-age students. Three of the four studies have been reported elsewhere (Oller & Eilers, 2002a; Pearson, 1993; Pearson *et al.*, 1993, Pearson & Fernandez, 1994; Pearson & McGee, 1993), but in this chapter we highlight information that was not in focus in previous reports. Our primary question for this analysis is whether we can find evidence of Spanish language maintenance at higher immigration 'depth' than the three-generation rule would imply. In particular, did we note in Miami any mitigation in the sharp drop-off of Spanish use and ability after Depth 4, so clearly described by Hakuta and D'Andrea (1992)? Taking Veltman's findings of accelerated loss into consideration, it was also important to note whether there were signs of Spanish loss before Depth 5. How did the loss of Spanish coincide with gains in English? Did gains in English precede loss of Spanish, as suggested in Hakuta and D'Andrea? Further, we were interested in knowing how attitudes affected the outcomes of use and proficiency. Was greater desire for Spanish maintenance actually associated with more Spanish use and proficiency?

Language attitudes

The Miami studies took place among participants with positive attitudes about their bilingualism, who expected to pass it on to their children. For a longitudinal study of simultaneous bilingual language acquisition from age 3 to 36 months, 24 families were recruited who had firm plans to provide equal exposure to English and Spanish for their newborns through the first three years of life. Through interviews and questionnaires, we determined that the circumstances of their lives appeared to support their plans, in that there were speakers of both languages within their extended families who would be involved in their child's care. As it happened, only one of the 24 families ended up providing equal exposure to both languages throughout the three years of the study. The average exposure was 70:30 in favor of one or the other language. By age 3 (when the study ended), several children had already ceased to speak one or the other language on a regular basis.

Children were audiotaped bi-weekly or monthly in each language and took various tests in both languages. Although all of the children began their language learning in two languages, by study's end, six children would not speak enough Spanish (or in one case enough English) for a language sample or for other assessments in that language. As it happened, those children were spending less than 20% of their time in the environment of that language. They all learned some words and phrases of their non-primary language, but it did not appear to be enough to allow them to function comfortably in that language. Although there was an expressed

plan to speak equal amounts of English and Spanish to their babies, five of these bilingual families faced a reality in which their children had insufficient exposure and little competence in Spanish.

A similar desire for bringing Spanish to the next generation was expressed universally by students taking language surveys in our lab. The surveys probed their language background, patterns of usage, and 'comfort level' in each language (Pearson & McGee, 1993), and included as the final question, 'Will you raise your children to speak Spanish?' In a sample of 110 junior high school students over 90% answered 'yes', regardless of whether they used Spanish actively in their own lives. A similar survey, conducted with 75 undergraduates in psychology courses at the University of Miami (Pearson & Andrews de Flores, unpublished manuscript) also yielded an overwhelming majority of students who said 'yes' and thereby portrayed a positive orientation toward Spanish. Only one student (realistically) questioned whether she would be in a situation that would allow her to teach her child Spanish. Thus, there appeared to be little attitudinal impediment to Spanish-language maintenance.

Language use/language choice

The parents of the bilingual infants studied by the BSG realized that their child would not learn Spanish if they, or a significant caregiver did not speak it, but they were unsuccessful in estimating the proportion of each language used by bilingual speakers. They were also not prepared for the difficulty they would encounter in maintaining Spanish as a medium of communication among family members and other caregivers. For example, one late-talking toddler at 17 months successfully switched her monolingual Spanish-speaking grandmother to speaking English, instead of having the grandmother use Spanish with the child as anticipated. There was also an expectation by many parents that two bilingual speakers would each use Spanish half of the time and English the other half. However, judging from the pattern of the children's vocabulary learning and the longitudinal questionnaires, about one-third of the children heard less Spanish (or English) than originally projected (Pearson *et al.*, 1997). Much of the failure to accurately predict language use stemmed from the inability to predict consistently the language that bilingual individuals would use with each other.

Language use between bilinguals

Scholars of minority language retention (and its flip side, attrition) point to the inherent instability of a bilingual environment. At the community level, bilingualism is generally considered a transitional phenomenon (at least where it is not institutionalized, as in Quebec or Switzerland, for

example). According to scholars like Fishman (1966), unless two languages can avoid direct competition by establishing distinct domains for each language (as in 'diglossia'), one language gradually takes over and the other recedes. Bilingualism serves a function in a community when there are two monolingual groups who need a bridge of communication between them. In this situation bilingualism is greatly valued. But as more people become bilingual and fewer people remain monolingual, bilingualism outlives its purpose and tends to decline rapidly (Haugen, 1953; Eilers *et al.*, 2002).

Thus, when the majority of a population is bilingual, bilingualism is self-limiting. However, in the face of continuing immigration and a steady influx of monolingual speakers of a minority language, a minority language's community presence may be prolonged beyond its 'natural' life. In particular, if Spanish is institutionalized outside the home, it may have the potential to foster more use of the language in a greater number of contexts. Miami, in particular, has a reputation for significant amounts of Spanish in the public sphere. Former mayor Maurice Ferre has been quoted as saying of Miami 'You can go through life without having to speak English at all' (Morgan, 1983). More recently, it has been claimed that the wide-ranging Hispanization of Miami includes third generation speakers of Spanish (Kilborn, 2000).

Despite public perception to the contrary, we have several indications that young bilingual speakers in Miami and possibly even new immigrants are shifting toward monolingual English when they are speaking together. Extensive evidence of English language choice was provided by Oller and Eilers in *Language and Literacy in Bilingual Children* (henceforth *LLBC*) (2002a, Chapter 3). In this study of almost 1000 elementary school children in Miami, subjects were pro-actively selected to fit the cells of a nested design that crossed bilingualism vs. monolingualism with Language in the Home and with Language of the School (whether English-only in 'English immersion' or Spanish and English equally in '2-way' programs). Only families who stated that Spanish was used in the home at least half of the time were selected into the study. All children in the study were born in the US, and they were attending heavily Hispanic schools with approximately 35% of children being very recent immigrants (Dade County Public Schools, Office of Educational Accountability, 1985–2003).

There were 10 cells at each of three grade levels – Kindergarten, 2nd, and 5th grade (mean ages 5.9, 7.10 and 10.10, respectively). The eight cells for bilinguals presented a four-step gradation of Spanish exposure, from no Spanish in the school coupled with only half-Spanish at home, to half-Spanish at school coupled with all Spanish at home. For each grouping, there was both a high-SES and a low-SES cell. All children at the

Table 1 Table of *LLBC* factorial design, along with summary of highlighted findings among bilinguals, arranged from least Spanish to most Spanish exposure

1. Design										
Linguality	Monolingual		Bilingual							
School Language:			E_S — English Immersion (English only in school)				ES_S – 2-way (Eng & Spanish in school)			
Home Language:			English & Spanish in the home ES_H		Only Spanish in the home S_H		English & Spanish in the home ES_H		Only Spanish in the home S_H	
SES:	High	Low	High	Low	High	Low	High	Low	High	Low
N	141	107	91	77	86	101	85	80	82	102
			E_SES_H		E_SS_H		ES_SES_H		ES_SS_H	
	2. Summary of Results									
	least Spanish ——————————> most Spanish									
			Number of Average-Range Scores in both English and Spanish summed across 9 subtests							
			2	1	3	3	4	5	5	6

three grade levels were administered a battery of eight standardized tests in English from the Woodcock Language Proficiency Battery-Revised (1991) plus the PPVT-R (Dunn & Dunn, 1981), and all children in the bilingual cells were also administered Spanish versions of the same standardized tests (Woodcock & Muñoz-Sandoval, 1995; Dunn *et al.*, 1986). In addition, there were three experimental 'probe' studies on syntax, phonology and narrative. (See Oller & Eilers, *LLBC*, 2002a, for details). The full design is summarized in part 1 of Table 1.

The first bilinguals from the left, labeled 'E_SES_H', are those with the least Spanish exposure. They were in English immersion schools (indicated by the subscripted 'S') and reported equal amounts of English and Spanish in the home (as indicated by the subscripted 'H'). Their only exposure to Spanish was the half Spanish in the home and whatever Spanish they heard in the community outside of school. At the far right are those with the most Spanish input: ES_SS_H, half day Spanish in the school and only Spanish at home. We inferred from the parents' language proficiency self-report data (Oller & Eilers, 2002b) that the high-SES bilinguals would have more choices of settings in which English might be spoken and that low-SES children would have fewer choices, with Spanish the only possible choice in their homes. Thus, the group with highest Spanish exposure is the one

with children from two-way schools, with only Spanish at home, coupled with low SES (ES_SS_H low).

As part of the project, the project included a 'deep description' that confirmed the differences in language use between children experiencing the contrasting instructional methods that constituted a major independent variable. Bilingual observers with clipboards and tape recorders observed students and teachers and followed groups of students in classrooms, in hallways, to the library and the cafeteria, and gathering at bus loading times. Findings indicated that teachers and students complied quite well in classrooms: with minor exceptions they spoke in classrooms in the designated language of instruction.

It has been noted that while 'ethnic enclave' (private) schools in Miami did not offer instruction in the medium of Spanish (except for Spanish subject classes), the life of the schools – from custodians to cafeteria service and exchanges in the school office – took place primarily in Spanish (Garcia & Otheguy, 1988). But further *LLBC* observations uncovered a surprisingly strong move toward *English* throughout all schools: in unregulated peer conversations (private conversations at their desks or in the halls and in other environments less structured than classrooms) children conversed overwhelmingly in English, even in schools with a large instructional component in Spanish, even among students who spoke little or no English. The trend began at Kindergarten, even in heavily Hispanic neighborhood schools.

Perceptions of language use

Data collected by Pearson and McGee (1993) speak to attitude of language use among 110 junior high students (13–15 years old). While most of the children claimed Spanish as their first language, only 15% considered it the language in which they had the most proficiency. By contrast, students reported that their parents' proficiency was greater in Spanish than English, and 40% of the parents were reported to speak English poorly or not at all. Pearson and McGee (1993) found that Spanish was relegated largely to the home and, in the home, used mostly with parents. Even in the home, there was a high frequency of English usage among siblings signaling an erosion of Spanish in the home of even first generation immigrants (Depths 2 and 3).

A similar preference for English in multiple non-academic settings with friends and siblings emerged in the language background surveys of bilingual college students (Pearson, 1993; Pearson & Andrews de Flores, unpublished data). In surveys of college students born in the US or who had immigrated during elementary school (Depth 2, 3, 4, or 5), a strong preference for speaking English with peers was reported, despite the fact

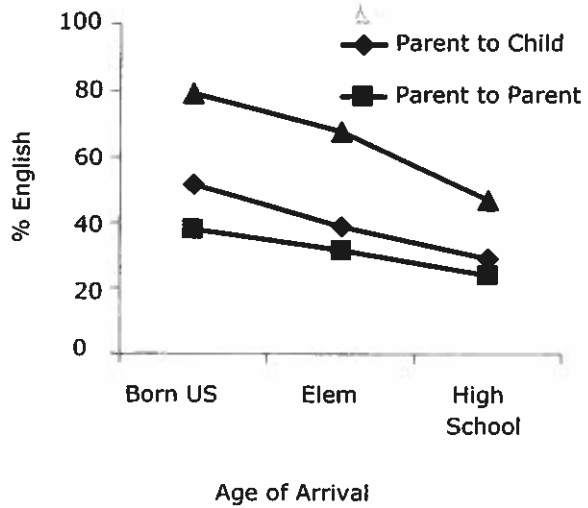

Figure 1 Relative frequency of language use by interlocutor, University of Miami Language Survey (Pearson & Andrews de Flores, unpublished)

that the students were balanced bilinguals by self-report, with verification from their PPVT and TVIP scores. Only students who immigrated later in life, at high school or university-age, reported preferring Spanish and having more than just a very few monolingual Spanish-speaking friends.

Figures 1–2 illustrate that, of the 75 University of Miami bilingual undergraduates surveyed by Pearson and Andrews de Flores, only those who immigrated after elementary school (Depth 1) chose Spanish more than 20–30% of the time when speaking with peers. About half the students reported that they were born in the US and that they remained bilingual and continued to use Spanish at home. Figure 1 illustrates that these students reported using on average nearly as much Spanish as English with parents and in activities that involved parents (e.g. church, dinner table conversation). In activities offering more choice of language use – for example, with media (movies, books, TV) – their choices were similar to those of Hakuta and D'Andrea's high school bilinguals: they chose English. Even the very popular Latin music accounted for only a third of their music listening preferences and activities.

Preference for English was also reflected in the language background of the friends with whom the students reported associating. This differed according to the students' age of arrival in the US. Figure 3 shows the relative number of bilingual, monolingual English, and monolingual Spanish-speaking friends aggregated by Depth cohort. Simultaneous (or

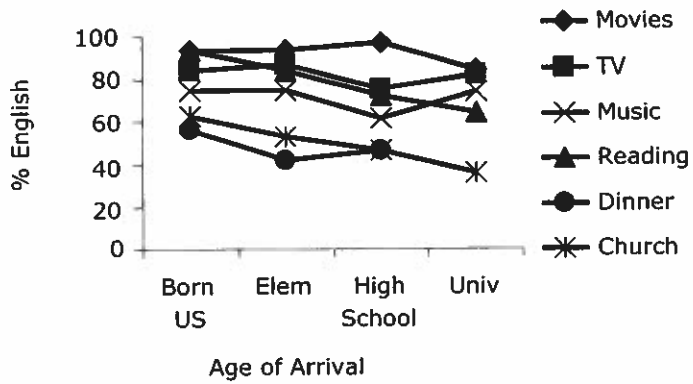

Figure 2 Relative frequency of language use by activity, University of Miami Language Survey (Pearson & Andrews de Flores, unpublished)

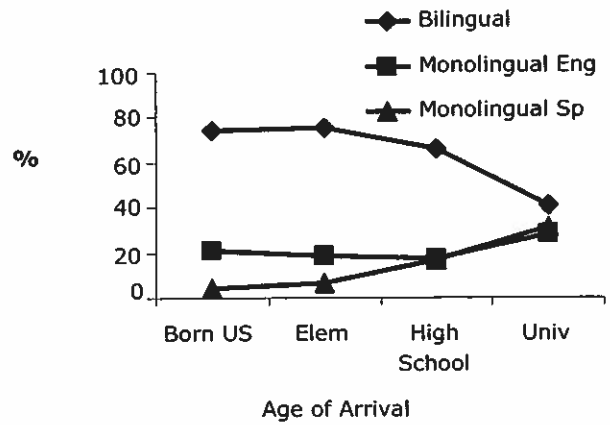

Figure 3 Linguality of friends, University of Miami Language Survey (Pearson & Andrews de Flores, unpublished)

early bilingual) children in the Pearson and Andrews de Flores survey (half of whom grew up in Miami), and those who came to Miami during preschool or elementary school, also reported having mostly bilingual friends, about 80% on average. There appears to be little linguistic pressure for these bilinguals to choose Spanish for their social life.

From a number of data sets, then, a similar picture is painted about language preference and use. English emerges as the preferred language early in the lives of infants and children who are born to first generation

households or who immigrate to the US. The question remains whether a functional level of both languages is attained and maintained during assimilation.

Proficiency in two languages

The true measure of a bilingual capacity is the ability to carry on daily discourse in two languages. Therefore, it is important to ask how well young Miamians speak Spanish and English. Can they get along in both? Can they excel in both? The BSG data show that the range of exposure to each language produced a range of capacity in each language, closely related, but not entirely so, to language exposure (Pearson *et al.*, 1997). Gathercole (2002: 253) suggests that in several domains, bilinguals may take longer to gain a 'critical mass' of exposure and thus to reach levels similar to monolinguals in each language. For the 24 infants in Pearson *et al.* (1993), productive vocabulary was generally below monolingual norms in each language, but when total vocabulary in the two languages was summed (even without double-counting words known in both languages), the total conceptual vocabulary of bilinguals equaled monolingual norms. Receptive vocabulary was even more robust. Levels of receptive vocabulary in one language at a time were comparable to monolingual norms. Because of lack of normative guidelines, though, babies can give only a partial answer to questions of relative proficiency.

The college survey and vocabulary testing reported earlier also provide a partial answer to the question of proficiency. In Figure 4 we graph English and Spanish vocabulary scores by Depth. It shows a pattern much like Hakuta and D'Andrea (1992: 81) for Depths 1 to 4. (We add additional data from the older immigrants at Depth 'pre-1', those who came after high school, to extend the comparison.) In the comparison of vocabulary knowledge in English and Spanish, there was a significant interaction of Depth by Language, $F(3, 71) = 9.85$, $p < 0.0001$. English means differed by Depth, $F(3, 71) = 3.31$, $p = 0.024$, while Spanish means, up to Depth 4, showed no significant change $F(3, 71) = 2.12$, $p = 0.11$. *Post hoc* pairwise comparisons (Tukey HSD) showed that students at Depth 4 had better English than those at Depth 1 (mean difference = 10.3, $p = 0.025$). Unlike Hakuta and D'Andrea, English at Depth 2 did not differ significantly from Depth 4 (Mean diff. = 2.286, $p = 0.595$). Spanish vocabulary, as in Hakuta and D'Andrea, did not differ reliably at any depth between Depth 1 and 4.

Aside from mean differences, it is important to note that all of the means for these groups, even at the lower Depths for English and the higher Depths for Spanish, were in the average range or above average. These results suggest that Spanish vocabulary appears to remain at a functional

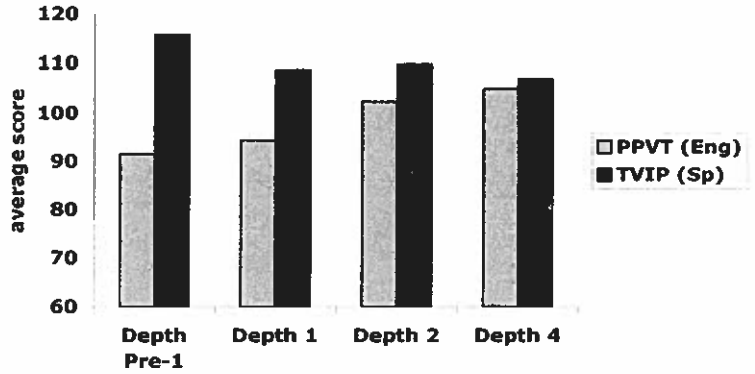

Figure 4 English and Spanish Receptive Vocabulary Scores (PPVT & TVIP, Dunn & Dunn, 1981; Dunn *et al.*, 1986) by Depth (University of Miami Language Survey, Pearson & Andrews de Flores, unpublished)

level as English scores rise across Depth (although there does appear in the graph to be some non-significant trade-off).

This *LLBC* study tested the strength of the effect of three major factors – home language practices, language(s) of instruction in the school, and SES – on an array of outcome measures in both English and Spanish. Children at all three grades took nine standardized tests of oral and written language in English, and all bilingual children also took them in Spanish. (For our discussions here, we look principally at 5th grade outcomes, when the different instructional methods or potential 'additive' or 'subtractive' factors will have had time to take effect.)

The analysis summarized in Table 2 rests on the findings in *LLBC* chapters 4–5 (Cobo-Lewis *et al.*, 2002a,b) but examines the comparison of mean scores in the two languages for the individual cells. For each of the nine standardized tests, Table 2 lists the groups of bilingual 5th graders scoring at least average (mean standard score 85 or higher) in both English and Spanish.

Two findings stand out. (1) Receptive language skills (reading and receptive vocabulary) were more likely to be adequate in both languages than expressive language skills (writing and tests that require a spoken response, as opposed to a recognition response, or an interpretation of what is presented). By 5th grade, all cells were in the average range in English reading scores (Passage Comprehension, Letter-Word, and Word Attack). In Spanish, all children were in the average range in basic reading (Word Attack and Letter-Word) and all cells in two-way schools were also average in Spanish Passage Comprehension. This may reflect an additive

Table 2 Summary of cells scoring in the average range in English and Spanish standardized scores in tests of language and literacy (5th graders)

Test	*Number of cells*	*School Lang/ Home Lang/ SES*
Productive Vocabulary	none	–
Proofing	1 cell	ES_S S_H low
Dictation	2 cells	ES_S S_H high ES_S S_H low
Oral Vocabulary	3 cells	E_S S_H low ES_S ES_H low ES_S S_H low
Receptive Vocabulary	4 cells	E_S S_H high ES_S ES_H high ES_S ES_H low ES_S S_H high
Passage Comprehension	4 cells	ES_S ES_H high ES_S ES_H low ES_S S_H high ES_S S_H low
Verbal Analogies	7 cells	E_S ES_H high E_S S_H high E_S S_H low ES_S ES_H high ES_S ES_H low ES_S S_H high ES_S S_H low
Word Attack (same results for Letter word)	8 cells	E_S ES_H high E_S ES_H low E_S S_H high E_S S_H low ES_S ES_H high ES_S ES_H low ES_S S_H high ES_S S_H low

process, an interpretation which is supported by factor analysis (Cobo-Lewis *et al.*, 2002) where literacy skills in both languages loaded on a single factor. Thus, Spanish and English learning seemed to be mutually beneficial resulting in bilingual proficiency in reading. (2) In contrast, expressive language skills (productive vocabulary and writing [dictation and proofreading]) did not show a similar ability in both English and Spanish, and were mastered in both languages by relatively few children. To have adequate expressive proficiency in both languages, it would seem one needs greater amounts of exposure than one would require for receptive skills.

Part 2 of Table 1 shows, for each bilingual cell of the design, the number of the nine sub-tests that fell in the average range in both English and Spanish. We see that the two-way schools have a clear advantage in helping children achieve proficiency in two languages regardless of the language of the home. By 5th grade, the English of children in two-way schools was similar to that of children in English Immersion schools and their Spanish was markedly better.

The two-way (ES_S) groups, those with the most Spanish exposure on a daily basis, were most likely to be adequate in both languages in most domains. As Part 2 of Table 1 shows, English Immersion cells (E_S), the ones with the least Spanish exposure, were least likely to be adequate in both languages. Similarly, when one looks at the non-standardized results in the narrative probe study (Pearson, 2002), E_S children with English and Spanish in the home (E_SES_H-low) were the only group whose mean on language measures in Spanish were nearly a standard deviation lower in 5th grade than in 2nd.

So, which factors matter most for keeping both languages?

From the point of view of maintaining Spanish, it is just those students with no schooling in Spanish and lesser Spanish in the home who appear to lose ground in Spanish from 2nd to 5th grade. Having half-Spanish in the home does not appear sufficient for most children to develop an acceptable level of expressive language nor literacy in Spanish (excepting phonics) without explicit teaching, as in the two-way schools.

From the point of view of promoting English, it seems that in some domains, having half English in the home compensates for having only half English in the school. But having no English at home (S_H) and only half English at school (ES_S) seems to depress English vocabulary scores, even receptive vocabulary. English expressive *and* receptive vocabulary are the two domains in which the low SES children with only Spanish at home in two-way schools (ES_SS_H-low) showed the least proficiency.

Still, there is a case to be made that for expressive capability in both languages; the most effective combination is the two-way school, only Spanish at home, low SES (ES_SS_H-low). The cell with highest scores overall is two-way, English and Spanish at home, high SES (ES_SES_H-high), but it is the ES_SS_H-low children who were most balanced between the languages in more domains. This most-balanced cell is the one with the most Spanish exposure in Table 2, reflecting perhaps that in an English-dominant society, maximal Spanish exposure is needed to maintain the most

balanced bilingualism, provided that threshold English exposure is also achieved.

Adding depth

To see whether the same principles hold as depth increases (as the children move from 2nd to 3rd generation), we added a new variable (Depth 4 or Depth 5) to the analysis of the *LLBC* data. The database for the multi-factor study provides information on the birthplace of two parents of study children and the number of years those parents resided in the US for 95% of the bilinguals. Of those children, 75% were Depth 4 (both parents born abroad), and 25% were Depth 5 (at least one parent born in US). (Only 16 children had both parents born in the US.) At Kindergarten, 29% of the bilingual children were Depth 5, at 2nd grade, 26% were Depth 5 and at 5th grade, only 17% were Depth 5.

Figure 5 illustrates that although there are (by design) approximately equal numbers of high and low SES families in the study overall, there are

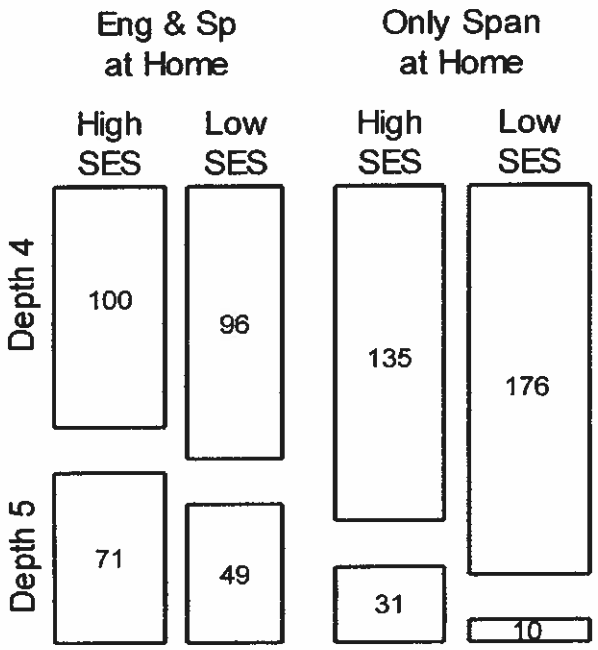

Figure 5 Relationship among Depth, SES, and Language Spoken in the Home in the *LLBC* design (Oller & Eilers, 2002a). In this mosaic plot (Hartigan & Kleiner, 1981) the area of a rectangle is proportional to the number of corresponding children (written in the middle of each rectangle)

associations between Depth and the study design variables. The biggest effects are that Depth 5 is associated with higher SES and that Depth 5 is associated with speaking less Spanish at home. Among the Depth 4 families (both parents born abroad), not surprisingly, there are more homes with only Spanish than with English and Spanish together in both high and low SES cells. Among Depth 5 families, the proportions are reversed, with more English and Spanish than Spanish-only. There is also a three-way association among Depth, SES, and Home Language, $\chi^2(1) = 6.06$, $p = 0.014$. In the low-SES cells, the ratio of only-Spanish to English-and-Spanish households at Depth 5 is 1 in 5 (10:49), whereas in the high-SES cells the ratio is closer to 1 in 2 (31 vs. 71). This disproportion is in the direction of Lambert and Taylor's (1996) claim that high-SES mothers were more committed to Spanish language maintenance: among families with both parents born in the US, high-SES families may have been more likely to enforce a practice of only Spanish in the home than were their low-SES counterparts. Another way of viewing the three-way association is that the relationship between Home Language and Depth was especially strong for low-SES families – although more English is spoken at home at Depth 5 for both high- and low-SES families, the high-SES families are more apt than the low-SES families to continue speaking only Spanish at home even when both parents are fluent in English.

We re-ran the Anova of the 5th grade scores ($N = 213$). Because Depth was associated with other factors in the *LLBC* design, we statistically controlled for those other factors and their interactions. Results, plotted in Figure 6, mirror the Hakuta and D'Andrea findings for the move from Depth 4 to Depth 5 – Depth had little or no effect on English scores. Depth 5 English scores exceeded Depth 4 English scores on only 4 of 9 sub-tests, consistent with the hypothesis of no overall effect in English. The largest effect among the English scores was only 3 points (Word Attack, $p < 0.05$), and it actually favored Depth 4 over Depth 5. In Spanish, by contrast Depth 4 scores exceeded Depth 5 scores on all 9 sub-tests (sign test rejects hypothesis of no overall effect, $p < 0.004$, and individual t tests are significant [$p < 0.05$] on 5 of 9 sub-tests). Depth had a substantial effect on Spanish Picture Vocabulary and PPVT scores (9–10 points), a smaller but still substantial effect on phonics scores, Word Attack and Letter–Word (6–8 points), and a marginal effect on other Spanish literacy scores (0 to 3 points, $p < 0.05$ for Passage Comprehension).

In the two phonics tests, the effect is greater in Spanish than in English, but surprisingly even the English effect favors Depth 4. This may reflect our speculation in *LLBC* (Cobo-Lewis *et al.*, 2002:130; also Labov, 2004) that there was a beneficial effect on English phonics for those who had also learned the more regular Spanish phonics. The pattern observed here may

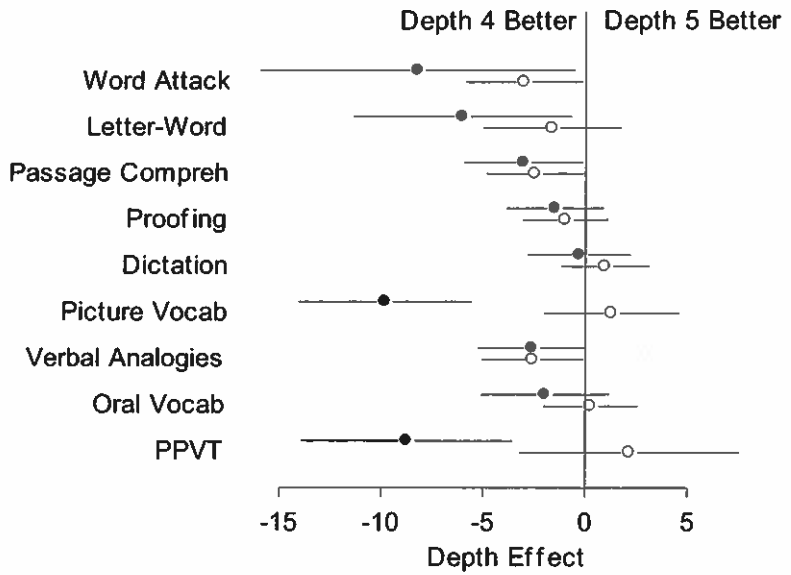

Figure 6 Depth effect by subtest in the *LLBC* data (Oller & Eilers, 2002a). Filled circles are Spanish; open circles are English. Bars indicate non-simultaneous 95% confidence intervals

be a reflection of the lesser benefit to English when Spanish is weaker, as in Depth 5. The picture in the two vocabulary tests appears more straightforward: Depth 5 benefits English by only 1–2 standardized points (a non-significant difference from zero), but Depth 5 loses 9–10 points, two-thirds of a standard deviation in Spanish.

It appears that in this study, Depth has only a small effect, if any, on scores that measure how children perform academic tasks in each language, but has a greater effect when the focus of the measure is the language itself. Pearson *et al.* (1996) and Oller (2003, and in preparation) reanalyzed the *LLBC* data and described what Oller calls a 'profile effect'. That is, otherwise competent bilinguals appear to have disproportionately low levels of vocabulary. Whereas in monolinguals, low levels of vocabulary are associated with poor academic performance, a small vocabulary does not appear to be as much of a handicap for bilinguals, except for scores on specific tests of vocabulary. This phenomenon was also shown in Pearson (1993), but the mechanism behind it is still not known.

Hakuta and D'Andrea (1992: 83) showed adult language choice to shift dramatically from Depth 4 and 5, from 'mostly Spanish' to 'more English than Spanish'. It therefore occurred to us that Depth might be confounded

with Home Language. Using Anova with Type III sums of squares, we tested the effect of Depth independently from the other independent variables (Language of the Home, Language of the School, and SES) on a dependent measure combining all Spanish scores. The Depth effect [$F(1, 212) = 10.837$, $p = 0.001$] and the Home Language effect [$F(1, 212) = 8.416$, $p = 0.004$] were both significant, and there was no interaction involving Depth and Home Language [$F(1, 212) < 1$, $p = 0.933$]. The two factors are thus distinct statistically. However, perhaps our Home Language variable, with just two categories (Spanish-only and English and Spanish equally) was incapable of showing an effect of 'more English than Spanish'. Although all families perceived themselves as speaking English and Spanish equally in the home, there may actually have been differences within the groups. There is also, no doubt, more assimilation among Depth 5 families. The Depth variable may capture such differences.

In summary, as Depth increased from 4 to 5, English scores remained stable but Spanish scores decreased. What does this mean for theories that insist Spanish must be lost in order for English to improve? Although an inverse relationship between English and Spanish is sometimes observed in the short run (e.g. Goldenberg *et al.*, 2005), it appears that in studies of language achievement in the long term, English shows marked improvement before Spanish declines. The decline in Spanish in these data (as in Hakuta and D'Andrea's) does not appear to be so directly related to gains in English and vice versa.

Conclusions

Despite Miami's rich cultural diversity and the value it puts on Spanish language and culture, despite the existence of a high-SES community infrastructure with political and financial power, and despite high rates of immigration of Spanish-speaking peoples to Miami, Spanish appears to be losing ground as it is elsewhere in the US. In this climate, two-way schools offer little if any threat to English proficiency. Evidence suggests that by 5th grade, children in two-way schools are as proficient in English as their counterparts in English immersion schools. There is also evidence that English immersion schools do little to support Spanish proficiency, and in those schools there is evidence of weakness in Spanish by 5th grade in most language domains.

It also appears that when Spanish is weakened in the home, there is little prospect for language maintenance, even though there is a cultural desire for it. Even in Miami, the general Spanish ambiance outside the home supports only a minimal level of 'passive' Spanish when its use is progressively weakened, generation by generation, in the home.

Ironically, the greatest threat to the preservation of Spanish in Miami and similar communities elsewhere may be that the language is perceived as unthreatened by American culture and the English language. This perception may act to curb motivation to promote Spanish language fluency with vigor. When parents and grandparents insist that children use the minority language in daily discourse, proficiency improves. Homes that allow English to replace Spanish in a growing number of familial contexts lose Spanish without a notable boost to English. A potent example of the lack of perceived need to promote Spanish is the small number of two-way schools, one of the few resources that may effectively help retain bilingualism for a while yet.

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Chapter 6

Developing Literacy in English-language Learners: An Examination of the Impact of English-only Versus Bilingual Instruction

DIANE AUGUST, MARGARITA CALDERÓN, MARÍA CARLO and MICHELLE NUTTALL

It is critical that we have a better understanding of the attributes of programs that contribute to positive literacy outcomes for English-language learners because of their overall low literacy performance. For example, state-by-state data collected by the US Department of Education indicate that only two states of 36 that reported such data – Alabama and Michigan – met their targets for English-language learners' scores on standardized reading/language arts during the 2003–2004 school year. One important attribute of instructional programs for language minority students is the language in which they are educated. This chapter explores literacy outcomes for students instructed in two types of programs – those that use the native language for some period of time for core academics (i.e. transitional bilingual education programs) and those that do not use the native language in any regular or systematic way (i.e. English as a second language [ESL] and its variants, such as structured immersion and content-based ESL, as well as 'submersion programs').

There has been an ongoing debate about which model is most effective (August & Hakuta, 1997). Those that support native language instruction argue that first language proficiency can be promoted in school at no cost to the development of second language proficiency because once developed, the cognitive capacities underlying language skills such as reading and writing can be applied to another language (Cummins, 1978, 1979, 1980,