Literacy Development in Two Languages: Cognitive and Sociocultural Dimensions of Cross-Language Transfer

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Abstract

One of the basic but implicit assumptions of bilingual education is that developing literacy proficiency in the first-language will transfer and facilitate literacy development in the second-language. To address the transfer issue in this paper, first we will summarize the evidence from two different lines of research. The first line of research is on literacy development in other (monolingual) contexts. This research helps us identify the universal versus language-specific factors of literacy development around the world. The second line of research is on bilingual students, and how their proficiencies in the two languages are related to each other. Finally, after discussing these cognitive underpinnings of transfer, we will also relate these factors to their sociocultural contexts of development.

Introduction

In this paper, our goal is to provide an overview of literacy development in different linguistic and multilingual contexts. We will start with the cognitive variables of literacy development, and discuss how they apply in monolingual contexts other than English, as well as in bilingual contexts. We will then discuss transfer across languages and conclude by considering the sociocultural dimensions of multilingual literacy development in multilingual contexts.

Background and Significance

Although educating students from non-English-speaking backgrounds has been a familiar issue in the American educational system, bilingual education programs have only become formally available since 1968 with the passage of the Bilingual Education Act (August & Hakuta, 1997). During the 30 years since the establishment of bilingual programs, much has been accomplished, but questions remain regarding the effectiveness of bilingual literacy education and the nature of psychological processes involved in literacy development in a second-language (Willig, 1987).

According to the 1990 census, 14% of the school-aged students in the United States between the ages of 5 and 17 come from homes where a language other than English is spoken. Over half of these students are in Grades 1-4. The Office of Bilingual Education and Minority Languages Affairs reports that of the 3.2 million limited-English-proficient students nationwide, only 1.3 million are in bilingual education programs ([http://www.ed.gov/offices/OBEMLA/rileyfct.html)]. It has been well documented that students with limited English proficiency are at higher risk for having reading problems (NAEP, 1996). In 1989, among people between the ages of 16-24, 42%

of those who reported difficulty with English dropped out of school, compared to 10.5% of those who spoke only English (August & Hakuta, 1997). However, the discrepancies in educational achievement start in elementary school. Given that literacy development during the early elementary school years has an ever-widening impact on academic achievement in later years (Stanovich, 1986), it needs to be addressed much earlier in the education of children who have home languages other than English.

Understanding Bilingual Literacy Development

It is clear that attaining high levels of literacy in a second-language is possible. It is less clear, however, how initial exposure to literacy in a second-language affects the subsequent development of literacy skills in that language. The National Research Council's report, Preventing Reading Difficulties (Snow, Burns, & Griffin, 1998), highlights the lack of and need for straightforward, data-based answers to questions about bilingual literacy development, but continuing debates on bilingual literacy programs are usually fueled by the social, economic and political climate of the times rather then being based on arguments guided by research. Especially lacking is clear information on who benefits from bilingual programs, whether literacy instruction in a second-language affects the growth of literacy in that language, and the cognitive processes in bilingual literacy.Bilingual literacy programs are based on the implicit assumption of transfer of skills between the first and second-languages, however, research on the nature of cross-language transfer (CLT) in literacy is quite limited. Most of the existing research focuses on the transfer of background knowledge or metacognitive strategies, rather than on cognitive processes of reading and writing. This is partly due to the dominance of top-down models of reading among researchers studying second-language reading and partly due to the focus on adult participants who already have proficient word recognition processes. However, existing research on CLT suggests that such transfer does occur, and that there is a positive influence of literacy instruction in the first-language on literacy skills in the second-language (Durgunoglu, 1998; Lanauze and Snow, 1989).

The study of bilingual literacy acquisition is further complicated by fact that one cannot always assume proficiency in the first-language among different second-language learners. Hence, there is a controversy about what transfers in bilingual reading. If there is a weakness in L2 reading, is it a language problem or is it a reading problem? (Alderson, 1984)

Of course, cognitive data alone cannot be the decisive factor on resolving the debate about bilingual education programs since political considerations are usually the major guiding force for decisions. However, it is necessary to understand the cognitive processes of bilingual literacy development and to inform educational policy makers accordingly. In order to study bilingual literacy development systematically, we start with a general framework of literacy development. We have used this general framework in our earlier studies with children (Durgunoglu & Öney, 1999; Öney & Durgunoglu, 1997), as well as in developing and evaluating an adult literacy program (Durgunoglu, Öney, & Kuscul, 1995). We first give an overview of this model.

A General Model of Literacy Development

The model outlined in Figure 1 is culled from different studies, each focusing on different subparts of the figure. Because most of these previous studies are correlational in nature, the

arrows are intended to indicate relationships rather than cause and effect. Also important to note is that almost all of these studies are conducted with English-speaking beginning readers (Adams, 1990; Juel, Griffith, & Gough, 1986; Lomax & McGee, 1987; Snow, Barnes, Chandler, Goodman, & Hemphill 1991; Tunmer, Herriman & Nesdale, 1988; Tunmer & Nesdale, 1985). Currently, some educational anthropologists propose "multiple literacies" (e.g. Street, 1994), assuming that both the meaning and the uses of literacy are related to specific cultural contexts. Although we do realize that literacy practices depend on cultural contexts, we assume that basic cognitive underpinnings are identical for various literacy practices.
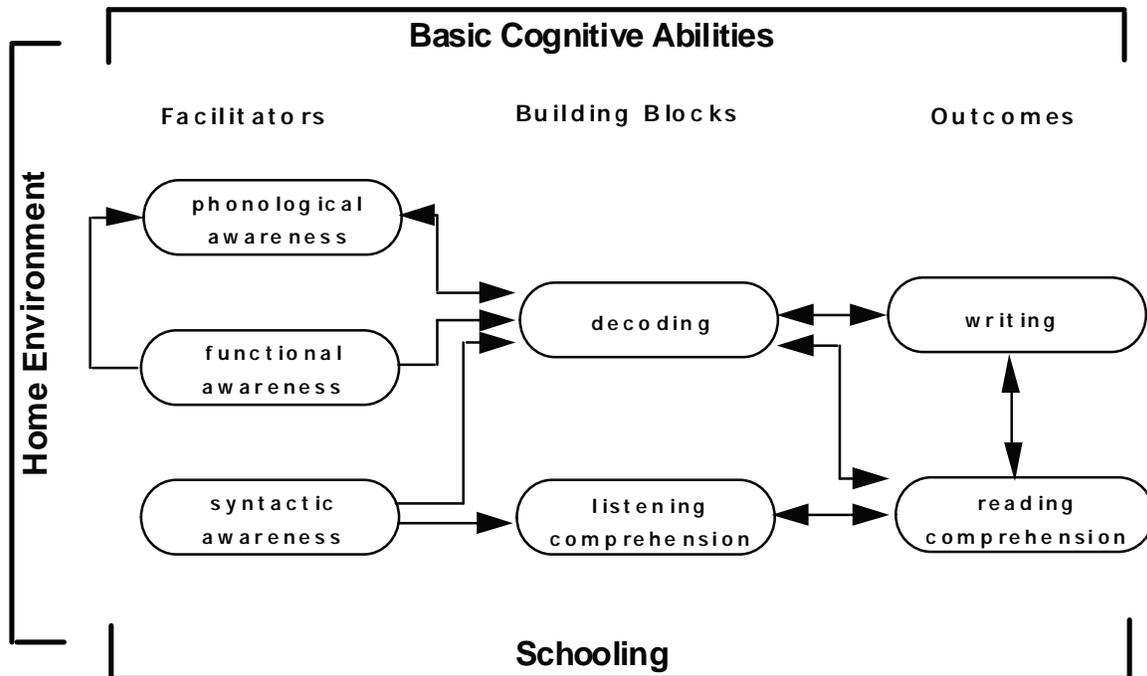
Basic Cognitive Abilities

| Facilitators | Building Blocks | Outcomes |

phonological awareness

functional awareness

syntactic awareness

decoding

listening comprehension

writing

reading comprehension

Home Environment

Schooling

Figure 1: A General Model of Literacy Development

Outcomes: Reading and Writing

The final outcomes in the model are reading and writing fluently and effectively. In addition to understanding a text, responding to it, learning from it, and enjoying it are some other hallmarks of good reading. Likewise, writing proficiency includes not only the mechanics of writing, but also expressing thoughts coherently and appropriately for a given audience using the relevant genre organization. To read and write fluently, a child needs to understand the spoken language and understand how this spoken language is represented in written form (Juel, et al., 1986; Perfetti, 1985). Listening comprehension and decoding, respectively, are the two tasks reflecting the operation of these components. These two constructs parsimoniously encompass quite a few of the cognitive processes of reading and writing (Gough, & Tunmer, 1986), even in different cultural contexts. We will call these components the building blocks of literacy development.

Building Blocks: Listening Comprehension and Decoding

Listening comprehension:

The common denominator in listening and reading is the comprehension of the language. Although listening skills are usually already well-developed when children start school, skills required for reading comprehension are not limited to understanding the semantic and syntactic aspects of spoken language. Especially related to literacy acquisition is the ability to comprehend decontextualized language that Gee (1999) calls the "school-based forms of literate language". One indication that the child knows this "dialect" is indicated by the quality of formal definitions (Dickinson & Snow, 1987). Yet another dimension of listening comprehension especially important for bilingual children is vocabulary and background knowledge. Vocabulary knowledge grows through a child's experiences with oral and written language, and is affected by cognitive variables such as memory and categorization (Gathercole & Baddeley, 1989). Background knowledge is also related to experiences with language and culture, especially in the family and through schooling. Finally, it must be noted that in this model, listening comprehension, rather than productive fluency, is included as a building block.

Decoding:

In reading, unlike listening, phonological information has to be extracted from print, using orthographic decoding routines. Quick and effortless recognition of words is an integral component of fluent reading, and unskilled decoding is regularly associated with poor comprehension. When the individual words of a text are read inaccurately or too slowly, comprehension suffers because integrative processes are disturbed (Shankweiler, 1989; Stanovich, 1986). Likewise, when spelling is laborious, it interferes with the quality of writing (Berninger, Graham, Abbott, Brooks, Abbott, Rogan & Reed, 1998). In addition, spelling performance can be used to understand a child's knowledge of linguistic structures, especially how orthography represents phonology (Moats, 1995; Treiman, 1993).

Facilitators: Metalinguistic Awareness

Before a child can progress to the analytic stage and begin to systematically use the correspondences between graphemes and phonemes, several developments need to occur. The child needs to: (a) understand how and why written language is used, (b) be familiar with the symbols used in the written language, (c) be aware of certain characteristics of spoken language, and (d) understand the systematic relationship between the components of spoken language and the components of written language. These insights can be grouped under the metalinguistic skills of phonological awareness, functional awareness, and syntactic awareness. They are the facilitators of decoding and listening comprehension skills, as well as of each other.

Phonological awareness:

Before children can understand how orthography represents spoken language, they need to be aware of the relevant units in spoken language. This insight includes a child's awareness of phonological units such as words, syllables, onset-rimes and phonemes. Evidence from a variety of

sources suggests that phonological awareness is highly correlated with word recognition and spelling (for a review, see Goswami & Bryant, 1990).

Syntactic awareness:

This metalinguistic insight refers to the child's ability to reflect upon the internal grammatical structure of the sentences. Even though unable to articulate a relevant rule, a child may still be aware of the systematicities in a language. Syntactic awareness can affect decoding and listening comprehension in several different ways (Tunmer, 1990). It can enable readers to monitor ongoing comprehension and notice when a word does not fit the ongoing representation of the text. It can also influence reading by enhancing or verifying the incomplete visual and phonological information that an inexperienced reader has extracted when reading an unfamiliar word in a text. Currently, there is some controversy about how much syntactic awareness contributes to the decoding process, especially after phonological awareness is taken into consideration (Bowey & Patel, 1988). However, the role of syntactic awareness in understanding the spoken language is still important. Also, syntactic awareness as measured by morphological knowledge predicts spelling performance (Muter & Snowling, 1997)

Functional awareness:

This metalinguistic insight includes children's developing notions about the functions and conventions of written language. Through interactions with written language, children develop "concepts about print" (Clay, 1979). This awareness also includes an understanding of when and why print is used and the symbols of the language community (e.g. alphabet). Of course, literacy practices at home and in immediate surroundings provide a model for the child to emulate. Research has shown that functional awareness, knowing about the functions of print, is related to letter discrimination ability and phonological awareness (Lomax & McGee, 1987). In sum, functional awareness seems to affect both of the building blocks, as well as some of the other facilitators.

Contexts of Development: Home Environment, Schooling, and Basic Cognitive Processes

Although in this paper our primary focus is on cognitive components of literacy development, we are very much aware that these components develop within the context of family, peers, community and culture. Furthermore, the specific educational orientations of schools affect literacy acquisition. Finally, the overall cognitive abilities of the child also play a role in this interaction. These three factors are included in our model as the contexts of literacy development. Thus, the constructs of the model in Figure 1 are enclosed within these contexts of development. Cognitive skills related to literacy take root, thrive or languish through the sociocultural interactions of children within this context (Bronfenbrenner, 1995).

Home environment:

As several researchers have discussed, home experiences play an important role in developing language skills, and through them, literacy skills (Heath, 1983; Chaney, 1992, 1994, 1998; Dickinson & Snow, 1987; Hart & Risley, 1995; Teale, 1986). Through their experiences

with both oral and written language, children become familiar with the characteristics of their language and develop an understanding of the functions of literacy. Home literacy practices contribute to the development of metalinguistic insights, or what we call the facilitators in our model. For example it has been shown that children's knowledge of rhymes is correlated with their subsequent phonological awareness (Maclean, Bryant, & Bradley, 1987). Cunnigham and Stanovich (1998) reported that knowledge of book titles (indicating print exposure at home or in school) was a good predictor of subsequent reading achievement.

Schooling:

Throughout history there have been many different approaches to teaching children how to read and write. These approaches differ in many ways. However, the major difference between literacy programs has been whether they promote explicit instruction in literacy skills. How reading instruction is structured influences the nature of literacy development as different methods emphasize different components of reading and writing. In a study on effective literacy instruction, Pressley, Wharton, McDonald & Mistretta (1998) have identified several other teacher characteristics that significantly influence the outcomes of literacy instruction. They have highlighted the differences in the quality of literacy activities, nature of instructional grouping, classroom management styles, classroom atmosphere and parental participation. Thus, it is clear that characteristics of the instructional setting influence the process of literacy development.

Basic cognitive processes:

The basic cognitive processing skills, such as speed of processing and memory, set limits on the operation of specific reading processes such as decoding, word recognition, and comprehension. We are assuming that basic cognitive abilities shape the development of literacy by setting a cognitive context for literacy development.

How the General Model Applies to Other Contexts of Literacy Development

Monolingual Contexts of Other Languages

Most of the research pertaining to the development of literacy has been conducted with English-speaking children. The universality of these findings needs to be evaluated by investigating literacy development in both alphabetic and non-alphabetic languages with characteristics different from those of English. Whether or not certain psychological processes assumed to be universal apply to writing systems with different structural characteristics has been an increasingly popular topic. In the last couple of years, several researchers have started investigating the universal and language-specific characteristics of literacy development by comparing the cognitive components of literacy development across different languages and writing systems (Goswami, Porpodas, Wheelwright, 1997; Wimmer & Goswami, 1994; Leong & Joshi, 1997). In our previous work, we have also addressed this issue. We have observed how children develop literacy in Turkish, a language with a transparent orthography, indicating which has systematic mappings between orthography and phonology (Öney & Durgunoglu, 1997). In that study, first-grade children were assessed using phonological awareness, letter recognition, word and pseudoword recognition, spelling, syntactic awareness, and listening comprehension tests in the

beginning of the school year. The impact of these factors on development in subsequent word recognition, spelling, and reading comprehension was examined. Results suggested that phonological awareness contributed to word recognition in the early stages of reading, just like with English. However, the phonologically transparent orthography fostered the earlier development of word recognition skills and, once children's word recognition performance was high, only listening comprehension ability distinguished children of different levels of reading comprehension. These patterns of results were interpreted as literacy development progressing along the same paths discussed in the general model, but with components developing at different rates and having different durations of impact because of the phonological and orthographic characteristics of Turkish.

In another study we examined changes in phonological mediation in word recognition in a group of Turkish and American 2nd graders, 5th graders and adults (Öney, Peter, & Katz, 1997). The thesis of this research was that the use of assembled phonology for printed word recognition would be more prevalent in transparent orthographies like Turkish than in opaque orthographies such as English. To test this hypothesis, we compared readers of Turkish and English in the degree to which printed word recognition was facilitated by an auditory rhyming pseudoword. We found stronger phonological activation in Turkish than in English at all levels of reading skill. This study demonstrated that readers in both Turkish and English become less dependent on phonological mediation with experience and that this reduction is more rapid for readers of the opaque English orthography. These findings support the general model of literacy development by again showing that literacy development in Turkish and English progresses along similar paths although the components may be developing at different rates.

Yet another question was whether facilitators developed similarly in other languages. In a recent study, we looked at how phonological awareness develops as a function of the characteristics of the spoken language a young child is exposed to (Durgunoglu & Öney, 1999). We selected nonwords that varied in the frequency of the orthographic pattern in both English and in Turkish. For example, the nonword "gat" has many neighbors and is a very common orthographic pattern in English (hat, cat, sat...) whereas "niz" is not. We asked both American and Turkish children to manipulate the sounds of those identical sets of nonwords, thus equating the physical characteristics and complexity of sounds in the nonwords given to the two groups. American children found it easier to manipulate nonwords with frequent English patterns and Turkish children found it easier to manipulate the nonwords with frequent Turkish patterns. In short, these children were already becoming aware of the common phonological patterns in their home languages, which would later be mapped onto orthographic patterns. In addition, compared to American children, Turkish children found it easier to manipulate syllables and final phonemes because Turkish has a well defined syllable structure and is a highly suffixed language requiring manipulations of the final morphemes (cf., Peynircioglu, Durgunoglu, & Öney-Kusefoglu, 1996). These results have indicated that precursors of literacy development are closely linked to children's experiences with the characteristics of their spoken language. This conclusion is also supported by studies of literacy development in other languages such as German, Czech, and Italian (Caravolas & Bruck, 1993; Cossu, Shankweiler, Liberman, Katz & Tola, 1988).

Cross-linguistic research in reading development has implications for understanding bilingual literacy development. Existing research suggests that structural characteristics of

different writing systems influence the relationships between orthography, phonology, morphology and meaning in the processing written language. Thus, it is important to understand how knowledge of a particular language and writing system may interact with bilingual literacy development.

Bilingual Contexts

Bilingual Cognition

Research on bilingual cognition has been conducted mostly with adults. Although a variety of cognitive skills have been tested, almost all procedures have relied on reading and writing skills of bilinguals in both of their languages, and almost all procedures have sought to determine the influence of the languages on each other, especially as a function of different L2 proficiency levels. For instance, Magiste (1979, 1980) has shown that bilinguals were slower in following written directions even in their dominant language, implying interference from their other language. Similarly, bilinguals have been found to be slower in lexical-decision tasks (Ransdell & Fischler, 1987). On the other hand, memory for a written passage was better if it was presented once in each of two different languages than twice in the same language (Durgunoglu, Ariño-Martí & Mir, 1993; Hummel, 1986), and short-term memory could be enhanced by presenting written words in two different languages in the same list (Peynircioglu & Durgunoglu, 1993).In general, for less proficient bilinguals, translating from L2 to L1 is faster and more successful than translating from L1 to L2 (e.g., Kroll & Curley, 1988; Peynircioglu & Tekcan, 1997). One of the prominent explanations for this finding is that, in novice bilinguals, lexical links between two languages are stronger than conceptual links and hence, lexical links are easier to access. For present purposes, the implication is that given literacy in one language already, word recognition in another language can develop faster than forming the initial conceptual knowledge in that language. That is, a Spanish-speaking child learning English can recognize that the words "cat" and "gato" mean the same thing more easily than recognizing that the furry cute animal is called a "cat".

Bilingual Literacy

Although there is also considerable research focusing specifically on bilingual reading, most of this research has been conducted with adults as well. This population usually consists of college students who are studying in the USA and who are quite literate in their first-language (e.g., Devine, Carrell & Eskey, 1987). There are fewer studies on young children who are bilingual and beginning to develop literacy in one or both languages. For this population, the usual approach is to evaluate the bilingual education programs and make policy recommendations (Ramírez, Yuen, Ramey, Pasta, 1991; Willig, 1987; but for exceptions see García, 1991; Jiménez, García & Pearson, 1996; Verhoeven & Aarts, 1998). Because of what we call "the tyranny of participant populations (Durgunoglu & Hancin, 1992), there is a gap between the two fields studying bilinguals' literacy development that limits the generalization of findings. In reviews of cognitive factors influencing literacy development of bilinguals (both children and adults), several sources of knowledge that can facilitate or hinder both reading and writing have been identified (August & Hakuta, 1997;

Bernhardt, 1991; Durgunoglu, 1992; 1998). Among such sources are (a) linguistic/metalinguistic factors, (b) print-related factors and (c) background knowledge and cognitive skills.

Linguistic/metalinguistic knowledge:

Linguistic/metalinguistic knowledge includes knowledge of semantics, phonology, syntax, and pragmatics, as well as an awareness of these structures in oral language. In our general model, listening comprehension, syntactic awareness and phonological awareness represent these factors. On the other hand, oral productive fluency is not included. In fact, oral proficiency may underestimate bilingual children's English proficiency (Moll & Diaz, 1985; Savile-Troike, 1984). Although oral fluency is not a major part of general reading models (based on data from monolingual children), it is one of the benchmarks bilingual educators use to decide when to start literacy education in English (Fradd, 1987). We have also observed several classrooms in which ESL instruction consisted solely of speaking and listening exercises and literacy activities did not start until the children were "proficient." However, if reading models do not place oral fluency as one of the predictors of reading and writing proficiency, then there is a conflict between what general reading models propose and what bilingual educators do. Children can usually understand a lot more than they can initially produce. Therefore, waiting until oral proficiency is achieved before starting literacy instruction may be counterproductive since an assessment of listening comprehension may be sufficient for starting literacy instruction.

Another rationale for not placing great weight on oral proficiency comes from research with monolingual children. These studies have shown that familiarity with decontextualized language, rather than fluent speech, is a stronger predictor of literacy development (Snow, Cancini, González & Shriberg, 1989). However, oral proficiency may play an indirect role in literacy development. It may affect decoding measures such as word recognition and spelling indirectly, through phonological awareness. Our work comparing Turkish and American beginning readers supports this claim. Children in our studies were acquiring awareness of phonological patterns occurring in the home languages they were exposed to (Durgunoglu & Öney, 1999). In several studies with monolingual children, the level of productive phonology has been linked to phonological awareness levels (Chaney, 1994; Metsala & Walley, 1998). Metsala and Walley (1998) argue that as oral vocabulary develops, children become familiar with many words and their neighborhood and lexical structures, leading to an awareness of phonemes. Indeed, our work comparing Turkish and American beginning readers showed that children were acquiring an awareness of phonological patterns that were specific to their home languages (Durgunoglu & Öney, 1999).

Another component of oral proficiency is narrative discourse. In a recent study with mostly monolingual first-graders, Speece, Roth, Cooper and de la Paz (1999) conducted a multivariate analysis of oral language skills of young children and grouped the children into four clusters according to their proficiency in semantics, syntax, phonemic awareness, narrative discourse and metasemantics (comprehending ambiguous and figurative language). Strength in phonological processing, but not narrative discourse, was related to literacy measures of word recognition, spelling and passage comprehension. This is paradoxical because narrative discourse fluency (as assessed by the story structure in children's storytelling), can be expected to relate to reading comprehension. For instance, if the children have high narrative skills (developed at home and school), then they should have knowledge of story grammar and know how the stories flow.

However, Speece et al.'s data support the previous findings of a weak link between oral proficiency and literacy development.

Print-related factors:

Print-related factors such as understanding the functions and conventions of print, as well as understanding how print represents the spoken language (e.g., the alphabet and its mappings to the spoken language), are specific to written language. In our model, decoding (both word recognition and spelling) and functional awareness represent print-related factors. Spelling provides a window into the orthographic and phonological knowledge of the students. As children develop proficiency, they use more sophisticated strategies and incorporate more sophisticated functional units in their production (Ehri, 1998; Venezky, 1995). When monolingual English-speaking children initially start spelling they usually use random marks or scribbles. As they begin to learn the alphabet, and the names of letters, they use this information to spell words ("r" for are). Eventually, letter names lose some of their impact, and individual phoneme-grapheme mappings get established. Later, through experiences with words and their neighbors, common patterns of letters, such as the rime -at, or the onset cr- get established as functional units. Finally, syntactic knowledge, especially that of morphology, plays a role and children spell words based on their complex morphological structure (e.g., -ed is always used to indicate past tense even when a verb ends with the sound -t) (Muter, & Snowling, 1997). When it comes to bilingual literacy development, it might be a universal metalinguistic skill to notice larger units, but learning the actual patterns of a language requires extensive experience with the words of that language through reading and writing.

Background knowledge:

Background knowledge includes information (such as cultural, scientific, historical) that affects comprehension, and this information permeates reading and listening comprehension as well as writing. One of the maxims from monolingual reading research is that how much one already knows about a topic affects how much one will comprehend a text on that topic (Dochy, Segers & Buehl, 1999; Stahl & Jacobson, 1986; Tobias, 1994). This becomes an even more important variable when bilingual children's comprehension of English texts is considered. Studies with older Spanish-speaking children have indicated that their reading comprehension suffers when they are unfamiliar with the topic (García, 1991). We suspect that home literacy experiences, and possibly SES, rather than language background will be closely related to the level of a child's background knowledge (Teale, 1986). Another kind of background knowledge—that can also be considered to be metalinguistic involves knowing about reading and writing styles. Good readers and writers are aware of genre differences. For example, they know that fairy tales and newspaper articles are written in different styles. Although studies assessing knowledge about genre are usually conducted with older readers, we believe that it is an important component of reading and writing and can be assessed with younger children.

Cross-Language Transfer:

Literacy development of bilingual children also presents the intriguing possibility of transfer across languages. There is a saying that "children acquire literacy only once" implying that

the proficiencies in first-language literacy (in either the home or the majority language) apply to the development of a second-language literacy (Geva & Wade-Woolley, 1998; Nagy, García, Durgunoglu, & Hancin-Bhatt, 1993; Verhoeven & Aarts, 1998; Wagner, 1998). In fact, one of the underlying assumptions of bilingual education is that literacy development in the strong language of a child will progress more smoothly and then facilitate literacy development in the other language (Durgunoglu & Verhoeven, 1998). Evaluation of this assumption has been very difficult because of many confounding factors, as well as the problem of posing the question globally (Durgunoglu & Hancin-Bhatt, 1992). It might be more fruitful to focus on specific proficiencies in first-language literacy and then to examine any cross-language transfer (CLT). A strong candidate for transfer is metalinguistic skills, those that involve an awareness and conscious analysis of language and literacy processes and characteristics, irrespective of language. As an example, although they were conducted with older elementary students, several studies have shown the importance of language-independent, good meaning-construction strategies for bilingual readers (Langer, Bartolome, Vásquez & Lucas, 1990). Jiménez et al. (1996) have discovered that skilled Latina readers reading English texts continuously monitored their understanding of the text, paid attention to word meanings, and used their background knowledge. Unskilled readers, in contrast, were interested in calling out the words and finishing reading the text with minimal attention to creating and updating the mental representation of the text.

Recent research indicates that bilingual children develop metalinguistic awareness earlier than monolingual children. For example Bialystok (1997) reported that awareness that print represented spoken language was stronger in bilingual children. They also realize the arbitrariness of symbols and the independence between form and meaning earlier (Ben Zeev, 1977). Knowing two languages provides a contrast so bilingual children should be better at detecting syntactic rules of languages as well.

Another metalinguistic skill, phonological awareness, has also been shown to transfer across languages (Carlo & Royer, 1999). In one study (Durgunoglu, Nagy & Hancin-Bhatt, 1993), Spanish phonological awareness and Spanish word recognition levels explained 74% of the variance in English word recognition, indicating that the basic cognitive processes of word recognition in Spanish helped in English word recognition.

In another study, we conducted a year-long assessment of 46 first-graders in a suburb of Chicago to explore the predictors of several literacy skills (Durgunoglu, Ariño-Martí & Mir, 1993; Durgunoglu, Mir, & Ariño-Martí, 1993b). All children in the study were in a transitional bilingual education program. They were mostly instructed in Spanish, with English as a Second-Language instruction that emphasized oral proficiency and listening comprehension rather than literacy. In the November and January, we gave children the following tests: six predictors and seven outcome measures.

The outcome measures in English included: [1] word recognition (November: reading Clay's (1979) list of 15 common words); [2] Environmental print (November: reading the logos/labels on 10 common objects); [3] spelling (January: spelling 8 common words using magnetic letters); [4] phonological awareness (January: segmenting and blending words, manipulating phonemes and onset-rimes).

The outcome measures in Spanish consisted of: [5] word recognition (November: a test parallel to Clay's 15 common words); [6] spelling (November: spelling 10 common words using magnetic letters); [7] reading comprehension test (January: reading a short story about a lost duck and answering 4 questions about it). To analyze the development of the outcome measures discussed above, six predictor tasks, all given in November, at the beginning of the school year, were used: [1] Spanish phonological awareness (segmenting and blending words, manipulating syllables, onset-rimes and phonemes); [2] Spanish syntactic awareness (correcting 15 ungrammatical sentences that had morphological or word order errors); [3] Spanish listening comprehension (two subsets of Duncan & DeAvila's preLAS test); [4] Letter identification (Clay's test of upper and lower case letters with either Spanish or English names/sounds accepted); [5] Functional print test (asking the children to describe in Spanish, the functions of nine different objects, such as a phone book); [6] Piedra: Spanish concepts about print test (Spanish version of Clay's test assessing knowledge such as how book is held, how reading progresses (Iturrondo, 1985).

The English word recognition levels were quite low (8%), which is not surprising, because of the very limited amount of literacy instruction children received in English. Therefore, we will not discuss the results of this task any further. However, if an English word was written with its logo, then recognition level was 68%.

By January, children could also spell some English words very well (62%). At the beginning of the year, Spanish word recognition and spelling levels were 63% and 70%, respectively. Not surprisingly, Spanish word recognition and Spanish spelling were correlated (.79). These two measures were also correlated with predictors such as letter recognition and Spanish phonological awareness (.85 and .55 for word recognition and .74 and .67 for spelling). More interestingly, the English literacy skills such as phonological awareness and spelling were also related to these Spanish variables, indicating cross-language transfer.

Multiple regression analyses further highlighted these patterns when all the predictors were entered into the equation to predict each outcome measure. For example, Spanish phonological awareness predicted 47% of the variance in English phonological awareness levels. Letter knowledge and Spanish phonological awareness together explained 69% of variance in Spanish word recognition, 69% in Spanish spelling, but also in 83% in English spelling. For Spanish reading comprehension, Spanish syntactic awareness was the only significant predictor. These results are summarized in a diagram in Table 1, Figure 2. Very simply, there are strong influences of Spanish variables on English literacy development.

Access to two languages, and the possibility of contrasting those languages are metalinguistic insights that can facilitate literacy development. The paradox, then, is why bilingual children with stronger insights to linguistic structures fall behind in literacy development. This suggests that we should also look more closely at sociocultural variables.
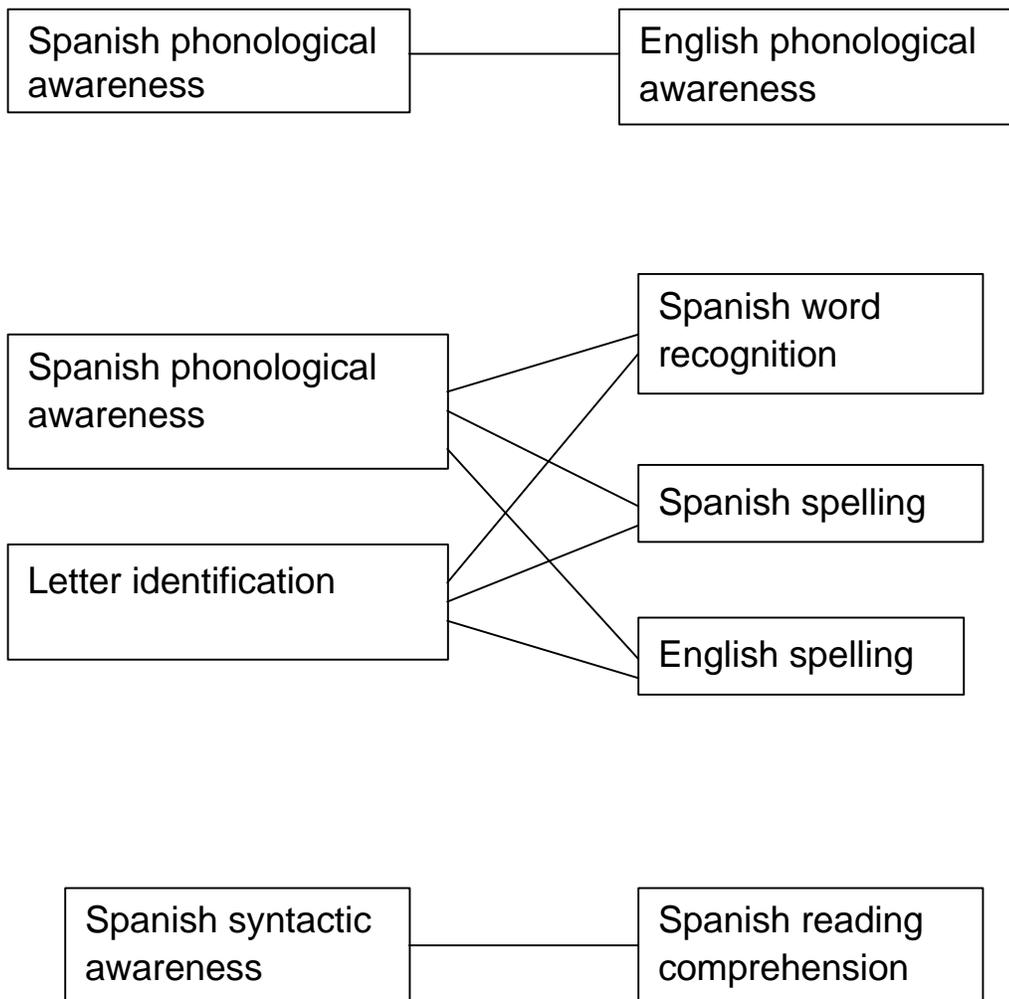
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│ Spanish syntactic   │────────────────────│ Spanish reading     │
│ awareness           │                    │ comprehension       │
└─────────────────────┘                    └─────────────────────┘
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Figure 2: Links between English and Spanish measures

Sociocultural Contexts of Literacy Development

It is clear that literacy development in multilingual contexts is affected by many interrelated factors. This complexity requires a wider perspective and necessitates the inclusion of political, social and cultural contexts while studying the cognitive underpinnings of literacy development in multilingual contexts (Durgunoglu & Verhoeven, 1998). Widening of perspectives also necessitates the use of different methodologies, such as case studies, ethnographic observations of communities, families, and classrooms, and experimental manipulations. A multilingual context comes bundled with many interrelated variables, including family characteristics and practices, levels of income and education, as well as the nature of children's schooling. For example, Tabors & Paez (1998) demonstrated that there is wide variation in bilingual education programs. Our previous observations also confirmed that the term "bilingual education" can have widely different

meanings. Therefore, in analyzing the effects of a second-language background, it is imperative to unconfound the effects of SES, family variables, and schooling from the effects of multilingualism.

Home environment:

As several researchers have discussed, home experiences play an important role in developing language skills, and through them, literacy skills (Heath, 1983; Chaney, 1992, 1994; Dickinson & Snow, 1987; Hart & Risley, 1995; Teale, 1986). Through their experiences with both oral and written language, children become familiar with the characteristics of their language and develop an understanding of the functions of literacy. Home literacy practices contribute to the development of metalinguistic insights. For example, certain oral language experiences, such as riddles and rhyming games, help children to develop phonological awareness (Maclean, Bradley & Bryant, 1987). As children observe the adults around them using literacy, they develop an awareness of functions and characteristics of print. In addition, monolingual middle-class homes have many literacy activities (e.g., labeling, magnetic letters, storybook reading) that not only help in literacy development (Adams, 1990; Hart & Risley; 1995), but also match the practices at school.

Low SES families may also do a lot of talking and storytelling, but the nature of their interactions is less likely to match the decontextualized language at school (Heath, 1983). For instance, Teale (1986) has discovered that for low-SES families, the types of literacy activities are similar regardless of ethnic background. Likewise, Chaney (1994) has shown that family income and maternal education are significantly correlated with the types of literacy activities at home (see also Baker, Fernández-Fein, Scher & Williams, 1998). This does not mean that some groups are illiterate or that these parents don't value literacy development. However, certain literacy-related practices appear to promote the type of skills children need to master in order to ensure success in school, and these interactions are not taking place in some homes. In short, some certain developmental outcomes (both positive and negative) may be related to sociocultural variables rather than the presence of a second-language. Therefore, when we study the cognitive underpinnings of literacy development in multilingual contexts, we need to also consider sociocultural variables such as SES, school quality, parental education levels.

On the other hand, there are some sociocultural issues specifically linked to language use, as will be discussed below. These factors influence parental attitudes and, through them, the nature and language of literacy practices at home (Hardman, 1998).

Schooling:

Good teaching is universally effective. What works with monolingual children (for a review, see Pressley, Wharton-McDonald, & Mistretta, 1998) applies to bilingual children as well. Some examples of effective educational practices are high parental involvement, building on the existing strengths of children, and providing a safe, interesting and active learning environment. Similarly, the body of research in early literacy development is beginning to reach sufficient volume to allow us to specify effective practices in literacy instruction, and these practices are beneficial for bilingual as well as monolingual children. In our discussions of the home

environment, we stressed that literacy development is embedded in daily family life and that children start moving toward fully-developed literacy through home literacy interactions.

Schooling provides the next layer of literacy interactions for children, and is especially important for those who have not been exposed to the kinds of literacy interactions known to promote early literacy development at home. For example, opportunities for oral language exchange and language play, creating supportive book reading episodes that foster growth in linguistic, cognitive and print related skills, allowing children to experiment with writing in creative and constructive ways are only part of the recipe for success in school-based practices. There is sufficient research available to guide the practice of such language and literacy activities in school settings, and they apply equally well to bilingual children as they do to monolingual children. Turning to phonological awareness, there is extensive evidence to support claims that this is a skill that can and should be included in early literacy instruction. Providing phonological awareness instruction is particularly important since research has shown that it can be developed through instruction. School settings are especially appropriate for fostering the development of phonological awareness. We think phonological awareness instruction is beneficial for the bilingual child who can learn from instruction in either language, as studies on CLT suggest.

Language, Culture and Society:

Both home and school literacy practices in multilingual contexts are closely linked to political, economic and social forces in a society (Durgunoglu & Verhoeven, 1998). These global forces shape the literacy instruction and development in one or both languages of children. Economic and political factors such as the status of the two languages in the larger society, whether the immigration perspective is one of a "melting pot" or a "salad bowl", the economic strength of the language minority group, among others shape policy decisions, affect the funding for educational programs, and directly affect the nature of support for mono/biliteracy (e.g., availability of educational resources, materials, teachers). These social factors operate at the level of families and small communities. They include factors such as group cohesiveness, connections within the home language communities, and cultural identity. Also relevant are concerns about the utility of language and literacy in one or both languages, for example, the economic benefits of becoming literate in Spanish, English, or both. These factors influence parental attitudes and, through them, the nature and language of literacy practices at home, affecting children's literacy development.

Conclusion

Researchers have begun to identify several studies indicating the universal and language-specific factors of literacy development. The universal factors seem to transfer across languages and facilitate biliteracy. The language-independence of these processes is encouraging because literacy development in one language can help it in the other. However, considering these cognitive developments within the contexts of the home, school and the culture gives us a more complete picture. More importantly, as a society, seeing a second-language as an asset, rather than a liability to be remediated, is essential.

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