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## ABSTRACT

This study describes the use of word recognition strategies by Spanish-English bilingual first graders in their non-instructed language. The behaviors of 35 first graders are described when they were asked to read in the language in which they had not received systematic reading instruction. Seven word recognition strategies used by children when reading in their non-instructed language were identified. The analysis of frequencies of each strategy revealed differences between the two language groups, which can be attributed to differences in the children's language knowledge and different language orthographies. One of the most important conclusions of this study is the finding that children have spontaneous approaches to reading in a language in which they have not been instructed. The study of prior conceptions is a common activity in other educational fields, such as science education, but it is rare in the area of second language acquisition. Following the logic of the emergent literacy field, understanding these preconceptions, whatever their source, is relevant for instruction, either to build on them when they are correct, or to explicitly correct them when they are wrong. (Contains 35 references.) (KFT)

# Transfer of Word Recognition Strategies from Instructed to Non-Instructed language in Spanish-English Bilingual First-Graders

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## Abstract

This study describes the use of word recognition strategies by Spanish-English bilingual first graders in their non-instructed language. The study consists of a description of the behaviors shown by thirty-five bilingual first graders when they were asked to read in the language in which they had not received systematic reading instruction. Seven word-recognition strategies used by children when reading in their non-instructed language were identified. The analysis of frequencies of each strategy revealed differences between the two language groups, which can be attributed to differences in the children's language knowledge and different language orthographies. The analysis of strategy use provides evidence of learning and transfer from the instructed to the non-instructed language. Implications for bilingual education are presented and future lines of analysis of the data are proposed.

## Introduction

The question of whether it is possible to transfer academic skills across languages, and how this transfer occurs, is a pervasive one in bilingual education. Specifically in the area of reading development, this question has originated a large amount of research, which has focused, in the case of children, mostly on subjects who are immersed in bilingual education programs and receiving reading instruction in their two languages. However, there is a large number of bilingual children in the US who do not receive direct reading instruction in their two languages, for different reasons. The present study attempts to answer the question of whether –and how– spontaneous transfer of reading skills can occur between L1 and L2 in bilingual children who have received literacy instruction in only one of their languages.

The study of biliteracy and the transfer of reading skills has strong implications for the design of instruction for bilingual and Low English Proficiency (LEP) students. Among those issues we find the question about the relation between reading acquisition in a second language and oral proficiency in that language; as well as the relation between reading skill in the first (L1) and second language (L2). These questions have implications related to when and how to begin L2 reading instruction for the young LEP and bilingual student. Most studies of transfer between reading skills in two languages have taken a quantitative approach, taking measures of different reading skills in the L2, and correlating them with L2 oral proficiency and L1 reading proficiency measures. On the other hand, most of these studies have been conducted either in adults who have already mastered reading in one of their languages, or in children who are being instructed in reading in both languages. The goal of this study is to address two perceived

needs in this literature. In the first place, the study takes a more in-depth stance, trying to first describe the behaviors, and not just assess the proficiency, of children when reading in a second language, and then find out the relations of these behavior to other measures of oral and written proficiency. On the other hand, the study focuses on bilingual children who are being systematically instructed to read only in one of their languages. Thus, we are interested in the constructions and adaptations that children develop when faced with the task of reading in a second language in which they have varying degrees of oral proficiency.

### **Transfer of reading skills across languages**

The belief that reading proficiency in L1 can influence reading acquisition in L2 is based on the hypothesis that there is some capacity that underlies reading in both languages. Cummins's *Interdependence Hypothesis* (Cummins, 1981, cited in Cummins, 1994) maintains that experience with either L1 or L2 can promote development of the capacities underlying both languages. It is thus predicted that development of reading proficiency will be similar in the two languages, provided that there is sufficient motivation and exposure to the L2. The transfer of reading ability between different languages has been in fact well documented in the bilingual literature, and there is currently a well established relationship between L1 and L2 reading ability (Koda, 1990; Koda, 1992; Royer & Carlo, 1991). However, the majority of these studies have focused mostly on higher level skills such as comprehension, or pre-reading skills such as directionality and ability to distinguish shapes and sounds, while only a few studies address the transfer of basic level skills such as word recognition (Brisbois, 1995; Roberts, 1994).

This distinction between higher level skills and basic skills is not trivial, and research findings can not be easily transferable among them. The distinction is especially relevant in the case of languages with important orthographic differences, such as Spanish and English. Recent studies show that higher-level, concept-driven reading components such as reading comprehension are not affected by orthographic differences, but processes involving visual, perceptual and phonological skills can be influenced by these variations (Gholamain and Geva, 1999). According to the "script dependent" hypothesis, accurate word recognition skills develop differently in languages with different orthographic depths (Gholamain and Geva, 1999) which refers to how systematically spelling and pronunciation can be mapped onto each other (Geva, Wade-Woolley & Shany, 1993). A shallow orthography allows a one-to-one correspondence between letters and sounds, while a deep orthography employs a more complex set of relations between letters and sounds. Thus, the shallower the orthography of the language, the more that readers rely on phonological information for accessing word meaning (Turvey, Feldman and Lukatela, 1984, cited in Fox, 1991). This is the case with Spanish, whose orthography, although it does not have a complete one to one letter-sound correspondence, is considerably shallower than that of English (Goyen, 1989). On the other hand, in orthographies like English, which represent speech at a morphophonemic level rather than at a phonemic level, readers need to use both visual (morphological) and phonological information (Fox, 1991). These differences in approach may difficult strategy transfer to the second language when the two languages differ in their orthographic depth.

However, some researchers do not attribute much importance to the similarity of orthographies for the transfer of skills, proposing instead the "central processing" hypothesis, which proposes that basic reading skills in all languages are influenced primarily by underlying cognitive and linguistic factors (Gholamain and Geva, 1999). There is in fact evidence that some transfer exists across different orthographies. Holm & Dodd (1996) studied the transfer of phonemic awareness among languages with different orthographies to English as a second language, and found evidence of transfer from L1 to L2 in spite of orthographic differences, at least between alphabetic orthographies. Wade-Woolley & Siegel (1997) found that poor readers display uncommon patterns of spelling, while L2 readers perform in ways similar to those of L1 readers in spelling tasks, suggesting a common underlying skill that influences normal reading in both languages, even though the languages exhibited different orthographic depths. While these studies focused primarily on subjects who had already mastered reading in their first language, there is also evidence of transfer of basic reading skills in children who are acquiring reading. Gholamain & Geva (1999), for example, studied the concurrent development of basic reading skills in children learning to read in English and Persian; and Geva, Wade-Woolley & Shany (1993), studied the concurrent development of spelling and decoding in English and Hebrew. Although both Persian and English have different orthographic peculiarities than English, these studies have found evidence of a shared underlying capacity of reading acquisition in both languages. For instance, they have observed that learners acquired equal (or even better) word recognition and pseudo-word decoding skills in their L2 and in their L1, even though their L2 proficiency might have been rudimentary.

These studies, however, have been conducted with children who are receiving reading instruction in their two languages, and they have all been based on quantitative measurements of skills such as word recognition, non-word decoding, and phoneme blending or segmentation, to determine the correlation between these abilities in the two languages. An interesting question is whether the relations between L1 and L2 found in these studies exist also for children who are only receiving reading instruction in one of their two languages, that is, whether they are able to transfer these basic reading skills from one language to another in which they are not receiving systematic reading instruction. This question is relevant given the large number of bilingual and LEP children who are not inserted in bilingual programs. According to the Summary Report of the Survey of the States' Limited English Proficient Students and Available Educational Programs and Services 1996-97 (Macías, 1998), 32.2% (1,110,635) of the LEP student population in the US was enrolled in state or local bilingual education programs in 1996-97, while another 19.9% (686,040) was enrolled in state or local ESL-only programs. However, the number of children actually exposed to programs with an explicit goal of developing bilingualism and biliteracy might be even smaller. Many researchers agree that, strictly speaking, only programs usually known as *dual-language* or *two-way bilingual programs* can be said to have the explicit goal of promoting bilingualism and biliteracy (Cummins, 1999), but it is not clear what percentage of bilingual programs in the country endorse these goals. It becomes of interest to consider whether children who attend programs not directly concerned with literacy in both languages still have the opportunity to convert their bilingualism into biliteracy, even though they will receive no

formal reading instruction in one of their languages. If so, how does this transfer proceed in those conditions, and how is it affected by the differences in orthographies of the two languages? These questions require a more qualitative approach than has been taken usually in studies of basic reading skills transfer, in order to generate in-depth descriptions of the processes that allow children to transfer their reading skills from one language to the other in the absence of systematic instruction.

### **Transfer of Word Recognition Strategies**

One of the most studied basic reading skill is *word recognition*, the naming of printed words. Several mechanisms have been proposed to answer the question of how words are recognized (Fox, 1991). The main mechanisms proposed through which mature readers recognize words are *analogy*, *prediction*, the *visual* route and the *phonological* route (Zuckernick, 1996). The *analogy* mechanism consists of using a store of lexical information (orthographic forms with their corresponding phonological associations) to which new words are compared to decide on their pronunciation, according to the features they share with stored words. *Prediction* refers to generating educated guesses about the identities of unfamiliar written words based on pictures, text that precedes the words, or partial letters. The *visual* route to word recognition involves memory for letter or letter-cluster features of words. It entails pronouncing a word by directly associating its letter pattern with its phonological form. It is important to say, however, that this mechanism does not rely solely on the shape of words or other visual features, but also uses some amount of letter-sound correspondences, at least in mature readers. Finally, the *phonological* route entails associating letters with their respective speech sounds, and then blending the sounds together to suggest a familiar spoken word that is identified in memory (Share, 1995). This process is known as *phonological recoding*, *decoding* or *word-attack* (Ehri, 1999). Since in this study we are dealing with the strategies used by first-graders, it is also convenient to discuss the strategies used by immature readers. Ehri (1999) describes four phases in learning to read words. In the *pre-alphabetic* phase, children recognize words by using selected visual cues such as color or other features that systematically accompany the word. Once in the *partial alphabetic* phase, the child already possesses some knowledge about the alphabetic system and is able to recognize the word by linking its most salient letters to their sounds. *Full alphabetic* readers are able to form full alphabetic relations between the graphemes and phonemes of the word. Finally, in the *consolidated alphabetic* phase, the reader has available in memory a number of recurring letter patterns that become consolidated into units symbolizing phonological blends. These consolidated forms are used in learning sight words.

Are these word-recognition strategies, either in their full or partial forms, good candidates for transfer across languages? According to the *script-dependent* hypothesis, differences in the orthographic depth of Spanish and English should make readers rely on different strategies for each language, and this might represent an obstacle for transfer, since maybe one reader's preferred strategy is not equally useful in the other language or vice-versa (for instance, in Spanish the use of consolidated blends might not be important, since letter-sound correspondences are more systematic, and therefore, children might not frequently use these forms). However, it is also possible that, once the child is aware of the differences between the two orthographies, he or she can compensate for the acquired



tendency to use some strategies more than others, and apply the appropriate mechanisms, producing transfer instead of interference. In fact, one prerequisite of successful transfer is the ability to identify the situations where it is useful, being able to distinguish the relevant structural features that make a new situation similar enough to an old situation to render the old knowledge applicable (VanderStoep & Seifert, 1994). In the case of transferring among two different orthographies this probably requires a high degree of metalinguistic awareness. Metalinguistic awareness is described as the ability to use control processing to perform mental operations on the products of language such as phonemes, words, structural representations of sentences, and sets of interrelated propositions (Tunmer & Rohl, 1991), and it has been shown to be positively related to reading achievement (Chaney, 1994, Bialystok, 1986, Borzone de Manrique & Signorini, 1994, Tunmer & Rohl, 1991). It has been suggested that metalinguistic awareness is especially well developed in bilingual children, since bilingualism forces them to "take distance" from their L1 and see it as only one of many possible language systems (Edwards & Christophersen, 1988). For instance, the understanding that objects have different names in different languages is related to the *arbitrariness* of language, one frequently assessed aspect of metalinguistic ability. There is some empirical evidence that highly bilingual groups are superior in phonemic awareness and other kinds of metalinguistic ability (Cummins, 1994; Bialystok, 1986, 1997, 2000; NRCIM, 1997). The presumed advantage of bilingual subjects in metalinguistic abilities might thus facilitate the transfer of word recognition skills across different orthographies, in cases where children have not been exposed systematically to the orthographic peculiarities of one of their two languages.

### **The self-teaching Hypothesis**

The spontaneous acknowledgment of these differences and the utilization of this knowledge in future decoding efforts is similar to what Share (1995) calls *self-teaching* in the context of word recognition. The self-teaching hypothesis suggests that each successful decoding encounter with an unfamiliar word provides an opportunity to acquire the word-specific orthographic information. Thus, this process acts like a "built-in teacher" that enables a child to independently develop word-specific and also general orthographic knowledge. Share (1995) suggests that basic phonemic awareness in addition to knowledge of only some letter-sound correspondences is enough for children to engage in this process. This mechanism could act in children trying to read in a non-instructed language. When a child encounters a new word in the non-instructed language, he or she might not need the whole set of letter-sound correspondences. With only some of the sound-letter correspondences present in that word, basic phonemic awareness, and the ability to utilize contextual information, he or she will be in a position to generate a plausible candidate for the novel item (Share, 1995). We hypothesize that children reading in a non-instructed language will also engage in this process, the success of which will depend on how much knowledge of the orthography of the non-instructed language they have, and how much knowledge from the instructed language they can successfully apply to the new language.

However, if letter-sound knowledge is necessary for this process to occur, where could bilingual children get any letter-sound knowledge of their non-instructed language? A

variety of sources seem plausible, especially for the children who are instructed in Spanish. Except for the classroom and family, these children are immersed in an English-speaking context. Some sources of letter-sound knowledge in English might be educational television programs and alphabet books or songs, which are more easily found in English than in Spanish in these children's environment. Furthermore, the Spanish-speaking first grade in this school district is defined as a *transitional bilingual* program, meaning that the program has the goal of providing progressively more instruction in English up to fourth grade. Even though the instruction received in English in first grade can not be said to be anything similar to the Spanish instruction either in amount or in structure, the teachers do sometimes provide isolated information about the English orthography, letter names, letter-sound relationships or sight words. The case of Spanish-speaking children instructed to read in English is quite different. The only source of Spanish information for these children comes from their family experiences and, even though some of these parents are interested in preserving their children's home language, many of them are more concerned with their acquisition of the dominant English. However, we still can expect that some knowledge of the alphabet and some letter-sound knowledge in Spanish be provided at home for these children, either intentionally or not. In addition, the use of frequent Spanish words in written form, such as their own names, might also provide an extra source of letter-sound knowledge for these children. One last source of information that might act for both groups of children is the transfer of knowledge from their instructed language. Although Spanish and English have different orthographies, they do share a number of letter-sound relations that children could try to extend to their non-instructed language. It is likely, however, that the success with which children will transfer this knowledge from one language to another will be moderated by the amount of knowledge they have of the other language and by the similarity of the two systems.

Since we assume the amount of information about the non-instructed language to be different for both groups, we hypothesize that both groups of children will behave differently in regard to the strategies used and the success attained when attempting to read in their non-instructed language. However, the amount of information about the non-instructed language will probably not be the only factor affecting potential differences in the reading attempts in two languages. In addition, we expect that some of the differences between the two groups will be best explained based on differences in the languages themselves and the peculiarities of their orthographies.

## Method

### Participants

This study used a sub-sample from a larger study conducted in three public schools from an urban district in the greater Chicago metropolitan area. For the larger study, eight students were selected at random from each Kindergarten class in 1998. These children were again interviewed in First Grade. All children in first grade who read in both Spanish and English in the larger study were selected for the present study. This group consisted of 35 children (17 female, 18 male). The mean age at the end of first grade was 7 years 2 months. Nine of the children attended English-instruction classrooms and

Twenty-six attended Spanish-instruction classrooms. Subjects in English-instruction classrooms were receiving systematic reading instruction only in English. The Spanish-instruction classrooms, on the other hand, are labeled by the school district as *transitional bilingual*. Children are to be gradually presented with increasing English instruction until grade four, after which all the classes are in English. However, in the case of first grade, although a small part of the instruction is provided in English, there is no evidence of systematic teaching of letter-sound relations and other reading skills in English in the same way as they are taught in Spanish. Thus, the English instruction provided at this level has its stronger impact on the children's *oral* English proficiency, rather than on the English reading skills.

Note that the first language of children in this sample does not always correspond to the instructed language. Spanish is the home language for all participants, but some of them attend the English-speaking First grades and therefore have received at least one year of reading instruction in English. Since our interest is in comparing the language in which reading has been taught against that in which it has not, we will refer to the languages as Instructed Language (IL) and Non-Instructed Language (NIL), instead of L1 and L2.

### **Description of the Interview**

All First-Grade teachers read the book *Are You My Mother?* to their class once prior to data collection, in order to make sure that the book was familiar to all children. This book was chosen, among other criteria, because it has the Spanish and English text in the same page. During data collection, each child was taken out of the classroom and interviewed in a separate room in his or her language of instruction. The examiner began the interview by talking about general topics with the child, to produce a sample of natural language. Later, the child was asked to read the book. After the reading, the child was asked whether she or he spoke any other languages. Children who answered affirmatively were asked to read the book in that language. Since the book was long and these were all beginning readers, experimenters read some parts of the book to children, once they had produced an analyzable portion of reading, and especially when children showed signs of being tired or struggling with the task. All interviews were videotaped and transcribed.

### **Data Coding**

#### *Sulzby Classification scheme*

Readings in both languages were scored by two independent scorers according to the Sulzby Classification Scheme (Sulzby, 1985). Scores were reconciled to obtain a final score for each reading. This instrument classifies reading attempts in four categories and eleven subcategories. The four categories are Story not formed (1,2), Oral language-like (3,4,5), Written-language like (6,7) and Print-based (8,9,10,11). The last category entails the use of print, and is divided in four subcategories: Print-based refusal (8), Reading Aspectually (9), Reading with Strategies Imbalanced (10) and Reading Conventionally (11). Category 11 refers to the integrated use of three sources of knowledge: letter-sound, comprehension and word. In category 10 (Strategies Imbalanced), children use all three sources of knowledge, but are unable to integrate them to produce a coherent, fluent



reading, focusing alternatively on one or another. Category 9 (Reading Aspectually) refers to the consistent use of only one source of knowledge. Category 8 (Print-based refusal) represents awareness of print combined with the feeling of being unable to read, which leads the child to refuse the task. These four categories reflect attention to print, and levels 9b (letter-sound focus), 9c(word focus), 10 and 11 represent the use of word recognition skills and phonemic information, partial or integrated.

### *Strategy coding*

Qualitative analyses were conducted for all NIL readings showing use of word recognition strategies (readings scored 9b, 9c, 10 or 11 in the Classification scheme, plus readings scored as "other", see results section). The readings were analyzed in order to identify and classify the range of strategies used by the children when reading in their NIL. These strategies were described and a number of criteria were established to identify a given behavior as representing each one, making sure that no alternative strategies could explain the same behavior. The frequency of each strategy was computed across all children in the sub-sample.

A second step in the qualitative analysis consisted in identifying patterns of learning through the NIL readings. Instances where children appeared to be acquiring and applying new knowledge or new strategies were described. Especial attention was placed on the examples that seemed to represent instances of skill transfer from IL to NIL.

## **Results**

### **Sulzby Classification Scheme**

Table 1 shows the scores in the Sulzby classification scheme. Most IL readings were scored as 11. There were also a number of level 10s and 9s. NIL readings showed a mix of levels 9, 10, 11 and a number of readings that were not possible to classify within the Sulzby Classification scheme. These were classified as "other" and most of them consisted in attempts to read from the NIL by directly applying the phonology and letter-sound rules of the IL. The presence of levels 9b, 10, 11 in the NIL readings indicates the use of word recognition strategies, including phonological information. The readings categorized as "other" also represent the use of word recognition strategies, although not always successful. Of a total of 9 readings in Spanish as NIL, 5 (55.5%) fall in one of these categories, with two of them being conventional (22.2%). The other four children in this group avoided completely the use of word or letter-sound knowledge, restricting themselves only to story knowledge, even though all but one had used some of this knowledge in their English (IL) readings. As for the 26 children reading in English as NIL, 22 (84.6%) attempted to use word or phonological knowledge, but only two (7.7%) were able to read at a conventional level. The difference in the proportions of children using phonological information in the two groups is not significant ( $X^2=3.202$ ,  $d.f=1$ ,  $\alpha=.074$ ), although it approaches significance at the .05 level, especially taking into consideration the small size of the English as NIL sample.



## Word recognition strategies used in NIL reading

Twenty-seven second readings (22 English, 5 Spanish) were subjected to qualitative analysis. This revealed a total of 7 types of strategies used by children when reading in their NIL. In this section these strategies are described, their frequency is reported and illustrative examples are provided. Note that no children used one isolated strategy, so the examples sometimes contain not only the strategy that is being illustrated, but also others. For the examples, text in brackets [ ] represents NIL text that is read directly with the pronunciation of IL (for instance, a child reading English text using Spanish letter-sound relations and pronunciation). The numbers in parenthesis ( ) before the examples represent the page of the book that the child is reading. The text in *italics* that appears below the examples corresponds to the original text being read, when necessary.

### 1. USE OF IL LETTER-SOUND RELATIONS IN NIL READING

A large number of children (73% in English and 20% in Spanish,  $X^2=4.857$ ,  $d.f=1$ , significant with  $\alpha=.028$ ) directly applied their IL letter-sound knowledge to portions or all of the NIL reading attempt. This behavior was done more or less consistently by different children, with some of them monitoring for meaning and stopping in the middle to change the strategy, and others insisting in the strategy and producing a meaningless reading. These developments will be discussed in the next section.

Instances of this behavior can also be found in the examples presented for other strategies, whenever the reading of the child is completely in brackets [ ] and all the words are pronounced as if the reading were being executed in the IL. In the following case, DA shows minimal knowledge of the sound of the vowel "o" and the pronoun "I" in English, and reads the rest of this sentence with Spanish rules:

(14-15) I... uh... [I go and look for her he said] So, a, a [it]...  
 (14-15) *I will go and look for her, he said. So away he went.*

Similarly, the following piece is part of a longer section in which the JA applies this strategy:

(19) [He -he could not fly , but he could gal. Now I will go and find] my [mother, he said].  
 (19) *He could not fly but he could walk. Now I will go and find my mother, he said.*

### 2. PARTIAL USE OF NIL LETTER-SOUND KNOWLEDGE

Some children used partial knowledge of NIL letter-sound relations. Most of the time this was not enough to help them build a coherent text or identify one word correctly, but occasionally it helps them figure out isolated words correctly. The use of partial knowledge can be identified based on the kinds of mistakes children make. When the word produced shares only some sounds with the target word, and they do not correspond to the IL sounds, then the child might be applying some knowledge of the NIL, mixed with knowledge from the IL or other source. Especially when the former is true and the word produced doesn't make sense in context, is a non-word or a word unknown by the

child, we can say the child is using some letter-sound knowledge from the NIL. We consider ambiguous all cases where the same outcome would have been produced by applying the IL knowledge to the word. For instance, the sound of the letter "y" in *baby* is the same for English and Spanish, so if the child reading in English as NIL reads correctly only that portion of the word, we cannot say that this is due to the use of some knowledge of the English letter-sound relations. Of the analyzed readings, 59% showed evidence of this strategy at least once in English and 40% in Spanish ( $X^2=.601$ ,  $d.f=1$ ,  $\alpha=.438$ , not significant). The following example is illustrative:

(3-4) [A mot—her a sat on her ij... ig. Tu eg jump]  
 (3-4) *A mother bird sat on her egg. The egg jumped.*

JN's only notion of English sound-letter relations in this example is the pronunciation of the letter "u" in "jump", which is closer to English than to Spanish. The rest of the reading corresponds to Spanish letter-sound relations. The words are all in brackets, indicating they are read with Spanish pronunciation. Some of the resulting words are not easily traceable to any existing rule of Spanish or English (for instance, why he replaces "the" with "[tu]", when reading it completely in Spanish would have resulted in "[te]"). However, in the case of the word "jump", he replaces the Spanish sound of the letter "u" with one closer to the Spanish sound for "a", which is more consistent with an English pronunciation of that letter, while all other letter are read with Spanish phonology.

### 3. IDIOSYNCRATIC NIL LETTER-SOUND KNOWLEDGE OR AVOIDANCE OF IL LETTER-SOUND KNOWLEDGE

Sometimes children used sound-letter relations that do not belong to any of the two languages, and that can not be explained as overgeneralizations of other sound-letter relations. This might be a sign of metalinguistic awareness, where children are aware that they have to change the strategies and letter-sound rules they use in their IL, but they do not know which ones to use instead. Thus, some children use "made-up" sounds, and other children simply choose to avoid the sounds they ignore. 64% of the children showed this behavior at least once in English and none of them in Spanish ( $X^2=6.608$ ,  $d.f=1$ , significant with  $\alpha=.010$ ).

JA consistently pronounces the letter "w" as "g":

(14) [I guill] go and look for his, he [said]

(14) *I will go and look for her, he said.*

(15) So agay I gant.

(15) *So away he went*

Sometimes this avoidance of the IL's rules is expressed in the mere omission of a letter which sound is not known in the other language: For example, DA omits the sound of "w" in initial positions.

(40) Now he looked [ay, ay] down.

(40) *Now he looked way, way down.*

#### 4. OVERGENERALIZATION OF NIL LETTER-SOUND KNOWLEDGE

Some children have notions of letter-sound relations in their NIL, but they do not have the context knowledge necessary to apply them correctly in most cases. This leads them to overgeneralize this knowledge and read some words incorrectly. Overgeneralization of NIL rules represents in part a failed attempt to identify the word by analogy, where the child does not have enough knowledge to decide which analogies are pertinent. This occurred especially in English, where the correct pronunciation of each letter is dependent on several other letters in the word. The examples reveal that many of these problems are related with vowels. This phenomenon was observed in 27% of the children reading in English as NIL (6) and only in one of the children reading in Spanish as NIL (20%) ( $X^2=.112$ ,  $d.f=1$ ,  $\alpha=.738$ , not significant). As the examples show, this phenomenon in English had to do mostly with the wrong use of the "long" sounds of vowels:

ER reads "her" as "ear", "to" as "toe", "looked" as "look-keed".

JN and EZ read "not" as "noat".

NC shows some fragmented knowledge of English letter-sound relations, which she sometimes uses correctly and sometimes overgeneralizes. In the following example this fragmented knowledge is reflected in her correct pronunciation of the vowel portion of "she" and of the word "be", and her incorrect pronunciation of the final vowel "e" in "where". The sounds she gives to the final "e" in this example (represented as "i" in brackets, the Spanish sound of the letter "i") corresponds to the sound of the letter "e" in some contexts in English, such as in the word "be".

(27) [eri, eri está, eri could si] be?

(27) *Where, where is she, where could she be?*

#### 5. PREDICTION

This strategy consists of making a guess about the word based on a number of clues: knowledge of the story, pictures or the immediate context. Children confronted with NIL text in this study have one additional source of information to predict from: reading or remembering the IL text (which is presented in the same page) and translate into NIL. Children sometimes moderate their predictions based on partial orthographic clues, that is, they identify the first or other letter of the word, and then try to make their prediction match the corresponding sound with the sentence meaning, the pictures or the translation. For instance, when trying to read "the egg jumped" the child instructed in Spanish can read the Spanish text (el huevo saltó), find a translation for the sentence (for instance, "the egg jumped"), and then name this translation directly. Another option is that, after finding a convenient translation, the child can look at the English text for known letters and then try to find a word that matches both the translation and the expected sounds. This might result in success or interference. For instance, the child who reads "hopped" instead of jumped, because she is misled by the Spanish sound of the letter "j", which is similar to the sound of the letter "h" in English. In other cases, after translating from their IL, children will not immediately name the word, but use this knowledge to try to decode



the NIL words, looking in the text for a word that might be the one they expect. Most children used prediction at least once when reading in their NIL (91% in English and 80% in Spanish,  $X^2=.491$ ,  $d.f=1$ ,  $\alpha=.484$ , not significant). Some illustrative examples follow:

In this example, JA's knowledge of the story and the reading of the first letter produce interference and lead him to read "here" for "hungry":

(5) My baby [gui] be [eir...] hungry. He [guet gant] to [eat]

(5) *My baby will be here. He will want to eat.*

ER sometimes looked back and forth between the Spanish and English text, so the examiner questioned her about that. She answered that "Sometimes I just wanted to know which word it was (...) and how to read it".

## 6. USE OF NIL SIGHT WORDS

The use of the visual route to recognize words in the NIL is hard to identify. One case where it is particularly clear is when the child demonstrates to be unable to decode most of the words, except a number of them that he or she always gets right. Especially when these are common words, we can assume that the child is using a visual route to access the word. To rule out that the child was using prediction to identify the word, it was required that the child was able to read the word also out of context. This was the case when the sentence surrounding the word was read in a meaningless way, for example. 41% of the children could be said beyond doubt to be using this strategy when reading in English as NIL, while none of the children could positively be said to use it when reading in Spanish as NIL ( $X^2 = 3.068$ ,  $d.f=1$ ,  $\alpha=.080$ , not significant). The following are examples of this strategy:

GL uses sight words in English as NIL, such as "the", "baby" and "mother". Not that in this example we can rule out prediction as a strategy since the rest of the sentence doesn't make sense (remember that when the child reads the words in English with a Spanish pronunciation they do not resemble meaningful units in any of the languages), and still the child is able to correctly read some of the words.

(9) [up]... [out]... [cut] the baby [dird]

(9) *Out came the baby bird*

(35) Dis... a be [mas]... Did [he have] a mother?

(35) *Did he have a mother?*

## 7. INTEGRATED USE OF NIL ALPHABETIC KNOWLEDGE AND COMPREHENSION MONITORING

This approach consisted of an integrated use of both alphabetic knowledge in its full form and comprehension monitoring. To be able to classify a certain behavior in this category, it was required that mistakes consisted mostly of words sharing orthographic information with the target word, and that they were self-corrected, when they affected meaning. In addition, mistakes should be self-corrected also when they do not affect meaning sometimes. Also, the use of alphabetic knowledge was inferred when the child was

observed sounding out phonemes and trying to blend them into words, but this by itself was not considered enough evidence to count the strategy as an integrated use of alphabetic knowledge and comprehension monitoring.

59% of the children reading in English as NIL and 100% of the children who read in Spanish as NIL demonstrated this behavior at least once ( $X^2=3.068$ ,  $d.f=1$ ,  $\alpha=.080$ , not significant). However, only 27% of these children used this strategy consistently throughout all the NIL reading in Spanish and 80% in English ( $X^2=4.857$ ,  $d.f=1$ , significant with  $\alpha=.028$ ), self correcting most of the mistakes that didn't match either the meaning of the text or the orthography of the word. These correspond to level 11 in Sulzby's classification scheme. Some examples of this strategy are presented in what follows, both in isolated and consistent form:

EC consistently used this strategy while reading in Spanish as NIL, except in a few occasions when she did not correct some mistakes that did not affect meaning.

(37) Yo... te—yo ten-go—yo tuve mamá, dijo el pajarito, yo se que sí.  
 (37) Yo *tuve mamá, dijo el pajarito, yo se que sí*

JD read only some passages of the book in Spanish as NIL before saying he was tired. Most of the time he read slowly but accurately:

(9-10) Del... Y del huevo salió un pajarito. Don... don... ¿Dónde, dónde está mi mamá...?  
 (9-10) *Y del huevo salió un pajarito. ¿Dónde está mi mamá? preguntó.*

MCa starts making phonetically close but contextually wrong mistakes, that she self corrects.

(11) Well... where... where is my mother.  
 (11) *Where is my mother?*

### Patterns of self-teaching through the NIL reading

In this section, patterns of evolution and learning through the readings are described, focusing mostly on evidence that can suggest that children are engaging in a process of self-teaching of the NIL orthography while reading. Many children showed evolution during their NIL readings, changing the reading of specific letters, letter clusters or words throughout their readings, in response to different sources of information. Sometimes these developments resulted in more coherent and/or fluent readings. The possible sources of information that children used to perform these changes were varied: some examples are translation from the adjacent IL text; monitoring for meaning at the word, sentence or story level; and asking the experimenter. The particular source in each case is sometimes hard to determine, so the examples presented here are not categorized according to this criterion, but we will comment on potential sources of information for each observed change.

In the following example, JA improves considerably after listening to the experimenter reading a part of the story, going from a decoding mostly marked by the interference of the Spanish pronunciation, to a much more fluent reading that uses a number of different strategies, including English decoding rules. It is possible that the reading by the

examiner reminded him of his knowledge of the story and prompted him to try to integrate this with his little knowledge of English orthography, to produce coherent passages. The examples shows two lines before and two after the intervention by the examiner:

(18) The baby [bird could not fly].

(18) *The baby bird could not fly.*

(19) [He -he could not fly , but he could gal. Now I will go and find] my [mother, he said].

(19) *He could not fly but he could walk. Now I will go and find my mother, he said.*

(Examiner reads pages 20 to 28)

(29) I am not your mother, I'm a dog, said the dog.

(29) *I am not your mother, I am a dog, said the dog.*

(30) A -the kit -the kint gwas not -not his mother, the hen was not his mother, the dog was not his mother.

(30) *The kitten was not his mother, the hen was not his mother, the dog was not his mother.*

ICa shows a number of errors produced by applying Spanish letter-sound rules, which he immediately self-corrects. He is monitoring for meaning at the word level, and trying to find the right way to pronounce the word so that it will make sense. The fact that he starts by applying the Spanish letter-sound relations and then self corrects and sometimes ends up with the right pronunciation, suggests a process of self-teaching based on meaning and maybe knowledge of the story. Some examples:

(12) He look [u...] up

(12) He looked up.

(18) The baby bird [could not fly] fly

(18) *The baby bird could not fly.*

(22) Are you [my] my mother?

(22) *Are you my mother?*

SS is very aware of the two different orthography systems, since she never reads any sentence or word in English using Spanish letter-sound rules. Rather, she stops and waits for help whenever she does not know how to read a word. She evolved during the reading, being able to read words at the second attempt. The following is an example where she was able to read the word "her" correctly 8 pages after she was told it:

Child: (11) [e] he look for... he look for...

(12) *He looked for her.*

Examiner: (11) Her.

Several pages later, she reads the following passage fluently, making one small mistake:

(19) Now he will go and look for her.

(19) *Now I will go and look for her.*

At the beginning of his reading, DA consistently omitted the sound of "w" in the initial position. He later figured it out and started using it. The following represents the segment where he "discovered" the sound of the letter. Note that first he starts reading the word without the letter, pauses and self-corrects:

(18) The baby bird could not fly. He could not fly, but he could [a...] walk.

(18) *The baby bird could not fly. He could not fly, but he could walk.*

Presumably this insight could have come from his knowledge of the story, and his expectation of the word "walk" at the end of that sentence (children are highly familiar

with this book and this page specifically is particularly well remembered).

MR shows an example of how hearing the word once helped her get it right subsequently. This was not merely by repeating it, since the next time she encountered the word she started reading it in Spanish, and then self-corrected:

Examiner (prompting): (17) Down, out of the tree he went. Down...  
 Child: (17) Down, down... t, t'w--- was a log --long way [dooo] down.  
 (17) *Down, down, down, it was a long way down.*

JA improves considerably after the first time that the experimenter reads a section of the story. This suggests that he begins monitoring for meaning after he listens to the story, and thus obtains passages such as the following:

(29) I am not your mother, I'm a dog, said the dog  
 (29) *I am not your mother, I am a dog, said the dog.*

Compare to some of his earlier reading:

(5) Oh, oh, [said] the [mother bird]. My baby [gui] be [eir...] hungry. I [guet gant] to [eat].  
 (5) *Oh, oh, said the mother bird. My baby will be here. He will want to eat.*

## Discussion

### Differences between English and Spanish as NIL

As expected, children reading in Spanish or English as NIL differed in the frequency with which they used each strategy. In the first place, the quantitative analysis showed that a high proportion of children reading in Spanish as NIL chose to revert to a comprehension-based, non-print-focused reading instead of attempting to use phonological or word knowledge, even though most of them had used these strategies in an efficient way in their IL reading. On the other hand, a large number of children at least tried some use of word recognition skills in English as NIL. One possible explanation for this difference (as reported in the results section, the difference only approached statistical significance, possibly due to the small size of the English-NIL sample) is related to the higher availability of sources of phonological, orthographic and word knowledge in English for children instructed in Spanish. Although these children are immersed in a Spanish First grade, the final goal of Spanish instruction in this district is transition into English, so some basic instruction at least about letter knowledge has been given to the children inside or outside their classrooms. On the other hand, home-based activities might also be a source of letter-sound knowledge in English for these children, since it is presumably easier for their parents to buy educational materials in English than in Spanish.

Interestingly, even though the English orthography is deeper and more complex than that of Spanish, many children attempted to read in English in absence of instruction. One possible interpretation, consistent with the script-dependent hypothesis, is that children learning to read in English are more aware of the potential complexities of an orthography, and therefore prefer not to venture in decoding a language in which they

have not been explicitly taught. The children learning to read in Spanish, on the other hand, might find the decoding process to be much more direct, and therefore are more prone to try to apply their knowledge to a new language.

Regarding specific strategies, some interesting differences were observed. One example is that only one of the children who read in Spanish as NIL used the strategy of directly applying the letter-sound rules of English to the Spanish text, while this was a popular strategy among children reading in English as NIL. Maybe the more complex, contextual nature of letter-sound rules in English lead children who had not received reading instruction in English to have a more diffuse or vague letter-sound knowledge in that language, which allowed rules from Spanish to interfere. The contextual nature of English letter-sound relations could also explain the overgeneralization of letter-sound knowledge, which occurred frequently in English as NIL readings, but almost never in Spanish as NIL readings. The systematic letter-sound relations in Spanish, on the other hand, might be easier for English-instruction children to learn without instruction. Thus, the few English-instruction children who did have this knowledge applied it almost always correctly (shown also in the high proportion -two out of five- of these children that produced conventional readings of most of the book). A third interesting difference is that none of the children who read in Spanish as NIL used the strategy of avoiding or making up unknown sounds of the NIL, while a large number of the children reading in English as NIL recurred to this strategy. This difference could also be related to the differences in knowledge about the NIL orthography and phonology in the two groups, and to the different orthographies of the two languages.

Another explanation for the absence of English letter-sounds relations applied directly to the Spanish text might have to do with the levels of language proficiency of the two groups of children. Both groups come from Spanish-speaking homes, but the English-instruction kids have shown to have enough English proficiency to be placed in an English-speaking first grade. This could suggest that those children have a more *balanced* bilingualism (where both languages have a similar level of proficiency). The higher oral proficiency might explain the fact that children reading in Spanish as NIL did not show the use of English letter-sound rules. Those rules would have produced readings that were easily identifiable as non-Spanish by these children, who are fluent Spanish speakers. On the other hand, NIL oral proficiency might not be the most relevant factor behind these differences. It is possible that the nature of the orthography itself explains them better. Being English a less regular orthography, it provides "more room for creativity", so to speak, for children. This is supported by the occurrence of high-level readings in English as NIL accompanied by low oral English proficiencies and vice-versa, low level readings in English with relatively good proficiency in the oral language.

However, any oral language-based explanation of differences between groups requires a more accurate judgement of the two groups' level of bilingualism. Unfortunately, the criteria for placement in the English speaking classes in this district do not always involve a systematic testing of the child's two languages, but rather an informal, qualitative judgment on the part of the teacher. This makes it hard to judge the real differences in the bilingualism of these two groups based only on their class placement.



An additional problem in judging the bilingualism of children by their class placement is given by the occurrence of Spanish attrition. First language attrition and even loss in immigrant children is a frequent phenomenon in the United States (McLaughlin, 1994), especially when children are immersed in English-speaking classes at early grades (Wong-Fillmore, 1991), and there are reasons to suspect that some attrition is occurring in this sample. This was especially observed in the use of unusual structures imported from English and the loss of gender-agreement and other inflections, earlier manifestations of language attrition (Merino, 1983). Thus, even though children in the English speaking classes may have higher levels of proficiency in English, we can not be sure that their bilingualism is more balanced until we evaluate also their levels of Spanish. In order to accurately determine the level and kind of bilingualism of both groups, we would require a direct measure of the language level of each of the children involved in the study. Although we do have oral language samples in both languages for most of the children in the sample, the problem of how to qualify these language samples adequately has yet to be resolved, in order to look at the relation between oral and reading proficiency in IL and NIL.

### **Reading of familiar text as a NIL Self-Teaching opportunity**

As predicted, a number of NIL readings showed some degree of evolution in the word recognition strategies used. This suggests that the self-teaching procedure described for IL reading (Share, 1995) can be also applied when trying to read in NIL, in spite of the absence of reading instruction, of varying amounts of letter-sound knowledge and of diverse levels of oral proficiency in that language. The strategies used by children here and the occurrence of self-teaching of NIL decoding rules suggest that reading ability in the IL provides a basis for instruction in the NIL. In these self-teaching instances, children's monitoring for meaning at the word and story level was essential. Moreover, their familiarity with the story and the presence of the IL text in the adjacent pages were additional sources from which the children could draw the information they needed to improve their word recognition skills in the new language. Thus, the reading of familiar text in a second language appears as a specially good instance for children to self-teach knowledge of that language. Instructional implications of this are straightforward.

### **Is transfer always good?**

One point that deserves commentary, however, is whether transfer from the L1 or IL is always a positive phenomenon. In discussions about when to start English reading instruction for low English proficiency students, it has sometimes been suggested that this instruction might interfere with reading instruction in the L1, and that therefore it might be better to wait until L1 literacy is well established before initiating reading instruction in L2. In this view, some of the behaviors we observed might be considered interference and thus, harmful for both the L1 and L2 reading instruction. In fact, the use of IL letter-sound relations when reading in the NIL, observed in our sample, can be considered a source of interference that might make the reading acquisition in the NIL harder. However, we believe that the analysis of these examples shows that transfer of reading strategies from the IL does not always act as interference, but sometimes actually plays the role of a foundation on which to build knowledge about the NIL. Most likely,

the potential of IL knowledge to act as harmful interference depends on a number of factors, among them, the level of oral NIL proficiency and the level of written IL proficiency. This possibility requires further exploration.

### **Conclusions, Implications and Future Analyses**

There is a large amount of information in these data that was not addressed in this study, and that eventually needs to be analyzed, such as the relation between strategy use and oral language proficiency, and the relation between strategy use in the instructed versus non-instructed language. Here we focused only on describing the strategies children used when reading in a language in which they can speak but have not been systematically instructed to read. The results of these preliminary analyses offer some insights into theoretical and instructional issues, and open questions that might guide future analyses.

One of the most important conclusions of this study is the finding that children have spontaneous approaches to reading in a language in which they have not been instructed systematically. The study of prior conceptions is a common activity in other educational fields, such as science education, but it is rare to the area of second language acquisition. These results suggest that misconceptions and idiosyncratic approaches to reading might play an important role in this field. In the area of literacy this topic is addressed by the field known as *emergent literacy*. Researchers in this field study the behaviors and concepts that children develop about literacy prior to formal instruction (Clay, 1989, Ferreiro, 1982, Sulzby, 1985), and one of their concerns is the connection between this emergent knowledge and instruction. Formal reading instruction usually assumes that children have some knowledge about written language before they enter school, such as knowledge about print functions, the way in which print encodes language, familiarity with a written register and conventions about writing and reading (Purcell-Gates, 1995). The match between children's conceptions and school instruction will be one of the determinants of the child's success in reading acquisition, and this is a reason why one major concern of the field of emergent literacy is that instruction should build on those emergent conceptions that children already have. Apparently, this spontaneous development of conceptions about reading does not only happen in the child's first language. As we have seen here, bilingual children who are learning to read in only one language also have preconceptions about reading in their other language. These preconceptions are different from the ones of children who have never faced reading instruction, and probably they are also different from those of monolingual children. They have to do with the differences between the two languages, and with notions about the orthography and phonology of the non-instructed language, among others. Some of these prior conceptions might be original and some may be imported or transferred from the instructed language, such as the alphabetic principle or the knowledge of particular letters-sound relations. Following the logic of the emergent literacy field, the understanding of these preconceptions, whatever their source, is relevant for instruction, either to build on them when they are correct, or to explicitly correct them when they are wrong.

Many open questions remain that this data might still contribute to answer. Some future analyses that it might be interesting to conduct have to do with the relation between oral language and reading in the non-instructed language. A preliminary look at the data suggests that the strategies and behaviors here described are not equally distributed for all levels of NIL oral proficiency. For instance, it is apparent that below a certain level of NIL proficiency, transfer of strategies from the IL becomes interference, but above that level, it can be adapted to be useful for decoding in the NIL. Addressing this question requires a classification of children's oral language samples to allow comparisons among them. Another interesting topic is the relation between strategy use in the instructed and non-instructed language, which would give more insight on the relations between L1 reading proficiency and L2 reading acquisition. This analysis will require a finer scoring of reading levels, maybe based on quantitative measures of fluency and number of miscues, in order to be able to perform some correlational analyses on these data.

For now, the present results provide a basis to start thinking about the ways in which reading in a second language is affected by skills and notions transferred from the first language, and how this transfer can contribute to reading instruction.

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ERIC is a project of the Department of Measurement, Statistics & Evaluation