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Translation Skills of Bilingual Children

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What I want to talk about is our on-going work on translation skills in bilingual children. My principal collaborators have been Marguerite Malakoff, who is a doctoral student at Yale, as well as Kay Hill, Mary Lowery and Lisette Bernier McGowan from the New Haven Public Schools.

First of all, I'd like to begin by noting that bilingualism in the United States is best described as subtractive. In general if you find bilingualism, it's in a fairly unstable form which results in relatively rapid shift within one or two generations from bilingualism to monolingualism (Veltman, 1988). The reason why translation is personally interesting to me is because it reflects the kind of skill you expect of a true bilingual--often the kind of skill that is not expected of language minority youngsters. In fact, as I will show, they are quite good at it, but in general, translation is the kind of skill that conjures up the United Nations, European bilinguals, jumbo jets, the jet set and so forth. So I personally find this exploration into the translation skill of language minority youngsters to be a rewarding one because I think it shows one of the skills that children <u>can</u> do, the kind of skills that, if you were a foreign language teacher in the American schools and your students were able to perform the kinds of translation skills that I will show you that the youngsters can do, you'd be proud of them even after intensive instruction in foreign language.

New Haven

The general bilingual context in New Haven as in most bilingual communities, is a subtractive one. Calvin Veltman (1988) came out with a study based on the 1976 Survey of Income and Education data from various Spanish-speaking groups around the United States showing that there is tremendously rapid shift from Spanish to bilingual Spanish-English to monolingual English. Our data from New Haven's Puerto Rican community is consistent with this national picture.

Most of the bilingual population comes from Puerto Rico, which is about two and a half hours by plane from New York city. So it's quite close, even economically as the air fares on this route are competitively priced. The primary areas of high concentration of bilingual Puerto Rican communities are in Hartford, New Haven and Bridgeport. We conducted a simple survey of language use in homes of all Spanish-speaking students using the household as the unit (Hakuta and Ferdman, 1984). We constructed composite indices based on reading materials at homes, language use among various members of the household, and so forth. We gave each household a score on Spanish and English robustness, and the results appear in Figure 1.

The scatter of individual students regardless of school program status can be seen in Panel (a). The vertical axis represents the composite Spanish score, and the horizontal axis represents English score. Thus, the top left hand part of the panel represents those whose household language is dominant in

Spanish, while the right bottom part represents English dominance. Panels (b), (c) and (d) divide students according to program status. Panel (b) contains only those students who are currently in the bilingual program; Panel (c) those who were formerly in the bilingual program, but are currently in mainstream classes; and Panel (d) those who are of Hispanic background but have never been in the bilingual program. Clearly, these sub-groups differ with respect to the distribution of use of the two languages in the home, with a clear pattern of shift towards English as the students move away from the bilingual program.

Language use is also predicted by parent's length of residence on the mainland. As Figure 2 shows, the number of English and Spanish reading materials are distributed in complementary fashion, with increasing English and decreasing Spanish materials as the family has resided in the U.S. longer. We would not expect to find such a pattern in an additive bilingual situation where an increase is expected in English reading material, but with maintenance in some form of Spanish reading material. (Some people familiar with the Puerto Rican newspapers will find some relief in the fact that one of the items that we find among specific Spanish reading materials with declining readership is the newspaper 'El Vocero'!)

You can also find that in terms of language proficiency as measured by tests, that the students who have been here longer generally tend to come in with lower proficiency in their native

language. For example, Figure 3 shows data from one study looking at kindergarten students in bilingual programs. The data come from English and Spanish versions of the Peabody Picture Vocabulary Test. Within bilingual programs we divided students in terms of whether they were born on the mainland or in Puerto Rico. They were all classified as Spanish-dominant limited-English and therefore are in bilingual programs, even among those students, there is a significant difference in their Spanish proficiency in the fall as they start kindergarten. This difference actually disappears by the spring, suggesting that the bilingual program succeeds in strengthening the native language skills of the students. Furthermore, both groups show gains in English, as can be seen in the left hand panel of Figure 3. The main point, though, is that here again you find the effects of the environment: the subtractive forces really operate at the societal level.

Finally, you can also find neighborhood effects of language. For our purposes, we have divided New Haven into two neighborhoods called the Hill and the Fair Haven areas. They are characterized, for example, by the residents of the area in terms of socioeconomic desirability. The Hill is almost universally acknowledged as the less desirable neighborhood. Housing is often marginal, there is a more prominent drug problem, the neighborhoods are ill-defined in terms of stores, parks and squares. By contrast Fair Haven is an upwardly mobile neighborhood. There is a coherent set of stores, new

construction such as of condominiums is evident and some trendy restaurants dot the area. If you divide up English and Spanish robustness by these neighborhoods, as shown in Figure 4, you find that there is a decrease in Spanish robustness accompanied by increasing English. There is an even more drastic difference if we include in our analysis the families who live in the other surrounding areas (e.g., an area known as Westville). These data are naturally confounded by the scales but if you take the particular items that are theoretically independent, you still find this effect.

Translation Research

We started our series of studies on translation with a group of very talented elementary school teachers in the bilingual programs. We spent a good part of one year of our research activities just talking to the teachers about ideas regarding issues that were considered very important for bilingual education, such as transfer of skills across languages. One of the things we discussed with the teachers was the fact that when we talk about language minority youngsters, we so often talk about what it is that they cannot do--their limited English proficiency, their limitations in their native language which sociolinguists know has more to do with sociolinguistic variability than basic ability in the language. One of the teachers (Steve Strom from Clinton School) said that he worked with students who are very good translators. To paraphrase, he said: "You should see some of these kids, especially when I get

materials that are available only in English. I'll sit these kids down next to other kids who have just arrived from Puerto Rico and have them translate these materials. These are also the kids who are sought after by the principal whenever he gets some mother screaming in Spanish at the other end of the line and he doesn't know what to do. He comes and asks these kids for help."

We thought this was a really interesting skill to study and decided to take a look at it. There turns out to be a lot of work on translation in terms of the theory of translation--the translators' societies, and professional journals in that area. However, there are few psycholinguistic studies of translation, in the area of children there is but a handful. Now, that's the kind of area I like, where you don't have to go around reading 800 articles and studies before you move into it! Brian Harris (1977) has worked in this area; Merrill Swain (1972) in her famous dissertation on bilingual children growing up bilingually at home used translation as a method to try to understand what their underlying linguistic abilities were. Neal Naiman and Guy Dumas at OISE working with Merrill Swain (Swain, Dumas, Naiman, 1974) subsequently used translation as the method to get at the underlying linguistic abilities of students in immersion programs. So, this topic has been explored but we have not really tried to understand exactly what it is that these kids are able to do and what the predictors of these skills are. We thought this would be an interesting area to look at and I'd like to share a couple of experiments we did to figure out the

predictors of these skills. We have also used some of the insights from these studies to develop a program to teach translation skills to students in the bilingual programs.

First, the experiments. In the first experiment we decided to start with students who are considered to be good translators. I use the term in a loose sense to cover both oral and written transition between two languages. I also don't have a terribly strict theory at the moment although I think we need to start developing this in terms of the relationships between form and meaning in going from one language to the other. We asked the director of a local educational advocacy and service organization (LULAC) to identify parents of fourth and fifth-graders, whom we interviewed to find out which ones do the translation and for whom. We established that the students had some experience with translation and we tried to understand the psycholinguistic properties of the translation skills.

Our base group was a sample of 16 children between the ages of 9 and 12, in the fourth and fifth grades. There were 8 boys and 8 girls, with a mean age of 10.7 years. Six Ss had just completed 4th grade, 10 had just completed 5th grade. Ten of the Ss had just completed the transitional bilingual program, five had been in the program at some earlier time, one child was in a private school.

Many of them had just completed the transitional bilingual program but there were some students who had never been in the bilingual program. There's some range there but all of them were

fairly good translators. We had them translate a whole range of different types of stimuli ranging from words and sentences to stories. We also had tasks in which we gave them writing--an Aesop's fable, for example--which they had to translate from English to Spanish, and from Spanish to English. We were able to do this in the summer and pay the subjects for their time. This way , they did not complain nearly as much as they would have in the classroom, because the entire testing sequence with any student took between 10-15 hours. In the course of the testing, we let them know that they possessed an ability that we were very interested in and that they should be proud of it. They were quite willing and very task-oriented.

For the word and sentence translations we were interested not only in the quality of the translations but also the efficiency. We measured the latter in terms of their translation time. We presented words and sentences on a Macintosh computer and measured the time lag between the time the sentences appeared on the screen and the time they began their translations. That was the task they really took to; they wanted to get faster and faster on it. We also made independent assessments of their proficiency in English and Spanish in two ways: one was by a standard language proficiency measure (the Woodcock-Johnson Test for oral proficiency), the other by way of tasks that used reaction time as a measure such as the solution time for analogies in English and Spanish. Essentially we were interested in asking the question: if you are going from English to Spanish,

which of the two independently assessed proficiencies would be a good predictor of performance on those tasks?

In the translation literature there is some discussion of the notion of translation proficiency. Trainers of interpreters and translators tell us that we cannot think of translation ability as consisting simply of some summation of the two language proficiencies, that there is likely to be some third proficiency, and that's what some people are endowed with, and this skill is what we want to develop further in really good simultaneous interpreters. Others don't have that and really have to work at it. Introspection by bilinguals suggests that one can be in fact quite proficient in two languages and yet not be very good at translation. It's a very appealing idea, one which we wanted to try and tap empirically.

To get at this notion of translation proficiency, we developed a task in which we present individual words (in English or Spanish) and ask the subjects to simply say if the words are English words or Spanish words. We thought of this as a way to measure the speed with which the two lexicons could be accessed. We also coded the data qualitatively, especially the sentences, using the error categories available in Tables 1 and 2. One of the "traps" we had set up for the students were sentences that, if you were doing a word for word translation, you would fall prey to. So for example, under Table 1, the source is La luna blanca brilla en la noche. If you were doing it using a literal translation, you might say The moon white shines in the night.

In fact, as can be seen in Table 1, we ended up getting a few such translations from our subjects. They had the written stimulus in front of them. Another "trap" we set up involved post-posing of the subject, as in Es redonda la mesa y las cuatro sillas son azules. These are obviously "Chomskyan sentences" in that you have to work hard to create a context for them, but the structure is what we were manipulating in the sentences. We get some translations like: It's round the table and the four seats are blue; The table is round and the room is full of blue; It's round the table and the four chairs are blue, and so forth. We were also interested in the extent to which children take optional placement of things like adverbs, such as everyday in Everyday the children sing at school and see the extent to which they preserve that order even though that might be optional. In most cases children respected the placement of the adverb. So for Everyday the children sing at school we get Todos los dias los ninos cantan en la escuela. We got one variant response: Casi todo el mundo canta esa cancion todos los dias en escuela.

We've taken these types of responses and conducted various analyses of errors. We get a range which is displayed in Table 2. The types of errors that interest us are primarily source errors, which appear as the third one on Table 2, where you get the source words coming into the translation. So we get Rapidamente el malcriado becoming Fastly the malobedient or la proxima semana becoming the proximate week. Others are very

cute and interesting; literal translation errors--He washed up was translated el baño arriva. When I look at these errors I think how well the child would do compared to a computer equipped with a Spanish-English/English-Spanish dictionary and to what extent can they take advantage of the target structure. We would like to do studies on what children do when they come across a word they don't know: they search around and guess the meaning of the word.

Now, let me summarize some rough conclusions from the first experiment. First of all, we found that the subjects, despite all our attempts to trick them into making various errors, were extremely good translators especially with respect to intrusion errors from a source language. They made very few errors based on the source language. For example, going from Spanish to English, at the sentence level, only about 3% source word intrusion errors were observed. The other kind of source error is word-order which was quite minimal. There seem to be slightly more intrusion errors going from English to Spanish. There are somewhat more source errors and intrusion errors for sentences (about 7%) and slightly fewer source word-order. That is an artifact due to the difference between English and Spanish, because going from English to Spanish, it is difficult to manipulate the English word-order sufficiently in the way that you can with Spanish. You can move Spanish words around to end up with deviant structures in literal translation into English.

We were quite impressed by the extent to which the students

did not fall prey to our traps for making source language errors. We were also impressed with the extent to which they struggled with the individual lexical items when they did not know the word in the target language, going in both directions. This agrees well with what people have been saying about code-switching in bilingual children because these students, when they are among themselves or among other bilingual students, are very rapid and efficient code-switchers. They are the types who, if you were a language purist of the Stanley Diamond variety, would be quite upset at the state of degradation of the language. And yet when you put them in the context of translation and say 'This is what you're supposed to do', they're tremendously good at blocking out the other language and will ask you 'Do you know what this is?'--they don't just pull the word from the source language. I thought that was a very impressive display of their ability to keep the two languages separate yet have an awareness as to what the translation process is between the two.

The second finding was that the subjects were much more efficient translators going from Spanish to English than from English to Spanish as measured in terms of translation time. For example, going from English to Spanish the mean translation time was 3.89 seconds and going from Spanish to English was 3.13 seconds--slightly over half a second difference in translation time which seems to reflect the English dominance of the students.

The third conclusion from the study was that the proficiency

in the target language is a better predictor of translation time than proficiency in the source language. For example, if you're going from English to Spanish it's your proficiency in Spanish that's going to matter. We have shown in a regression analysis that in going from English to Spanish, if we throw in English as a predictor it does not account for very much of the variance. Once you add in Spanish it takes in a larger proportion of the variance. Going from Spanish to English, the reverse works--English proficiency is what predicts translation time. That's true for both our different measures of proficiency in those languages that were independently assessed. That seems to support what trainers of translators have been saying--'What really matters in translation is the language that you're translating into'. Simultaneous translators, for example, often translate into their native language rather than the other way.

The fourth result is that performance on our bilingual word identification task (that's the one that goes from choosing English or Spanish words) seems to account for additional variance in addition to the target language proficiency. So if we first enter into our regression model their target language proficiency, that accounts for a certain proportion for the variance. And then the word identification task accounts for an additional and significant part of the variance. So there might in fact be something to this idea of the translation proficiency. Where we're going to go next is trying to do some better measurements of that ability which is considered to be something

like translation proficiency.

As you recall, we also gave our subjects written translation tasks, which can be seen in Table 3. For example, we constructed these stories that would cause difficulty if you were doing a literal translation. I've given you a couple of examples of translation. The first one, I think, is a fairly good translation and the second one was a kid who fell straight into the traps we'd set up. That gives you a sense of the variation you could get. Once again we conducted various analyses of source and source word-order intrusion. This was a different task and in a written mode--the written stimulus is in front of you and the responses are to be given in writing. Again the general conclusion we reached from this is that kids are fairly robust in resisting types of errors; they are certainly working at a much higher level than word-for-word translation. We have not made a direct comparison of the results from the translations in the oral and written modalities, because these are non-comparable units. But our impression was that when kids are in the writing mode perhaps it's a much more demanding activity to get your output out as you can in the spoken mode. They seem to produce a larger proportion of source word-order errors. In the written story, again, we found also that the target language proficiency is a better predictor of translation product than a source language proficiency. So that if you're going from English to Spanish, Spanish is a better predictor and if you're going the other way English is a better predictor.

Finally, we were interested in the extent to which this skill is distributed in terms of a representative sample in a bilingual community, so we went into bilingual classrooms. The minimal criterion was to ask the teachers whether the kid can write minimally in English and Spanish. For those kids we gave them the story task and then we conducted similar assessments. This time, there were 52 subjects (25 boys, 27 girls), mean age 10.4, age range 9-13. Testing was conducted in June. Of these, 24 were in 4th grade, 27 in 5th grade, and 1 in 6th grade. Eighteen of these students were assigned to mainstream classrooms for next year, 29 were scheduled to continue in the bilingual program (information missing for 5 of the Ss). Basically we find the same kinds of results, i.e. our conclusion is that the kids show very similar patterns of errors. For example, if you look on Table 4, and compare Experiments 1 and 2, the pattern of errors is very similar. If you looked at the proportion of errors of different types the rank order correlation in the Spanish to English is .87 and in the English to Spanish is .91. So they're showing very similar patterns of errors in their stories. One of the things we did find--that was probably predictable on the basis of what we know about the subtractive bilingual patterns in our community--is that there were differences in error rates for the English to Spanish translation. If you look on the bottom panel of English to Spanish results, what you find is that there are more errors in Spanish on average across various types of errors in Experiment 1

data than in Experiment 2. The difference there is that the Experiment 1 students were transitioned out of the bilingual programs and they are rapidly shifting over to English.

Conclusions

This was a lot of work but still very preliminary. There are lots of interesting questions--e.g., about modality effects, about the notion of translation proficiency. There are also questions raised with respect to variation in the results as a function of language and script. So if you take a non-alphabetic language you might expect different types of results and predictions.

As far as the pedagogical implications of this, we've taken two steps and this is in collaboration primarily with Sheila Shannon. We worked with teachers in a Spanish for Spanish-speakers program in the middle school where we attempted to teach translation skills in order to develop a sense of awareness and pride in their skills among the kids. It turns out that by the time you get the kids, they are English-dominant (see Shannon, in press for a discussion of the program). They're fairly limited in their Spanish so it becomes somewhat of a remedial Spanish program although I really think it has helped quite a bit in that there are kids in there who are very good translators. So we think this is a very good (and devious) way to introduce grammar in the curriculum. It's also fun to get the kids to engage in the entire range of levels of analysis of language: the lexical types of contrast, the cognates, and so forth. We can also

engage them in very philosophical discussions about how appropriate it is to deviate from the original form of the writer. In collaboration with Dennis Sayers, we are also now in the process of working this program into the transitional phase for the transitional students. So for the fifth-grade transitional bilingual program, as the students are getting ready to leave, we use translation as a way of building their metalinguistic awareness.

In conclusion, let me say that this is the most complicated research area that I have ever tackled. There is a tremendous amount that makes it exciting and also makes it very likely that one will pursue the wrong leads for a long time to come. Basically we have tended to be form-oriented in our analysis but I think the really more exciting stuff--although it's much more difficult to conduct research--is in terms of intentions and meanings and so forth. That's where we can get a lot of pedagogical mileage.

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FIGURE 1. Scatterplots of Spanish and English composite scores from Hispanic elementary school students in the New Haven Public Schools. Panel (a) represents all students, Panel (b) students who were in the bilingual program, Panel (c) students who had been in bilingual programs but were in mainstream English-only classrooms, and Panel (d) students who reported to be of Hispanic background but had never been in the bilingual program.

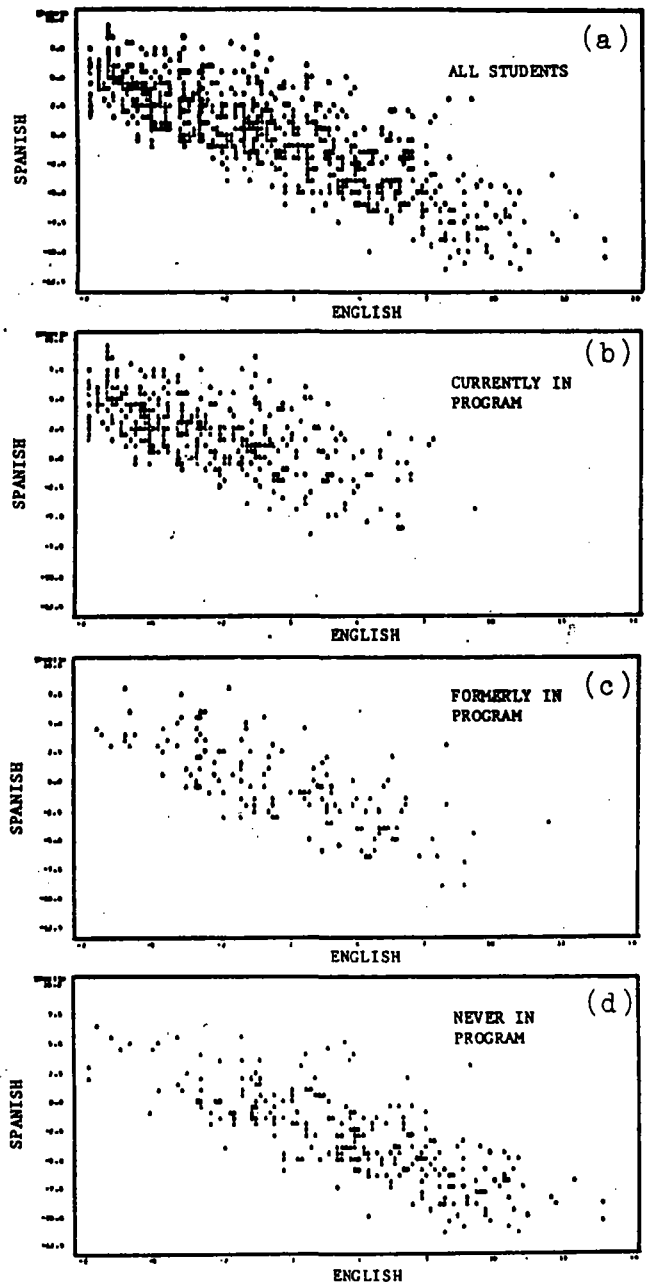

FIGURE 2. Mean number of Spanish-language and English-language periodicals (newspapers, magazines, newsletters) as a function of length of residence on the mainland United States.

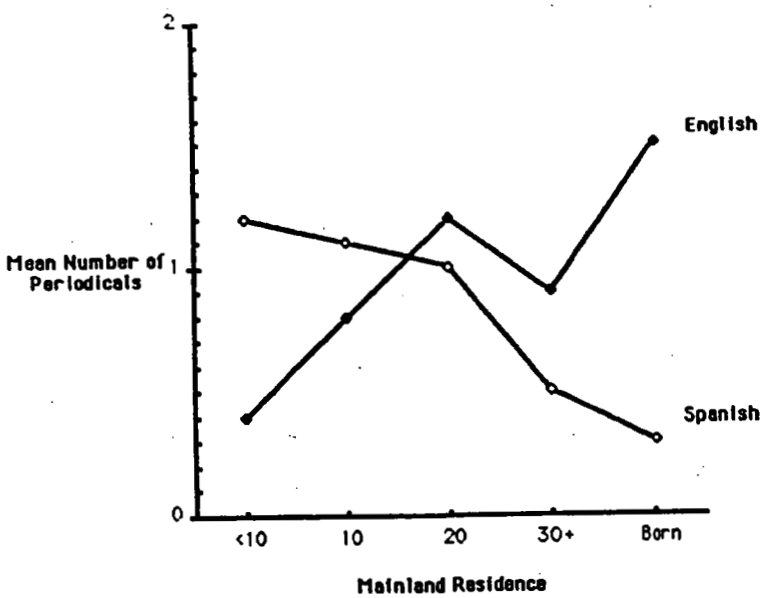

FIGURE 3. Mean raw scores on the English and Spanish versions of the Peabody Picture Vocabulary Test for two groups of kindergarten students in the bilingual education program measured in the fall and the spring. Group labelled US were those who were born in the United States mainland. Group labelled PR were those who were born in Puerto Rico.

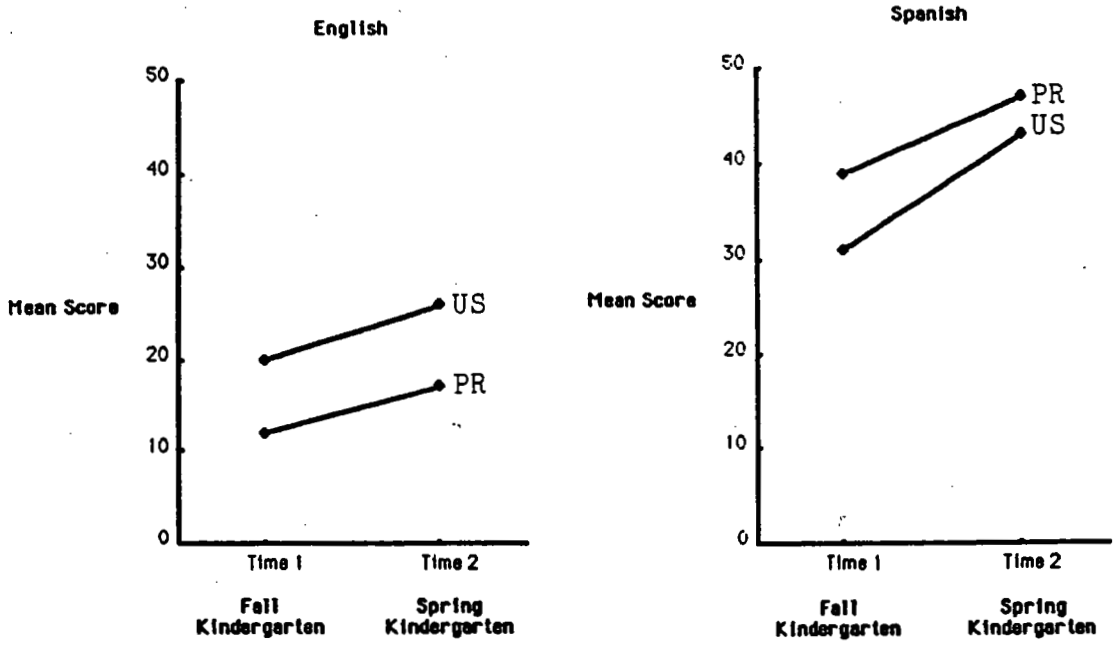

FIGURE 4. Neighborhood effects on the mean composite language scores for English and Spanish. Results are plotted separately for elementary and middle school students.

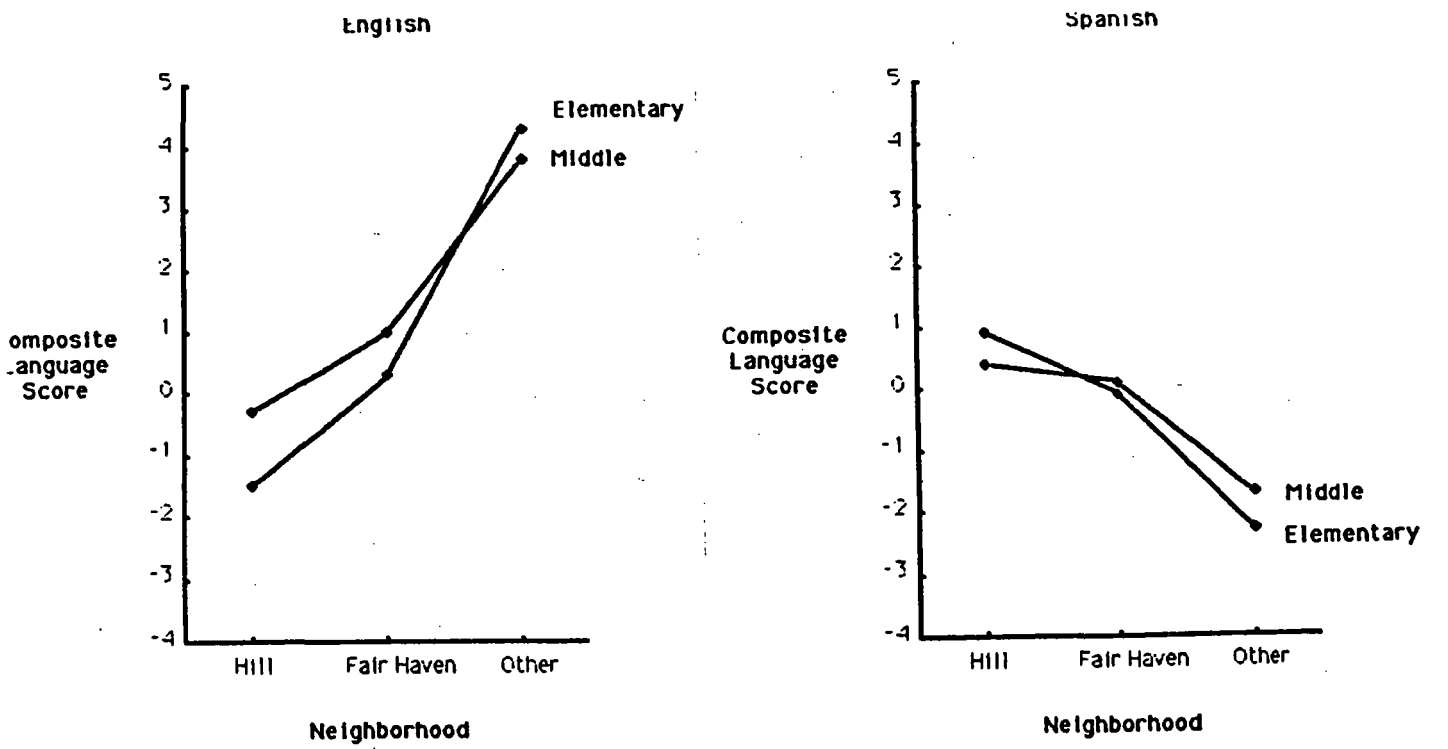

TABLE 1. Some examples of translations from Experiment 1. Children are displayed the source sentence on a computer screen. The instructions are to read it first in the source language, and then to translate it into the target language. The source sentence is on display on the screen while the children are translating.

SOURCE: LA LUNA BLANCA BRILLA EN LA NOCHE.
The moon white shines in the night.
The moon white shines in the dark.
The moon shines in the night.
The white moon shines in the night.
The white moon shines on the night.

SOURCE: ES REDONDA LA MESA Y LAS CUATRO SILLAS SON AZULES.
It's round the table and the four seats are blue.
The table is round and the room is full of blue.
It's around...the table is round and the four chairs are blue.
Is round the table and the four chairs are blue.
The table is round and the seats are round too, and they are blue.
The desk is round and the seats are blue.
It's round the table and the four chairs with blue.
The table is around and the four chairs are blue.

SOURCE: EVERY DAY THE CHILDREN SING AT SCHOOL.
Todos los dias lost ninos cantan en la escuela.
Todito los dias los ninos cantan en la escuela.
Cada dia los ninos cantan en la escuela.
Todos los dias los ninos cantan en lescuela.
Casi todo el mundo canta esa cancion todos los dias en escuela.
Todo los dias los ninos cantan en la escuela.
Todos dias los estudiantes cantan en escuela.
Todos los dias los ninos cantan en la escuela.

TABLE 2. Error examples from Experiment 1.

SPANISH TO ENGLISH

(SEW1) Articles & Quantifiers
(6% of total errors, M=.071, SD=.029, 0 with no errors)

en la oscura casa	to that dark house
sus grandes pies	the big feets

(SEW2) Nouns, Verbs, Adjectives, Adverbs
(27% of total errors, M=.312, SD=.091, 0 with no errors)

Los ninos jugaban	the boy played
en la noche	in the dark

(SEW3) Source
(3% of total errors, M=.033, SD=.018, 0 with no errors)

Rapidamente el malcriado	Fastly the malobedient
la proxima semana	the proximate week

(SEW4) Prepositions
(9% of total errors, M=.101, SD=.062, 0 with no errors)

en el parque	on the park
a la casa	in the house

(SEI1A) Ungrammatical Addition
(3% of total errors, M=.035, SD=.020, 1 with no errors)

El martes	The other Tuesday
el pajaro se murio	the bird it died

(SEIWB) Semantic Addition
(3% of total errors, M=.040, SD=.017, 1 with no errors)

bebia agua con su almuerzo	he drank water in lunch with her
las cuatro sillas som azules	the seats are round and they are blue

(SEI2A) Ungrammatical Deletion
(2% of total errors, M=.022, SD=.028, 3 with no errors)

Los ninos juagaron	The boy (was) playing
El vecina ganara el juego	The neighbor (will) win the game

(SEI2B) Semantic Deletion
(17% of total errors, M=.191, SD=.110, 0 with no errors)

en el bano temprano	in the bathroom (early)
No encontro papel en la caja	I didn't find paper (in the box)

(SEM1) Case
(1% of total errors, M=.010, SD=.013, 8 with no errors)

Por la puerta entro	Him through the door
Tiene ella un viejo vestido	Has her one old dress

(SEM2) Agreement
(3% of total errors, M=.032, SD=.033, 3 with no errors)

Empiezan las clases	The classes starts
pero entiendo poco	but he understand a little bit

(SEM3) Part of Speech
(1% of total errors, M=.015, SD=.012, 3 with no errors)

oramos por la comida	we prayer for the food
porque dice que yo soy tonta	because I'm too dummy

(SET) Tense
(14% of total errors, M=.164, SD=.058, 0 with no errors)

esta fria	is gonna be cold
Luego, se vieron	Then they were seeing

(SEO) Order
(3% of total errors, M=.036, SD=.035, 1 with no errors)

Donde estara mi hermano?	Where should be my brother?
El bebe triste	That baby sad

(SEP) Paradigmatic
(4% with no errors, M=.042, SD=.027, 1 with no errors)

sus grandes pies	his big feets
crecen rapidamente	grow fastly

(SES) Subject
(4% of total errors, M=.041, SD=.032, 1 with no errors)

El termina temprano	I finished early
Llamo mi madre	I called my mother

ENGLISH TO SPANISH

(ESW1) Articles & Quantifiers
(9% of total errors, M=.141, SD=.064, 0 with no errors)

To a game tomorrow	Al juego manana
Saw the boy	Vio al nino

(ESW2) Nouns, Verbs, Adjectives, Adverbs
(31% of total errors, M=.470, SD=.151, 0 with no errors)

Leave a message	Dejar un papel
The telephone often rings	El telefono casi suena

(ESW3) Source
(5% of total errors, M=.069, SD=.052, 2 with no errors)

We ate icecream	Comimos ice cren
The chicken is ready to eat	El pollo esta redi para comer

(ESW4) Prepositions
(8% of total errors, M=.120, SD=.048, 0 with no errors)

toward the mouse	sobre el raton
wait for me at the table	esperame en la mesa

(ESI1A) Addition Ungrammatical
(6% of total errors, M=.089, SD=.024, 0 with no errors)

You can tell my teacher	Tu puedes decirle a mi maestra
I can't study	No puedo a estudiar

(ESI1B) Addition Semmantic
(8% of total errors, M=.130, SD=.090, 0 with no errors)

She saw the word	Ella vio las palabras
Maria will arrive tomorrow	Maria va a llegar aqui manana

(ESI2A) Deletion Ungrammatical
(4% of total errors, M=.064, SD=.021, 0 with no errors)

To visit her friends	A visitar (a) sus amigos
The door ... opened	La puerta ...(se) abrio

(ESI2B) Deletion Semantic
(10% of total errors, M=.146, SD=.117, 0 with no errors)

My neighbor goes to the store to buy fish	Mi vecino va (a la tienda) a comprar pescado
The problem was too hard to understand	El problema era muy duro (para entender)

(ESM1) Case
None

(ESM2) Agreement
(6% of total errors, M=.087, SD=.041, 0 with no errors)

Every day	Todos los dia
My friends	Mi amigos

(ESM3) Part of Speech
(2% of total errors, M=.032, SD=.018, 2 with no errors)

knew that lesson perfectly	sabia esa leccion muy perfecto
Mother entered quickly	mi mama entro al cuarto rapido

(EST) Tense
(6% of total errors, M=.087, SD=.046, 0 with no errors)

The teacher told him to read	La meastra le dijo que lea
The letter is in the envelope	La carta estaba en el sobre

(ESO) Order
(2% of total errors, M=.028, SD=.020, 3 with no errors)

The new desk	La nueva mesa
The famous actor who we saw	El famoso actor nosotros vimos que

(ESS) Subject
(1% of total errors, M=.018, SD=.016, 5 with no errors)

Make room for me	Cogemos un cuarto
With her friends she played	Con su amigo jugaron pelota

(ESP) Paradigmatic
(2% of total errors, M=.025, SD=.019, 2 with no errors)

My sister knew that lesson	Mi hermana sabio esa leccion
To stop the drinking	Que parada de beber

TABLE 3. Written translation task and some sample responses. Ss were given the following source story, and asked to write it in the target language.

SOURCE

Los tres ninos jugaban bajo el arbol viejo en la casa de su abuela. Cerca del jardin estaba un perro enorme. El perro salio corriendo y los ninos lo siguieron. Llegaron todos a una vieja casa abandonada. Enraron silenciosamente para buscar al perro. Dentro de la casa oscura, se abrio una puerta con un ruido extrano. Uno de los ninos salto un grito porque tenia miedo. Pero otro de los ninos cirrio hacia la puerta abierta. Alli descubrieron al perro y se fueron todos a su casa.

TRANSLATION 1

The three boys were playing under an old tree in they're grandmothers house Near the back hard there was a big dog. The dog came out running and the children ran after him. Then they all got to an old house that was empty. They entered the house silenlli to find the dog. In the old dark house a door opend with a strange noise. One of the boys scrimed because he was scared. But one of the boy's ran to the door that was open. There they discovered the dog and went home.

TRANSLATION 2

The three boys were playing in an all tree in their grandmother's house. Near the garden was a big dog. The dog went running and the kids follow him. They went in to an all house abandoned. They went inside quietly to find the dog. Inside the dark house, one door opened with a extrainch noise. One at the boys screamed cause he had scared. The they discovered the dog and they went to their house.

SOURCE:

A lonely cat was looking for something to play with. He suddenly saw a baseball. He began to play with it. After a while he got bored, though, and went outside. In a garage he discovered a whole bunch of paper boxes and began climbing them. Inside one of the boxes was his old friend, Fido the dog! Together the two animals played all afternoon. They realized afterwards that they had lost track of time and that it was very late. When the cat got home, he washed up and ate his dinner.

TRANSLATION 1:

un gato solo estaba mirando a algo para jugar. El derepente vio un juego de pelota. El comenso a jugar, despues un tiempo el se amorinno, penso, y se fue afuera. en un garage el descubrio un bonche de cajas de papel y comenso a treparse por el. Adentro uno de las cajas fue el mayor amigo, Fido el perro! juntos los dos animales jugando al mediodia. Ellos se dieron cuenta despues aqueyo ellos fuero perdidos atrapado el tiempo y despues fue vastante tarde. cuando el gato se fue a casa, el vano ariba y el comio.

TABLE 4

Comparison of Written Story Errors in Expts. 1 & 2

Spanish to English

	Experiment 2			Experiment 1			
N	52			14			
	%	M	SD	%	M	SD	t
articles	14	2.17	3.77	7	0.93	0.62	1.23
nouns	17	2.62	2.10	22	3	2.83	-0.56
source	2	0.27	0.63	3	0.43	1.34	-0.66
prep	9	1.39	1.17	10	1.43	1.28	-0.11
add ungr	4	0.67	1.26	1	0.14	0.36	1.55
add sem	4	0.58	0.87	3	0.36	0.63	2.75**
delet ungr	2	0.33	0.56	1	0.21	0.43	0.75
delet sem	10	1.52	1.58	6	0.86	1.35	1.43
agreement	3	0.46	0.78	3	0.36	0.75	0.43
case	0	0	0	0	0	0	0
part of speech	1	0.08	0.27	5	0.64	0.84	-4.31***
possessive	<1	0.21	0.41	<1	0.21	0.42	0
order	13	1.9	1.9	10	1.36	1.99	0.95
subject	2	0.35	0.48	2	0.29	0.47	0.43
paradigmatic	3	0.46	0.73	4	0.57	0.85	-1.42
tense	16	2.42	2.29	22	3	2.11	-0.85

English to Spanish

	Experiment 2			Experiment 1			
N	52			16			
	%	M	SD	%	M	SD	t
articles	8	1.08	0.84	5	1	0.82	0.33
nouns	34	4.71	2.48	25	5.15	1.28	-0.69
source	6	0.87	1.01	10	2	1.78	-1.03
prep	1	0.19	0.40	3	0.62	0.87	-2.87**
add ungr	6	0.87	1.21	11	2.31	1.60	-3.89***
add sem	6	0.81	1.34	5	1.0	1.26	-0.51
delet ungr	3	0.39	0.63	5	0.92	1.04	-2.52*
delet sem	13	1.85	1.66	19	3.77	1.83	-4.00***
agreement	6	0.77	0.94	3	0.54	0.78	0.88
case	<1	0.02	0.14	0	0	0	0
part of speech	0	0	0	<1	0.08	0.28	0
possessive	0	0	0	0	0	0	0
order	9	1.31	0.98	6	1.23	0.60	0.31
subject	1	0.10	0.30	1	0.15	0.38	-0.56
paradigmatic	1	0.15	0.36	3	0.69	1.12	-3.18**
tense	6	0.81	0.91	4	0.85	0.80	0.16