Bilingual Phonological Acquisition of Preschool Children of Puerto Rican Descent

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ABSTRACT

The purpose of this study was to describe longitudinally the phonological acquisition of 43 children of Puerto Rican descent who were acquiring Spanish and English sequentially or simultaneously from the ages of three to five years. Spanish and English language samples were obtained at the beginning and end of each year of two years of Head Start preschool (Times 1-4). Language samples were analyzed to determine vowel, consonant and syllable type inventories in English and Spanish. The first data collection indicated richer Spanish phonologies in those children from Spanish-speaking homes. At Time 2, all children had less complex Spanish phonological systems than reported for monolingual children. By Time 3, English phonologies of the simultaneous group were within the range reported for typical monolingual children and the reverse was true of children in the sequential group. At Time 4, all children produced most English phonemes in simple phonetic environments but continued to have difficulty with later developing English phonemes and consonant clusters. Children in both groups continued to have difficulty with Spanish trills.

1. INTRODUCTION

Spanish speakers in the United States represent many different dialect regions of Spain and the Americas of which the three largest groups are Mexican, Cuban, and Puerto Rican [1]. One of the largest centers of U.S. Spanish speakers is New York City where the most dominant group is from Puerto Rico. Over the years, many Puerto Rican families have moved away from the City to upstate New York and areas of New Jersey and Pennsylvania where some communities have been established for more than 50 years. Although Puerto Ricans are U.S. citizens, their linguistic and sociocultural experiences are similar to those of many Latino immigrants [2, 3]. Children from this group of Spanish speakers are the focus of the current study of the phonological acquisition of bilingual children in Head Start preschool.

School programs for bilingual children have received much attention in recent years and bilingualism and U.S. second-language policies are controversial issues [4]. Bilingual skills fall along a continuum. Consequently, more information is needed on the effects of varied amounts of exposure to two languages on children's acquisition of a functional linguistic system and the subsequent use of the linguistic system to learn to read and spell. The timing of children's exposure to Spanish and English is an especially important variable to consider. Children may acquire one language before another or may acquire two languages more or less simultaneously [5, 6, 7, 8]. In addition to the amount and type of exposure to different languages, it is important to consider the dominance of one language over another, the interaction of the two languages, and sociolinguistic factors [9].

Simultaneous (SI) and sequential (SE) learners were considered separate groups in this investigation. SI children were acquiring two first languages, Spanish and English, had continuous exposure to both languages and lived in homes where they were expected to follow directions, answer questions and interact with family and friends in both Spanish and English. SE children were raised in Spanish-speaking homes and were acquiring Spanish as the first language. They were not expected to follow directions, speak, or interact with their families or other people in English until they attended Head Start at 3 years of age. SE children in the U.S. are usually exposed to English through television and excursions into the English-speaking community such as trips to the grocery store or post office [10]. The children in this study were not, however, placed in situations where communication in English was required or expected or them, nor were they encouraged to learn English until they attended Head Start.

Head Start preschool programs assist children with learning those skills they will need when they attend U.S. public schools and are taught to read in English. Although children in many parts of the world have been successfully taught to read in a language they do not know very well, children's reading success is at some risk when they are taught to read in a language in which they do not have a strong foundation [11]. This risk becomes more apparent when bilingual children live in economically disadvantaged homes [11]. The current study observed the changes in phonological acquisition of children whose systematic exposure to two languages differed.

2. PURPOSE

Differences exist in the nature of the linguistic input children receive in families who speak only Spanish in the

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home and families who speak both Spanish and English at home. Because language input is one of the critical factors that predict success in school in low-income English-speaking children [12], it is important to more clearly understand differences in language acquisition among bilingual children. Since phonological sensitivity has been shown to be a strong predictor of success in learning to read [13], it is especially important to understand bilingual phonological acquisition in children. The purpose of the current study is to describe longitudinally the phonological acquisition of children acquiring Spanish and English simultaneously or sequentially from the ages of three to five years.

3. METHOD

3.1 Participants.

Forty-three Puerto Rican children attending Head Start programs in two urban areas in central Pennsylvania, USA, participated in this study. The children were from Puerto Rican neighborhoods established in the 1950s when migrant workers from Puerto Rico moved to the area. The children and their mothers also participated in a larger longitudinal study of language and English literacy development in bilingual children. The primary aim of the larger investigation is to study the language and literacy development of bilingual children and to identify characteristics of children's oral language and home environment that serve as risk and protective factors for children's literacy outcomes. The current study focused on productive language data collected during play sessions at the children's preschools.

Based on information mothers provided to home visitors at the beginning of the study, children were divided into two groups: children who were spoken to in Spanish and English by family members prior to 3 years of age, SI group (n=28), and children who were spoken to in Spanish before the age of 3 by family members and later spoken to in English by preschool teachers, SE group (n=15).

The mean age of the children when they were enrolled in the study was 3;8 (years; months). All children were typically developing, passed a hearing screening and lived in families that qualified financially for the Federally funded preschool program, Head Start.

The children's mothers were of Puerto Rican descent and spoke a Puerto Rican dialect of Spanish. Nearly all the mothers of the SE children were born in Puerto Rico. Less than half were working outside of the home and 67% had no more than a high school education. The sociodemographic profile of the mothers of the SI children was similar except that only half of the mothers of the SI children were born in Puerto Rico. Half of the mothers worked outside the home and 71% of the mothers had no more than a high school education. No differences existed between the two groups with regard to maternal age, $t(41) - 1.24$, $p = .22$, and years of education, $t(41) = -1.38$, $p = 17$. According to maternal report, 77% of the fathers of SE children and 42% of fathers of the SI children saw their children every day [14]. Differences between the groups in home language use were significant, $t(34) = -4.0$, $p = .0001$, $d = 1.2$, with mothers of the SE learners using more Spanish than English and mothers of the SI learners using more English than Spanish when talking to other adults in the home. Home language use with children also differed significantly between the groups, $t(34) = -3.1$, $p = .005$, $d. = .96$ [14].

3.2 Procedures.

3.2.1. Language samples. Language samples were obtained at the beginning and end of each school year for two years of Head Start. Samples were obtained during two play sessions each lasting 45-60 minutes: one interacting with a monolingual English-speaking adult and one with a Spanish-speaking adult. During the sessions, children were asked to name pictures of common items known by their dialect communities such as food items, animals, clothing, toys, types of transportation, and tools. Items were chosen based upon their phonetic content and provided a minimum of five opportunities to produce all sounds and syllable structures across possible phonetic contexts according to the phonotactic constraints of Spanish and English. Children also conversed with the adult while playing with symbolic toys.

Language samples were recorded in a room in a child's respective preschool. The samples were audiotaped and videotaped. Children wore a smock containing an omnidirectional lavaliere microphone adjusted to maintain a constant frequency response. The microphone was connected to a wireless transmitter sewn into a pouch on the smock and linked to a FM receiver. The audio signals were recorded onto a HiFi audio channel of a videotape simultaneously with the video signal.

3.2.2. Transcription and analysis. Language samples were transcribed independently using the International Phonetic Alphabet [15] and entered into the Logical International Phonetic Program [16] to determine vowel and consonant inventories, distribution of consonants and vowels, and syllable types. The inventories were determined independent of the intended utterance in order to determine the complexity of the children's productive phonological repertoire in each language [17]. All speech sounds used at least twice in two different words during a single session were considered part of a child's phonetic inventory. Any utterance that occurred simultaneously with any other noise, such as the conversation partner's speech or a toy, was not transcribed. Cries, coughs and screams were not transcribed. Relational analyses were later completed to determine mismatches with the adult phonological system.

4. RESULTS

4.1. Time 1. At the beginning of the children's first year in preschool, children from Spanish-speaking homes had richer Spanish phonologies than children from bilingual homes. As would be expected, children from bilingual

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homes had more complex English phonological systems. Both groups, however, produced simpler syllable structures and fewer phonemes than reported for monolingual children [18, 19].

4.2. Time 2. At the end of the first year of preschool, both groups made some gains in their production of English phonemes, particularly in singleton onsets. The English phonological systems of the sequential group more closely resembled those of the simultaneous group. A similar growth was not observed in children's Spanish phonologies.

4.3. Time 3. The third data collection occurred at the beginning of the second year of Head Start preschool after children had spent 3 months at home with their families. The English phonologies of the simultaneous group were similar to those reported for monolingual children [18]. Although the phonological systems of the sequential group had also grown, they were not as complex as those of the simultaneous group. The reverse was true for use of Spanish. The phonetic inventories of the sequential group resembled those reported for Spanish-speaking children of the same age [19]. Spanish inventories of the simultaneous group showed little change from Time 2.

4.4. Time 4. At the end of the second year of Head Start, the productive English consonant inventories of both groups were similar to those of monolingual peers, overall, however, not all sounds were used in phonetically complex environments. Children in the sequential group showed gains in the complexity of the syllable and word structures used in Spanish; however, few children in the simultaneous group showed growth in the complexity of their Spanish inventories.

At the end of the study, most children in both groups used the respective vowel systems with ease with the exception of English rhotic vowels. Some children in each group had not yet acquired both English liquids or English interdental fricatives. English s-clusters and Spanish trills (mostly uvular in these children) were particularly challenging. Some children in both groups omitted coda consonants, a common characteristic of Puerto Rican Spanish that sometimes generalized to English.

5. CONCLUSIONS

The purpose of the current study was to determine if differences existed in the phonological acquisition of children learning Spanish and English sequentially and simultaneously and to follow their phonological acquisition in the two languages while enrolled in an English-speaking Head Start preschool.

Results showed that the productive English phonologies of both groups increased while attending a Head Start program that provided primarily English instruction. This shows promise for success when the children attend elementary school and their school performance will be compared to that of monolingual English-speaking children.

Although the SE children maintained their Spanish systems, children in the SI group did not show the growth expected in the course of typical acquisition with continued exposure to the language in question. This suggests that most children's Spanish phonologies did not continue to develop in a typical way. In order for children to maintain their early bilingual abilities and especially for those abilities to continue to grow, special attention will need to be paid to providing Spanish language exposure at home.

Research on the phonological acquisition of bilingual children should lead to a better understanding of the process and to recommendations for the school and home. Further research may lead to expanded options and improved practices in preschool programs with large bilingual populations so that the most advantageous learning environment is available in both settings.

It is also important to understand that many bilingual children in the U.S. are from low-income backgrounds and come to preschool programs with a range of home experiences and linguistic abilities. Professionals who work with bilingual children can best develop programs that build on children's linguistic knowledge. Multiple factors place children at risk and much more research is needed that connects analyses of children's language skills with the larger political and social context in which children learn [20]. Professionals should enhance and build on children's first language abilities and take advantage of the learning opportunities facilitated by bilingualism.

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