

# When Learning a Second Language Does Not Mean Losing the First: Bilingual Language Development in Low-Income, Spanish-Speaking Children Attending Bilingual Preschool

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This article discusses two investigations which explored the bilingual language development outcomes of comparable groups of low-income, Spanish-speaking, Mexican American children who either did or did not attend a bilingual (Spanish/English) preschool. Study 1 is a replication of a study by Rodríguez, Díaz, Duran, and Espinosa, involving a new sample of 26 children who attended bilingual preschool for one year and 20 control children who remained at home. Study 2 represents a 1-year, longitudinal follow-up of Rodríguez et al.'s, sample of children during and after the children spent another year at home or in the preschool. In both investigations, standardized, objective measures of three components of children's language proficiency (productive language, receptive language, and language complexity) in English and Spanish were obtained at the beginning and end of the academic year. Contrary to fears that have been expressed by some that early exposure to English would lead to children's native language loss, the results of both studies offered no evidence of Spanish proficiency loss for children attending bilingual preschool. Children who attended bilingual preschool, compared to those who remained at home, showed significant and parallel gains in Spanish language development as well as significant and greater increases in English language proficiency over time. Results are discussed in terms of the need for more systematic research to be conducted in this area to inform policy and practice in the early education and development of language-minority children.

## INTRODUCTION

According to the U.S. Bureau of the Census (1995), approximately 6 million American children speak a language other than English in the home. In California today, this is true for one out of every four preschool children (California Tomorrow, 1988). It is estimated that by the year 2035, 50% of California's kindergarten children will speak languages other than English at home (García, McLaughlin, Spodek, & Saracho, 1995). Such growth in the linguistic diversity of the society provides a wealth of opportunities for developmental psychologists to ask important empirical questions about such topics as the processes and outcomes of bilingual language development, the interaction between thought and multiple languages, the consequences of systematic exposure to multiple languages at different ages for children's psychological and language development, and the social and educational contexts that facilitate or constrain the development of bilingualism in children.

One area that has been the focus of a fair amount of research concerns the potential cognitive advantages of being bilingual. Research on "balanced bilinguals," individuals who show high and relatively equal levels of competence in two languages, has shown that bilingual children evidence numerous cognitive, metacognitive, metalinguistic, and sociolinguistic advantages, when compared to monolinguals. These

advantage include increased awareness of and control over language, greater cognitive flexibility, improved analogical reasoning and classification skills, and a greater understanding of the syntactic, symbolic, and arbitrary features of language (Bain, 1996; Bialystok, 1988, 1991; Díaz, 1985; Galambos & Hakuta, 1988; Hakuta, 1987; Hakuta & Díaz, 1985; Kessler & Quinn, 1980). Moreover, such metalinguistic and metacognitive benefits have been demonstrated in bilingual children as early as the preschool years (Bain & Yu, 1980; Campbell & Sais, 1995; Díaz, Padilla, & Weathersby, 1991).

Although it is clear that children with full competence in two languages benefit from such bilingualism, it is not at all clear which social, cultural, economic, educational, and temporal contexts best support the development of such balanced bilingualism for children in the United States. The majority of the studies that explore bilingualism and cognitive development have studied children in a context of "additive bilingualism," in which middle class, language majority children learn a second language in a supportive cultural context with little or no threat to their native language. The experience of many language-minority groups in the United States, however, is one of "subtractive bilingualism," in which the learning of

the second, majority language by language-minority persons, in a societal context that does not value the first language, leads to the eventual loss of native language ability (Cummins, 1979). Hispanics make up more than 50% of the language-minority population of the United States (August & García, 1988) and more than 72% of the language-minority population in the State of California (Hakuta & Pease-Alvarez, 1992). Subtractive bilingualism, or language shift, has been documented among the Hispanic population as an issue of central concern (Lopez, 1978; Veltman, 1988). Language shift is known to occur both across generations among Latinos and, to some extent, within individuals (Hakuta & D'Andrea, 1992; Pease-Alvarez & Winsler, 1994; Veltman, 1988). However, the extent to which such language substitution takes place within individual children during the early years, and the role that early contexts such as schooling play in such bilingual language development, have been matters of some debate. This article reports the results of two investigations that explored the impact of attending bilingual (English, Spanish) preschool on low-income, Mexican American preschool children's bilingual language development.

A central concern in the education of language-minority children in the U.S. is how best to insure that students will acquire full competence in the English language without losing their primary language and cultural identity (Genesee, 1994; Kagan & García, 1991). Much debate exists over current bilingual education programs as to which types of programs with which types of children are most effective in facilitating English language acquisition and/or native language maintenance, and there are at present no clear answers (August & Hakuta, 1997; García et al., 1995; Hakuta & Gould, 1987). A question of concern to many is whether early schooling in English for language-minority children harms the development and/or maintenance of their mother tongue and possibly children's language competence in general (Wong Fillmore, 1991a). Such debate quickly and unfortunately becomes highly politicized and productive scholarly discussion of the issues is hampered by extreme and emotional political positions (i.e., see Crawford, 1992; Cummins, 1989; Porter 1990, Wong Fillmore, 1991b).

Debate over language practices in the early schooling of language-minority children intensified considerably with the publication of the National Association for Bilingual Education's (NABE) "No Cost" study (Wong Fillmore, 1991a, 1991b). In this study, a volunteer network of hundreds of interviewers conducted semistructured interviews with a convenience sample of 1001 parents of language-minority children who had attended preschool. Parents retrospectively

reported on the language use and proficiency of their children since their entry into preschool. Results from this study suggested that (1) language-minority children attending monolingual English or bilingual preschool programs rapidly lose proficiency in their native language (L1), and (2) such losses in children's L1 proficiency, the language spoken in the home by parents, are sufficiently extensive to disrupt parent-child communication and family relationships and set the child on a high-risk developmental course.

Such claims, should they stand up to empirical scrutiny, replication, and further study, would indeed be cause for alarm and have many important implications for social and educational policy. However, the NABE study (Wong Fillmore, 1991a) is fraught with many critical methodological and conceptual flaws, which make interpretation of the findings problematic (Rodríguez, Díaz, Duran, & Espinosa, 1995). Among the methodological limitations of the NABE study are: (1) reliance on retrospective, parental report measures on children's language use patterns and language proficiency, (2) no measures, other than parental report, of the type of preschool programs attended by the children, the duration and amount of preschool attendance, and the language(s) actually used in the preschool classrooms, (3) a nonrepresentative, convenience sample of acquaintances of the interviewers, and (4) lack of appropriate preschool and control groups.

Subsequent research further highlights some of the methodological complexities and limitations of work in this area. Recent research on language shift, for example, has shown the necessity of distinguishing between, and obtaining independent objective measures of, three separate but related components of language loss: language use or choice, language proficiency, and language attitude (Hakuta & Pease-Alvarez, 1992, 1994; Hakuta et al., 1995; Pease-Alvarez, Hakuta, & Bailey, in press). Hakuta and his colleagues studied low-income, Mexican-origin elementary school children (Hakuta & Pease-Alvarez, 1992; Hakuta et al., 1995; Pease-Alvarez et al., 1992) and high school students (Hakuta & D'Andrea, 1992) in California. They found that although considerable shift to English can be observed in children's language use, both across and within generations, such shifts in language *choice* are not typically associated with losses in Spanish *proficiency* when proficiency is measured objectively with child language assessments. Similar results showing shift in language choice but not language proficiency have also been reported with a younger sample of Latino preschoolers (Faulstich Orellana, 1994).

Hakuta et al. (1995) further found that although Latino parents are fairly accurate at reporting their

children's proficiency in English, parental reports of children's Spanish proficiency are not very accurate and, in fact, are contaminated by the parents' beliefs and attitudes toward bilingualism. Thus, studies that rely solely on parental report of children's proficiency are suspect if they do not contain objective measures of children's actual ability in their native language. Furthermore, children's language use in the home, rather than their language use patterns in school or their attitudes toward bilingualism, have been found to be the main predictor of Mexican-origin students' Spanish language use and proficiency (Hakuta & D'Andrea, 1992). Umbel, Pearson, Fernández, and Oller (1992) assessed kindergarten-age, Spanish-speaking children who were exposed to English at home from one parent, and found that children showed no Spanish language delays or decrements compared to children who were exposed to only Spanish at home. Umbel and colleagues also found a clear advantage in English vocabulary development for the children who were exposed to some English in the home. Finally, some research has suggested that, even when losses in Spanish proficiency have been found in individual participants over time, the difficulty in L1 production is more one of retrieval, access, and speed, rather than one of actual loss of knowledge or skill (Bahrick, Hall, Goggin, Bahrick, & Berger, 1994; Hakuta & D'Andrea, 1992; Mägiste, 1986).

Thus, although it is clear that much societal pressure exists for language-minority children to speak English and that shift in language choice does take place within individual children over time (Pease-Alvarez & Winsler, 1994), the extent to which such change in language use translates into losses in proficiency, and the extent to which early schooling affects the development and/or maintenance of such varying patterns of bilingualism, are quite unclear. The NABE study was an important contribution to the field in that it brought widespread attention to the issue of potential language loss resulting from early schooling in English, and it offered many preliminary hypotheses for testing in future research. However, given the complexity of the issues and the potential for research in this area to inform educational policy and practice for language-minority children in the early years, it is imperative that additional research with sound methodology be conducted to systematically explore specific components of bilingual language development in the early years.

One study that made methodological contributions to this area of research was that of Rodríguez, Díaz, Duran, and Espinosa (1995). Rodríguez and colleagues conducted a well-controlled investigation involving comparable groups of low-income, Mexican-

origin children who either attended a high-quality, bilingual, preschool program for 1 year ( $n = 30$ ), or remained at home ( $n = 20$ ). Measured were children's receptive language, expressive language, and language complexity in both English and Spanish via standardized language assessments given at the beginning and end of the school year. Also measured was the relative proportion of English to Spanish actually spoken by the teachers in the preschool classrooms. These data showed no evidence of loss in Spanish proficiency over a 1 year period for children attending the preschool program. Expressive and receptive language abilities in English and Spanish improved over time for both groups, with children attending the bilingual preschool experiencing especially large gains in English. Although these results clearly suggested that the fears raised by Wong Fillmore (1991a) and others are unfounded, no single study is sufficient to definitively answer such an important question.

The present work reports the results of two investigations which contribute to the growing body of methodologically sound research on early bilingual language development and loss in language-minority children. Study 1 represents a replication of the Rodríguez et al. (1995) work with a new sample of low-income, Mexican-origin preschoolers from the same population attending the same preschool programs for one year. Replication, a central and critical element of scientific inquiry, occurs all too infrequently in behavioral science research and this observation (together with the observation that much behavioral research suffers from relatively low power due to small sample sizes) has led several scholars to call for more replication studies to be conducted in psychological research (Cohen, 1994). The important question addressed in Study 1, therefore, was whether the findings of Rodríguez and colleagues will generalize to another independent sample of children. Study 2 represents a 1-year, longitudinal follow-up on the English and Spanish language proficiencies of the sample of children reported in Rodríguez et al., during and after these children attended a 2nd year in the bilingual preschool program. The central question explored in Study 2 was whether Spanish-speaking children attending bilingual preschool maintain their gains in both English and Spanish proficiency or whether sustained exposure to English in the preschool context changes the rates of English and/or Spanish language development. It is possible, for example, that detrimental effects on children's Spanish language exist for those attending bilingual preschool, but that these effects do not appear until after children have extended 2-year contact with English in preschool classrooms.

If systematic exposure to English in the context of bilingual preschool impacts negatively on children's development and/or maintenance of Spanish, then one would expect to see the children who attend bilingual preschool to demonstrate less development (or even a decline) over time in Spanish, relative to children who remain in Spanish-speaking homes throughout the day. Our hypothesis for Study 1 was that we would find the same results as those in Rodríguez et al. (1995), namely that low-income Spanish-speaking children who attend bilingual preschool, relative to those who do not, will show parallel development of Spanish competency and accelerated English language skills. Hypotheses for Study 2 were that children who attended bilingual preschool for a 2nd year would continue to show greater gains in English language development compared to those who remained at home, and that the preschool group would continue to demonstrate no delay in their development in Spanish proficiency, compared to the control group.

## STUDY 1—REPLICATION

### Method

#### Participants

A total of 46 preschool children of Mexican descent from the same school district and community as the participants in Rodríguez et al. (1995) were recruited to participate in the replication study. The preschool group consisted of 26 children (age  $M = 44.3$  months,  $SD = 4.9$ , 54% female) who were randomly selected as a subsample from the larger group of children entering one of the three participating preschools for the first time. Children in the preschool group attended a full day, 5 day/week, subsidized preschool program that was implemented in three different elementary school sites within the community, with each site offering two, combined 3- to 4-year-old, mixed-age classrooms. Enrollment in these subsidized preschool programs required poverty level income or below to qualify as well as a demonstrated need for child care. The sample participating in this study also participated in a larger community intervention initiative known as Family Focus for School Success (Lesar, Espinosa, & Díaz, 1996), which included a home visitation program and family resource centers. The preschool programs were modeled after the High Scope curriculum and the bilingual teachers' language use goals for the classroom were to spend half of each day speaking English and the remaining half Spanish. Classroom observations conducted by Rodríguez et al. (1995) revealed that although teachers' language use patterns varied somewhat from class to class,

the modal proportion of English to Spanish used by the teachers was approximately 50/50.

The control group consisted of 20 children (age  $M = 40.6$  months,  $SD = 5.0$ , 45% female), who were equivalent with the preschool group in terms of Mexican origin, socioeconomic status, and neighborhood/school zone residence, but who did not attend any type of formal child care arrangement according to maternal report. Control children, identified through school records, each had an older sibling who was attending the elementary school affiliated with one of the participating preschools. Families of control children were of similar low-income status as the preschool families as indicated by their eligibility for both the free/reduced lunch program at the school and other community initiatives for the poor. Control families were not on the waiting list for enrollment in the subsidized preschools because they either did not demonstrate need for child care or because they did not apply for the program. Thus, the essential difference between the preschool and control groups appeared to be whether or not child care was reported needed by the families. Control families presumably had other options for informal child care such as friends and extended family members. Although no families refused to participate in the study once contacted, it was not possible to get in contact with five of the families.

The community, located in the San Francisco Bay area, is an urban setting with a rapidly growing Hispanic population. School district reports and previous research in this community indicate that the majority of children attending public schools are "Hispanic" with approximately 80% of this group consisting of relatively recent immigrants from Mexico (Hakuta & Pease-Alvarez, 1992). Parents in this community typically arrived in the U.S. between the ages of 15 and 25, were originally from both rural and urban areas of the Mexican states of Michoacán and Jalisco, have completed only 4 to 5 years of primary education, and are of very low income (Pease-Alvarez, 1991; Pease-Alvarez & Winsler, 1994; Winsler, 1992). Children whose native language is Spanish in this community typically attend transitional bilingual education programs for the first 4 years of elementary school. The region has fair to high community support for the Spanish language as many stores and community centers conduct their business in Spanish.

#### Procedure

Children and their parents from both groups met with an experimenter in a separate room of the preschool site on four occasions which lasted approximately 1 hour each and consisted of the following:

Time 1 (T1) English assessment, T1 Spanish assessment, Time 2 (T2) English assessment, and T2 Spanish assessment. The order in which languages were tested within the pretest (T1) and posttest (T2) sessions was counterbalanced. T1 data collection occurred within the first 2 months after the preschool program started in the early fall and T2 sessions occurred approximately 6 months later in the late spring. The time interval between the English and Spanish assessment sessions for participants within the pretest or posttest period ranged from 1 to 7 days. As much as possible, given the language competencies of both parent and child, the language spoken during each session by the experimenter was the same as the language being assessed that day. Three bilingual women (one for each preschool site) from the same community, were hired and trained to administer the language assessments according to strict protocols. The order of the four language tasks administered within each language assessment session was counterbalanced. Each session was audiotaped. The accompanying parent was in a corner of the room occupied with paperwork when child language assessments were taking place.

### Measures

*English and Spanish Receptive Language Ability.* Children's receptive language skills in English were assessed with both the Peabody Picture Vocabulary Test–Revised (PPVT-R; Dunn & Dunn, 1981) and the sentence comprehension subtest of the Language Assessment Scales (LAS; De Avila & Duncan, 1981). Children's receptive language skill in Spanish was similarly measured by the Spanish version of the PPVT (TVIP; Dunn, Padilla, Lugo, & Dunn, 1986) and the Spanish sentence comprehension subtest of the LAS. Administration of the PPVT task involves the experimenter saying words, one at a time in increasing difficulty, and the child choosing the one picture (of four presented) that corresponds with the word read. In the sentence comprehension task, the experimenter reads a sentence in the target language and the child picks the one picture (out of three) that corresponds to the sentence read. For both tasks, measured was the raw number of words correctly identified by the child.

*English and Spanish Productive Language Ability.* Children's productive language competence in English and Spanish was assessed via the lexical subtests of the LAS and the number of words in the target language produced by the child in a story-retelling task. The lexical subtest of the LAS requires children to say the word for a series of pictures of simple

nouns. Measured is the number of pictures verbally identified by the child. In the story-retelling task, the experimenter first read a modified-to-ten-page picture book—for English, *Berenstain Bears: Too Much Vacation* (Berenstain & Berenstain, 1989), for Spanish, *Berenstain Bears Go to School* (Berenstain & Berenstain, 1978)—that had the words on each page covered. Then the child was given the book, assisted with the pages, and asked to retell the story in their own words as much as possible to the experimenter. The child's utterances during the story-retelling tasks were carefully transcribed from the audiotapes.

*English and Spanish Language Complexity.* Children's language complexity in English and Spanish was measured by calculating the number of verbs in the target language produced by the child during the story-retelling task and by calculating the average number of words per verb phrase used in these narrative productions. All of the above measures are identical to those used in Rodríguez et al. (1995).

### Results and Discussion

Preliminary analyses conducted to explore original group equivalence in terms of demographic variables revealed that there were no group differences in the number of children in the home, number of adults in the home, parental employment status, maternal age, and maternal education of the participants. The preschool group, on average, was slightly older ( $M = 44$  months.), however, than the control group ( $M = 40$  months),  $t(44) = 2.58, p < .05$ . Age was, thus, used as a covariate in the analyses reported below. No notable language order or task order effects emerged in the preliminary analyses. For the rest of the analyses reported below, a series of mixed ANCOVAs were conducted, with *group* (preschool, control) as the between-participants variable, *time* (T1/T2) as the repeated measure, *age* as the covariate, and each language measure serving as the dependent variable. To assist in the interpretability of the ANCOVA results, an identical set of ANOVAs was conducted without including age as a covariate. The ANOVA results, in all cases, were the same as those from the ANCOVAs. Table 1 shows the means (and standard deviations) for each of the language measures in English, by group and by time. Table 2 shows similar means (and standard deviations) for each of the language measures in Spanish.

#### English Language Proficiency

*Receptive Language.* Analysis of children's PPVT scores revealed significant *group*,  $F(1, 43) = 4.68, p < .05$ , and *time*,  $F(1, 44) = 17.11, p < .001$ , effects with no

**Table 1 Study 1—One Year Replication—Means (and Standard Deviations) of the English Proficiency Measures at Pretest and Posttest, By Group**

English	Preschool Children		Control Children	
	Pretest	Posttest	Pretest	Posttest
Receptive language skills				
PPVT <sup>ab</sup>	6.69 (4.31)	12.12 (6.68)	5.00 (4.29)	8.20 (7.04)
Sentence comprehension <sup>a</sup>	3.54 (1.68)	4.69 (1.87)	3.15 (1.79)	3.35 (1.81)
Productive language skills				
Lexical production <sup>abc</sup>	2.46 (3.29)	6.15 (3.81)	.85 (1.53)	2.65 (3.38)
Number of words in story <sup>b</sup>	4.23 (7.50)	26.62 (34.25)	7.65 (25.68)	17.8 (33.94)
Language complexity				
Number of verbs in story <sup>b</sup>	.54 (1.53)	4.42 (6.10)	.65 (2.91)	3.55 (7.09)
Complexity of verb phrase <sup>b</sup>	.20 (.49)	.56 (.70)	.10 (.47)	.37 (.66)

<sup>a</sup>Significant group effect,  $p < .05$ .

<sup>b</sup>Significant time effect,  $p < .05$ .

<sup>c</sup>Significant group by time interaction,  $p < .05$ .

notable interaction. Similar results were found for children's sentence comprehension scores with a significant *group* effect,  $F(1, 43) = 3.80, p < .05$ , a marginally significant effect for time,  $F(1, 44) = 3.30, p = .07$ , and no interaction. Children from both groups understood significantly more English words and sentences as they got older, and the preschool group showed more receptive English language ability at both pretest and posttest. The gains in English reception made by the children attending bilingual preschool were slightly but not significantly greater than those made by children who stayed at home.

*Productive Language.* The ANCOVA on children's lexical production in English revealed a significant *group* effect,  $F(1, 43) = 6.66, p < .01$ , a significant *time* effect,  $F(1, 44) = 57.11, p < .001$ , and a significant *group by time* interaction,  $F(1, 44) = 6.78, p < .01$ . The

preschool group showed greater ability relative to the control group in producing English words for pictures at both pretest and posttest. All children improved over time in their English word production skills. Children who attended preschool made greater gains over time in their lexical production skills than children in the control group. For the number of words produced in the story-retelling task, only a significant *time* effect,  $F(1, 44) = 16.27, p < .001$ , was observed.

*Language Complexity.* English language complexity increased for both groups of children from pretest to posttest, as indicated by significant *time* effects for both the number of verbs used in the story-retelling task,  $F(1, 44) = 18.05, p < .001$ , as well as the average number of words per verb phrase,  $F(1, 44) = 10.80, p < .01$ . No other significant effects were observed in the ANCOVAs.

**Table 2 Study 1—One Year Replication—Means (and Standard Deviations) of the Spanish Proficiency Measures at Pretest and Posttest, By Group**

Spanish	Preschool Children		Control Children	
	Pretest	Posttest	Pretest	Posttest
Receptive language skills				
PPVT <sup>a</sup>	9.23 (8.80)	18.08 (10.87)	8.05 (8.15)	15.90 (13.08)
Sentence comprehension <sup>a</sup>	5.15 (1.93)	6.77 (2.29)	4.65 (1.69)	5.30 (2.20)
Productive language skills				
Lexical production <sup>a</sup>	8.42 (3.85)	11.42 (3.87)	8.30 (4.30)	10.10 (4.05)
Number of words in story	42.42 (43.91)	58.65 (43.48)	36.00 (33.70)	44.85 (33.88)
Language complexity				
Number of verbs in story <sup>a</sup>	8.35 (8.25)	11.12 (7.33)	5.45 (5.90)	8.50 (6.79)
Complexity of verb phrase	1.12 (.88)	1.29 (.53)	.89 (.72)	1.02 (.66)

<sup>a</sup>Significant time effect,  $p < .05$ .

## Spanish Language Proficiency

*Receptive Language.* Both measures of children's receptive ability in Spanish showed significant improvement over time: PPVT,  $F(1, 44) = 31.23, p < .001$ ; sentence comprehension,  $F(1, 44) = 11.57, p < .001$ . There were no group differences nor group by time interactions for children's receptive Spanish skills.

*Productive Language.* Similar ANCOVAs performed on the two measures of children's Spanish production revealed a significant increase over time in all children's lexical production on the LAS,  $F(1, 44) = 38.56, p < .001$ , and a marginally significant time effect,  $F(1, 44) = 3.08, p = .08$ , for the number of Spanish words produced in the story-retelling task. Again, no group differences nor interactions emerged on measures of Spanish production.

*Language Complexity.* Both groups of children's Spanish language use became more complex over time as indicated by increasing number of verbs used by the children in the story-retelling task from T1 to T2,  $F(1, 44) = 4.48, p < .05$ . No significant effects emerged in the ANCOVA on the number of Spanish words per verb phrase during the story task.

The results from Study 1 constitute a powerful replication of Rodríguez et al. (1995) in showing, with a new sample, that Spanish-speaking 3- to 4-year-old children enrolled in high quality, truly bilingual preschools make significant gains in both Spanish and English language abilities over the course of 1 year of preschool. No evidence was found to suggest that children's Spanish language proficiency is in any way compromised by exposure to English in the bilingual preschool classroom. The receptive language, productive language, and language complexity in Spanish of children who attended preschool increased significantly over the 1 year period in the same way that was observed for the control children who did not attend a formal child care facility. The English skills of both groups of children also improved significantly over time. Children who attended the bilingual preschools made significantly greater gains than the control group over the course of the school year in English expressive language skills as measured by lexical production on the LAS. Finally, it is interesting to note that nonsignificant trends were observed for the preschool group to actually show greater T2 proficiency in Spanish and larger gains over time in Spanish, compared to the control group. This pattern in the data argues against the notion that a detrimental effect of bilingual preschool attendance on children's Spanish proficiency may actually exist but was simply not found in the present study with its particular measures and relatively small sample size.

It is important to note that the children in the preschool group showed greater receptive, and to some extent, greater productive English language skills compared to the control group at pretest. A number of explanations exist for such group differences at T1. First, and as reported in the preliminary analyses, the preschool group was found to be 4 months older, on average, than the control group and this group difference in age appeared to be due to sampling error. Four more months of the type of informal exposure to English that likely takes place for children in this community is possibly enough to account for the increased English skills observed in this group at pretest. Second, there is the possibility that the two groups were indeed different in English language ability before entering the preschool due to chance or systematic sampling error on a variable unrelated to children's age. For example, the children attending the preschools could have represented a more acculturated group or more advantaged group than those who did not, or those in the preschool group who agreed to participate in the study could have been those with higher English proficiency. Arguing against this interpretation, however, are that (1) the preschool group was randomly selected from the larger group of those attending the preschool, (2) both the preschool and control group families had very similar backgrounds and were at poverty level income or below, and (3) no families refused to participate in the study.

A third possible explanation for the observed group inequalities in English proficiency at pretest is the fact that the "pretest" session occurred 3 to 8 weeks after the children were already attending the pre-school—thus the children already had 1 to 2 months of English language exposure in preschool before data were collected. Arguing for this interpretation is the fact that (1) the same group pretest inequality effect for English was found in the Rodríguez et al. (1995) study and in Study 2 reported below, even though no group differences in age were found in those studies, and (2) preschool group pretest advantages in English were more often found for receptive rather than productive measures of English proficiency.

## STUDY 2—LONGITUDINAL FOLLOW-UP

### Method

#### Participants

The longitudinal sample consisted of 41 (82%) of Rodríguez et al.'s (1995) original sample of low-income, Spanish-speaking preschool children of Mex-

ican descent. Twenty-six of these children formed the "preschool group" (50% female) as they continued to attend, for a 2nd year, one of the three subsidized preschool programs described above and in Rodríguez et al. (1995). The control group was comprised of the other 15 children from the same community (66% female) who continued, for their 2nd year, to not attend any formal preschool or child care program. The 18% attrition rate from year 1 to year 2 was due to families leaving the area. No families who were available for contact refused to participate in the second year of the study. Also included in this attrition rate were a few participants who had missing data on one or more of the language measures from T1 to T4 due to either technical problems with the tape recorder or experimenter error.

### Procedure

The data collection personnel, setting, and procedures were identical to those reported above for Study 1, and the same six measures of children's receptive and expressive abilities in both English and Spanish were administered. Data were thus collected from the children a total of four times. T1 (age  $\approx$  3.5 years) and T2 (age  $\approx$  4 years) results were reported in Rodríguez et al. (1995). The T3 (age  $\approx$  4.5 years) and T4 (age  $\approx$  5 years) findings, along with the longitudinal trends across the four data points, are discussed here.

## Results and Discussion

Preliminary analyses revealed no group differences at T3 in children's age, maternal age, or maternal education. The data analysis strategy was to conduct a series of mixed ANOVAs with *group* (preschool/control) as the between-participants variable, *time* (T1, T2, T3, T4) as the repeated measure, and each of the language measures in turn serving as the dependent variable. Table 3 contains the means (and standard deviations) for each of the English language measures from T1 to T4, and Table 4 presents the same for the Spanish language measures.

### English Language Proficiency

*Receptive Language.* The repeated measures ANOVA for children's PPVT performance in English revealed only a significant effect for time,  $F(3, 108) = 38.57, p < .001$ . Children's English sentence comprehension also showed only a significant time effect,  $F(3, 108) = 11.70, p < .001$ . Both groups of children, therefore, made significant gains in English receptive language abilities over the course of the 2 years. Figure 1 represents both groups' mean English receptive skills (PPVT) as a function of time.

*Productive Language.* Both groups of children made significant improvement in their productive English skills as indicated by significant effects for time on both the lexical production test,  $F(3, 111) = 30.23, p < .001$ , and the number of words produced in their sto-

**Table 3** Study 2—Longitudinal—Means (and Standard Deviations) of the English Proficiency Measures at T1, T2, T3, and T4, By Group

English	Preschool Children				Control Children			
	T1	T2	T3	T4	T1	T2	T3	T4
Receptive language skills								
PPVT <sup>b</sup>	9.64 (7.61)	19.44 (10.49)	21.56 (12.03)	27.00 (11.70)	7.15 (6.43)	15.23 (10.83)	15.92 (12.54)	20.31 (13.31)
Sentence comprehension <sup>b</sup>	3.77 (1.82)	5.19 (1.62)	5.58 (1.45)	5.81 (1.74)	3.33 (1.67)	5.50 (3.40)	5.33 (1.77)	5.25 (2.34)
Productive language skills								
Lexical production <sup>b</sup>	4.04 (4.48)	7.96 (5.21)	9.65 (4.68)	11.42 (4.11)	3.54 (3.60)	4.08 (4.50)	6.85 (6.01)	8.69 (6.45)
Number of words in story <sup>b</sup>	20.57 (37.86)	41.70 (30.78)	73.70 (52.58)	81.65 (65.36)	10.62 (17.21)	15.62 (28.49)	46.85 (68.75)	54.92 (39.34)
Language complexity								
Number of verbs in story <sup>ab</sup>	4.46 (8.83)	7.46 (6.4)	12.04 (8.83)	13.83 (10.89)	1.77 (3.63)	2.46 (4.68)	7.85 (11.72)	9.08 (6.43)
Complexity of verb phrase <sup>b</sup>	.42 (.64)	.86 (.53)	1.05 (.54)	1.16 (.68)	.60 (.88)	.29 (.60)	.73 (.73)	.93 (.58)

<sup>a</sup>Significant group effect,  $p < .05$ .

<sup>b</sup>Significant time effect,  $p < .05$ .



**Table 4** Study 2—Longitudinal—Means (and Standard Deviations) of the Spanish Proficiency Measures at T1, T2, T3, and T4, By Group

Spanish	Preschool Children				Control Children			
	T1	T2	T3	T4	T1	T2	T3	T4
Receptive language skills								
PPVT <sup>b</sup>	8.73 (5.44)	18.89 (12.22)	24.04 (14.68)	32.65 (14.02)	10.40 (4.94)	19.13 (10.51)	20.80 (12.57)	31.93 (16.12)
Sentence comprehension	5.92 (2.30)	6.89 (2.23)	6.69 (1.57)	7.27 (1.97)	6.87 (1.88)	7.13 (1.64)	5.47 (2.00)	6.80 (1.52)
Productive language skills								
Lexical production <sup>b</sup>	8.88 (4.32)	10.38 (5.11)	11.67 (4.49)	12.13 (4.79)	10.73 (3.39)	12.13 (3.54)	12.33 (3.50)	13.40 (3.74)
Number of words in story <sup>b</sup>	42.42 (45.43)	44.16 (31.81)	75.16 (57.85)	109.26 (122.18)	36.21 (18.40)	38.14 (25.77)	64.93 (29.55)	83.14 (41.73)
Language complexity								
Number of verbs in story <sup>b</sup>	8.05 (7.09)	10.10 (7.92)	13.05 (10.26)	19.19 (17.34)	6.36 (4.34)	6.93 (5.06)	10.50 (4.59)	14.57 (6.48)
Complexity of verb phrase <sup>a</sup>	.93 (.71)	1.12 (.68)	1.17 (.55)	1.13 (.60)	1.35 (.50)	1.52 (.52)	1.44 (.46)	1.21 (.28)

<sup>a</sup>Significant group effect,  $p < .05$ .

<sup>b</sup>Significant time effect,  $p < .05$ .

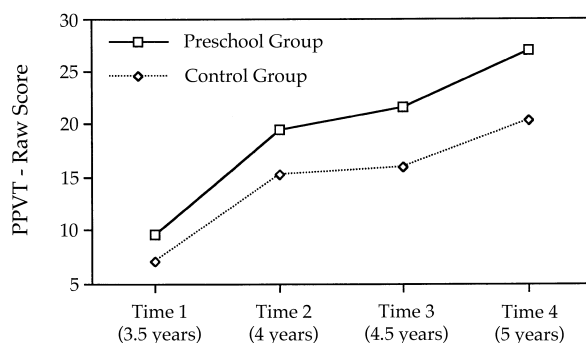
ries,  $F(3, 102) = 14.08$ ,  $p < .001$ . Trends for the preschool group to show greater English expressive abilities compared to the control group emerged for both measures, lexical production  $p = .09$ , words in story  $p = .06$ . The group by time interaction approached significance,  $p = .10$ , for the LAS lexical subtest. Figure 2 plots children's mean productive language skills (number of words in the story) over time, by group.

*Language Complexity.* Children's language complexity also increased significantly for both groups over time, as indicated by the number of words per verb phrase measure,  $F(3, 105) = 6.77$ ,  $p < .001$ , and the number of verbs produced in their English stories,  $F(3, 105) = 11.93$ ,  $p < .001$ . The group by time interaction approached significance,  $p = .06$ , for the number

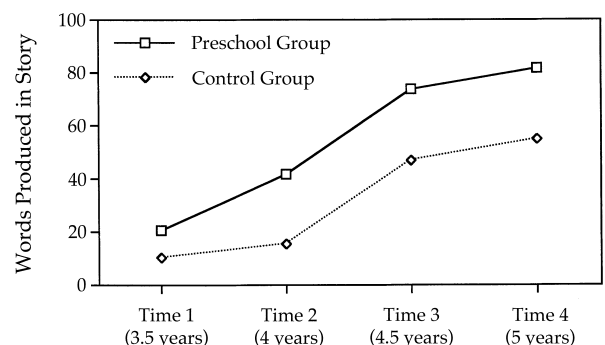
of words per verb phrase, and a significant group effect favoring the preschool children obtained for number of verbs used in the narrative,  $F(1, 35) = 3.97$ ,  $p < .05$ .

### Spanish Language Proficiency

*Receptive Language.* Both groups of children made parallel and significant gains in their Spanish receptive abilities as indicated by a significant time effect for the PPVT,  $F(3, 117) = 65.62$ ,  $p < .001$ . Figure 3 plots these means, by group. The pattern was less clear on the sentence comprehension subtest of the LAS due to a marginally significant group by task interaction effect,  $p = .06$ , that revealed that whereas the



**Figure 1** Study 2—Longitudinal—Children's receptive English language development (PPVT) over time (T1, T2, T3, T4), by group.



**Figure 2** Study 2—Longitudinal—Children's productive English language development (number of words in story) over time (T1, T2, T3, T4), by group.

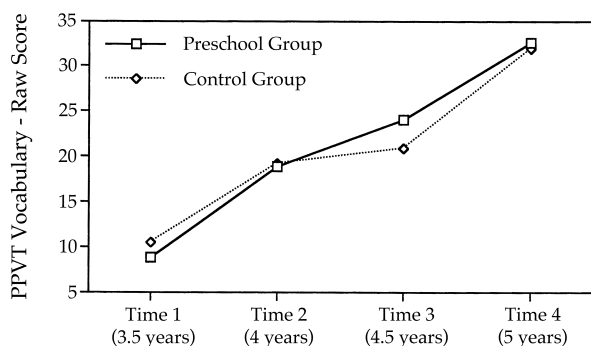


Figure 3 Study 2—Longitudinal—Children’s receptive Spanish language development (TVIP) over time (T1, T2, T3, T4), by group.

children attending the preschool tended to make steady gains in Spanish sentence comprehension, the control children showed no overall gain and a fairly sporadic pattern.

**Productive Language.** Both groups of children made parallel and significant gains in Spanish expression as indicated by significant effects for time on both the lexical subtest,  $F(3, 111) = 12.88, p < .001$ , and the number of words used in the story-retelling task,  $F(3, 93) = 11.77, p < .001$ . No group effects nor group by time interactions were observed. Figure 4 plots the means for children’s productive Spanish abilities (number of words in story) over time, by group.

**Language Complexity.** The level of language complexity in Spanish for both groups increased over time as indicated by a significant time effect,  $F(3, 99) = 12.76, p < .001$ , on the number of verbs produced in the stories. The results for the other measure, average number of words per verb phrase used in the story, were unclear as there was only an overall group effect,  $F(1, 33) = 4.42, p < .05$ , favoring the control group. However, an exploration of the means reveals that whereas the control group started scoring significantly higher than the preschool group at T1, their performance on this measure peaked at T2 and then dropped to below the T1 level by T4. The preschool group, on the other hand, steadily increased their performance on this measure until T4, at which time there were no meaningful differences between the groups.

Overall, the results of Study 2 clearly demonstrate that the patterns in bilingual language development discussed in Study 1 and reported in Rodríguez et al. (1995) were sustained, and they continued to strengthen 1 year later as low-income, Mexican American children who either attend bilingual preschool or stay at home reach their 5th birthday. Both groups of children continue to show significant gains over the full

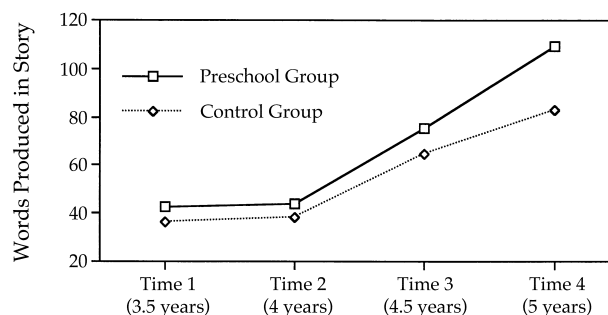


Figure 4 Study 2—Longitudinal—Children’s productive Spanish language development (number of words in story) over time (T1, T2, T3, T4), by group.

2-year period in both Spanish and English language proficiency, with the preschool group maintaining greater gains than the control group in English. Sustained 2nd year participation in a bilingual preschool had no noticeable detrimental effect on children’s Spanish language proficiency.

As was the case in Study 1, several of the English proficiency measures (i.e., both measures of English production and the language complexity measure of the number of verbs produced in the story) showed either statistically significant or marginally significant group differences favoring the preschool children across all periods of data collection including the “pretest.” Given that the two groups were determined to be equivalent in terms of family SES, child age, and other relevant demographic variables at the start of the study, these findings need some interpretation. As discussed in the context of Study 1 above, one possibility is that as a result of sampling error, the preschool group differed in terms of their English ability from the control group before attending the preschool. This could be related to some unmeasured but relevant family variable such as maternal attitudes toward preschool attendance or English language learning.

Another possibility, however, is that the children did not differ in English ability before the start of preschool and that the group differences observed at T1 in children’s English skills were due to the unfortunate timing of the “pretest” data collection session (3 to 8 weeks after preschool started in the fall) and the likely possibility that the youngsters had already made considerable gains during the first 2 months of systematic exposure to English at school. If this latter interpretation is correct, these group effects may best be seen as significant group by time interactions (similar to the actual group by time interaction trends observed) that would indicate that attendance in bilin-

gual preschools has an especially facilitative effect on children's acquisition of L2. Future researchers in this area would be wise to conduct pretest language assessments before school entrance to avoid this problem of interpretation. Nevertheless, although conclusions in this study about the potential *facilitative* effects of bilingual preschool attendance on children's English development are somewhat restricted due to this methodological limitation, the findings showing the lack of a *detrimental* effect of preschool attendance on the development of Spanish proficiency in young children are clear.

## GENERAL DISCUSSION

Study 1 replicated the findings of Rodríguez et al. (1995) in showing that (1) low-income, Spanish-speaking, 3–4-year-old children enrolled in bilingual preschools make significant and parallel gains in Spanish proficiency over the course of 1 year when compared to similar children who do not attend preschool, and (2) children in the preschool group show equal or greater competency and gains over time in English proficiency. Study 2 demonstrated that the above bilingual language development patterns described for the two groups only continue and strengthen with a 2nd year of exposure to bilingual preschools. The present investigation, therefore, provides additional and strong evidence that relatively high quality truly bilingual preschool experiences promote the development of both Spanish and English language competence, rather than impede the development of Spanish proficiency as has been suggested in the literature (Wong Fillmore, 1991a). No evidence was found to suggest children's Spanish language proficiency is compromised by exposure to English in the preschool classroom. Receptive language, productive language, and language complexity, in Spanish, of the children who attended bilingual preschool increased significantly over a 2-year period parallel with that which was observed for the control children who did not attend formal out-of-home care. Meanwhile, English language development was, on some measures, found to occur more rapidly among the preschool group than the control group.

Thus, the present findings concur with those of other recent research that even though young language-minority children experience great pressure from peers, schools, and society to adopt English as their primary language of choice, there is little evidence that actual losses in Spanish language proficiency occur in the early years (Faulstich Orellana, 1994; Hakuta et al., 1995; Hakuta & Pease-Alvarez, 1992, 1994; Pease-Alvarez & Winsler, 1994; Umbel et

al., 1992). It is possible and indeed likely that sustained exposure to bilingual and/or English schools affects other aspects of language shift for language-minority children (such as the language they choose to use in different contexts, or their attitudes/beliefs about bilingualism), and that such changing patterns of language use over some time may be associated with an eventual loss of proficiency in the native language. However, the extent to which this is the case ontogenetically within individual children is still largely an empirical question at this point. The studies reported here simply demonstrate that no loss of L1 proficiency occurs from true bilingual education experiences during the preschool years. It is still possible that subtractive effects of L2 instruction on L1 proficiency exist during the later years.

The methodological contributions of the present work include: (1) Comparison of equivalent groups of children systematically exposed or not exposed to English, (2) the use of observational and standardized measures of children's actual proficiency in English and Spanish rather than simply parental report, (3) a longitudinal focus exploring change in children's English and Spanish proficiency over the course of 2 years, (4) the separation of various components of language shift (language proficiency, language choice, and language attitudes) which have been confounded in previous research, by focusing exclusively on children's language proficiency, and (5) the measurement and minimization of variance in the teachers' actual language practices in the bilingual preschool classes. The methodological limitations of this research include the fact that the replication sample was not of uniform age across groups, that children's T1 language assessment occurred shortly after school attendance had already begun, that quality of care and teacher-child interactions in the preschool classrooms were not systematically measured, and that observational measurements of the language environments of the control children were not taken.

It is important to make explicit the limitations in generalizability of the present two studies. At a minimum, this work demonstrates that when low-income, Mexican-origin children in a California community with reasonable sociolinguistic support for Spanish attend relatively high quality, bilingual preschools, in which relatively equal amounts of Spanish and English are spoken by the teachers, no detrimental effects are observed for such children's Spanish language proficiency. The extent to which these findings generalize to other situations is unknown at this time and should clearly be the focus of future systematic research. For example, it is not known to what extent the findings here would apply for other language-

minority populations, communities with less support for L1, higher SES children, other "bilingual" preschool programs in which more asymmetric use of the two languages occurs, other preschool programs varying in curriculum and quality, and other studies measuring other components of language shift (e.g., language use or language attitude). Especially important to note here is that the bilingual preschool programs observed in this study were truly bilingual in the sense that approximately equal proportions of time were spent by the teachers speaking Spanish and English. This is not the case for the majority of "bilingual education" programs in the United States today. The extent to which these findings generalize to other so-called bilingual programs, where little or no instructional use of children's native language actually occurs, remains unclear.

Another important issue that future investigations in this area should explore is variation in the language environments of Spanish-speaking children who remain at home. Surely there is important language variance in the types of informal child care arrangements that are made within such families, and in the language patterns and sociolinguistic goals of the home. Hakuta and D'Andrea (1992) and Hakuta et al. (1995) suggest that it is the language used in the home by parents and children, not that used in the school, that is the major predictor of language-minority children's language loss in middle childhood. It is also clear that further investigation into multiple manifestations of language loss (proficiency, choice, and attitude) is needed with attention paid to the developmental changes in each as well as to the interactions among the three over time. Finally, given the massive variance found in bilingual education programs in terms of children's language goals, languages used by the teacher, curricula, and quality (Hakuta & Gould, 1987), research attention may be better spent on systematically exploring *which types* of early bilingual educational contexts promote or constrain the development of balanced bilingualism in *which type* of communities, rather than pursuing more global questions that average across different language-minority groups and different types of school programs.

Important implications for social and educational practice involving low-income, Mexican American children emerge from the present research. First of all, it is clear that much more research, with sound methodology and good measures, is needed before generalizations leading to global educational policies concerning the early education of language-minority children can be made with confidence. The primary policy suggestion that emerged from the NABE study,

namely that we must protect language-minority children from any systematic exposure to English in schools until about the age of 8 for fear of a loss of proficiency in the child's native language (Wong Fillmore, 1991b), does not appear to be warranted from these data. It may indeed be the case that such a policy is best for the facilitation of certain language, educational, developmental and/or cultural outcomes in certain language-minority children, but more research that clearly supports this practice would need to be conducted before such policies are pursued.

At a minimum, the studies reported here show that exposure to English in the form of relatively high quality, truly bilingual preschool for low-income, Spanish-speaking children does not result in children's loss of Spanish proficiency, at least not during the years of 3 to 5. At a maximum, these results suggest that bilingual preschool can be an effective way to promote additive bilingualism in young Latino children. It appears from these data that it is possible to provide high quality bilingual preschool experiences for language-minority children that promote the simultaneous development of both English and a native language. Bilingualism offers individuals and society a wealth of important cultural, linguistic, and cognitive resources. It is the hope of these authors that via additional carefully designed investigations, we may eventually come to understand the educational and social contexts which best support the development and maintenance of this vital human resource.

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