



PREDICTORS OF EARLY READING DEVELOPMENT IN A FIRST AND SECOND LANGUAGE

Assist. Prof. Dr. Rhonda Marie JOY
Memorial University of Newfoundland, Canada
rjoy@mun.ca

Abstract

As globalization becomes more widespread and countries become more multicultural, there is an increased need to understand how to effectively promote the learning of foreign languages. An important part of that process relates to understanding how reading develops when a child is learning a new language. Researchers' focus on assessing students' oral language proficiency in a second language has not provided as much insight as expected into that development. This paper reports on a study of grade one students whose first language was English and who were being schooled in French as a second language. The context provided an ideal case in which to investigate how well variables such as phonological awareness, word reading, memory, rapid automatized naming (RAN), and vocabulary, in addition to oral language proficiency, predict reading development in a first and second language. Methods involved testing 47 Canadian students at the beginning and end of the school year. Findings revealed that word reading was the sole variable that predicted reading development within and across time and for the first and second language. Phonological awareness and RAN were the next most important variables, followed by memory and vocabulary. Oral language proficiency did not play a significant role. The results of this study suggest that those involved in assessing young children's first and second language reading should focus on word reading, phonological awareness, RAN and memory. As well, findings suggest that oral language proficiency in a foreign or second language may not be an accurate predictor of reading development.

1

Keywords: predictors of early reading, elementary education, language education, first language learning, second-language learning

INTRODUCTION

As globalization becomes more widespread and countries become more multicultural, there is an increased need to understand how to effectively promote the learning of second languages. An important part of that process relates to understanding how reading develops when a child is learning a new language. Assessments of students' foreign language oral language proficiency have not provided as much insight as expected into that development. Some studies of English as a second language learners with Spanish and Punjabi as the first language, French Immersion and bilingual-Hebrew learners have led researchers to question the predictive power of oral language proficiency in explaining individual and developmental differences in basic foreign language reading (see Durgunoglu, Nagy & Hancin-Bhatt, 1993; Geva & Petrulis-Wright, 2000; Geva & Clifton, 1994; Geva, Wade-Woolley & Shany, 1993). In fact, young children can learn to decode and spell words without difficulty even when oral language proficiency in the foreign language is still developing (August, Calderon & Carlo, 2001; Comeau, Cormier, Grandmaison & Lacroix, 1999; Geva & Siegel, 2000; Gholomain & Geva, 1999).





A growing body of research demonstrates that first and second language phonological awareness skills (e.g., sound-symbol correspondence; rapid automatized naming or quickly reading a series of digits/letters; memory) correlate with each other, transfer across languages and predict word recognition and spelling skills (Bruck & Genesee, 1995; Cisero & Royer, 1995; Comeau et al., 1999; Gottardo, 2002). Durgunoglu et al. (1993) and others have also found second language phonological awareness skills to be correlated to pseudoword decoding skills in the second language (e.g., Geva, Yaghoub & Schuster, 2000). However, few studies have investigated the role these variables play in relation to one another and to other variables such as vocabulary, word reading and oral language proficiency in second language learners.

Canada's French Immersion (FI) programs present an ideal context in which to study the complex development of children's first and second language reading. In FI, children are introduced to reading in French before reading in their first language, English. The study reported on in this paper focused on that context in order to identify the variables that predict how reading develops in the first and second language. The results will be of interest, not only in a Canadian context, but for the understanding of foreign-language reading development in general.

Performance on tasks that measure phonological awareness, rapid automatized naming and phonological memory is well recognized as a potent predictor of early reading in a child's first language and second language (National Institute of Child Health and Human Development, 2000; Bowers & Swanson, 1991; Mumtaz & Humphreys, 2001; Wagner, Torgesen & Rashotte, 1994;). This performance has been documented for various languages such as Turkish, French, Italian, Spanish, English, German and Hebrew (see Quiroga, Lemos-Britton, Mostafapour, Abbott & Berninger, 2002; Ehri, 1998; Cossu, Shankweiler, Liberman, Katz, & Tola, 1988; Durgunoglu & Oney, 1999; Alegria, Pignot & Morais, 1982; Nasland & Schneider, 1991; Benton, Hammer & Cahan, 1991). Some studies have also found that working memory plays an important role in first and second language word identification and comprehension in the early stages of reading (e.g., Chiappe, Siegel & Wade-Woolley, 2002; Genesee & Geva, 2006; Geva & Siegel, 2000; Gholomain & Geva, 1999).

Comeau et al. (1999) observed cross-language transfer of the phonological processing and reading skills in grade one, three and five French immersion (FI) children with English as their first language. Results indicated that the relationship of phonological awareness to word decoding was just as strong within the same language as it was across the two languages. For example, French phonological awareness predicted English and French word decoding. LaFrance and Gottardo (2005) found similar results when studying a group of primary-grade students who had French as their first language and English as their second language.

Tingley et al. (2004) studied whether various English and French phonological awareness skills (syllable, onset-rime, phoneme) predicted English and French reading development in a group of kindergarten and grade one FI students. They found that onset-rime (e.g., boat; b=onset, oat=rime) and phoneme awareness (sound-symbol correspondence) were correlated significantly with French and English word and nonword (e.g., fum) reading scores. However, they found syllable awareness was only significantly correlated with French nonwords.





Deacon, Wade-Woolley and Kirby (2007) considered whether FI students' English morphological awareness skills could predict French reading ability. Morphological awareness relates to one's ability to recognize the smallest units of meaning in a language (e.g., create, creator, creation). They followed a group of FI students from grades one to three and found that English morphological awareness was a significant predictor of French word identification skills in grades one to three.

These studies highlight the cross-linguistic connections in learning to read in a second language. However, there is a need to expand and understand the measures of reading and the relationships among the predictor variables in order to predict reading development. The study reported on in this paper focused on French as a second language and English as a first language to consider aspects of reading that have not been previously explored in one study, i.e., phonological awareness, English rapid automatized naming (RAN), English vocabulary, English working memory and English/French oral language proficiency. The study also explored the role of Time 1 (T1) word reading in relation to the other variables, in predicting Time 2 (T2) word reading. The inclusion of word reading as a predictor variable is unique as it is usually considered as an outcome variable. Its inclusion as a predictor variable helped provide a timeline as to when word reading becomes more important than phonological awareness in predicting reading development.

The study's research questions were as follows:

1. What role do these variables play in predicting first-language word reading?
2. What role do these variables play in predicting second-language word reading?
3. What role do these variables play in predicting first-language pseudoword decoding?
4. What role do these variables play in predicting second-language pseudoword decoding?

METHOD

Forty-seven students (27 girls and 20 boys) were drawn from three classes of grade one FI, Canadian schools. Only children whose first language was English and whose parents identified them as having no formal reading instruction in English or French prior to beginning school were included in the study. In the schools studied, English was not formally introduced to these second-language learners until grade three. The only subjects taught in English in kindergarten and grade one were Physical Education and Music.

The study involved two testing phases: October (T1) and May (T2). All tests were administered individually to each grade-one child. Directions for both English and French tests were read to each child in English to ensure they understood the tasks presented. As well, one or two examples of each task were reviewed with the child before beginning testing. Tests similar in make-up such as RAN and Digit Span (repeating digits of increasing length) and/or differing in language only (e.g., word reading tests) were presented in different sessions. The order in which these three sets were presented to students was randomized.

Table 1 describes the dependent and independent reading measures used in this study. The test name and the variable it measures as well as the language of administration and time of administration are noted. Depending on the purpose of the test and due to time constraints, some tests were only administered in English and/or at one time frame.



**Table 1.** Testing Instruments (possible range of raw score in parentheses)

Test	Purpose	Reference	Language	T1	T2
PPVT*(Form L) (0-175)	Vocabulary Knowledge	Dunn & Dunn (1981)	English	Yes	No
Sentence Repetition subtest of the Stanford-Binet (0-42)	Oral Language Proficiency	Chevrier (1988)	French	Yes	Yes
Sentence Repetition subtest of the Stanford-Binet (0-42)	Oral Language Proficiency	Thorndike, Hagen & Sattler (1986)	English	Yes	Yes
Digit Span (forward/backward) subtest of the WISC-III* (0-16)	Verbal Memory	Wechsler (1991)	English	Yes	No
RAN*	Efficiency of Lexical Retrieval	Denckla & Rudel (1976)	English	Yes	No
The Rosner Test of Auditory Linguistic Skills (0-18)	Phonological Awareness	Rosner & Simon (1971)	English	Yes	Yes
The French Auditory Analysis Test (0-42)	Phonological Awareness	Cormier et al., (1994)	French	Yes	Yes
The Word Reading subtest of the WRAT-R (0-15 letters, 0-42 words)**	Word Reading	Jastak & Jastak (1984)	English	Yes	Yes
FIAT* Word Reading subtest (0-5 letters, 0-81 words)**	Word Reading	Wormeli & Ardanaz (1987)	French	Yes	Yes
The Word Attack subtest of the Woodcock Reading Mastery Test- Revised (0-45)**	Ability to Use Various Phonological and Orthographic Rules to Decode English Pseudowords	Woodcock (1987)	English	Yes	Yes
Experimental French Pseudoword Word-Attack task (0-61)**	Knowledge of Various Phonological and Orthographic Rules to Decode French Pseudowords.	Geva (1995) No Standardized Test Available. Experimental Cronbach's alpha at T2= .92)***	French	Yes	Yes

*Note. PPVT= Peabody Picture Vocabulary Test; WISC-III= Wechsler Intelligence Scale for Children-Third Edition; WRAT-R=Wide Range Achievement Test-Revised; FIAT= French Individual Achievement Test.

**Note. Measures used to assess the dependent variables. Word reading was used as both a dependent and independent variable.

***Note. Cronbach's alpha is high which indicates strong internal consistency estimate of reliability of test scores.

Descriptive statistics are presented in Table 2. Correlations and intercorrelations are presented in the Appendix. Intercorrelations among most of the parallel constructs in English and French at T1 and T2 suggest that these tasks do, in fact, measure similar constructs. Therefore, students who do well on the English form of these tasks are likely to do well on the French form. However, correlations among the English and French predictor measures and the reading measures suggested that different sub-sets of predictors were correlated with each of the reading measures in early and late grade one while others do not appear to be correlated (see Appendix). Regression analyses were carried out to determine how much variance was explained by each of these predictor variables on the reading measures.

The relationship was examined between the English and French predictor variables and the English and French reading skills. A series of step-wise multiple regression analyses was conducted with the predictor variables allowed to enter freely. Hierarchical regression





analysis was not used in this study due to the exploratory nature of the research. It should also be noted that forced entry of a set number of predictor variables did not greatly influence the amount of variance the variables contributed to any of the measures used. Only variables that significantly correlated (see Appendix) with each dependent variable (word reading and pseudoword decoding) were entered into the regression analyses.

Table 2. Descriptive Statistics for English (E) and French (F) Predictor and Dependent Variables at Time One and Time Two (possible ranges in parenthesis).

Predictor Variables	Time 1		Time 2	
	Mean	SD	Mean	SD
(E) Phonological Awareness (0-18)	43.97	20.59	56.97	19.78
(F) Phonological Awareness (0-42)	20.31	13.94	33.38	13.05
(E) Sentence Repetition (0-42)	39.21	8.68	42.60	8.82
(F) Sentence Repetition (0-42)	17.02	7.11	24.98	6.68
(E) Vocabulary (0-175)	40.21	7.40		
(Standard Score)	97.00	7.00		
(E) Memory (0-24)	41.05	8.73		
(E) RAN digits (seconds)*	51.71	10.50		
(E) RAN letters (seconds)*	52.70	13.26		
(E) Word Reading (0-57)	25.79	3.33	30.57	5.48
(Standard Score)	92.53		86.94	
(F) Word Reading (0-86)	5.84	1.71	12.40	4.49
(E) Pseudoword Reading (0-45)	.80	2.43	4.97	7.03
(F) Pseudoword Reading (0-61)	1.15	2.44	7.57	9.86

Note 1. RAN digits/letters= rapid automatized naming of numbers/letters.

Note 2. Some of the above predictor variables were only measured at T1.

Note 3.* = seconds refers to how long it takes to rapidly name the list of letters/numbers.

Note 4. N=47

The stepwise procedure then determined the contribution, if any, of the predictors to the variance on each dependent measure. One series of regression analyses used T1 predictor variables on T2 reading measures. Another series of regression analyses used T2 predictor variables on T2 reading measures. At each time frame, the French or English predictor variables were entered into the regression equation along with the T1 English cognitive-linguistic variables (RAN, Vocabulary, Memory) that correlated with the dependent measure. This allowed for four models (A,B,C,D) for each dependent measure. For example, A) T1 French predictor variables, B) T1 English predictor variables, C) T2 French, and D) T2 English predictor variables. Each of these sets of variables was entered into a regression equation along with the T1 English cognitive-linguistic variables to determine their role in predicting English word reading. This approach made it possible to examine the utility of predicting performance on reading at the end of grade one on the basis of performance on the predictor variables at T1 and T2. Even though percentage scores were used instead of standard scores, age in months was not included in the regression analyses because, when entered, it did not contribute significantly to the variance on the dependent measures.



FINDINGS

1. What role do the T1 and T2 variables play in predicting first language word reading at T2?

French phonological awareness, followed by French word reading and then RAN digits were the most important T1 French predictors of T2 English word reading. Fifty-four percent of the variance in scores on the T2 English word reading performance was explained by the T1 French word reading and French phonological awareness in combination with T1 English RAN digits (see Model A, Table 4a). T1 French phonological awareness accounted for about 31% of the variance on English word reading at T2. T1 French word reading accounted for an additional 17% while T1 English RAN digits accounted for an additional 6% of the variance.

Table 4a. Significant Predictors of English T2 Word Reading

Model	Significant Predictors	R2 Change	Total Adjusted R2	Significant F Change	Beta
A	T1 French				
	Phonological Awareness	.313		.000	.373
	Word Reading (E)RAN digits	.169	.543	.000	.381
B	T1 English				
	Word Reading	.061		.021	-.270
	RAN digits	.439	.490	.000	.551
C	T2 French				
	Word Reading	.051		.041	-.252
	(E)T1RAN digits	.389	.532	.000	.545
D	T2 English				
	T1RAN digits	.143		.001	-.386
	Sentence Repetition	.246	.359	.000	-.472
		.113		.008	.337

Note. Models A, B, C and D represent the results of the four regression equations: A) T1 French predictor variables, B) T1 English predictor variables, C) T2 French predictor variables, and D) T2 English predictor variables, together with the T1 English cognitive-linguistic predictor variables which correlated with the word reading measure.

Note. R2 change= amount of variance explained by independent variables; Total adjusted R2 change= modification of R2 that adjusts for the number of explanatory terms in a model; Significant F change= probability of F-value occurring by chance; Beta= standardized regression coefficients

In relation to the T1 English predictor variables, 49% of the variance on the T2 English word reading task was explained by a combination of the T1 English RAN digits (5%) and the T1 English word reading (44%) variables (see Model B, Table 4a). Despite the inclusion of English phonological awareness into the regression analysis, it was the T1 English word reading and RAN that were the significant English T1 predictors of T2 English word reading.

At T2 (see Model C, Table 4a), in relation to the T2 French predictor variables along with the T1 English cognitive-linguistic variables, two predictor variables explained a substantial percentage of the variance in scores on the T2 English word reading task. T2 French word reading (39%) and T1 English RAN digits (14%) together accounted for 53% of the variance on this task. This means that by the end of the year, students' French word reading was a good indicator of their performance in their English word reading.

At the end of the year, two English predictor variables accounted for a significant proportion of variance on the T2 English word reading task: T1 English RAN digits (25%)



and the T2 English oral language proficiency (11%). These variables explained together, 36% of the variation in scores on the T2 English word reading task (see Model D, Table 4a).

2. What role do the T1 and T2 variables play in predicting second language word reading at T2?

T1 French phonological awareness (26%) and T1 French word reading (15%) explained 41% of the variance on T2 French word reading (see Model A, Table 4b). The only T1 English predictor variables (see Model B, Table 4b) that contributed to the variance on the T2 French word reading task are the T1 English vocabulary (8%) and T1 English word reading (24%) variables. Together, they accounted for 32% of the variation in scores. At T1, it was the T1

Table 4b. Significant Predictors of French Word Reading

Model	Significant Predictors	R2 Change	Total Adjusted R2	Significant F Change	Beta
A	T1 French				
	Phonological Awareness	.258		.000	.420
B	T1 English				
	Word Reading	.149	.407	.002	.396
C	T2 French				
	(E)T1 Vocabulary	.238	.320	.001	.370
D	T2 English				
	Word Reading	.082		.026	.309
	T2 French				
	(E)T1 Vocabulary	.203	.203	.002	.450
	T2 English				
	Word Reading	.389	.496	.000	.495
	Phonological Awareness	.107		.004	.351

French predictor variables that proved to be the best predictors of T2 word reading. At T2, when included with the T2 French predictor variables, T1 English vocabulary was the only significant predictor of T2 French word reading, explaining 20% of the variance (see Model C, Table 4b). At T2, no French variables when included with English vocabulary, accounted for variation in scores on this task.

In relation to the T2 English predictor variables (see Model D, Table 4b), the T2 English word reading and T2 English phonological awareness, explained together, 50% of the variance on the T2 French word reading task. T2 English word reading explained 39% of the variance on this task while the T2 English phonological awareness task explained an additional 11% of the variance. At T1, it was the French predictor variables which better predicted T2 French word reading. However, at T2, it was the English predictor variables which better predicted T2 French word reading.

3. What role do the T1 and T2 variables play in predicting first language pseudoword decoding at T2?

T1 French phonological awareness explained 19% of the variance on the English pseudoword decoding task while the T1 French word reading variable explained an additional





8% of the variance. Together these two French variables accounted for 27% of the variance on the T2 English pseudoword decoding task (see Model A, Table 5a). The only T1 English predictor variable that accounted for variance on the T2 English pseudoword task was T1 English word reading, which accounted for 24% of the variance (see Model B, Table 5a). At T2, 55% of the variance on the T2 English pseudoword task can be explained by T2 French word reading (see Model C, Table 5a).

Table 5a. Significant Predictors of English T2 Pseudoword Decoding

Model	Significant Predictors.	R2 Change	Total Adjusted R2	Significant F Change	Beta
A	T1 French				
	Phonological Awareness	.193		.002	.377
	Word Reading	.075	.268	.039	.281
B	T1 English				
	Word Reading	.236	.236	.001	.486
C	T2 French				
	Word Reading	.551	.551	.000	.742
D	T2 English				
	Word Reading	.404		.000	.533
	Phonological Awareness	.069	.473	.020	.283

At T2, 47% of the variance in scores on the T2 English Pseudoword task can be explained by T2 English word reading (40%) in combination with T2 English phonological awareness (7%) (see Model D, Table 5a). In general, as with the English word reading variables, it was the French predictor variables, not the English predictors which continued to be better predictors of English pseudoword decoding. T2 French word reading explained more variance than the T1 French predictor variables (phonological awareness, word reading). As well, regardless of language or time, word reading consistently added to the variance in scores on the English pseudoword decoding task.

4. What role do the T1 and T2 variables play in predicting second language pseudoword decoding at T2?

There were no T1 French predictor variables that accounted for a significant proportion of the variance on the T2 French pseudoword decoding task. However, T1 English memory, explained a considerable amount of the variance (27%). Even when entered with the T1 French predictor variables, T1 English memory was the only variable that significantly contributed to the variance in scores on the T2 French pseudoword decoding task (see Model A, Table 5b).

The T1 English memory variable also explained variance in scores on the T2 French pseudoword decoding task when entered into the regression analyses with the T1 English predictor variables. T1 English memory (27%) together with T1 English phonological awareness (7%) accounted for 34% of the variance on this French pseudoword decoding task (see Model B, Table 5b). When the T2 French predictor and the correlated T1 English variables were entered into the regression equation, 40% of the variance on the T2 French



pseudoword decoding task can be explained by the T1 English memory (27%) and the T2 French word reading (13%) variables (see Model C, Table 5b).

Table 5b. Significant Predictors of French T2 Pseudoword Decoding

Model	Significant Predictors	R2 Change	Total Adjusted. R2	Significant F Change	Beta
A	T1 French				
	T1Memory E	.274	.274	.000	.523
B	T1 English				
	Memory	.274		.000	.359
	Phonological Awareness	.068	.342	.039	.307
C	T2 French				
	T1Memory E	.274	.401	.000	.407
	Word Reading	.127		.004	.375
D	T2 English				
	T1 Memory	.274		.000	.453
	Word Reading	.081	.355	.024	.292

When the T2 English predictor and the correlated T1 cognitive-linguistic variables were entered into the regression equation 36% of the variance on the T2 French pseudoword decoding task can be explained by T1 English memory (27%) and T2 English word reading (8%) (see Model D, Table 5b). In general, regardless of whether T1 or T2 French or English predictor variables were entered into the regression equation for T2 French pseudoword decoding, it was the T1 English memory predictor variable that consistently contributed the most variance on French pseudoword decoding.

DISCUSSION

Phonological Awareness: French phonological awareness was important in predicting English word reading at the beginning of grade one but then took a "back seat" to French word reading at the end of grade one. This result provides a different perspective on the changing role of phonological awareness as it relates to word reading over time. The addition of the word reading measure as an independent/predictor variable allowed examination of when this transition occurred from phonological awareness to word reading. It also allowed for a more stringent examination of the role of each of these skills.

Cross-language transfer did occur consistently in one direction, in at least one time frame, with most of the reading measures. This means that, although T1 French phonological awareness transferred and predicted T2 English word reading, T2 French phonological awareness did not transfer and predict T2 English word reading. Phonological awareness did not account for much variance on the reading measures at T2. However, it still predicted variance indirectly through the word reading variable.

French phonological awareness had a more consistent role than English phonological awareness in predicting the reading measures. In general, the regression analyses indicated that the French predictor variables appeared to be more sensitive measures of individual variance in overall performance on the reading measures. This finding may be explained by



Bruck and Genesee's (1995) observations. Bruck and Genesee suggested that students learning a second language are more aware of the rules of the language, independent of meaning, because they have been forced to become focused on these rules when studying the second language.

Jimenez, Garcia and Pearson (1995) had similar findings when they compared strategic reading processes of a bilingual Latina/o child skilled in English reading with a monolingual Anglo student as well as a bilingual Latina/o student who was a less skilled reader. They found the Latino children who were successful English readers tended to use different strategies than the other groups. In particular, the successful second-language learner tended to focus on vocabulary more than did the other groups of children. The second-language learners' focus for reading was to understand the vocabulary which would help with comprehension. The monolingual children tended to focus on the overall meaning and rarely concerned themselves with vocabulary.

Cormier and Kelson (2000) and others (MacCoubrey, Wade-Woolley, Klinger and Kirby, 2004; Comeau et al., 1999) have emphasized the importance of phonological awareness in predicting spelling and reading in both skilled and at-risk FI students. The present study supports previous results related to the important role of phonological awareness in predicting reading skills. However, in this study, the role of phonological awareness diminished by the end of grade one and was replaced by word reading.

Word Reading: Word reading consistently predicted reading ability in French and English, however, the amount of variance it contributed to these reading measures varied. Although English is not introduced until grade three for the students in this study, T2 English word reading continued to account for a large proportion of the variance on many of the T2 reading measures. Also, English skills continued to develop for these students but their rate of development was slower than what would be expected based on the standard scores for the measure used. Students' English skill development lagged as demonstrated by the drop in standard scores from T1 to T2 on such tasks as word reading.

These results are similar to those of Wimmer and Goswami (1994) who suggested that students learning in a deep orthography such as French or English may initially rely on phonological awareness to decode words but quickly learn to use larger orthographic chunks such as direct recall from memory or word reading. The use of word reading as an independent/predictor variable made evident this transition from students' use of phonological awareness to word reading as the most consistent predictor of reading both within and across languages.

Rapid automatized naming of digits: This study made evident the separate contributions of RAN and phonological awareness to variance in word reading in this second-language context. Although these two variables were significantly and positively correlated, they each accounted for unique variance. There is debate as to whether the two variables measure distinct and separate underlying processes (see Vukovic & Siegel, 2006). However, the results are congruent with the results of other studies (e.g., Geva, Yaghoub-Zadeh & Schuster, 2000; Wolf & Bowers, 1999; Wolf et al., 2002). The present study suggested that the two variables are distinct.

The predictive power of the cognitive measure, T1 English RAN at T2 supports Comeau et al. (1999) and other studies (Geva et al, 2000; Gholomain & Geva,1999;





MacCoubrey et al., 2004) that found speed of lexical access (RAN) plays a significant role in predicting reading skills such as word reading cross-linguistically.

Memory: Other studies (e.g., Lesaux & Siegel, 2003; Chiappe et al., 2002) have found memory to be a good predictor of first and second language reading. In this second-language context, memory appeared to predict only French pseudoword decoding. Students relied heavily on memory when attacking French pseudowords, yet, at T2, they were better able to use some of their orthographic, word decoding and letter-sound knowledge skills to assist them with this task. This improvement may be explained by the fact that students had been exposed to almost a full year of direct instruction in French reading and thus had increased their French word reading and decoding skills.

Memory appeared to play a role in the development of French pseudoword decoding yet, it did not appear to play a role in predicting English pseudoword decoding. This finding is different from previous research in this area in which memory was found to be a significant predictor of first and second language pseudoword and word decoding (e.g., Comeau et al., 1999; Gholomain & Geva, 1999; Geva & Siegel, 2000). It is possible that attacking second-language pseudowords would place an even greater strain on memory than attacking first language pseudowords or decoding first or second language real words. It is also possible that these students used their knowledge and background information to assist them in decoding real words and English pseudowords but because they had limited French knowledge, they had to rely on their more rudimentary skills to decode French pseudowords.

Oral Language Proficiency: The role of oral language proficiency (OLP), as measured by the sentence repetition task, in predicting word reading was minimal. In fact, T2 English word reading was the only reading measure in this study in which OLP contributed significantly to the variance. This result is congruent with other research in this area (e.g., Geva, & Petrulis-Wright, 2000; Gholomain & Geva, 1999; Durgunoglu et al., 1993) and brings into question the importance of OLP in predicting early word reading.

Vocabulary: The vocabulary task correlated with the French and English word reading tasks but it only significantly predicted T2 French word reading. Vocabulary skills assessed in T1 may have transferred cross-linguistically and predicted French word reading at T2. French word reading may have been so minimally developed at this time that the best predictor of performance on this task was a more basic measure such as vocabulary. It is also possible that the variance attributed to the vocabulary task may not be strictly related to vocabulary knowledge, per se, but the task may have tapped such underlying constructs as verbal ability or phonological memory.

CONCLUSION AND SUGGESTIONS

Results revealed that it is important to consider the specific skill as well as the time frame when studying predictors of reading in a second-language setting. T1 word reading was the only variable that not only predicted T2 word reading within languages, but also transferred and predicted word reading across languages. Phonological awareness and RAN digits were the next most important processes in predicting reading followed by memory. Oral language proficiency did not appear to play as meaningful a role in predicting reading development.





The results of this study suggest that teachers or those involved in assessing young children's second language reading ability may be able to rely on the predictors of reading cited in this study, namely word reading, phonological awareness, RAN digits and memory. As well, a student's oral language proficiency in the second language should not be considered as an indicator of success in word reading or pseudoword reading. Additionally, other researchers may wish to see if they can replicate these results in other second or foreign language classrooms.

The population used for this study may place limitations on the findings as might the study's focus on only French and English as opposed to other languages. The sample size was relatively small with only 47 students. It is also possible that the teaching style of each teacher may have varied or created a bias. Time restrictions also limit this study as students were reassessed following a short time frame. A number of testing issues also pose limitations. Some of the parallel tasks such as the French/English word reading tasks, have a different number of items, making a comparison of the two tasks difficult. Task equivalency issues (e.g. word length) between parallel reading measures may also place limitations on the study as it is difficult to control all dimensions of equivalency in an instrument.

References

- Alegria, J., Pignot, E., & Morais, J. (1982). Phonetic analysis of speech and memory codes in beginning readers. *Memory and Cognition*, 10(5), 451-456.
- August, D., Calderon, M., & Carlo, M. (2001). *Transfer of skills from Spanish to English: a study of young learners*. Washington, D.C.: Center for Applied Linguistics.
- Benton, S., Hammer, R., & Cahan, S. (1991). The effects of aging and first grade schooling on the development of phonological awareness. *Psychological Science*, 2(4), 271-274.
- Bowers, P.G., & Swanson, L.B. (1991). Naming speed deficits in reading disability: Multiple measures of a single process. *Journal of Experimental Child Psychology*, 5(2), 195-219.
- Bruck, M., & Genesee, F. (1995). Phonological awareness in young second language learners. *Journal of Child Language*, 22(2), 307-324.
- Chevrier, J.M. (1988). *Echelle d'intelligence Stanford-Binet* (4th ed.). Montreal, QC: Institut de Recherches Psychologiques.
- Chiappe, P., Siegel, L.S., & Wade-Woolley, L. (2002). Linguistic diversity and the development of reading skills: A longitudinal study. *Scientific Studies of Reading*, 6(4), 369-400.
- Cisero, C.A., & Royer, J.M. (1995). The development and cross-language transfer of phonological awareness. *Contemporary Educational Psychology*, 20(3), 275-303.
- Comeau, L., Cormier, P., Grandmaison, E., & Lacroix, D. (1999). A longitudinal study of phonological processing skills in children learning to read in a second language. *Journal of Educational Psychology*, 91(1), 29-43.
- Cormier, P., Godin, L., Grandmaison, E., Ouellette-Lebel, D., Hebert, N., & MacDonald, G.W. (1994). *Test of Auditory Analysis in French*. Moncton, NB.: Universite de Moncton.
- Cormier, P., & Kelson, S., (2000). The roles of phonological and syntactic awareness in the use of plural morphemes among children in French Immersion. *Scientific Studies of Reading*, 4, 267-293.
- Cossu, G., Shankweiler, D., Liberman, I.Y., Katz, L., & Tola, G. (1988). Awareness of phonological segments and reading ability of Italian children. *Applied Psycholinguistics*, 9, 1-16.
- Deacon, S.H., Wade-Woolley, L., Kirby, J. (2007). The role of morphological awareness in French immersion children's reading. *Development Psychology*, 43(3), 732-746.
- Denckla, M.B., & Rudel, R.G. (1976). Rapid automatized names (R.A.N.): Dyslexia differentiated from other learning disabilities. *Neuroscience*, 14, 471-479.
- Dunn, L.M., & Dunn, L.M. (1981). *Peabody Picture Vocabulary Test-revised*. Circle Pines, MN: American Guidance Service.





- Durgunoglu, A.Y., Nagy, W.E., & Hancin-Bhatt, B.J. (1993). Cross-language transfer of phonological awareness. *Journal of Educational Psychology*, 85(3), 453-465.
- Durgunoglu, A.Y., & Oney, B. (1999). A cross-linguistics comparison of phonological awareness and word reading. *Reading and Writing: An Interdisciplinary Journal*, 11(4), 281-299.
- Ehri, L.C. (1998). Research on learning to read and spell: A personal-historical perspective. *Scientific Studies of Reading*, 2(2), 97-114.
- Genesee, F. & Geva, E. (2006). Cross-linguistic relationships in working memory, phonological processes and oral language. In D.L. August & T. Shanahan (Eds.), *Developing literacy in a second language: Report of the National Literacy Panel* (pp. 175-184). Mahwah, NJ: Erlbaum.
- Geva, E. (1995). *French Pseudoword Decoding Task*. Toronto, Ontario, Canada: Ontario Institute for Studies in Education, Department of Special Education and Adaptive Instruction.
- Geva, E., & Clifton, S. (1994). The development of first and second language reading skills in early French Immersion. *The Canadian Modern Language Review*, 50, 646-667.
- Geva, E., & Petrulis-Wright, J. (2000). The role of oral language proficiency in the reading development of L1 and L2 primary level children. Unpublished manuscript, University of Toronto, Toronto, Ontario, Canada.
- Geva, E., & Siegel, L.S. (2000). Orthographic and cognitive factors in the concurrent development of basic reading skills in two languages. *Reading and Writing: An Interdisciplinary Journal*, 12(1-2), 1-30.
- Geva, E., Wade-Woolley, L., & Shany, M. (1993). The concurrent development of spelling and decoding in two different orthographies. *Journal of Reading Behavior*, 25, 383-406.
- Geva, E., Yaghoub-Zadeh, Z., & Schuster, B. (2000). Understanding individual differences in word recognition skills of ESL children. *Annals of Dyslexia*, 50, 123-154.
- Gholamain, M., & Geva, E. (1999). Orthographic and cognitive factors in the concurrent development of basic reading skills in English and Persian. *Language Learning*, 49, 185-217.
- Gottardo, A. (2002). The relationship between language and reading skills in bilingual Spanish-English speakers. *Topics in Language Disorders: Dyslexia among biliterates: A global perspective*, 22(5), 46-70.
- Jastak, J.R., & Jastak, S.R. (1984). *Wide Range Achievement Test-Revised*. Wilmington, DE: Guidance Associates.
- Jimenez, R.T., Garcia, G. E., & Pearson, P.D. (1995). Three children, two languages, and Strategic reading: Case studies in Bilingual/monolingual reading. *American Educational Research Journal*, 32 (1), 67-97.
- Lafrance, A., & Gottardo, A. (2005). A longitudinal study of phonological processing skills and reading in bilingual children. *Applied Psycholinguistics*, 26, 559-578.
- Lesaux, N.K., & Siegel, L. (2003). The development of reading in children who speak English as a second language. *Developmental Psychology*, 39(6), 1005-1019.
- MacCoubrey, S.J., Wade-Woolley, L., Klinger, D., & Kirby, J.R. (2004). Early identification of at-risk L2 readers. *The Canadian Modern Language Review*, 61(1), 11-28.
- Mumtaz, S., & Humphreys, G.W. (2001). The effects of bilingualism on learning to read English: Evidence from the contrast of Urdu-English bilingual and English monolingual children. *Journal of Research in Reading*, 24(2), 113-131.
- Nasland, J.A., & Schneider, W. (1991). Longitudinal effects of verbal ability, memory capacity and phonological awareness on reading performance. *European Journal of Psychology of Education*, 6(4), 375-392.
- National Institute of Child Health and Human Development. (2000). *Report of the Reading Panel. Teaching children to read: an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Retrieved July 10, 2010 from <http://www.nichd.nih.gov/publications/nrp/smallbook.htm>.
- Quiroga, T., Lemos-Britton, Z., Mostafapour, E., Abbott, P.D., & Berninger, V.W. (2002). Phonological awareness and beginning reading in Spanish speaking ESL first graders: research into practice. *Journal of School Psychology*, 40(1), 85-111.
- Rosner, J., & Simon, D.P. (1971). The Auditory Analysis Test: An initial report. *Journal of Learning Disabilities*, 4(7), 384-392.
- Tingley, P.A., Dore, K.A., Lopez, A., Parsons, H., Campbell, E., Bird, E.K.R., & Cleave, P. (2004). A comparison of phonological awareness skills in early French Immersion and English children. *Journal of Psycholinguistic Research*, 33(3), 263-287.
- Thorndike, L., Hagen, E.P., & Sattler, J.M. (1986). *The Stanford-Binet Intelligence Scale* (4th ed.). Itasca, IL: Riverside.





- Vukovic, R.K., & Siegel, L.S. (2006). The double-deficit hypothesis: A comprehensive analysis of the evidence. *Journal of Learning Disabilities*, 39 (1), 25-47.
- Wagner, R.K., Torgesen, J.K., & Rashotte, C.A. (1994). Development of reading-related phonological processing abilities: New evidence of bidirectional causality from a latent variable longitudinal study. *Developmental Psychology*, 30(1), 73-87.
- Wechsler, D. (1991). *Wechsler Intelligence Scales for Children* (3rd ed.). New York: Psychological Corporation.
- Wimmer, H., & Goswami, U. (1994). The influence of orthographic consistency on reading development: Word reading in English and German children. *Cognition*, 51, 91-103.
- Wolf, M., & Bowers, P.G. (1999). The double deficit hypothesis for the developmental dyslexias. *Journal of Educational Psychology*, 91(3), 415-438.
- Wolf, M., O'Rourke, A.G., Gidney, C., Lovett, M., Cirino, P., & Morris, R. (2002). The second deficit: An investigation of the independence of phonological and naming-speed deficits in developmental dyslexia. *Reading and Writing: An Interdisciplinary Journal*, 15(1-2), 43-72.
- Woodcock, R.W. (1987). *Woodcock Reading Mastery Test*. Circle Pines, MN: American Guidance Services.
- Wormeli, C.T., & Ardanaz, N. (1987). *Canadian French Individual Achievement Test*. Vancouver, B.C.: University of British Columbia, Faculty of Education, Education Clinic.



Appendix

Table A. Intercorrelations/correlations among French and English Tasks

T1 Tasks	PhonoF	WRE	WR F	PseE	PseF	SenRepF
T1 Tasks						
PhonoE	0.61**	0.33*	0.30*	0.17	0.33*	0.67**
PhonoF	1.00	0.37**	0.22	0.40**	0.28	0.61**
VocabE	0.51**	0.38**	0.33*	0.17	0.07	0.36*
SenRepE	0.38**	0.44**	0.30*	0.13	0.03	0.29*
SenRepF	0.61**	0.27	0.27	0.24	0.23	1.00
MemoryE	0.52**	0.40**	0.26	0.20	0.17	0.61**
RAN digits E	-0.38**	-0.44**	-0.22	-0.41**	-0.38**	-0.05
RANL E	-0.32*	-0.50**	-0.31*	-0.35*	-0.32*	-0.06
WR E	0.37**	1.00	0.59**	0.33*	0.35*	0.27
WR F	0.22	0.59**	1.00	0.20	0.26	0.27
PseE	0.40**	0.33*	0.20	1.00	0.10	0.24
PhonoF	0.55*	0.56**	0.51**	0.44**	0.44**	0.38**
VocabE	0.41**	0.34*	0.45**	0.25	0.28	0.53**
SenRepE	0.40**	0.41**	0.35*	0.34*	0.20	0.53**
SenRepF	0.49**	0.26	0.34*	0.22	0.39**	0.40**
MemoryE	0.53**	0.24	0.31*	0.17	0.52**	0.56**
RANdigits E	-0.07	-0.50**	-0.20	0.29*	-0.11	-0.07
RANL E	-0.07	-0.44**	-0.14	-0.22	-0.11	-0.04
WR E	0.14	0.66**	0.49**	0.49**	0.28	0.40**
WR F	0.25	0.52**	0.49**	0.36*	0.25	0.18
T2 Tasks						
PhonoE	0.50**	0.37*	0.53**	0.48**	0.42**	0.42**
PhonoF	1.00	0.34*	0.29*	0.24	0.46**	0.56**
SenRepE	0.56**	0.37**	0.20	0.13	0.27	1.00
SenRepF	0.56**	0.37**	0.38**	0.26	0.26	1.00
WR E	0.34*	1.00	0.62**	0.64**	0.40**	0.37**
WR F	0.29*	0.62**	1.00	0.74**	0.50**	0.20
Pse E	0.24	0.64**	0.74**	1.00	0.53**	0.13

Note 1. **= $p < .01$ *= $p < .05$

Note 2. T1/T2PhonoE/F= Time 1/ Time 2 English/French phonological awareness; T1/T2WR E/F = Time 1/Time 2 English/French word reading; Pse.E/F = English/French pseudoword decoding; T1Vocab E= Time 1 English vocabulary; T1/T2 SenRepE/F= Time 1/Time 2 English/French sentence repetition/OLP (Oral language proficiency); T1RANL E= Time 1 rapid automatized naming of letters in English; T1Memory E= Time 1 English memory.



İLK VE İKİNCİ DİLDE İLK OKUMAYI GELİŞTİRMEYİ ETKİLEYEN FAKTÖRLER

Yrd.Doç.Dr.Rhonda Marie JOY
Newfoundland Memorial Üniversitesi, Kanada
rjoy@mun.ca

Özet

Problem (amaç): Küreselleşme ve ülkelerin çok kültürlülüğü yaygınlaştıkça etkili bir ikinci dil öğrenmenin nasıl olabileceğinin anlaşılması gereksinimi de artmıştır. Bunu anlamamanın bir yolu bir çocuğun yeni bir dili nasıl öğrendiğinin tanımlanmasından geçebilir. Yeni bir dili öğrenen çocuğun bunu nasıl yaptığını ilişkin alanyazında birçok çalışmaya rastlamak olanaklıdır. Ancak ilk dil olarak İngilizce ve ikinci dil olarak Fransızca'nın öğrenilmesinde, okumada önemli etkisi olan fonolojik farkındalık vb ile ilgili faktörlere dönük bir çalışmaya rastlanmamıştır. Bu çalışmanın amacı söz konusu faktörlerin neler olabileceğini ve bu faktörlerin ikinci dilin söz-kelime kodu üzerinde nasıl rol oynayabileceğini ortaya koymaktır.

Yöntem: Çalışma Kanada okullarından üç tane birinci sınıftan (okuma sınıfı) kırk yedi (20 Bay-27 Bayan) öğrenci ile yapıldı. Bu öğrencilerin ilk dilleri İngilizce idi ve üçüncü sınıfa kadar da İngilizce ile ilgili bir ders almıyorlardı. Bu öğrencilere yılın başında ve sonunda olmak üzere iki test uygulandı. İngilizce ve Fransızca tesler çocuklara bire bir okunarak sunuldu. Herbir testte (ayrıntıları makale metninde oluşturulan tablolar ile verilen) ölçümler yapıldı.

Bulgular: Araştırmanın sonucunda ilk ve ikinci dilde okumayı geliştirme süreci içinde kelime okuma tek değişken olarak bulundu. Bellek ve kelime takibi sağlayan sonraki iki önemli değişken ise fonolojik farkındalık ve hızlı otomatik adlandırma (HOA) idi. Diğer yandan bu süreçte, oral dil yeterliği anlamlı bir rol oynamamaktaydı.

Öneriler: Bu çalışmanın sonuçlarına bakarak çocukların ilk ve ikinci dilde okumamalarında, fonolojik farkındalık, bellek ve hızlı otomatik adlandırma (HOA) üzerine yoğunlaşılması gerektiği söylenebilir. Diğer yandan oral dil yeterliğine gerekenden fazla bir anlam yüklenmemesi gerekliliği de bir başka öneri olarak sunulabilir.

Anahtar Kelimeler: İlkokuma etkenleri, İlköğretim, Dil eğitimi, İlk dil öğrenme, İkinci dil öğrenme

