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**Receptive acquisition of novel vocabulary by Spanish-dominant,
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Boies, Robert Mehnert, M.S.

The University of Arizona, 1987

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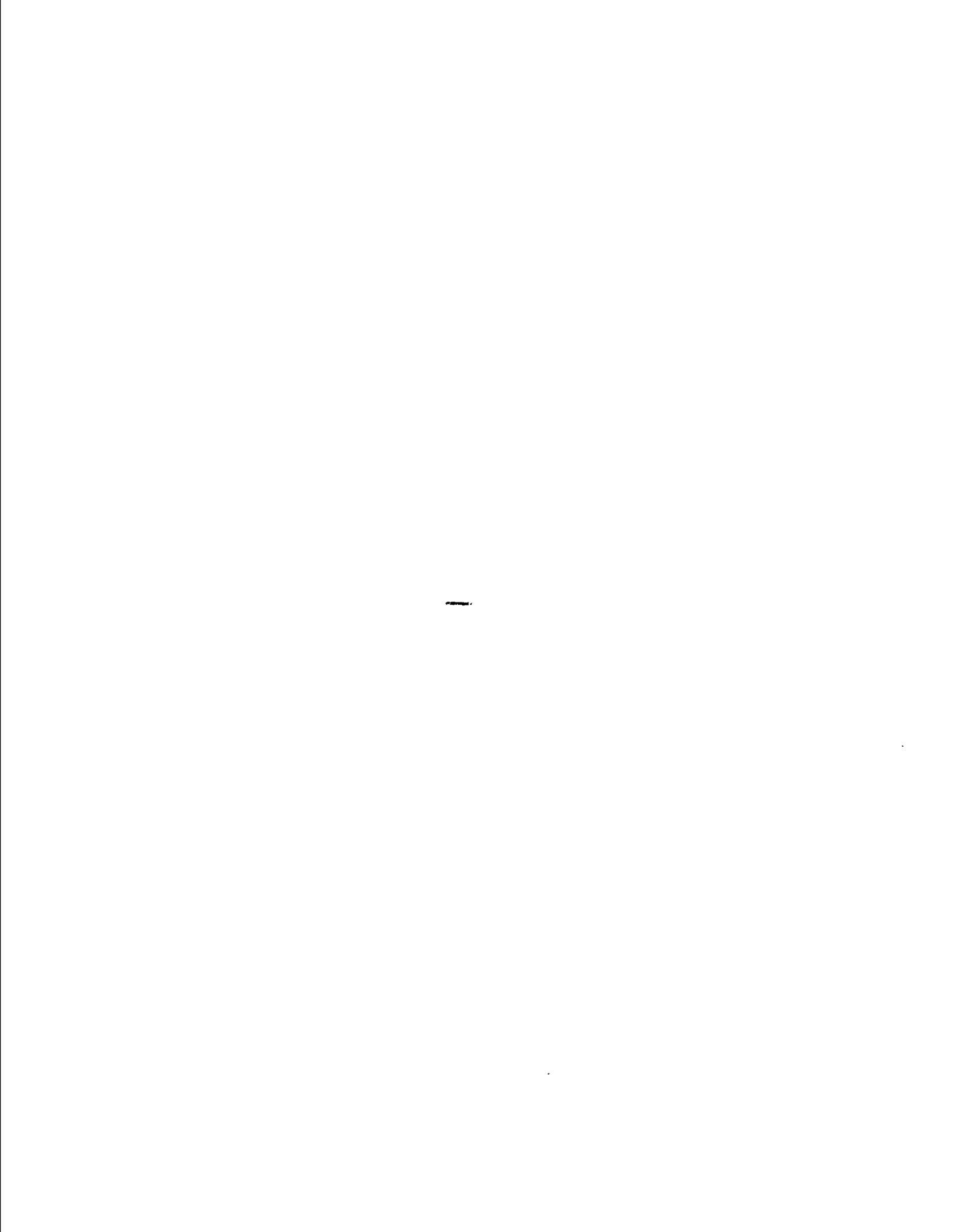
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RECEPTIVE ACQUISITION OF NOVEL VOCABULARY
BY SPANISH-DOMINANT, BILINGUAL PRESCHOOL CHILDREN

by
Robert Boies

A Thesis Submitted to the Faculty of the
DEPARTMENT OF SPEECH AND HEARING SCIENCES
In Partial Fulfillment of the Requirements
For the Degree of

MASTER OF SCIENCE

In the Graduate College
THE UNIVERSITY OF ARIZONA

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ACKNOWLEDGMENTS

First and foremost, the investigator extends his gratitude to his thesis advisor, Linda Swisher, Ph.D., for her whole-hearted guidance during this project; also, to members of his committee, Noel Matkin, Ph.D., and Thomas Hixon, Ph.D. for their comments. The author also thanks Tom Kiernan for his efforts and cooperation in serving as trainer for the project. The author also acknowledges the help of Nancy Gibb and Barbara Kiernan in brain-storming sessions. Margaret Kish and the staff at Pio Decimo Center provided unflagging logistic and administrative assistance. The parents of the children in this study also merit recognition for their cooperation throughout. Finally, Vickie Cameron deserves praise for her indefatigable clerical and secretarial aid.

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ABSTRACT

The effectiveness of a bilingual and a monolingual treatment condition was compared in the receptive training of novel action words presented to two bilingual, Spanish-dominant, minority-language preschoolers. In the bilingual condition, one set of actions and referents was trained in Spanish (L1) followed by training in English (L2). In the monolingual condition, another set of actions and referents was trained in L2 alone. For one child, superior L2 learning occurred in the bilingual condition, results consonant with reports by García (1983a) and by Oskarsson (1975). For the other child, unexpectedly, the monolingual condition resulted in superior L2 learning. Her findings suggest that the effect of preference to learn in L2 may result in behavior which runs counter to expectations of performance based on observed dominance.

Generalization of receptive learning to expressive performance was also assessed. Both children performed at sufficient levels to indicate learning was generalized from reception to expression.

CHAPTER 1

INTRODUCTION

Variables pertinent to dual language acquisition include the following: age, manner, and context of acquisition of each language (Vaid, 1983); preference for the use of one language over the other (Chesterfield & Perez, 1981; Padilla & Liebman, 1975; Wald, 1985); social and individual attitudes towards each language (García, 1983b; Grosjean, 1983); demonstrated skills or linguistic performance in each language (Hernandez-Chavez, Burt, & Dulay, 1978); the nature of the particular learning task (García, 1983b); and transfer of knowledge from one language to another (García, 1983a; Oskarsson, 1975; Perozzi, 1985).

Studies that have compared the effects of different treatment conditions on the learning of the nondominant language (L2) include García (1983a), Gibb (1985), Oskarsson (1975), and Perozzi (1985). Oskarsson and Garcia compared the effects on learning of L2 of a monolingual treatment (English words only) with the effects of a bilingual treatment (English words preceded by training in the dominant language, L1). Oskarsson demonstrated superior receptive learning of English nouns by Swedish-dominant high school students when the words were trained in a bilingual format. García studied the acquisition of English and Spanish locative prepositions (e.g., under) in four normal, preschool children (ages 4;3 to 4;8 years) who were

Spanish dominant. Both expressive and receptive training occurred. He reported that concurrent training in both languages (bilingual) was superior to training in L2 alone (monolingual).

The question then arises: Why does training in a bilingual format result in better L2 learning than training in a monolingual L2 format? A possible answer, as suggested by Perozzi (1985), is that learning in L2 is facilitated when it is preceded by learning in L1. In order to determine the existence and strength of such an effect, two bilingual treatments need to be compared: L2 training preceded by L1 training, and L1 training preceded by L2 training. Such a design was followed by Perozzi and by Gibb (1985).

Perozzi (1985) studied three English-dominant and three Spanish-dominant preschoolers who were 4;0 and 5;5 years of age. Subjects included normal as well as language-delayed and language-disordered children. Two bilingual treatments were compared in the receptive learning of unfamiliar object words depicted on picture cards from the Peabody Picture Vocabulary Development Kit. For both Spanish- and English-dominant children, and for both normal and language-delayed or disordered subjects, training in L1 followed by L2 resulted in a superior rate of learning of the words in L2 compared with L2 followed by L1.

Gibb (1985) examined the possibility of a facilitation effect in the receptive learning of 16 novel referents of puzzle-like object stimuli by four normal Spanish-dominant, bilingual preschoolers, ages 5;1 to 5;11 years. Gibb found that L1 items were more quickly learned to a higher level than L2 items. However, she did not observe a

facilitation effect, possibly because the great number of names to be learned prevented subjects from reaching a level of performance adequate for facilitation to occur.

In summary, the experimental findings thus far have suggested that better learning in L2 can be achieved with a bilingual treatment that trains L1 vocabulary before L2 vocabulary, compared with one that trains L2 before L1, or one that trains L2 alone. These treatment effects have been demonstrated for unfamiliar words for objects (Oskarsson, 1975; Perozzi, 1985), and for locative prepositions (García, 1983a).

Studies have also indicated that object words may be more easily learned than action words by both normal and language-impaired, monolingual, English-speaking children (Camarata & Schwartz, 1985; Schwartz & Leonard, 1984). As yet unexplored is the question of whether the treatment effects demonstrated by bilingual children for object words and locative prepositions extend to the learning of novel action vocabulary.

Another question worthy of examination is whether there is generalization from receptive learning in two languages to expressive performance in two languages. Children with different language characteristics generalize learning from one language component to another to varying degrees. For example, both retarded and nonretarded children have been shown to generalize from receptive training to untrained expressive items (Cuvo & Riva, 1980). The difference between the groups is one of quantity, not quality:

Retarded children generalize less well than nonretarded children. Language-impaired children with normal nonverbal performance skills also have demonstrated an ability to generalize from reception to expression (Leonard, 1974). Studies of normal, bilingual preschool children have not addressed this issue.

The present investigation addressed the following question:

Will the receptive learning of English, novel action words by Spanish-dominant, bilingual preschool children show a superior level of performance as a result of treatment in English only (monolingual treatment) compared with a treatment of Spanish followed by English (bilingual treatment)? In addition, will receptive learning generalize to expressive performance?

CHAPTER 2

METHODS

Experimental Design

To identify and evaluate the variables affecting individual subject performance differences, an alternating-treatment, single-subject design was used (cf. McReynolds & Kearns, 1983). The experiment contained four sections: a pre-treatment period of subject familiarization with the apparatus and procedures; a treatment phase; an application (withdrawal) phase; and post-treatment measures of generalization. No pretesting or baseline data were collected because of the novel nature of the stimuli. Justification for this decision came from two sources. The first was the report by Gibb (1985) that the children she studied became frustrated during baseline pretesting of their comprehension of the novel experimental stimuli. The second source was derived from Kazdin (1982, p. 118) who states "...when behavior has never been performed..., treatment may begin without baseline."

Before the initiation of treatment, the children were introduced to the experimental apparatus (hand puppets) in their homes and encouraged to name and manipulate the puppets in free play. This was followed by the treatment phase which took place at the children's preschool. It was administered by a trainer who had been instructed by the investigator and who was blind to the purpose of the study.

Treatment and stimulus sets were counterbalanced within and across children as shown in Table 1.

Generalization measures were obtained on two occasions with the same expressive task. The first measure was administered by the trainer immediately after a subject reached criterion, or on the last day of training in both treatments if criterion was not reached. The second measure was administered by the investigator in the children's homes after a period of two days following completion of the experimental treatment sessions.

Subjects

Subject Inclusion Criteria

Four preschool children of Mexican-American heritage served as subjects for the experiment. They were currently acquiring Spanish and English simultaneously and were enrolled in a preschool/day-care center in Tucson, Arizona in which Anglo, English-dominant children were their primary playmates. Though the preschool nominally advocated a bilingual philosophy, in practice the language of instruction and discourse was typically English.

The children met the following criteria: (a) Mexican-American background; (b) concurrently acquiring both Spanish and English; (c) enrolled in a preschool center; (d) chronological age between 4;0 and 5;11 years; (e) Spanish as the dominant language both in terms of level of skills as well as frequency of usage as judged by parental report, teacher impression, and investigator observation as well as standardized testing and language analyses; (f) motor, social, cognitive, and linguistic status rated by parents to be within age-

Table 1. Counterbalancing of Treatment Conditions and Stimulus Sets following McReynolds and Kearns (1983).

Subjects 1 and 4 received training as shown, alternating stimulus sets A (bilingual) and B (monolingual). Subjects 2 and 3 received alternating treatments with stimulus sets C (monolingual) and D (bilingual).

Treatments and Sets				
Day				
1	BL ^a - A	ML - C	ML - C	BL - A
	ML ^b - B	BL - D	BL - D	ML - B
2	ML - B	BL - D	BL - D	ML - B
	BL - A	ML - C	ML - C	BL - A
3	BL - A	ML - C	ML - C	BL - A
	ML - B	BL - D	BL - D	ML - B
4	ML - B	BL - D	BL - D	ML - B
	BL - A	ML - C	ML - C	BL - A
5	BL - A	ML - C	ML - C	BL - A
	ML - B	BL - D	BL - D	ML - B
6	ML - B	BL - D	BL - D	ML - B
	BL - A	ML - C	ML - C	BL - A

^a - Bilingual Treatment

^b - Monolingual Treatment

Note. A, B, C, D refer to stimulus sets (see Appendix 2 for description).

appropriate levels on all sections of a locally translated Spanish adaptation of the Minnesota Child Development Inventory (Ireton & Thwing, 1974) (see Appendix 1); (g) confirmation of normal nonverbal performance as reported by the classroom teacher; (h) vision within normal limits as screened three months previously by the preschool; (i) no history of recurrent otitis media; (j) hearing within normal limits as screened three months previously by the preschool; and (k) right-hand preference as observed by the investigator and as reported by the classroom teacher.

Subject Attrition

Treatment of two children was discontinued. In the case of O.M. (4;0 years, male), attention to the experimental task was minimal. Even after a reduction of the number of stimuli presented (from eight to six), on-task attending behavior was intermittent. He would fling the puppet aside, fidget, cry, or appear sleepy.

The second child to be discontinued was E.Z. (4;8 years, female) because of irregular and unpredictable attendance. (E.Z. attended only one session over six days of planned treatment sessions.)

Thus, only two children completed the experiment: L.L. and S.S., both females. L.L. was 4;8 years; S.S. was 5;2 years.

Subject Language Performance

Dominance in language proficiency. To determine their levels of language proficiency in Spanish and in English, the children were administered a battery of tests. The investigator conducted the

testing in the children's homes, beginning in English on one day and following in Spanish after a period of one week. All assessments were completed within two weeks of the initiation of treatment.

Standardized, norm-referenced measures are not currently available to assess the child acquiring both Spanish and English. In addition, "discrete-item language tests which focus on one aspect of language also tend to limit the range of communicative abilities which need to be considered in determining relative language proficiency" (Ramirez, 1985, p. 182). In order to allow for replication of testing procedures and to arrive at a broadly based, roughly parallel description of skills in each language, several discrete-point, formal tests were conducted. The following instruments to assess English were administered: The Templin-Darley Screening Test of Articulation (T-D), (Templin & Darley, 1969); the Peabody Picture Vocabulary Test-Revised (PPVT-R), (Dunn & Dunn, 1981); and the Northwestern Syntax Screening Test (NSST), (Lee, 1971). Spanish measures were the following: The Southwestern Spanish Articulation Test (SSAT), (Toronto, 1977); a locally translated adaptation of the Assessment of Children's Language Comprehension (ACLC), (Foster, Giddan, & Stark, 1973); and the Screening Test of Spanish Grammar (STSG), (Toronto, 1973). (The ACLC has three parts; single-word comprehension is assessed in Part A which is thus roughly comparable to the PPVT as a receptive vocabulary measure.)

In addition to formal testing, expressive language samples were obtained in spontaneous and elicited formats: child-sibling(s),

child-parent(s) and child-investigator. Dialogue, monologue, narrative, and story retelling tasks were recorded.

Table 2 summarizes the results of speech and language testing for the two children who completed the experiment. Both showed better skills in Spanish than in English as assessed by the tests. In addition to some slight-to-fair proficiency demonstrated in English in the receptive portion of the NSST, both received scores on the articulation test which are close to the mean for monolingual English speakers their age. The higher mean length of utterance (MLU) in Spanish as compared with English, while probably related to higher proficiency in L1, may also be "attributable to morphological differences between the languages and MLU computational procedures" (García, 1983b), as Spanish morphosyntax is highly inflectional compared to English.

Dominance in sociolinguistic performance. A major source of language usage information was the Home Bilingual Usage Estimate (HBUE), (Skoczymas, 1971). This tool examines the frequency of use of Spanish and English in the home with family, and with playmates outside of school. A difference of nine or more points between the language usage scores for Spanish and English indicates dominance in use of the language with the higher score.

Subject L.L. scored 40 in Spanish and 19 in English on the HBUE, which classified her as Spanish dominant. Her scores reflect the fact that, although she heard and spoke some English with family and friends, she listened to and produced much more Spanish with her 2-year-old brother, with her parents, with relatives, and with

Table 2. Language Proficiency of Subjects L.L. and S.S.

<u>A. Standardized Language Measures</u>		
	Subject L.L. (age 4;8)	Subject S.S. (age 5;2)
<u>Spanish</u>		
SSAT	46/47 (98%)	41/47 (87%)
ACLC part A	46/50 (92%)	46/50 (92%)
part B	20/20 (100%)	20/20 (100%)
part C	17/20 (85%)	19/20 (98%)
STSG-r	38/46 ^a (83%)	35/46 ^b (76%)
STSG-e	30/46 ^b (65%)	29/46 ^c (63%)
<u>English</u>		
T-D	41/50 ^d (82%)	40/50 ^d (80%)
PPVT-R (Form M)	basal not reached	basal not reached
NSST-r	20/40 ^e (50%)	28/40 ^c (70%)
NSST-e	11/40 ^f (28%)	12/40 ^f (30%)

^a 98th Percentile

^b 75th Percentile

^c 50th Percentile

^d Mean for age

^e 10th Percentile

^f More than 2 S.D. below mean

Note. SSAT = Southwestern Spanish Articulation Test; ACLC = Assessment of Children's Language Comprehension; STSG = Screening Test of Spanish Grammar; T-D = Templin-Darley Screening Test of Articulation; PPVT-R = Peabody Picture Vocabulary Test-Revised; NSST = Northwestern Syntax Screening Test; r = reception; e = expression.

Table 2 (Cont.). Language Proficiency of Subjects L.L. and S.S.

	B. <u>Language Samples</u>	
	Subject L.L.	Subject S.S.
<u>Spanish</u>		
MLU (spontaneous)	9.0 morphemes	7.6 morphemes
MLU (story retelling)	8.0 morphemes	7.8 morphemes
<u>English</u>		
MLU (spontaneous)	5.0 morphemes	5.6 morphemes
MLU (story retelling)	4.6 morphemes	5.1 morphemes

playmates. At home, L.L. often switched from Spanish to English. She attended preschool for 2 1/2 hours each weekday morning, where the ambient language was English. In addition, her teacher occasionally spoke Spanish to L.L.—perhaps in order to reinforce comprehension of directions given to the group. Other occasional sources of Spanish were songs played to all classes of the preschool, Spanish vocabulary presented to the class for the English-speaking children to learn in group situations, and Spanish spoken by teachers and aides to each other in the presence of the children. L.L. had several English-speaking, monolingual playmates, but no one special friend at the preschool.

S.S. was also rated as Spanish dominant by the HBUE, scoring 44 in Spanish usage and 25 in English usage. These scores reflect the fact that S.S. both listened to and had opportunities to use more Spanish than English. Her higher scores for both languages, when compared with those of L.L., may be attributed to the fact that S.S. had greater occasion to be exposed to both languages in the home. S.S. had two older sisters who spoke both languages, a mother who spoke almost exclusively Spanish, and a close monolingual, English-speaking playmate with whom she had frequent phone exchanges and visits. In her home, S.S. used English with the investigator even though he spoke both languages to her, unless she was reminded to use Spanish. S.S. attended the preschool for 6 hours each day, where she was exposed to the English and Spanish input described above for L.L. Because she was in the preschool for a longer period than L.L. each day, S.S. received more English input than L.L. not only at home but

also at school. In addition, she was inseparable from the monolingual friend mentioned above, who also attended the preschool for 6 hours daily.

Table 3 lists parent and sibling characteristics of sociolinguistic relevance. Percentages of language use by family members are based on parental report which was corroborated by investigator observation. Proficiency or skill levels have been rated as high, fair, limited or extremely limited, based on the investigator's observations.

Experimenters

The primary investigator in the experiment trained and supervised someone who was blind to the purpose of the investigation, who then administered the treatments to the children. The investigator was a male, Anglo, graduate clinician in Speech-Language Pathology. He had a high level of proficiency in English and in the variety of Spanish spoken in Tucson. The trainer was a bilingual male, Anglo, college freshman who had acquired Spanish while growing up in Venezuela. His Spanish did not differ substantially enough from the children's dialect to call attention to itself.

Stimuli Selection

Sixteen experimental stimuli were selected from a pool of novel words. All stimuli consisted of a trochaic syllable structure with a CVCV or a CVCØ configuration. These stimuli had been approved by adult, bilingual judges who had rated them as sounding like Spanish or English (Gibb, 1985). The novel English items had phonological

Table 3. Sociolinguistic Characteristics of Subjects' Families.

	Subject L.L.	Subject S.S.
<u>Mother</u>		
Age	28 years	36 years
Occupation	housewife	housewife
Education	8 years	5 years
Upbringing	Sonora, Mexico	Guerrero, Mexico
Language Proficiency	Spanish dominant; limited English proficiency	Spanish dominant (almost monolingual); extremely limited English proficiency
Home Language Use to Child	Spanish - 80% English - 20%	Spanish - 99% English - 1%
<u>Father</u>		
Age	32 years	36 years
Occupation	clerical assistant	mechanic
Education	14 years	15 years
Upbringing	Arizona	New Mexico
Language Proficiency	high proficiency in both languages	Spanish dominant with fair English proficiency
Home Language Use to Child	Spanish - 90% English - 10%	Spanish - 75% English - 25%
<u>Siblings</u>		
Number, gender, age	1 brother, age 2;6 years	2 sisters, ages 9 & 12 years
Language Proficiency	Spanish dominant; extremely limited English proficiency	high proficiency in both languages
Home Language Use to Child	Spanish - 90% English - 5%	Spanish - 50% English - 50%

configurations similar to the action words hurry or wiggle. Spanish stimuli resembled action words in the familiar command form such as corre or baila. Examples of the Spanish novel words are /poxa/ and /fite/. Examples of the English stimuli include /mɛpi/ and /dzupɹ/. (According to Volterra and Taeschner, 1978, phonological configuration helps the language learner assign a word to one or the other language.)

After eight novel actions were created, novel words were randomly assigned to them. Four actions were assigned a Spanish novel word and an English novel word. These made up the set of actions in the bilingual treatment condition. Four other actions were assigned English novel words only. These comprised the set of actions in the monolingual treatment condition. To reduce possible stimulus effects, different words were assigned to a given action for different children. Each action, that is, was assigned one novel word for the training of one child and a different novel word for the second child. For example, an action in the bilingual condition might be labeled /pefa/ in Spanish and /lɛro/ in English for L.L, but /sitʃa/ and /dʌbi/, respectively, for S.S.

Each of the eight experimental actions involved moving the puppet's head or body in various orientations. In creating two sets of four actions each, an attempt was made to achieve set equivalence both in terms of the motor coordination required to perform the actions in each set and in terms of the ease of visuospatial discriminability of each action in a set. Thus, for example, an action that crossed the child's midline to the left was not an item

in the set that contained an action moving to the right. Descriptions of each action and the novel word (monolingual stimuli) or words (bilingual stimuli) assigned to it for each child are found in Appendix 2.

Apparatus

A pair of identical puppets served as primary apparatus for the experiment. They were knitted figures resembling an Anglo, female firefighter, and conformed easily to each child's hand. During the treatment sessions, one puppet was worn by the trainer and the other by the child.

Procedure

Familiarization Procedure

Before training began, the investigator visited the homes of the children to familiarize them with the puppets and their role in the study. Each child was introduced to the two puppets, encouraged to play with the puppet of her choice, and was told she would be playing and working with the puppet. Parents also participated in this play. The investigator asked each child to name the puppet of her choice, and then gave the second puppet a name of his choice. In an effort to heighten each child's linguistic and metalinguistic awareness, attention was focused on her ability to use both English and Spanish. To this end, the investigator used both languages in interacting with each child and explained that the study was "to learn about children like you who speak Spanish and English."

Learning Tasks

Training was conducted in two rooms on the grounds of the preschool attended by the children. Training sessions lasted between 20 and 40 minutes and were conducted once daily, from Monday through Friday when possible. In the bilingual condition, each one of the four Spanish words was presented and then tested four times each session for a total of 16 trials per session. Then four English counterpart words for the actions were presented and tested four times each, for a total of 16 times per session. In the monolingual condition, all four English words were presented and tested eight times in every treatment session, for a total of 32 trials per session. The treatments were counterbalanced so that on any given day one child was trained first in the bilingual condition and the other child was trained first in the monolingual condition (see Table 1). In both conditions, training procedures were identical except for the use of Spanish in the bilingual condition.

During each session, the trainer and the child sat at a table. The investigator sat nearby facing them and video-taped the sessions. On the first day of the experiment, the investigator introduced the trainer and the child. Then the trainer instructed the child in the appropriate language. He first reminded her that she could speak both Spanish and English, and remarked that he could also speak both languages. He added that both languages would be used during the time they would be playing and working together.

Next, the trainer introduced the puppets, and he and the child each put one on. The trainer named his puppet and then had the child

name hers. He explained that both puppets could speak Spanish and English. He manipulated his puppet through several actions, asking the child to watch and be ready to have her puppet do the same things when he requested them. After telling his puppet to run, dance, and jump, and after his puppet complied, the trainer had the child manipulate her puppet similarly. When she was not successful, she was shown how to make her puppet perform the requested actions. Verbal praise was awarded (e.g., "Good! You made your puppet do what I told her to do" or "¡Que bien! Hiciste que tu monita hiciera lo que le dije a ella que hacer.").

The child was then told of other actions that the trainer's puppet could perform, and provided with a nonverbal model of each. She was then requested to copy all eight novel actions. The trainer then asked the child to watch and listen carefully while he told his puppet what to do, so that the child could make her puppet perform those same movements when it was her turn. At this point, the trainer presented the first novel action words, giving his puppet in random order all four commands of a given stimulus set. It was then the child's turn to make her puppet follow the trainer's commands. Again, in random order, the trainer produced the same four actions words assigned to the particular set to be trained.

This sequence of four trainer modeled action presentations followed by four commands was repeated four times for the bilingual Spanish stimuli, four times for the bilingual English stimuli, and eight times for the monolingual English stimuli. After each request by the trainer to perform an action, the child's response was judged

to be either correct or incorrect. When the child did not attempt an action or performed an incorrect action, the trainer produced the action word and then modeled the requested action. Then, he elicited a second, correct response from the child. That is, when the child was incorrect or did not respond, the trainer said, "You don't remember? O.K, my puppet, Maria, will show you. Maria-ready? Now, _____! All right, now it's your puppet, Anita's, turn. Ready? _____!" If the child was correct, she was given a social reward in the form of verbal praise, such as "Good job!", "That's it!", "All right," etc. (In Spanish, the comments were: "¡Que bien!", "¡Eso es!", or "¡Andale mi hijita!".) Tangible motivators in the form of stickers were given to the child after every 16 presentations and 16 trials (i.e., requests by the trainer for the child to match his commands). A break of two or three minutes also occurred between each group of 16 presentations and trials. Praise was also awarded throughout the sessions (e.g., "You're working hard!" or "¡Que trabajadora!").

After the first day of training, instructions were reduced to the trainer reviewing the learning task and reminding the child that she had to make her puppet follow the same commands and perform the same actions as his puppet. Other than this change, treatment procedures continued as described above.

Criteria for Treatment Effectiveness

Both treatment conditions were to be continued in their entirety until two criteria were reached. These criteria applied to the second half (second 16 trials) of the performance trials of a particular condition—that is, the 16 trials of English that had been preceded by

16 trials of Spanish in the bilingual condition and the 16 trials of English that had been preceded by 16 trials of English in the monolingual condition. The first criterion was one of 80% accuracy in performance level over three consecutive sessions. The second criterion was that of stability in performance, with maximum allowable variability of a range of 20% around the mean of all previous days' performance. When these criteria were reached, the treatment condition in which the second 16 trials displayed a lower level of performance accuracy and greater variability was to be withdrawn, and training in the more effective treatment was continued in the application phase for three additional sessions. Performance in a given condition was judged on the basis of the final level of learning achieved in the second 16 trials of the condition as determined by a celeration line fitted to the data points (Hersen & Barlow, 1976).

Interscorer Reliability

As it proved impossible for the trainer to model actions with the puppet and simultaneously to record subject responses, the investigator served as primary scorer of response accuracy. Responses following trainer commands were scored as correct or incorrect. Point-to-point interscorer reliability (McReynolds & Kearns, 1983) was measured during one session of each treatment condition for each child. For these four sessions, interscorer reliability was 100%.

Expressive Generalization Tasks

To obtain measures of generalization from the receptive learning task, data were collected on an untrained expressive language task at two separate sessions. The first occurred at the end of the last day on which both treatments were still being administered. This session took place at the preschool and was administered by the trainer. The second generalization session was conducted two days after all treatment had ended. This task was administered by the investigator in the homes of the children. During these sessions, the children did not manipulate puppets. The trainer or investigator put on his puppet and said to the child, "I'll make my puppet do something. Then I'll stop and you tell her to do the same thing again. Ready?" The trainer then made his puppet run, then stopped and asked "Now what do you tell her to do?" When the child said "Run!" she was praised and the puppet was made to run by the trainer. If the child offered no response, the proper command was supplied - "Tell her, 'run!'". The same procedure was followed for dance and jump.

After these conventional action words were presented, the trainer or investigator elicited the sets of novel action words in similar fashion, with each action word probed four times in random order within each set.

L.L. was asked first to produce, in random order, 16 English words assigned to the actions in the English monolingual condition, producing four elicited action words for each of four actions. Then she was asked, in random order, for 16 productions of the four novel

Spanish action words of the bilingual condition, with four trials for each of the four action words. Finally, 16 productions of the four English counterparts of the Spanish words were elicited in a similar manner.

Identical procedures were used with S.S., except for the order of execution. That is, each of the novel words was elicited a total of four times, but with the order of elicitation reversed, so that first novel Spanish words were produced, then their English counterparts, and finally the novel words of the English monolingual condition were elicited.

CHAPTER 3

RESULTS

Treatment Phase - L.L

Several comparisons were made across and within the treatment conditions. The first area of performance to be considered is the response accuracy for novel English action words in two treatment conditions. The bilingual condition comprised 16 trials of English action words preceded by 16 trials of Spanish words referring to the same actions. The monolingual condition comprised 16 trials of English stimuli preceded by 16 trials of the same English words with the same action referents. Two criteria were involved: stability of performance within 20% of the mean of the data points for all previous sessions and 80% accuracy on three consecutive days of training. On the fifth day of treatment, L.L. performed at or above 80% in responding to the English words in the bilingual condition; however, stability of performance was not reached. After three additional days of continued treatment (through day eight), and despite an asymptote of 100% accuracy in response to the bilingual stimuli, the criterion of stability was still not passed. To compare the learning of words in each condition and in order to select the more effective treatment condition for the application phase, celeration lines were drawn for performance in each treatment (Hersen & Barlow, 1976). A comparison of the levels at which the celeration lines intersect the abscissa on the eighth day showed a higher level of responding correctly to the

English words in the bilingual condition compared with the monolingual condition. In addition, the action words of the bilingual treatment had been responded to with an asymptote of 100% accuracy for three consecutive days. Finally, the performance levels for the bilingual English stimuli displayed less variability around the celeration line than was the case for the day-to-day performance levels of the monolingual English stimuli. For all these reasons, it was decided on the eighth day of training for L.L. that the bilingual condition was the more effective treatment. Therefore this condition was selected for the application phase.

Bilingual English (S/E) versus Monolingual English (E/E) Stimuli

Inspection of the celeration lines (see Figure 1) fitted to the second 16 trials for each of the two treatment conditions reveals several findings. The celeration line for the English stimuli trained in the bilingual condition intersects the abscissa at 18/16 (113%) on the eighth day of treatment. For the monolingual English condition, the ending level where the celeration line crosses the abscissa is 16/16 (100%). These figures represent a higher ending level (13% greater) for learning of the English action words in the bilingual condition as compared with the monolingual condition. These data, and the greater variability around the celeration line fitted to the performance on the monolingual English stimuli, indicate superior learning for L.L. in the bilingual treatment condition.

Bilingual Spanish (S/E) versus Monolingual English (E/E) Stimuli

The next sets of trials on which performance is compared (see

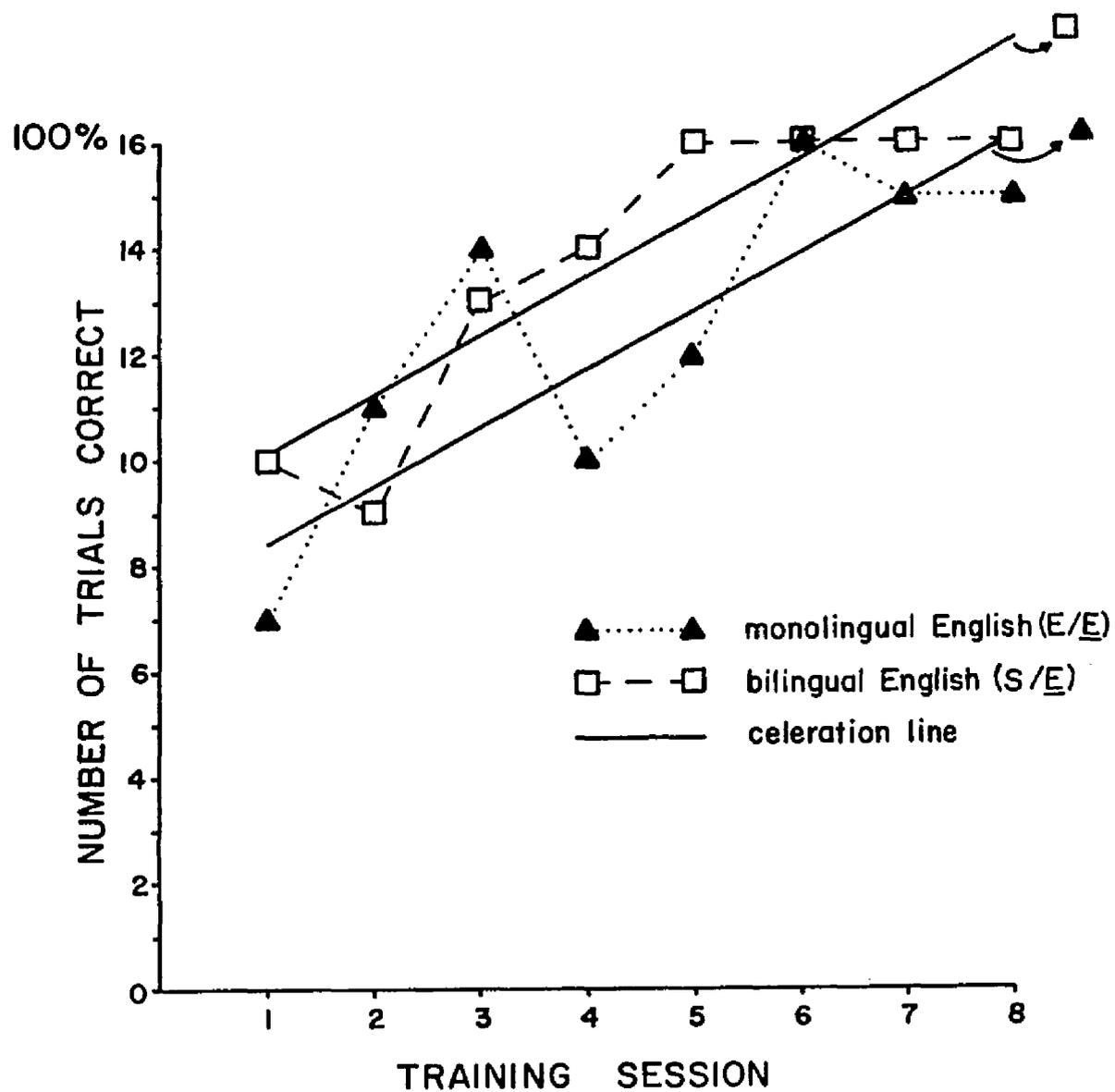


Figure 1. Receptive performance of L.L. during Treatment Phase: Number of trials correct in responding to monolingual English (E/E) compared with bilingual English stimuli (S/E).

Figure 2) are the 16 trials for the novel Spanish words (first half of the bilingual condition stimuli) and the first 16 trials of the monolingual English stimuli. The ending level for the Spanish words is 15/16 (94%). The ending level for the monolingual English stimuli is 14/16 (88%). Thus, the ending level is 6% greater for the Spanish stimuli. This slightly lower final level for English, as well as the greater apparent variability shown in performance around the acceleration line fitted to the data points of the first 16 monolingual English words, suggest overall superior performance on the bilingual Spanish stimuli for L.L.

Application Phase - L.L.

The more effective treatment, the bilingual condition, was extended for three additional days for L.L. and the monolingual treatment was withdrawn. Results (Figure 3) show continued high levels of performance for both the English and Spanish stimuli in the absence of the monolingual treatment. Each set of stimuli shows ceiling effects, with an asymptote for the English stimuli at 16/16 (100%) and an asymptote for the Spanish stimuli at 15/16 (94%) on the three consecutive days. Such high performance indicates that the superior results for the bilingual condition during the treatment phase simultaneous were not dependent on the presence of the monolingual condition of training.

Generalization - L.L.

The first occasion on which generalization measures were obtained for L.L. was at the end of the eighth day of training. The second

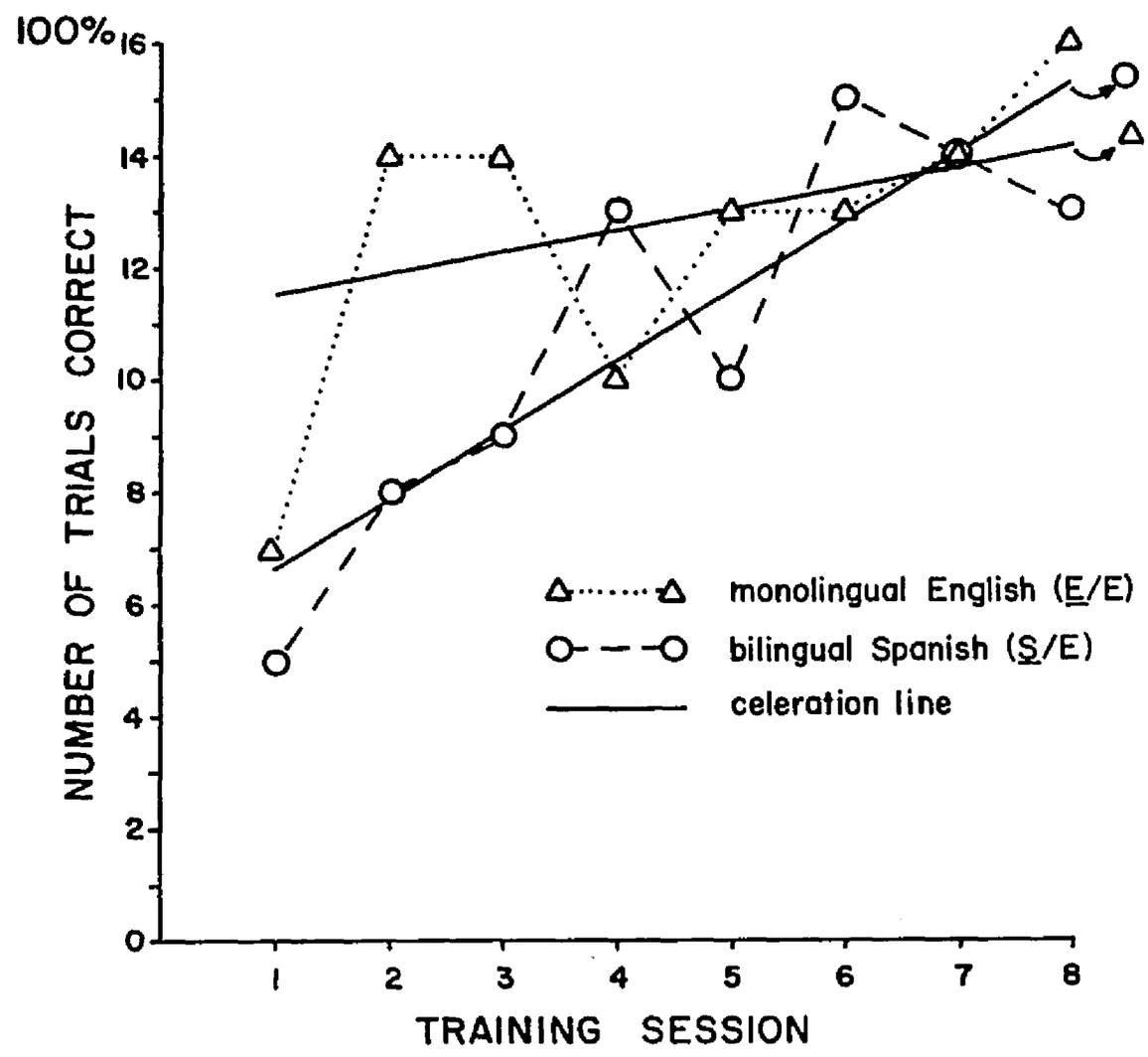


Figure 2. Receptive performance of L.L. during Treatment Phase: Number of trials correct in responding to monolingual English (E/E) compared with bilingual Spanish stimuli (S/E).

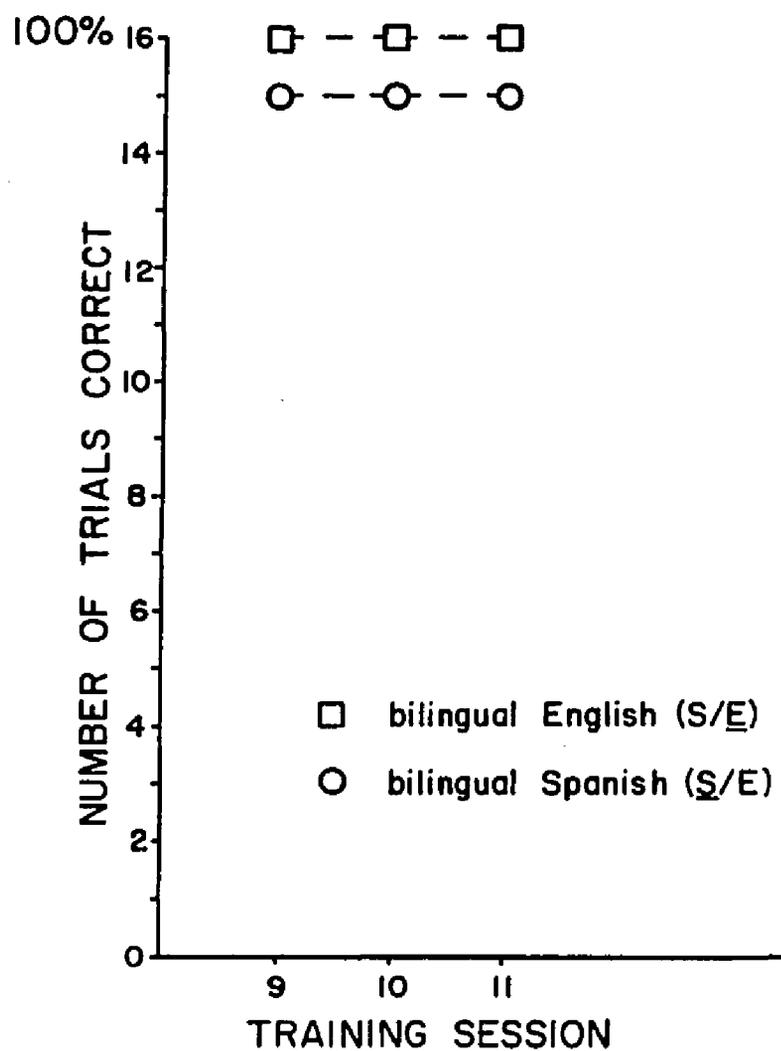


Figure 3. Receptive performance of L.L. during Application Phase: Number of trials correct in responding to bilingual English (S/E) compared with bilingual Spanish stimuli (S/E) after withdrawal of monolingual English (E/E) condition.

generalization measure was taken five days later, following the three days of the application phase and a break of two days with no treatment at all. Thus, L.L. received an additional three days of treatment in the bilingual condition alone in the period between the first and the second expressive generalization tasks, while monolingual English stimuli were not trained. Data for expressive performance are presented in Figure 4. At the first session, expression of correct responses for the bilingual English stimuli is 12/16 (75%). Level of correct production of the novel Spanish stimuli is 8/16 (50%). Of the monolingual English words, 12/16 (75%) of the responses are accurate. On the second generalization task, levels of correct production are 12/16 (75%) for the bilingual English words, 12/16 (75%) for the bilingual Spanish words, and 12/16 (75%) for the monolingual English words. Thus, even though the training tasks were receptive, learning generalized to expression. In addition, although no training had been administered for two days on receptive, monolingual English stimuli, expression remained 75% accurate. Finally, L.L. was observed to use the puppet to attempt to teach her younger brother some of the novel words.

Treatment Phase - S.S.

No performance could be elicited from S.S. unless her close friend M.D. was present. For this reason, M.D. attended the sessions, sitting with the investigator and watching S.S. and the trainer.

On the ninth day of training, S.S. had achieved the criterion of three consecutive days of performance of 80% accuracy in the second 16 out of 32 trials of the monolingual English condition. She had not

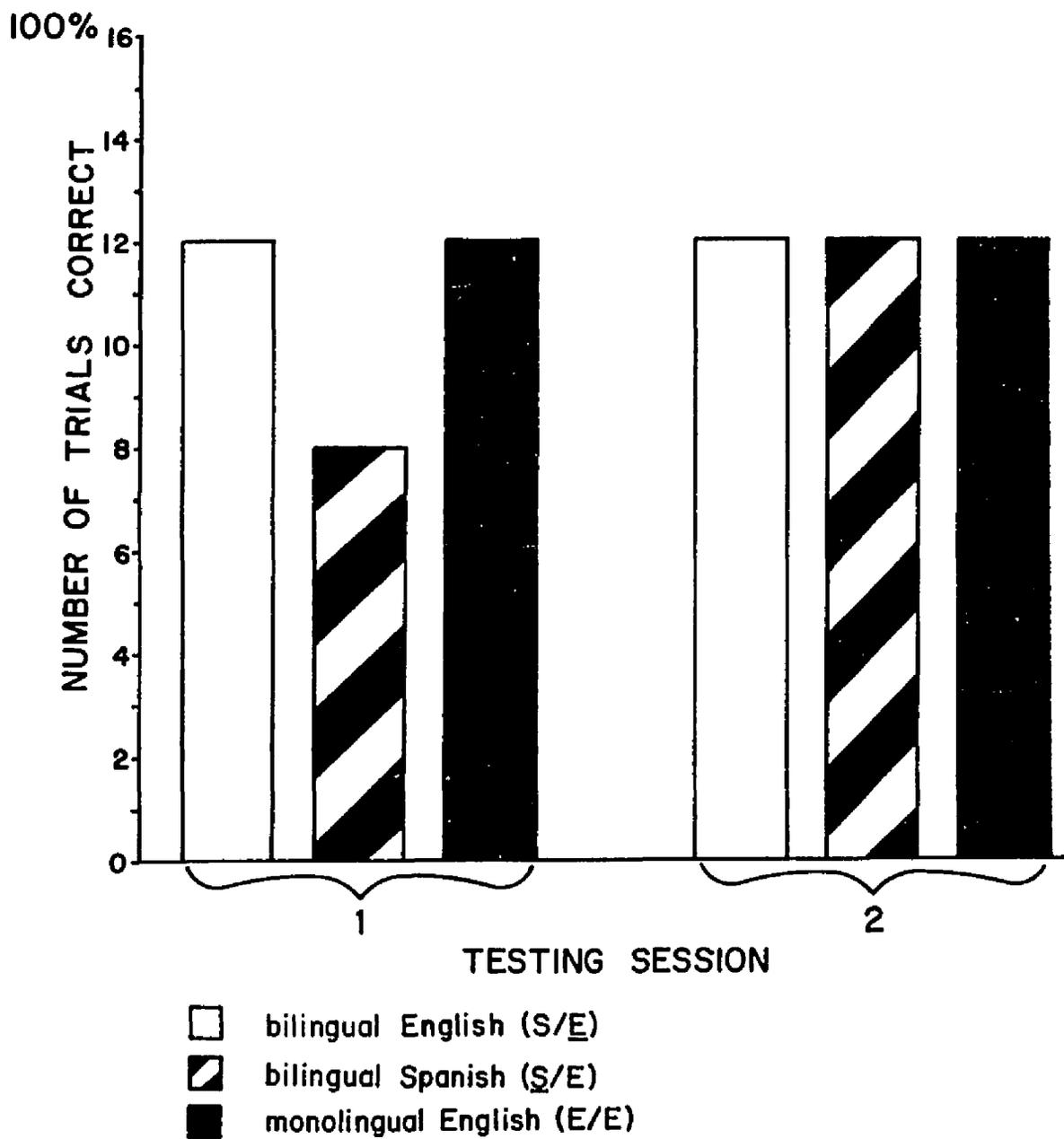


Figure 4. Expressive performance of L.L. during Generalization Tasks: Number of trials correct in expression of bilingual English (S/E), bilingual Spanish (S̄/E), and monolingual English stimuli (E/E).

met the criterion of stability of performance within a range of 20% around the mean of all previous days' performance. Because of time constraints and trainer unavailability, no application phase was conducted for S.S.

Bilingual English (S/E) versus Monolingual English (E/E) Stimuli

Figure 5 shows performance of S.S. on the second 16 out of 32 trials of monolingual English stimuli compared with the 16 trials of the bilingual English stimuli. The ending level for performance on monolingual English words is 16/16 (100%). The ending level for the bilingual English novel words is 11/16 (69%). Thus, the monolingual English stimuli display a higher learning level, with an ending level of 31% more than the bilingual English novel words. The superiority of the monolingual treatment condition for S.S. is additionally indicated by the greater variability of data points around the celeration line fitted to the performance in the bilingual condition.

Bilingual Spanish (S/E) versus Monolingual English (E/E) Stimuli

Figure 6 displays the first 16 trials of the Spanish stimuli in the bilingual treatment condition compared with the first 16 trials of the English stimuli in the monolingual treatment condition. The ending level of performance for Spanish is 8/16 (50%); the ending level of English is 13/16 (81%). This difference represents a 31% greater ending level for English compared with Spanish. Variability is also much greater for the data points around the celeration line

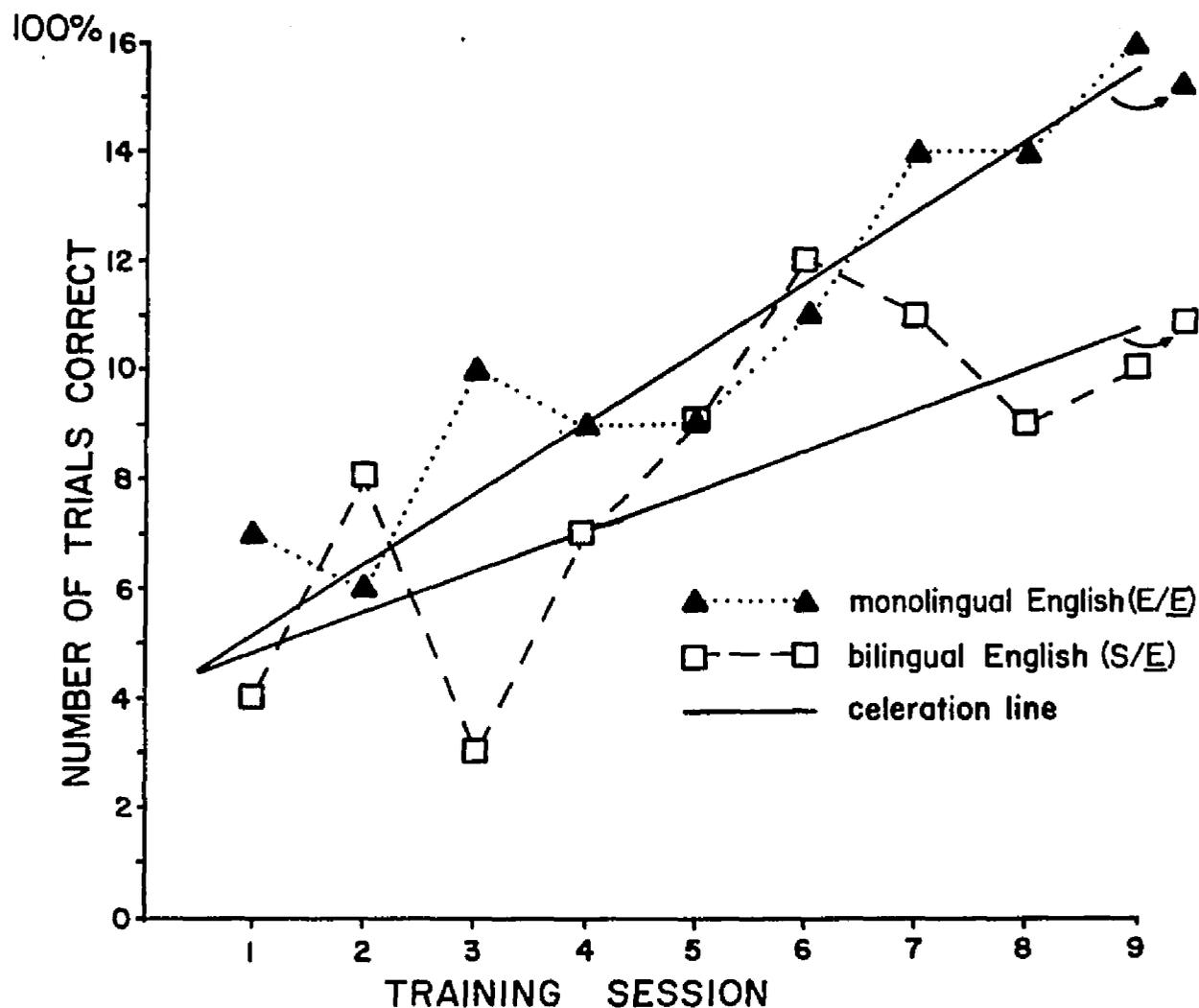


Figure 5. Receptive performance of S.S. during Treatment Phase: Number of trials correct in responding to monolingual English (E/E) compared with bilingual English stimuli (S/E).

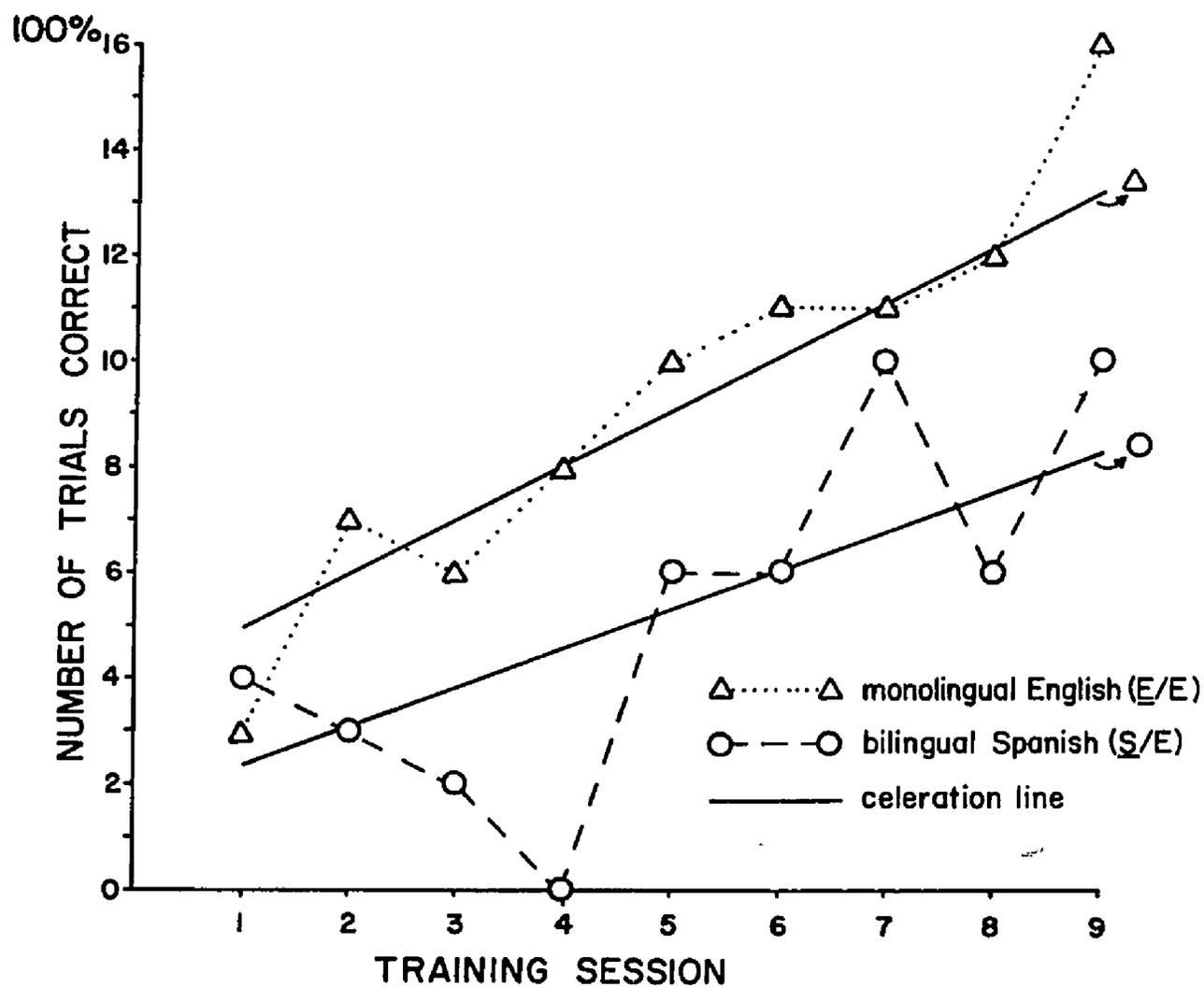


Figure 6. Receptive performance of S.S. during Treatment Phase: Number of trials correct in responding to monolingual English (E/E) compared with bilingual Spanish stimuli (S/E).

fitted to the Spanish performance, another indication of the greater learning shown by S.S. for the English stimuli in the monolingual condition.

Generalization - S.S.

Figure 7 displays the data obtained in the two expressive generalization tasks presented to S.S. The first task was conducted on the ninth and last day of treatment. The second task was conducted two days later, after a period of no treatment. Data for both sessions are identical: correct production of 8/16 (50%) of the bilingual English words; 8/16 (50%) of the bilingual Spanish words; and 12/16 (75%) of the monolingual English words.

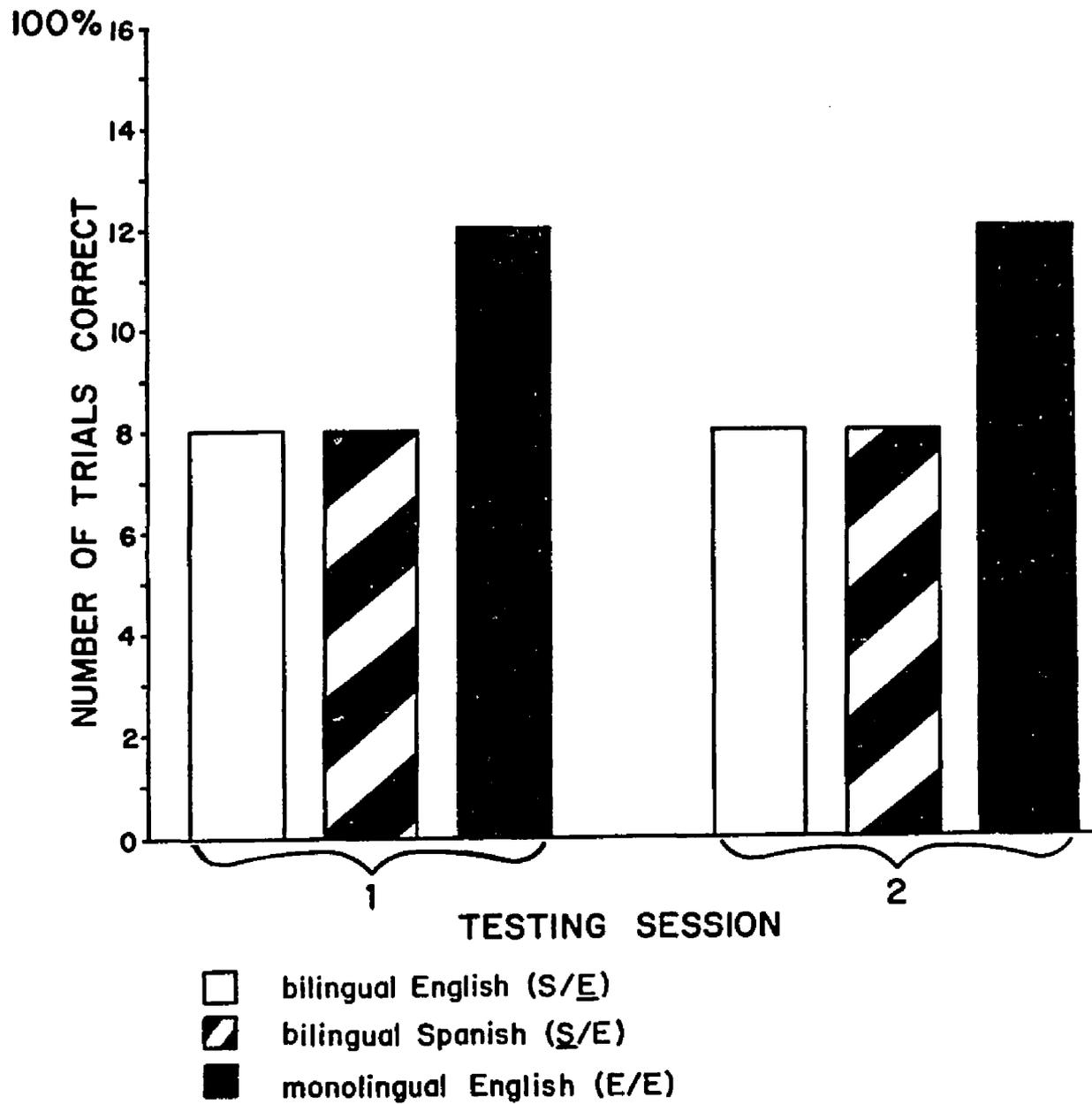


Figure 7. Expressive performance of S.S. during Generalization Tasks: Number of trials correct in expression of bilingual English (S/E), bilingual Spanish (S/E), and monolingual English stimuli (E/E).

CHAPTER 4

DISCUSSION

The receptive learning of English and Spanish novel words by the two bilingual children in the present study generalized to untrained tests of expression of the same words. Given that the language learning of monolingual, specifically language-impaired children (e.g., Leonard, 1974) and also mentally retarded children (e.g., Cuvo and Riva, 1980) has been shown to generalize from receptive training to expressive performance, this transfer of learning by normal, dual language learners is not surprising.

The relative performance of both children on the tests of Spanish and English expression was comparable to their relative levels of responding during the receptive presentations of the stimuli. This suggests not only that there was transfer from receptive learning to expressive performance, but that the transfer paralleled the level reached during receptive training.

The behavior of L.L. and S.S. in acquiring the novel words for the novel actions presented in this study suggests that, in learners of two languages, treatment differences apply to action words as well as to object words (Oskarsson, 1975; Perozzi, 1985) and locative prepositions (García, 1983a).

Both children had been judged to be Spanish dominant based on reports of teachers and parents, observations of language use and skills by the investigator, and standardized tests. In previous

studies, children considered to be Spanish dominant have shown superior levels of learning in L2 as a result of a bilingual treatment of L1 before L2 compared with either a bilingual treatment of L2 before L1 (Perozzi, 1985) or a monolingual treatment of L2 alone (García 1983a). The performance of L.L. was as expected: She learned L2 to a higher level under bilingual rather than a monolingual condition of training. Unexpectedly, the performance of S.S. revealed a different pattern of responses. She learned English to a higher level under a monolingual rather than a bilingual condition of training. Thus, individual differences in the pattern of responses to monolingual and bilingual treatments were observed in the current study.

Individual differences in response patterns were also observed when the responses to the Spanish stimuli were compared with the responses to the comparable monolingual English stimuli. As expected from the results of García (1983a), Gibb (1985), and Perozzi (1985), L.L. learned Spanish words to a higher level than the English words. The reverse pattern--again, unexpectedly--was shown by S.S. who responded correctly to fewer of the Spanish novel words.

Test results and investigator observations suggest that S.S. had somewhat higher English skills and lower Spanish skills than L.L. This is not surprising, given that their histories of exposure to English are so different: L.L. had had roughly 18 months of occasional interaction with one English-speaking cousin her age on weekends, and seven months of attendance at the preschool; S.S., on the other hand, had been exposed since infancy to the English of her

older sisters. S.S. also had been in attendance, in effect, twice as much at the preschool as L.L., since S.S. was enrolled for a whole day and L.L. left after half a day. Moreover, L.L. had not had the concentrated and extended dyadic involvement with a monolingual, English-speaking playmate that S.S. had experienced.

Preference on the part of S.S. to use as much English as possible when English speakers were present also distinguished her from L.L. As Chesterfield and Perez (1978, p. 20) point out, "bilingual children differ significantly from each other when compared in terms of their preferred language," yet "the importance of the child's preference for one language over the other" (p. 25) is usually ignored in most research. Similarly, Padilla and Liebman (1975, p. 52) reported consistent findings that

bilingual children acquiring two languages simultaneously demonstrate a preference in their language output for one language over the other. This appears to be true even though there are reports from parents that the child is proficient in both languages and/or that no language preference is expressed by the parents in speaking to the child.

S.S. demonstrated better learning of L2 novel words under monolingual rather than bilingual conditions of training. She also displayed poorer L1 learning than L.L. This pattern of results could be cited in support of the suggestion by Wald (1985) that a preference for L2 may be associated with loss in the L1 skills of Spanish-dominant children between 4 and 6 years of age. He hypothesizes that a deleterious effect on L1 may occur when a preference for L2 develops before the child has reached a "threshold level of competence in Spanish" (p. 94) that would prevent such an effect. The pattern of

treatment effects shown by S.S. might also be in line with the report by García (1983b) who described a decrease in the mean length of Spanish utterances, accompanying an increase in the mean length of English utterances for a group of 600 Spanish-dominant, minority language, bilingual children who were attending either preschool, kindergarten, or first grade.

The possibility also exists that a preference to learn in one language more than another requires a certain "threshold" level of competence in that language. That is, there may be an interaction between preference and level of skills. The high level of English skills shown by S.S. relative to other children who have been studied might have partially accounted for her unexpected findings.

Several conclusions may be drawn from the present experiment. The first is that new vocabulary acquisition in the nondominant language may be better enhanced by a bilingual treatment in some children (L.L.) and by a monolingual treatment in others (S.S.). Secondly, because transfer from receptive learning to expressive performance was demonstrated, the expression of novel words may not necessarily require explicit training once receptive learning has occurred. Thirdly, the previously described treatment differences characteristic of object words and locative prepositions also appear to apply to action words.

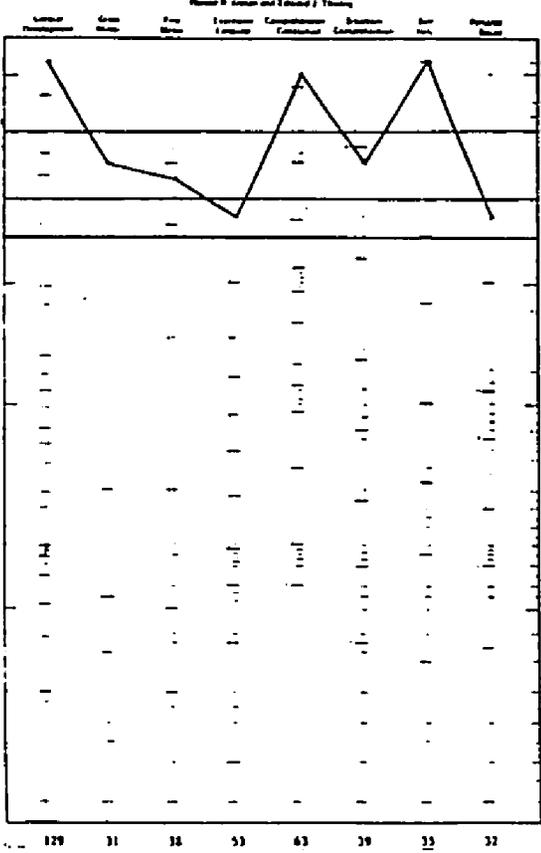
The final conclusion entails the need for clear description in dual language acquisition research, not only of the levels of skills and frequency of use in both languages, but also of the extent or absence of a preference for one language over the other. As

graphically demonstrated by S.S., preference for the use of one language should be added as a possible factor in describing and grouping subjects, because some bilingual children who are labeled Spanish dominant may display a preference for learning in English rather than Spanish. This preference may run counter to the assumptions of language dominance or proficiency suggested by test results and caregiver reports. Because learning may be superior in the preferred but nondominant language, rather than in the nominally dominant language, case-by-case evaluation is vital when considering the assignment of children to language-learning settings.

APPENDIX 1

MCDI Profiles

Minnesota Child Development Inventory Profile
Revised 11-1988 and Edited 2-1989

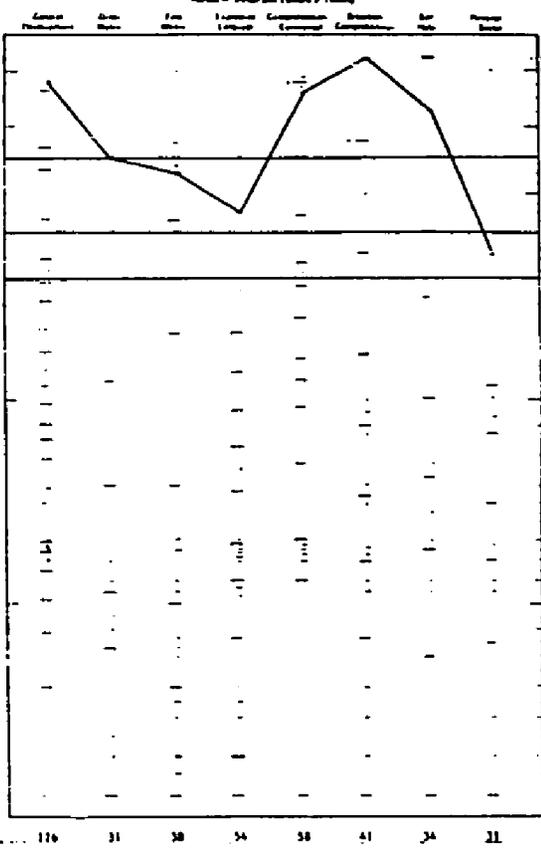


FEMALE

Subject 2

10/1/88
 (10/1/88)
 (10/1/88)

Minnesota Child Development Inventory Profile
Revised 11-1988 and Edited 2-1989



FEMALE

Subject 3

10/1/88
 (10/1/88)
 (10/1/88)

APPENDIX 2

Experimental Stimuli: Puppet Actions and Novel Word Referents

A. Bilingual Treatment Condition

<u>Description of Puppet Action</u>	<u>Referent</u> ^a	
	Subject L.L. Set A	Subject S.S. Set D
in up-right position, bob head rapidly up and down back and forth 3 or 4 times	{ /bixe/ /sæzi/	{ /ruba/ /dzupə/
from up-right position, tip whole body straight back parallel to floor and "float" in dorsal position	{ /pefa/ /læro/	{ /sitʃa/ /dʌbi/
from upright position, dive as though into a pool, ending with head and body upside- down	{ /fite/ /gedo/	{ /xuge/ /mɛpi/
in ventral position, go horizontally to far right of mid-line as though "flying"	{ /xeda/ /neti/	{ /poxa/ /bʌlɔ:/

^a First listed in each pair is the Spanish referent;
the second listed is the English referent.

APPENDIX 2 (Cont.)

Experimental Stimuli: Puppet Actions and Novel Word Referents

B. Monolingual Treatment Condition

<u>Description of Puppet Action</u>	<u>Referent</u>	
	Subject L.L. Set B	Subject S.S. Set C
in up-right position, scunch head down and in, holding head pressed down	/dzupə/	/ʒəzi/
in ventral position, go horizontally to far left of mid-line, as though "flying"	/dʌbi/	/læro/
in up-right position, rotate body rapidly back and forth forth 3-4 times	/mɛpi/	/gedo/
from up-right position, move body forward and upward at roughly 45° angle	/bala/	/neti/

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