In this study, the authors plotted the Spanish language usage of 10 preschool-age children over the course of 3 years and assigned them to one of two groups: language maintenance and language loss. The authors then compared the groups’ scores on structured tasks, language behaviors, and language usage/exposure variables. They found that children in the language loss group presented with more grammatical errors, whereas the language maintenance group performed better on Spanish vocabulary and language tasks. No specific variable was predictive of maintenance or loss, but the children from the language loss group began to use more English with family members or peers.

The number of preschool-age children from linguistically diverse backgrounds has drastically increased in the United States over the past decade. Enrollment of linguistically diverse children in Head Start, for example, rose from approximately 21% in 1993 to approximately 24% in 1999, with the largest growth rate seen in Spanish-speaking households, increasing from 17.5% to more than 20% (Administration for Children and Families, 2000). Currently, more than 2 million preschool-age children of Hispanic/Latino descent reside in the United States (U.S. Census Bureau, 2005). Because of this demographic trend, speech–language pathologists (SLPs) need to be informed about bilingual language development in young children. This issue is quite complex, however, because linguistic differences may mask, mimic, or be confused for symptoms or characteristics of a specific disorder (Anderson, 2004; Schiff-Myers, 1992; Wong Fillmore, 1991). The American Speech-Language-Hearing Association (2004) recognizes this difficulty and has provided guidelines stating that to provide ethical and appropriate services, professionals must possess knowledge about and be responsive to culturally and linguistically diverse populations. Unfortunately, most SLPs are not prepared to work with linguistically diverse children (Hammer, Detwiler, Detwiler, Blood, & Qualls, 2004; Kohnert, Kennedy, Glaze, Kan, & Carney, 2003; Papoutsis Kritikos, 2003; Roseberry-McKibbin, Brice, & O’Hanlon, 2005). In numerous surveys, SLPs have reported a lack of confidence or efficacy in assessing and treating children from culturally and linguistically diverse backgrounds. Many of these surveys indicate that the causes probably include a lack of appropriate training and insufficient knowledge of cultural and linguistic differences.

Perhaps what makes assessing and working with children from culturally and linguistically diverse backgrounds perplexing to many SLPs is the fact that these children present with a wide range of language proficiencies that are dynamic and that change over time (Genesee, Paradis, & Crago, 2004; Silva-Corvalan, 1991; Valdes & Figueroa, 1994). Understanding language development in these populations requires knowledge of both development in other languages and bilingual ac-
quisition. Simultaneous acquisition occurs when a child is exposed to both languages simultaneously from birth or a very early age; sequential acquisition occurs when a child becomes exposed to and begins to learn the second language (L2) after developing his or her primary language (L1; Arnberg, 1987; Tabors, 1997). This distinction between sequential and simultaneous acquisition is important because each type of bilingualism results in slightly different developmental patterns (Arnberg, 1987; Cook, 1997; Harley & Wang, 1997; Tabors, 1997). For example, simultaneous bilingual children may present with language skills that are comparable across languages, whereas sequential bilingual children will proceed through a series of predictable stages (for reviews, see Genesee et al., 2004; Krashen, 1982; Tabors, 1997). At the same time, educators need to understand the effects of other important variables, including time of L2 exposure and context and quality of exposure to L1 and L2 (Patterson & Pearson, 2004). These—and other—variables influence language maintenance or language loss.

**LANGUAGE LOSS AND LANGUAGE MAINTENANCE**

First, what is language loss? It is a process in which an individual’s L1 abilities are reduced or impeded from developing while his or her L2 skills become more established (Anderson, 2004; Fase, Jaspaert, & Kroon, 1992; Schiff-Myers, 1992; Sharwood Smith & Van Buren, 1991). In adults, in whom L1 abilities would otherwise be stable, loss manifests as decreases in the use of L1 vocabulary and fluency, and/or the transfer of L2 rules to L1 (Genesee et al., 2004). In children, who are in the process of acquiring language proficiency, language loss manifests as a failure to gain proficiency in L1 as expected (Sharwood Smith & Van Buren, 1991). Such a pattern is thought to occur in young children when they begin to acquire a second language before they have had the opportunity to master or fully develop their first language (Cummins, 1979; Schiff-Meyers, 1992; Tabors, 1997; Wong Fillmore, 1991). A number of language usage and exposure variables have been associated with language loss, including preschool enrollment (Wong Fillmore, 1991); age of second language exposure (Hakuta & D’Andrea, 1992); and language usage with siblings, peers, and family members (for a review, see Anderson, 2004).

In contrast, language maintenance is a process in which there is continuous L1 growth or maintained L1 proficiency and usage (Fase et al., 1992). Language maintenance results in L1 proficiency and includes the continued use of L1 (Fase et al., 1992; Hakuta & D’Andrea, 1992; Tannenbaum, 2003). Moreover, for true language maintenance to occur, children from linguistically diverse backgrounds must learn more than the household vernacular of their L1; they also need to learn the cognitive academic language that is typically fostered through educational experiences (Cummins, 1994; Echevarria & Graves, 1998; Schiff-Myers, 1992). As children from linguistically diverse backgrounds in the United States begin elementary school, however, they are exposed primarily to L2 (English) in their instructional settings. Thus, in most cases, as children progress through formal schooling in their L2, they are less likely to maintain their L1 unless they are consistently exposed to their L1 through their family or the community. Children who are afforded bilingual educational experiences are the exception; for these children, development in both L2 and L1 is supported. Some researchers have found that enrollment in bilingual preschool programs supports L1 (as well as L2) development (Winsler, Diaz, Espinoza, & Rodriguez, 1999). Also, maintained parental usage of L1 has been linked to continued L1 development in children (Hakuta & D’Andrea, 1992; Hurtado & Vega, 2004).

**CODE-SWITCHING AND CODE-MIXING**

Code-switching, the alternate usage of languages between sentences or phrases, and code-mixing, the alternate usage of languages within a single sentence, are common bilingual behaviors. Despite the fact that most bilingual children code-mix, this bilingual behavior is often a source of concern and misunderstanding (Genesee et al., 2004). Code-switching and code-mixing have been considered by some researchers as indicators of language deficiency, inadequacy, or deviancy (Cheng & Butler, 1989; Fernandez, 1990; Poplack, 1980). Conversely, other researchers have described these behaviors as typical, common, and occurring at all levels of language proficiency (Ardila, 2005; Backus, 1999; Brice & Anderson, 1999; Genesee et al., 2004; Patterson, 1999; Toribio, 2004).

Several researchers have documented code-switching and code-mixing behaviors in young children through case studies or studies of small groups of children. In a longitudinal case study, Kaufman and Aronoff (1991) followed a preschool-age sequential bilingual child whose first language was Hebrew. After being exposed to English, the child began to code-mix and eventually became unwilling to speak Hebrew. As the child’s code-mixing behaviors increased, so did her error patterns in L1. This child’s profile might lead one to believe that increased
code-mixing is related to language loss; however, there is little evidence to support this claim. In a similar study, Brice and Anderson (1999) documented code-mixing behaviors in a Spanish-speaking sequential bilingual child of preschool age and found that roughly 10% of the child’s utterances involved code-mixing over the course of the study. In this case, however, code-mixing was not related to language loss. In a study of 10 typically developing children from Spanish-speaking families, Rodriguez, Hammer, Miccio, and Aragon (2005) documented code-mixing and code-switching behaviors after 1 and 2 years of Head Start preschool programming. Using language samples, the authors found that the children began to code-switch and code-mix more when speaking Spanish than when speaking English. The authors believed that this behavior might have reflected the children’s growing competency in English; however, no exploration of the possibility that children might also have been demonstrating L1 loss was made. Other researchers studying young French/English bilinguals have found that by 26 months of age or earlier, children know when to use L1 or L2 with monolingual adults (Genesee, Boivin, & Nicoladis, 1996; Genesee, Nicoladis, & Paradis, 1995). Thus, one might expect that children would use L1 only and would not code-mix when interacting with monolingual speakers, such as playing with a monolingual parent at home (Grosjean, 1998). More research describing the relationship between code-mixing and L1 maintenance or loss is needed.

ERROR PATTERNS AND GENERAL TERM USAGE

Researchers have described two other language behaviors in children who are experiencing language loss: increased error patterns (Anderson 1999a; 1999b; Gutiérrez-Clellen, Restrepo, Bedore, Peña, & Anderson, 2000) and use of general terms/nondescriptive words (Anderson 1999a, 1999b). Although these language behaviors have not received as much attention as code-mixing, they may provide insight into language maintenance and loss in young children who are sequential bilingual.

For a number of years, grammatical errors have been of interest to researchers studying specific language impairments (SLI) in Spanish-speaking children (for a review, see Restrepo & Gutiérrez-Clellen, 2004). In a study of more than 60 children, Restrepo (1998) found that noun phrase errors were more common in Spanish-speaking children with SLI. Still, only a few studies have documented error patterns in typically developing children who have experienced L1 loss. In a case study, Anderson (1999a), found that L1 grammatical errors (e.g., errors in verb usage; errors involving clitics, articles, and prepositions) were more frequent as the child became more proficient in her L2. However, the language behaviors seen in children who are experiencing language loss are not necessarily uniform. Anderson followed two bilingual children experiencing L1 loss (1999b) and found that a specific error pattern, such as gender agreement, was observed in only one of the children studied. Anderson (1999a) also documented decreases in lexicon as the children lost vocabulary in their L1 and began to increase their usage of general terms/nondescriptive words, such as éso, ésa, esto, esta, este, aquí, acá allá, and allí. None of the other studies that we reviewed documented error patterns and the use of general terms/nondescriptive words in successive bilingual children or related these behaviors to language maintenance or loss.

Unfortunately, longitudinal studies that describe development in language minorities are lacking (Artiles, Rueda, Salazar, & Higareda, 2005); thus, knowledge about the trajectories of L1 language maintenance and language loss is limited. As the number of young Spanish-speaking children continues to rise in this country, it is becoming increasingly important to study their language development. This article will describe the Spanish language trajectories of 10 preschool-age, emergent sequential bilingual children over the course of 3 years. In addition, we will explore the following questions:

- How do language maintenance or loss trajectories compare to scores obtained on structured language tasks?
- What child language behaviors are associated with language maintenance or loss?
- What language usage and exposure variables are associated with language maintenance or loss?

METHOD

Participants

The study participants were 10 children (6 girls, 4 boys) of Mexican immigrant parents whom research assistants recruited at a Colorado metro-area health-care center that provided services in Spanish. Table 1 presents basic demographic information: years of maternal residence in the United States, maternal level of education, and family monthly income. The children were seen
across three time points (Time 1, 33–37 months of age; Time 2, 48–49 months of age; and Time 3, 59–61 months of age). The study included only children who met the following criteria: parents reported no concerns about speech–language development, children had normal hearing histories, and none of the children were receiving special education services.

**Instruments**

**Demographic Questionnaire.** We modified Matthes and Santiago’s (1985) *Bilingual Language Proficiency Questionnaire* (BFQ) to gain detailed information about family and child language usage, as well as demographic and child development information. Specific questions from the BFQ included the following:

- What percentage of the time does the mother speak Spanish with the child?
- What percentage of the time does the father speak Spanish to the child?
- What percentage of the time does the child speak Spanish with his or her parents?

We were also able to gain basic information about preschool enrollment. We amended the BPQ by adding a number of questions about child development, including the following:

- Do you have concerns about your child’s speech–language development?
- Does your child have a history of ear infections?
- Does your child receive speech–language or other special education supports?

We added these questions to be sure that the children in the study were typically developing and because researchers studying Spanish-speaking children have found that parents’ reports of their child’s speech and language skills, combined with other measures, is a strong predictor of language impairment (Restrepo, 1998).

**Spanish Language Assessment Procedure–Third Edition.** The *Spanish Language Assessment Procedure–Third Edition* (SLAP; Mattes, 1995) is a Spanish-language assessment that measures both expressive vocabulary and the ability to comprehend and use language in structured academic tasks. Mattes created the SLAP to use with preschool- and primary-age children; however, the test contains no developmental norms, standard scores, reliability, or validity information. We selected the SLAP because at the onset of this study, widely accepted, standardized measures of language development for the age groups in our study did not exist. We also felt that it was appropriate to use a nonstandardized assessment, given that alternative and dynamic assessments are often recommended for children from culturally and linguistically diverse backgrounds (Gutiérrez-Clellen & Peña, 2001; Laing & Kamhi, 2003.) For the Expressive Vocabulary subtest of the SLAP, the child is asked to name pictures of 80 items within 12 categories (e.g., food, furniture, clothing, shapes, colors). The Language subtest measures both receptive and expressive language, as well as concept development. Language items fall into the following seven subsets:

1. describes noun function,
2. comprehends spatial concepts,
3. describes differences between objects,
4. makes inferences,
5. predicts outcomes,
6. follows instructions in sequence, and
7. retells short stories.

A bilingual SLP administered the SLAP in Spanish and recorded raw scores for both the Expressive Vocabulary and Language subtests. If a child provided an answer in English, he or she was politely prompted to

| TABLE 1. Demographic Characteristics of Families in Study |
|-------------------------------|-------|-------|-----------|-----------|
| Characteristics | M | SD | Minimum | Maximum |
| Mother’s U.S. residencea | 5.68 | 2.38 | 1 | 8 |
| Maternal education (# yrs. formal) | 7.68 | 2.79 | 1 | 11 |
| Family income (monthly) | $1,254 | $460 | $600 | $2,000 |

*aNumbers of years the child’s mother had resided in the United States at the onset of the study.*
provide the answer in Spanish. Spanish responses were calculated, and regional or dialectal variations of these items were accepted as correct. Five of the 10 participants provided some answers in English; in most cases, this involved one or two responses. The SLP recorded these English responses; however, because language maintenance requires the continued usage of L1, they were not counted toward correct Spanish responses.

Videotape Behavior Scale. We created a Videotape Behavior Scale (VBS) to gain information about how the parents felt about the videotaped interactions. At the end of each home visit, the parents rated the naturalness (very natural, natural, somewhat natural, not natural) of their child’s behaviors during the videotaping. The VBS also included questions about perceptions of the parents regarding how much their child talked during the videotaping (my child spoke more than normally, my child spoke an average or normal amount, my child spoke less than he or she normally speaks). And finally, the parents were asked to rate the play and activities that were observed during the home visit in terms of how representative they were of daily interactions in the home (this was a typical play interaction or this was different than typical interactions). The form included a space at the end for parents to provide additional comments.

Procedure
A bilingual early childhood teacher or SLP recruited the participants in this study at a metro-area health-care center that was located in a neighborhood where mostly Mexican immigrants lived. These professionals completed three home visits at roughly child age of 3 years (33–37 months), 4 years (48–49 months), and 5 years (59–61 months). During these visits, the interventionists used the demographic questionnaire to collect and update demographic and other information. In addition, the interventionists collected videotaped, nonstructured, and naturalistic parent–child interactions. Parents were asked to interact and play with their children, using items in the home, as they normally would. At the end of each visit, the parents completed the VBS to rate different dimensions of the videotaped interaction. At the Time 3 visit, the interventionists administered the SLAP after collecting the videotaped sample.

Language Transcripts. Seven native-Spanish-speaking graduate students in speech–language pathology transcribed the 25-minute mother–child videotaped interactions from each home visit. These graduate students entered the transcripts into the CHAT format of the Child Language Data Exchange System language transcription program (CHILDES; MacWhinney, 2000). We trained the transcribers in this system, each of whom achieved 90% reliability prior to beginning coding independently; in addition, transcribers paired up and checked for reliability every fifth tape that a transcriber completed. We employed the CLAN system of CHILDES to calculate the observed language, including Spanish D, MLUw (mean length of utterance in words), number of utterances code-mixed, number of utterances with errors produced, and number of Spanish general terms/nondescriptive words used (for a review, see MacWhinney, 2000).

D is a measure of lexical diversity (Malvern & Richards, 2002) that is derived from an iterative process that begins with 35 randomly selected tokens and continues up to 50 tokens. For each iteration, a type/token ratio (TTR) is calculated by averaging the TTRs obtained from 100 randomly selected subsamples consisting of the number of tokens for that point (MacWhinney, 2000). Type/token ratios from each iteration and the number of tokens are plotted on a graph (N = 35–N = 50). The final result is a curvilinear distribution, which is compared to a probabilistic model of curvilinear TTR distributions and assigned a value: D (for a review, see Duran, Malvern, Richards, & Chipere, 2004; Malvern & Richards, 1997; Owen & Leonard, 2002). A larger D results in a higher curve and greater lexical diversity or expressive vocabulary (MacWhinney, 2000). For the current study, we used D to measure the lexical diversity of our Spanish-speaking children. Because the primary variable of interest is Spanish language development, we calculated Spanish D by including only Spanish words. Spanish D was calculated at each time point for each participant.

To provide an additional estimate of the reliability of Spanish D for the current study, MLUw was calculated at Time 1 for each participant and compared to Time 1 Spanish D scores. Researchers have described MLUw as a satisfactory language sample measure in younger preschool-age, Spanish-speaking children (Gutiérrez-Clellen, Restrepo, Bedore, Peña, & Anderson, 2000). A zero-order correlation revealed that Time 1 Spanish D and MLUw were highly correlated (r = .86, p = .001, N = 10), suggesting that Spanish D was a valid measure of lexical development. We did not select MLUw as a measurement to be used throughout this study because MLU measurements are thought to have limitations once children progress beyond 3.5 morphemes per sentence (Bernstein Ratner & Menn, 2000; Tager-Flusberg, 2005). Because 4-
and 5-year-olds typically have progressed beyond 3.5 morphemes per sentence (Miller & Chapman, 1981) and because we included time points at 4 and 5 years of age, MLU was not an ideal measure for the current study. D does not contain this limitation; in fact, D is thought to capture lexical development and diversity in both young speakers and mature speakers (Duran, Malvern, Richards, & Chipere, 2004; Malvern & Richards, 2002).

**Coding.** Transcribers coded code-mixing (as noted previously, the mixing of or alternating between two languages within a single utterance of more than a single word, e.g., *aquí hay un* fish). We handled code-mixing in the same way that other researchers did in earlier studies (Anderson, 1999a; Brice & Anderson, 1999): obtaining a percentage of code-mixed utterances for each transcript. This involved counting the total number of code-mixed utterances and dividing that by the total number of utterances.

For each grammatical error that a child produced during the videotaped interactions, transcribers entered an error code and specified the error (e.g., child used *una pelota* for *una pelota*). We later calculated the percentage of errors by dividing the number of utterances with errors by the total number of utterances. We also used CHILDES QWAL command (for a review, see MacWhinney, 2000) to count the number of general terms/nondescriptive words, as described by Anderson (1999a); these included *éso, ésa, esto, esta, este, aquí, acá allá,* and *allí.* This finite list of general terms/nondescriptive words includes demonstrative pronouns and place adverbs.

**Data Analysis**

First, we examined the results of the VBSs to determine if the videotaped interactions were characteristic of what parents typically observed. We then ran the CHILDES commands to calculate observed child language variables. We plotted the Spanish D scores for each child and visually inspected them. Finally, we entered the language measures, child language behaviors, language usage and exposure variables, and demographic survey information into an SPSS database to calculate means and standard deviations.

**RESULTS**

**Videotape Behavior Scale**

Prior to considering the variables from the language transcripts, we examined the results of the VBSs, for several reasons. Parent–child interaction styles across Hispanic/Latino cultures vary, with parenting behaviors ranging from nurturing-permissive to authoritative (for a review, see Rodriguez & Olswang, 2003; Zuniga, 2004). As a result, there was the possibility that some of the children demonstrated less spontaneous utterances or might have demonstrated restricted play routines because of cultural variations in parent–child interactions, such as respect for the parent or adult visitors in the home. In addition, we wanted to know if the interactions and behaviors observed were typical of what the parent observed on a regular basis. Across all three time points, the parents rated their children’s behavior as *natural* or *very natural.* At Times 1 and 2, all of the parents rated their children as speaking a *less than average,* an *average,* or a *more than average* amount. At the third time point, eight parents reported that their children spoke either the average or more than average amount, whereas 2 parents reported that their child spoke less than average. One parent wrote in the comments section that her child normally talks all the time but was quieter on the day of the visit. We examined the transcripts for these children and saw that they (a) spoke a comparable or more than comparable amount at their Time 2 visits and (b) took a comparable number of turns as the other children at the Time 3 visit.

Finally, we examined the parents’ ratings of how representative the interactions were of daily parent–child play interactions in the home. Nine of the families reported that the interactions videotaped were characteristic of a typical play interaction they engage in with their child on a regular basis. One parent reported that the recorded interaction was different than typical interactions, noting that her child usually behaved better than was observed on the day of the recording. We visually inspected this child’s language transcripts and found that his language behaviors were not different from those of the other children. Based on the results from the VBS, we believed that the videotaped interactions and the transcriptions obtained from these interactions were—for the most part—representative of behaviors, language, and interactions that the parents typically observed in the home.

**Language Measures**

**Spanish D Trajectories.** Figure 1 presents the Spanish D scores, plotted at all three time points, for each of the 10 participants, as well as the mean trajectory (presented with a dotted black line). Five of the trajectories demonstrated a general positive growth trend, which
suggests a Spanish language maintenance profile. Three of the trajectories demonstrated a decrease in Spanish D at Time 2 or Time 3; however, at Time 3 these 3 participants had Spanish D values (61.01, 43.64, 65.47) that were within 1 standard deviation of the mean Spanish D value at Time 3 \((M = 55.45, SD = 22.59)\); thus, they also demonstrated L1 maintenance. Two participants demonstrated trajectories that declined over time, which we believe indicated language loss. Based on our visual inspection of the trajectories, we created a language maintenance group consisting of 8 of the children and a language loss group consisting of the other 2 children.

We were interested in learning more about the two participants, both girls, who had demonstrated language loss. We first examined parental responses from the VBS and found that they indicated that the videotaped interactions were characteristic of what parents observed on a daily basis. We assigned these two participants the pseudonyms Angelica and Blanca. Angelica’s trajectory began above the mean but gradually decreased over time, whereas Blanca presented with comparable scores across all three time points that were considerably lower than the mean trajectory. Blanca and her family participated in two additional visits during Blanca’s second year of life (27–33 months of age), but we did not use these data due to the absence of comparable scores for the other participants. We should note, however, that Blanca’s Spanish D scores at these points were higher than her scores at the three time points used in this study, suggesting language loss rather than low ability. Both girls had Spanish D scores at Time 3 that were one standard deviation or more below the group mean (Angelica = 24.18, Blanca = 15.49, \(M = 55.45, SD = 22.59\)). Figure 2 presents Angelica and Blanca’s trajectories and the mean trajectory.

**SLAP Vocabulary and Language.** Table 2 presents the SLAP subtests results for both groups. The language maintenance group presented with a range of vocabulary scores on the SLAP Expressive Vocabulary subtest, but all of the children were able to identify more than 55 of the 80 vocabulary items elicited. We also noted a great deal of variability on the SLAP Language subtest items, with participants from the language maintenance group correctly identifying between 9 and 39 items. The language loss group presented with scores on the SLAP that were lower than those of the language maintenance group. Angelica’s Expressive Vocabulary score was almost in the same range as the language maintenance group’s mean score; however, her score on the Language subtest was lower than the maintenance group’s mean score. Blanca presented with lower scores on both the Expressive Vocabulary and Language subtests. We should note, however, that Blanca provided many answers in English. Because our goal was to measure Spanish language development and L1 mainte-
nance profiles, none of the children were given credit for responses in English. The SLAP administrator prompted all of the children to use Spanish. Blanca either chose to use English or was not able to complete these tasks in Spanish.

**Language Behaviors**

For both groups, we then examined the observed child language behaviors: percentage of utterances code-mixed; percentage of utterances with errors; and number of general terms/nondescriptive words (see Table 3). We observed very little code-mixing in the language maintenance group; in fact, three of the children did not code-mix at all. We also observed limited error patterns in this group, with many of the children making errors in less than 2% of their utterances. In the language loss group, Angelica code-mixed at about the same rate as the maintenance group, but she had a somewhat higher use of general terms/nondescriptive words. Blanca code-mixed more than the children from the maintenance group, which may have been an artifact of lexical level loss in Spanish or her preference for English. Either way, her percentage of code-mixing was comparable to that of typically developing bilingual children from other studies (e.g., Brice & Anderson, 1999). More important, Blanca had substantially more errors than all of the other children in this study.

![Figure 2](image)

**FIGURE 2.** Angelica and Blanca’s trajectories and the mean trajectory (dotted line = mean trajectory; middle line with diamonds at time points = Angelica’s trajectory; bottom line with circles at time points = Blanca’s trajectory).

**TABLE 2.** Language Maintenance Group Mean and Standard Deviations for Language Variables at Time 3, and Scores for Angelica and Blanca

<table>
<thead>
<tr>
<th>Variable</th>
<th>Language maintenance group&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Language loss group&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Spanish D</td>
<td>64.36</td>
<td>14.05</td>
</tr>
<tr>
<td>SLAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expressive Vocabulary</td>
<td>60.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Language</td>
<td>27.88</td>
<td>9.30</td>
</tr>
</tbody>
</table>


<sup>a</sup>n = 8, <sup>b</sup>n = 2.
Finally, we examined the language usage and exposure for both groups (see Table 4). It should be noted that none of the parents indicated that their children were enrolled in preschool programs that used only Spanish. Several parents indicated that their children were in bilingual settings, and most of them noted that their children were enrolled in preschools that used English. Yet, on a separate question these parents indicated that their children were exposed to Spanish at school. Some researchers have stated that these types of questions are confusing to parents, in part because they may not know how languages are being used in the classroom (Rodriguez, Diaz, Duran, & Espinoza, 1995). Based on participant responses in our study, however, it appears safe to assume that the children who were enrolled in preschools were exposed to some level of English instruction (either English + Spanish or English only).

We found that the language maintenance group had relatively little exposure to English through immediate family members, but three of the children used English with friends. We saw a great deal of variability in preschool enrollment: Some children had not been enrolled in preschool, whereas others had 1, 2, or 3 years of preschool experience. (It should also be noted that only one of the eight children from the language maintenance group spent time in Mexico.)

We observed that the children in the language loss group presented with a number of differences in language usage and exposure. Angelica’s language usage with her parents was much like that of the maintenance group; however, she used both Spanish and English with siblings and friends. Angelica had not been enrolled in preschool, but her parents reported that her brother spoke mostly English with Angelica and that she received daycare in the home 40 hours a week with an aunt who spoke both Spanish and English. Her parents also reported that Angelica was exposed to English through television and that she used English when she played. Her family had spent 4 weeks in Mexico in the past year, which was higher than the average for the language maintenance group.

Blanca used English 50% of the time when speaking with her parents, which is noticeably more than the for the language maintenance group. Blanca also used only English when speaking with siblings and friends. She had been enrolled in preschool for 3 years, and her parents also reported that they used English when reading with Blanca and that Blanca used English when she played. Blanca’s family had spent 3 weeks in Mexico in the past year, which was also higher than the average for the language maintenance group.

**DISCUSSION**

**How Do Language Maintenance or Loss Trajectories Compare to Scores Obtained on Structured Language Tasks?**

We were interested to see how the two groups in this study performed on the SLAP Expressive Vocabulary and Language subtests. We found that the children in the language maintenance group did quite well on the Expressive Vocabulary subtest and presented with a range of skills on the Language subtest. One of the children in the language loss group named more than 50 items, but the other child was able to name only 2 items in Spanish. Both of the children in the language loss group had difficulty with the Language items.

The results from the SLAP demonstrated the variability that can be seen in early sequential bilingual chil-
For some children, early signs of language loss may take the form of a decrease in L1 vocabulary skills, whereas for other children, language loss may take the form of decreased ability to handle L1 language tasks or to develop academic language skills in their L1. In these cases, it would be inappropriate to compare their language development to that of monolingual peers or early sequential bilinguals who have maintained their first language. Alternatives would be to consider the child’s emergent skills in English or to consider both languages together. For example, applying strategies such as conceptual scoring allows a child to receive credit for skills acquired regardless of the language used (L1 or L2; for a review, see Bedore, Peña, Garcia, & Cortez, 2005). In our study, if we had considered the performance in English by Blanca, her vocabulary skills would have been near those of the children in the language maintenance group. Her language scores still would have been lower, but this would not be surprising, given her short history of as an English speaker.

What Child Language Behaviors Are Associated With Language Maintenance or Loss?

We examined the patterns of three language behaviors: use of general term/nondescriptive words, code-mixing, and grammatical errors. One of the children in the language loss group began to increase her usage of general terms/nondescriptive words (éso, ésa, esto, esta, este, aquí, acá allá, and allí) much like a child described in Anderson’s study (1999a). Researchers need to study this phenomenon further before general terms/nondescriptive words can be unquestionably associated with language loss. Numerous studies have demonstrated that code-mixing is a typical bilingual behavior that is not related to language deficits. Our study substantiated these findings; we detected no relationship between code-mixing and decreased L1 usage.

Conversely, percentage of grammatical errors was higher in the two children from the language loss group; these findings are consistent with the results from early studies. Previous studies have also indicated that grammatical errors are more common in children with SLI; thus, a child experiencing language loss could be misdiagnosed as having SLI. SLPs can address this problem and differentiate these populations through considering multiple sources of converging evidence, such as obtaining the child’s bilingual language history, completing thorough parent and teacher interviews, comparing the child’s performance to that of other children with similar language and educational backgrounds, and describing changes in the child’s L1 and L2 competence over time (Anderson, 2004; Gutiérrez-Clellen, Restrepo, Bedore, Peña, & Anderson, 2000; Restrepo, 1998). When trying to differentiate SLI from language loss, SLPs should also apply dynamic assessment practices that elicit various grammatical forms, verbal short-term memory skills, and structured language samples (for a review, see Gutiérrez-Clellen & Peña 2001; Restrepo & Gutiérrez-Clellen, 2004).

### Table 4. Language Maintenance Group Means and Standard Deviations and Family/Child Language Usage and Exposure Variables at Time 3 for Angelica and Blanca

<table>
<thead>
<tr>
<th>Variable</th>
<th>Language maintenance group&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Language loss group&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>% Spanish, mother</td>
<td>98.00</td>
<td>5.00</td>
</tr>
<tr>
<td>% Spanish, father</td>
<td>99.00</td>
<td>1.00</td>
</tr>
<tr>
<td>% Spanish, child</td>
<td>90.00</td>
<td>12.00</td>
</tr>
<tr>
<td>Sibling language&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.80</td>
<td>.35</td>
</tr>
<tr>
<td>Friend language&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.50</td>
<td>.75</td>
</tr>
<tr>
<td>Preschool enrollment (# yrs enrolled)</td>
<td>1.50</td>
<td>1.20</td>
</tr>
<tr>
<td>Weeks in Mexico&lt;sup&gt;d&lt;/sup&gt;</td>
<td>.75</td>
<td>2.10</td>
</tr>
</tbody>
</table>

<sup>Note.</sup> Sibling language = language that child uses with siblings; friend language = language that child uses with friends.

<sup>a</sup>n = 8, <sup>b</sup>n = 2. <sup>c</sup>Coding: 3 = Spanish, 2 = Spanish + English, 1 = English. <sup>d</sup>Number of weeks that the parent reported the child spent in Mexico in the last year.
What Language Usage and Exposure Variables Are Associated With Language Maintenance or Loss?

We found that the children in the Spanish-language maintenance group came from homes where family members continued to use Spanish. According to their parents, these children used some English with other children and in some instances were exposed to English through preschool enrollment. The children in the language loss group presented with language usage and exposure variables that were both similar and different from those of the language maintenance group. For both Angelica and Blanca, parents reported speaking English 90% or more of the time. At the same time, exposure to and usage of English in home contexts were more common. Angelica spoke English and Spanish with her siblings, whereas Blanca spoke English 50% of the time with her parents and spoke only English with siblings and peers. Blanca was enrolled in a preschool where she was exposed to some level of English, whereas Angelica had multiple sources of English exposure in the home (e.g., aunt, older brother, reading activities, during play, television). Both children spent more time in Mexico than the other children in the study, which is somewhat surprising, because one would expect that they would thereby have had more exposure to Spanish or that their parents would be more likely to encourage their child to develop Spanish language skills to use with relatives in Mexico. It is likely that other child characteristics, including motivation to speak L1 or L2, language aptitude, learning style, and personality, influence whether a child will maintain or lose his or her first language (Moore, Beatty, & Perez-Mendez, 1995). In brief, we found no specific variable to be predictive of decreased L1 usage, but we did see that the children who experienced decreases in L1 began to use more English with family members or peers.

This study described the Spanish language usage trajectories of 10 children of Mexican immigrants over the course of 3 years. There are limitations to this study, including the small number of participants studied and the lack of detailed information about language instruction in preschool programs. Also, this study only considered the Spanish language development of these children; some researchers have found that considering both languages can be a better gage of language development than considering only L1 or only L2 (Bedore, Peña, García, & Cortez, 2005). However, for the current study, the continued use and development of Spanish was of particular interest.

Conclusions

This study substantiated the findings from earlier studies that grammatical errors are predictive of language loss but code-mixing is not. More studies are needed to further investigate the relationship between general terms/nondescriptive words and language loss. In addition, this study demonstrated the tremendous amount of variability in the language trajectories of early sequential bilinguals. Not surprisingly, it appears that language maintenance occurs when families continue using L1 in the home. Children who demonstrated language maintenance were able to demonstrate more vocabulary and language skills than the children in the language loss group. Our results are consistent with a body of emerging research that has asserted that preservation of home language and culture ensures optimal continued language development for young emergent bilinguals (Genesee et al., 2004; Guiberson, 2005; Gutierrez-Clellen, 1999; Kay-Raining Bird et al., 2005; Kohnert, Yim, Nett, Kan, & Duran, 2005; Moore & Perez-Mendez, 2006; Restrepo & Kruth, 2000). Our analyses also suggest that (a) language loss can occur under various language usage and exposure conditions and (b) a number of differing language behaviors may be observed. Future studies in which researchers investigate language maintenance and language loss should consider child characteristics (e.g., motivation, language aptitude, learning style, personality); parental beliefs about bilingualism and L1 maintenance; and detailed information about preschool programming, including language of instruction and teacher beliefs about bilingualism.

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