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Abstract

The purpose of this thesis was to examine both French and English reading errors made by early French immersion students to determine if there was a transfer of literacy skills between the two languages.

French immersion students (n = 12) in Grade 2 and Grade 3 were assessed for word reading, word decoding, and paragraph comprehension using standardized English measures and an experimental French assessment tool, the Karen Andrews Reading Assessment Tool (KARAT). The participants, whose first language was English, had not yet received formal English reading instruction.

Detailed error analyses revealed that students make the same types of errors when reading in French as when reading in English. Additionally, students who have reading difficulties in one language, experience similar difficulties in the other language.
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CHAPTER ONE
INTRODUCTION

Many researchers, teachers, and parents have expressed concerns about the suitability of French immersion programs for students who are experiencing learning difficulties. Those concerned often wonder if these students would be more successful if they were placed in English programs, where instruction is given in their native language. In my experience, often students who are performing below grade level in French immersion are encouraged to transfer to an English program. However, some second language research indicates that the benefits of becoming functionally bilingual by remaining in the French immersion program are greater than the benefits of transferring into the English program (Genesee, 2008; Rousseau, 1999; Wiss, 1989). Furthermore, studies conducted in the last 15 years suggest that skills learned in one language will transfer to another (Cummins, 1984; Geva & Clifton, 1994; MacCoubrey, Wade-Woolley, Klinger, & Kirby, 2004; Wiss, 1987). In other words, students experiencing academic difficulties in French immersion programs will experience similar difficulties if they are placed in English programs.

I have been teaching primary-aged French immersion students for the past five years. Each year, several parents individually approach me for my professional opinion as to whether their children, who are encountering learning difficulties, should remain in the French immersion program or transfer into English. It has bothered me that, without an accurate assessment tool, it is difficult for me to give parents a well-informed response. I began to question the argument for removing students from the program after I saw parents struggle with accepting this decision. I also wondered about the benefits
after seeing children upset from being displaced from their peers. What began as curiosity has now led me to this topic for research on whether a French immersion student, who is experiencing reading difficulties, would benefit from being placed in an English program.

This study examined the cross-transference of literacy skills between French and English. Data were collected from 12 primary-aged French immersion students at a school within a northwestern British Columbia school district. In addition, French immersion teachers completed a questionnaire about an experimental assessment tool used for this study, the *Karen Andrews Reading Assessment Tool* (see Appendix A).

This chapter includes a discussion of the problem, including the rationale and the theoretical framework for the study. In addition, the purpose of the study is presented followed by the guiding research questions. Limitation and delimitations of the study are discussed followed by ethical considerations. The definitions of terms are outlined in the final section of this chapter.

The Problem

*Rationale*

This northwestern BC school district has experienced declining student enrollment for several years, including enrollment in the French immersion program. As such, the immersion program, like all programs of choice in this district, is at risk of being eliminated. According to Statistics Canada (2008), the primary-aged French immersion student dropout rate due to learning difficulties is about 10 percent. This dropout rate is a concern given the benefits of the French immersion program reported by researchers (Bruck; 1978, Cummins; 1979; Wiss, 1987). According to these researchers,
the best way for a student with learning disabilities to learn a second language is through an immersion program, in which instruction and classroom communication is exclusively in the second language, rather than through core French, in which French is taught as an academic subject. And because having a second language offers greater job potential in this bilingual country, it would be beneficial for all students to have the opportunity to participate in such a program (Genesee, 2007a). It would therefore be advantageous for the school district to identify which students would do just as well in French as they would in English. Given that information, parents might choose to have their children remain in the program, keeping the enrollment steady.

Early studies by Bruck (1978), Cummins (1979), and Wiss (1987) addressing the problem of learning difficulties among French immersion students indicated that the majority of learning disabled students could benefit from the experience of immersion education. In fact, if learning a second language is important, then it is better for a learning disabled student to acquire the language through immersion, rather than through core French programs (Bruck, 1978). Bruck (1978) argued that the methodology used in teaching core French tends to rely on learning language out of context and memorization of grammatical rules, unintentionally using strategies that focus on the learning disabled students’ weaknesses (Bruck, 1978). For this reason, it is important that students not be transferred out of the French immersion program solely due to academic problems.

Theoretical Framework

Several language and literacy development theories were considered for this study. The most relevant theoretical frameworks involved cross-language issues specifically concerning the influences of target language, interlanguage, underlying
cognitive abilities, and common underlying proficiencies. In this section, I will explain each of these frameworks. I will then detail Cummins’ common underlying proficiency theory, the framework selected for this study.

Theories of target language influences purport that second language acquisition is determined by features of the second language (Dulay & Burt, 1974, cited in Genesee et al., 2008). These features, such as orthography and phonological systems, result in errors that are similar to those made by first-language learners, acquiring the same language. In other words, it is hypothesized that developmental influences are the cause of errors for students who are learning to read. Target language theories, therefore, are not cross-linguistic in nature.

Interlanguage theories support the effects of both the first and second language influences on adult language learners (Gasser & Selinker, 2000). It is postulated that these learners use both languages to create an in-between grammatical system, which has features of both the target, and the first language.

According to the theory of underlying cognitive abilities, “the same set of linguistic and cognitive predictors underlies the development of reading skills in L1 [first language] and L2 [second language]” (Geva, 2000, p. 20). In other words, general cognitive ability is thought to be independent of language specific abilities. This theory postulates that phonological awareness and working memory, for example, are innate in nature.

In contrast, Cummin’s (1984) theory of common underlying proficiency, argues that language for academic purposes is language dependent and developmental in nature. During the process of learning one language, a child acquires a set of skills and implicit
metalinguistic knowledge that can be accessed when working in another language. It is this set of basic abilities that underlies the processing of meanings in L1 and L2. However, Cummins argued that these meanings do not always translate across languages. Abstract concepts such as justice, for example, tend to have slightly different meanings in various languages. Nevertheless, according to Cummins, academic language skills, including those related to literacy, are connected to common underlying proficiencies. Cummins purports that when a developing bilingual person reads in either language, for example, both languages will be stimulated. Specifically, in a French immersion program, French instruction that develops second language reading skills is not only developing these skills in French, but is also fostering “a deeper and linguistic proficiency” (Cummins, 1984, p. 143) that is connected to the development of English literacy and general academic skills.

In addition, Cummins argues that language can be placed on a continuum that is dependent on the cognitive and academic demand of the task (see Figure 1). He argues that tasks can range in difficulty along one continuum from cognitively undemanding to cognitively demanding; and along the other continuum from context-embedded to context-reduced. A context-embedded task is one in which the student has the support of a variety of additional visual and oral cues. A context-reduced task is one in which there are no other sources of help than the language itself. Cummins explains that the terms of Bloom’s Taxonomy can be used to determine if a task is cognitively demanding or undemanding. For example, activities such as showing and naming, which fall within the category of Knowledge would be less demanding than Analysis activities such as explaining and inferring.
The aim of this study was to test the accuracy of the predictions made by Cummins’ (1984) common underlying proficiency. This theory was selected because it was determined to be the most robust for the purposes of this study. The assumption is that a child who experiences reading difficulties should experience these difficulties in either language. Specifically, French immersion students, who have yet to be taught formal English language literacy skills, would be able to apply these skills in both French and English.

For my study, this theory holds that I would expect early French immersion students, who are experiencing reading difficulties, to make similar errors when reading in French as when reading in English because a child who has inefficient reading skills should exhibit them in either language, a finding that was supported by the data of the current study. In addition, according to Cummins’ theory, reading comprehension
questions that are cognitively demanding, such as inference, should be more difficult than questions that are undemanding, such as detail. In sum, Cummins’ (1984) common underlying proficiency theory offered a framework for this study.

Statement of Problem

Currently, in this northwestern BC school district, students who are thought to have learning disabilities are encouraged to leave the French immersion program. If the student undergoes a psycho-educational assessment, the report frequently recommends that the child be placed in an English classroom. My study demonstrates that the better action would be to use a locally-developed assessment that would provide a more expedient and more reliable outcome for placement purposes.

The practice of removing students from immersion who are referred for assessments cannot be supported by research. Bruck (1978) and Cummins (1979) reported that students with learning difficulties were not hindered by being in a French immersion classroom. In fact, Genesee (2007a) argued that denying students with learning difficulties the opportunity for French immersion would “deprive them of access to what is arguably the most effective form of second language (L2) education and, in turn, from an important life- and job-related skill, namely, proficiency in French” (p. 657). Furthermore, students who drop out of the French immersion program suffer feelings of failure, affecting their self-esteem (Bruck, 1982; Wiss, 1989). In addition, Hoge and Khan (1994) reported that students who transfer out of French immersion display high levels of stress and behaviour issues. Because of the fact that students transferring out do just as well as their English counterparts and because of the negative impact of transferring a student out of French immersion, it is important for teachers to
identify whether or not the student would truly benefit by switching to the English program. With this knowledge, teachers can educate parents to help them to make informed decisions about the placement of their children.

Despite an increased interest in the cross-language transfer of reading skills in second language students, it is surprising that so little empirical research has been conducted on this topic, especially focusing on early French immersion. Very few studies have investigated reading difficulties in primary-aged French immersion students (MacCoubrey, Wade-Woolley, Klinger, & Kirby, 2004). Despite evidence on the cross-linguistic role of phonological awareness in bilingual students (Comeau, Cormier, Grandmaison, & Lacroix, 1999; Genesee, Geva, Dressler, & Kamil, 2008; Geva & Clifton, 1994), little research has been conducted on the assessment of early French immersion students who are experiencing reading difficulties in text comprehension and phonological awareness. Because there is no current reliable French immersion reading assessment tool in the school district, students who have learning difficulties, including reading, are assessed in English. However, French immersion students are not formally taught to read in English until Grade 4, which could lead to inaccurate or unreliable test results.

In consultation with my supervisor, Dr. Andrew Kitchenham, who has extensive experience in standardized testing and test construction, I created my own French immersion reading assessment tool to assess a small number of students who are encountering reading difficulties. An increased understanding of early literacy acquisition of French immersion students, provided by a reading assessment tool, may lead to recommendations about programming options to ensure optimal early literacy learning.
Purpose Statement

The intent of this sequential mixed-methods study was to better understand reading difficulties in early French immersion students by blending both qualitative and quantitative data. The first phase of the study was to create a reading assessment tool, the KARAT, with the intent of using this tool to explore errors made by a small sample of students who exhibited reading difficulties. A detailed explanation of the KARAT construction is provided in Chapter 3 of this thesis. A qualitative exploration of line-by-line student responses to the French and English reading assessment tools from Grades 2 and 3 French immersion students at a school within this northwestern BC school district was used to analyze the data. In the second phase, a quantitative analysis of errors on the KARAT was related to errors made on the English subtests. At the same time, quantitative surveys were administered to probe teacher ratings of each subtest of the KARAT with French immersion educators in this northwestern BC school district.

Research Questions Investigated

Second Language Acquisition research suggests that reading skills learned in one language will transfer to another language (August & Shanahan, 2006). Specifically, students who are experiencing reading difficulties in one language will experience similar or the same difficulties in another language. Using the process of observed research, I investigated the following central research question: What types of errors do early French immersion students make when reading in French? Supporting questions included: Do early French immersion students make the same types of errors when reading in French as when they are reading in English? How valid are elements of the KARAT as rated by French immersion teachers?
The answers to these questions provided me with a better understanding of the types of reading difficulties in phonological awareness and text comprehension that are made by students in early French immersion. The teacher survey responses also provided validity to the KARAT test items. Finally, the answers to these questions informed my discussions with parents when they were debating whether or not the French immersion program is right for their child.

Limitations and Delimitations

There were a few limitations that may have affected this study. First, was the willingness of the parents and their children to consent to participate in the assessment process. Parents may not have wanted their children to be assessed because they may not have wanted to recognize that their children have reading difficulties. Children may not have wanted to spend time outside of the school day being assessed so they may have been rushed in their responses. Second, was the willingness of teachers to respond to the on-line survey. Some teachers may have had limited access to the internet and others may not have had time to answer the questions. However, I asked teachers to respond within a short period of time to encourage them to respond promptly. Also, the survey was short with close-ended questions using a continuous response scale.

Delimitations for this study included the size and make-up of the sample. The number of students involved in the study was limited to those who were in early French immersion Grades 2 or 3 in a northern community and who were currently experiencing reading difficulties. Furthermore, only students who began the program in Kindergarten and whose first language is English were selected to participate. These restrictions limited the number of variables in the study. Therefore, the results of this study were
generalized for the Grade 2 and 3 population within the school located within a northern community and not to a larger population.

Another delimitation is that I administered the English reading assessments to students whom I was currently teaching. It was possible that I could have given extra encouragement or additional explanations to these students. However, I ensured that testing procedures and instructions were written and that they were accurately followed for all students. Furthermore, I have completed a graduate course in individualized assessment and am both familiar and comfortable with testing procedures.

An additional delimitation is that each of the oral responses was transcribed using the International Phonetic Alphabet. The transcribing could have inaccurately reflected the actual student response. However, the subtests requiring oral responses were digitally recorded to ensure that the sounds were accurately heard. Furthermore, I have completed undergraduate courses in both French and English phonetic transcription, limiting the possibility of error.

I also asked some French immersion teachers, whom I know professionally, to respond to the questionnaire. These teachers may have felt compelled to answer favourably and give positive feedback. To reduce this risk, the survey was answered anonymously, with typed responses.

Ethical Considerations

Permission to conduct research was granted on June 8, 2009 by the Research Ethics Board (see Appendix B). Before conducting research in this northwestern BC school district, the superintendent gave written permission for the study to proceed. The principal of the school was informed of the proposed study. Because the participants in
this study were seven to nine years old, their parents or legal guardians had to sign a written consent form (see Appendix C). A brief letter describing the assessment and the importance of the research accompanied the consent form. Parents were also given contact information if they needed further clarification about the study (see Appendix D). I personally hand delivered the consent forms to the parents when they came to pick up their children at the school or I phoned the parents, at which time, I introduced myself and explained my study.

Each participant was assigned a pseudonym to ensure that his or her identity was protected. Because the student assessments and the on-line teacher survey were conducted during the summer months, the school was closed making it inappropriate for me to store data there. As well, I did not have access to a University of Northern British Columbia office in which to securely store data. Therefore, all assessments, notes, and data were kept in a secure, locked filing cabinet at my residence. Upon completion of the study or participant withdrawal, all data were shredded or deleted from the computer hard drive.

Definition of Terms

A number of terms used in the study require definitions for clarity.

1. Early French immersion: French is the exclusive language of instruction and classroom communication for non-French-speaking children, beginning in Kindergarten or occasionally in Grade 1. One hundred percent of the curriculum is taught in French until Grade 4, at which point 20% of instruction occurs in English.

2. Reading difficulties: performing below expectations for reading learning outcomes, as provided by the BC Ministry of Education. Approaching expectations or not yet meeting
expectations is a report card designation for students experiencing difficulties in reading.

3. *Karen Andrews Reading Assessment Tool* (KARAT): a reading assessment tool for early French immersion students who are experiencing reading difficulties. The KARAT was used to measure the following sub-categories of reading: word identification, word decoding, and paragraph comprehension.

4. **Word Identification**: stimulus words that a primary-aged French immersion student should be able to respond to even without previous experience with the word.

5. **Word Attack**: nonsense words, or letter combinations that are not actually words. Test items represent French phonemes, or sounds, that are taught to early French immersion students.

6. **Paragraph Reading**: a series of short stories using high frequency vocabulary after which the student is asked a series of questions for each story.

The following definitions are derived from McLoughlin and Lewis (2008):

7. **Norm-referenced test**: the test is administered to a large number of select individuals who represent the population for whom the test will be used.

8. **Test reliability**: a test that produces consistent results when administered to the same norm-group. Test items are relatively free from error making the score dependable.

9. **Test validity**: the degree to which the test scores measure what the assessment tool claims to measure.

10. **Standardized test**: the test's administration, scoring, and interpretation are standard, usually based on a norm-group.
Summary

This study is built on current research that indicates that there are considerable cross-linguistic factors in first and second language reading acquisition. Using Cummins' (1984) common underlying proficiency theory as a framework, this study specifically focused on the use of phonetic awareness and reading comprehension skills of early French immersion students, an area of limited research. Using a mixed-methods approach, I answered the central research question: What types of errors do early French immersion students make when reading in French?. The results of this research could guide district administration, educators, and parents in determining the best placement for a French immersion child who is experiencing reading difficulties.

Organization of Thesis

This thesis is organized into six chapters. Chapter 1 introduced the thesis and detailed its purpose. In Chapter 2, a review of relevant literature is presented. Initially, a historical overview of learning difficulties in French immersion is discussed. The literature review then outlines and critiques studies of cross-language transference of skills. A discussion of standardized testing of immersion students is presented in the final section of the literature review. Chapter 3 outlines the methodology of the study including the procedures and measures used. The results of the study are presented in Chapter 4. Chapter 5 presents a discussion of the results. Implications of the research and recommendations for future research conclude the thesis in Chapter 6. Appendices at the end of the paper include the experimental assessment tool used for the data collection, as well as the specific consent forms and letters given to the participants in this study.
CHAPTER TWO
LITERATURE REVIEW

The previous chapter introduced the thesis and detailed its purpose. This chapter of the thesis begins with a historical overview of research conducted on the appropriateness of French immersion programs for students with learning difficulties. This early research came to opposite conclusions, which are still under debate three decades later. Recent research has focused on the cross-language transfer of reading skills in second language students. French immersion studies that explore the transferring of English literacy skills and their role in reading difficulties will be discussed. Finally, the implications of using standardized assessment tools in the measuring of French immersion students, including those who have reading difficulties, will be discussed as these implications played a major part in the design of the study, in general, and in the design of the Karen Andrews Reading Assessment Tool. The chapter concludes with a summary of the research.

Historical Overview of Learning Difficulties in French Immersion

Canadian French immersion programs have been the subject of study and long-term research for the past 35 years, since their conception. Between the mid 1970s to the late 1980s, a series of studies were conducted that laid the foundation for more recent research in the field of French immersion. Of this research, the studies that pertain to whether or not some children are predisposed to experience learning difficulties in early French immersion are the focus of this literature review.

Two researchers, Trites (1976, 1977a, 1977b) and Bruck (1978, 1982) conducted the first large-scale studies to determine the effect of learning difficulties with the French
immersion programs. These two researchers, after conducting almost a decade of research, came to opposite conclusions about the suitability of the French immersion program for all children. On the one hand, Trites' (1976, 1977a, 1977b) studies indicated that some children are predisposed to learning difficulties in French immersion and should, therefore, be screened before entering the program. On the other hand, Bruck (1982) argued that, based on her research, learning disabled students do just as well in French immersion as they would do in English.

Trites' (1976) initial study was conducted on 32 children who were referred to the Neuropsychology Laboratory of the Royal Ottawa Hospital for difficulties in French immersion. Each child was examined for a range of linguistic, cognitive, perceptual, and motor tests. The objective was to determine if these children exhibited the same, unique neuropsychological profile. Based on this study, Trites (1976) claimed that students who manifested "a developmental lag in the maturation of the temporal lobe regions" (p. 200) would not be successful in French immersion because this disability would limit the comprehension of a second language. Trites (1977) repeated the study in response to criticism. In this second study 16 French immersion students who dropped out of the program due to learning difficulties were compared to 16 successful immersion students. Trites (1977) reached the same conclusion that a tactual performance deficit suggests a specific maturational lag in the temporal lobe regions.

In a third longitudinal study conducted by Trites (1977), four-year-old Kindergarten students were initially assessed using a battery of neuropsychological tests. These students were followed through until Grade 4. The aim of the research was to determine if there were neuropsychological characteristics that could predict success or
failure in the French immersion program. Based on this research, Trites (1977) advocated for the screening of a developmental lag before children entered into the French immersion program. Furthermore, those children assessed with this disability should then be discouraged from entering early immersion. However, Cummins (1984) questioned the validity of the assessment tool, the *Tactual Performance Test* (TPT). He argued that there was no evidence that the TPT was related to the function of temporal lobe, where verbal material and perception of space, was processed. In addition, Cummins (1984) questioned the statistical analysis of the data, concluding that there were no significant differences between the students who remained in French immersion and those who switched to the English program.

Bruck’s (1978, 1982) major longitudinal study focused on 147 five-year-old Kindergarten students in both English and French immersion programs. All of the participants were administered four different assessment tools, including the *Peabody Picture Vocabulary Test* (PPVT) and the *Wechsler Preschool and Primary Scale of Intelligence* (WPPSI). These tests were administered again in Grades 1 and 2. In addition, the students were screened for language difficulties for over a period of six years. Initially any English as a first language Kindergarten student identified by his or her teacher as having language problems was referred for diagnostic screening. This screening, conducted by a language development specialist, consisted of language-based subtests such as story telling and sentence imitation. The identified students scored lower on these diagnostic screening subtests, even though their IQ was average. After the language problem students were identified, they were matched with students from the non-language difficulty control group. Bruck (1982) determined from her longitudinal
study that language-disabled students "acquired proficiency in French at no cost to first language development, academic progress, or cognitive skills" (p. 57). Furthermore, Bruck's (1982) study indicated that students experience the same academic problems in either the French or English programs. She concluded that language-disabled students should be given opportunity to attempt French immersion as they would not be at an academic disadvantage. In fact, Bruck (1982) suggested that this group of students would only acquire second language proficiency through total immersion rather than core French.

Thus, it would appear that Trites and Bruck came to opposite conclusions about the placement of language-disabled students. However, Trites' interpretation of his findings was questioned (Cummins, 1979, 1984; Wiss, 1989). According to Cummins (1979), Trites' data supported the opposite conclusion to the one that he deduced. In other words, re-analysis of the data showed that students who transferred into English actually fell behind, whereas those who remained in the French immersion program, despite difficulties, did not. Furthermore, Trites' testing was limited to students referred due to academic difficulties and not to the general French immersion population. In addition, subsequent research was inconclusive as to whether difficulties were due to a disability in the temporal lobes or due to learning problems.

These early studies did not clearly answer the question as to whether the French immersion program is for all students, including those with learning difficulties. For that reason, Wiss (1987, 1989) conducted two case studies, which provide information about students who are experiencing difficulties. In the first case study, Wiss (1987) assessed Jenny, a Grade 4 French immersion student experiencing reading and writing difficulties,
in both French and English. Wiss determined that Jenny’s disabilities presented in both English and French. Therefore, she concluded that Jenny should not be transferred out of the immersion program. In the second case study, however, Wiss (1989) determined that there might be a subgroup of students for which the French immersion program is not appropriate. Wiss assessed Stacey, a Grade 1 French immersion student, and concluded that she exhibited average mental abilities but was weak in quantitative reasoning. She described Stacey, and others manifesting the same profile as her, as being “cognitively and linguistically immature, traits that make difficult the learning of a second language (L2) in a school setting” (Wiss, 1989, p. 526). Wiss, therefore, believed that program placement decisions depend on distinguishing between problems of specific learning disabilities and problems in learning, which may be a result of developmental immaturity (Majhanovich, 1993).

Wiss’ (1987, 1989), Bruck’s (1978, 1982), and Trites’ (1976, 1977) early research attempted to answer the concerns of parents, teachers, and administrators of as to whether or not the French immersion program was appropriate for all students. The researchers focused on whether or not the acquisition of a second language interfered with a student’s learning. These early studies have led to more questions about the application of first language skills when a student is acquiring a second language.

Cross-Language Transference of Skills

Since the late 1990s, there has been a growing interest in the field of cross-language transfer of basic skills, such as phonological awareness, that are the same across languages. Much of this research has focused on students who were learning the majority
language. For example, minority Spanish language students, who are learning English as a second language, have been the subject of much research in the United States.

A recent publication by the National Literacy Panel (August & Shanahan, 2008) provides a consolidation of this second language research. The focus of this publication was on minority language learners, whose difficulties in literacy had become a growing concern, especially in the United States. In this publication, research on cross-linguistic relationships, as well as relationships between second language learning and literacy were reviewed and summarized. One of the key findings was that precursors for reading in the first language were similar to those exhibited by second language learners. In other words, phonological awareness is crucial for students who are encountering reading difficulties regardless of whether learning to read in their first or second language. Phonological awareness is especially important for reading in phonemic languages, such as English and French, as the orthography (spelling) is related to the phonemic structure. Phonemic structure is the grapheme-phoneme correspondence of letters to sounds. The orthographic structure of a language has the potential to modify the effect of phonological awareness on reading in a particular language. Phonological awareness is applicable to second language learners who need to focus on additional phonological cues when learning to read.

French immersion students, on the other hand, are majority language students learning a second minority language. There have been, however, a few recent studies that have focused on French immersion students. These studies have specifically concentrated on the role of English literacy skills in French immersion students, who are being taught to read in a second language.
Comeau, Cormier, Grandmaison, and Lacroix (1999) conducted a longitudinal study of English-speaking students enrolled in a French immersion program in a New Brunswick bilingual community, where students were exposed to both French and English outside the classroom environment. The researchers administered measures of phonological awareness and word decoding in both French and English to students in Grades 1, 3, and 5 and then again, a year later to the same group of students. Comeau et al. (1999) found that "the relation of phonological awareness in French to reading achievement in each of the languages was equivalent to that in English" (Abstract, ¶ 1). However, it is worthy to note that students who were receiving learning resource help either before or during the study or who had failed a grade, were eliminated from the research. In addition, the majority of the students participating in the study came from bilingual homes where both French and English were spoken. Although this study involved more bilingual students rather than those of a true immersion setting where the students' only exposure to French is in the classroom, it does support the cross-transfer of skills across phonemic languages, English and French.

MacCoubrey, Wade-Woolley, Klinger, and Kirby (2004) researched methods of early identification of at-risk readers in early French immersion using first language to predict reading achievement in both first and second languages. The participants in this study, the large majority of whom were from English only homes, were both typical and poor readers from an Anglophone community in Ontario. The researchers administered several tests in English, including phonological awareness, phonological recoding, and phonological short-term memory. They also assessed word-reading skills in both French and English during a longitudinal study of 98 Grade 1 students who were then tested.
again in Grade 2 (n = 77). MacCoubrey et al. (2004) concluded that achievement on phonological processing skills in English was an indicator of both good and poor readers in English and French. Furthermore, the researchers suggest that students could be assessed in English vocabulary during Kindergarten, before extensive French is used. Knowledge of a student’s reading difficulties at this early age, could allow for early intervention and academic support.

In a study conducted by Geva and Clifton (1994), Grade 2 French immersion students’ reading skills were compared to Grade 2 English only students’ reading skills, both good and poor readers in each program respectively. The participants were screened to assure that their first language was English and that they had no other exposure to French except at school. The researchers examined whether poor readers in immersion were at greater risk than poor readers in an English program and whether poor readers in immersion had the same reading profiles in their two languages. Geva and Clifton (1994) found that the immersion students’ scores in English and French reading demonstrated positive and significant correlations between almost all first language and second language reading measures, including measures of accuracy, speed, and comprehension.

These French immersion studies have focused on the transference of certain literacy skills from English into French. However, Genesee (2007a) noted, “in domains such as reading, short-term research tends to focus on word-recognition skills and fails to shed light on reading comprehension; different constellations of skills and factors might influence outcomes in these two aspects of reading” (p. 675). In order to address this void, my study will add to early French immersion research, focusing on reading
comprehension and related skills. In addition, it will provide data about the transferring of reading skills from French into English, an area that remains relatively unexplored.

**Standardized Testing of Immersion Students**

Most of these previous studies had focused on data provided through English language standardized achievement tests in order to evaluate academic performance of French immersion students. These tests had been conducted in English, yet immersion students had been taught subject matter in French. There are some concerns that arise from the use of standardized assessment tools in second language learners.

Testing companies and researchers within the field of education have provided assessment tools designed to evaluate the bilingual student’s language proficiency. Such standardized tests include measurements of listening, speaking, writing, and reading which have been normed for specific groups of students. For example, Spanish minority language students in the United States are often used as the norm group for English as a second language proficiency tests. However, there are few tests that have been designed to assess French immersion students, who unlike the Spanish students, are learning a minority language in a Canadian context.

Standardized tests of reading are often used to assess a student’s reading ability. However, there are problems using standardized normative tests of reading ability with French immersion students, whose language at home is English yet the language of the classroom is French. If the test is administered in English, it ignores the possibility that the student may know more French words in some domains than others. For example, more French words may be available when stimulus materials relate to school activities and content specific vocabulary such as math and science. On the other hand, more
English words may be known when stimuli relate to the home. This knowledge of different vocabulary items in each language makes it difficult to assess a student’s total vocabulary knowledge with an assessment in only one of the languages (Garcia, McKoon, & August, 2008).

If the test is administered in French, the student may know the concrete words in French but not know the abstract words that are important for school. For example, a student may be able to list names of endangered species but have a limited vocabulary to discuss reasons for the endangerment. In addition, McLaughlin (1985) stated that:

if learning to read involves learning to use context and expectancies, and if there is nothing in the child’s experience to provide context and no background against which to develop expectancies, then it is not surprising that the child has trouble reading the language. (p. 210)

In other words, the content of a language measure should not be outside a student’s experience or cultural customs. For example, asking a French immersion student to discuss the Mardi Gras parade with its costumes, and masks would be unfair as it is not within the typical Canadian student’s realm of experience. In sum, a norm-referenced assessment penalizes second language students because of their lack of contact with the language.

The interpretation of standardized test results for bilingual students takes special attention because these types of assessments have limited validity and reliability for this segment of the education population (Garcia et al., 2008; McLaughlin, 1985). Before the test scores are interpreted, the population for which the test was normed should be carefully scrutinized. Standardized tests in French are often normed against a Francophone population, including those students in Quebec and France, which is a very different population than students who are learning French as a second language.
In order to achieve a more accurate diagnosis of student strengths and weaknesses, the examiner should base the interpretation of test results on bilingualism and second language acquisition research. In fact, McLaughlin (1985) posits that if standardized normative tests are administered to bilingual students then it would be most appropriate "to compare students in the same class and from the same linguistic background against each other for diagnostic purposes" (p. 211). Comparing students in the French immersion classroom would therefore be suitable if they all spoke English as a first language and had begun the immersion program at the same grade level.

Summary of Research

French immersion and learning difficulties have been the focus of research for the past three decades. Studies (Bruck, 1978, 1982; Trites, 1976, 1977a, 1977b; Wiss, 1987, 1989) have not been conclusive about the appropriateness of the program for students who are experiencing learning difficulties. Recent studies (Comeau et al., 1999; Geva & Clifton, 1994; MacCoubrey et al., 2004) have focused more specifically on the transferring of literacy skills between English and French. McLaughlin (1985), however, questioned the validity and reliability of standardized assessments for bilingual students. Caution needs to be given to the interpretation of test scores for the French immersion population. Heeding the research outlined in this chapter, the next chapter will discuss the research procedures for this study.
CHAPTER THREE

RESEARCH PROCEDURES

Chapter 1 outlined the purpose of this study and included the rationale and research question. Chapter 2 reviewed the extent literature on second language acquisition. This chapter begins with a discussion of the measures used in the study, including details of the standardized and experimental assessment tools, as well as the on-line survey. In addition, the step-by-step procedures for the study are detailed. The methodology is then discussed. The chapter concludes with the roles of the participants, including the reasons for their inclusion in the study.

Measures

Measures used in this study included both standardized and experimental reading assessments. English language standardized measures were the Woodcock Reading Mastery Tests-Revised (WRMT-R) Word Identification and Word Attack subtests (Woodcock, 1998), as well as the Test of Reading Comprehension, Third Edition (TORC-3) Paragraph Reading subtest (Brown, Hammill, & Wiederholt, 1995). These standardized measures were selected due to their robust norming procedures and their effectiveness in testing reading skills. Standardized procedures were followed for the administration of these subtests and the tests were administered by me as a qualified examiner and verified by my thesis supervisor, Dr. Andrew Kitchenham.

An experimental assessment tool, the Karen Andrews Reading Assessment Tool (KARAT), was designed for the French reading assessments, as there are few current French immersion measures. A few provinces, such as Alberta and Manitoba, have developed their own French immersion reading comprehension tests. However, these
tests are limited to the provincial testing program (Jared, 2008). The KARAT was designed to parallel the standardized English assessment tools in order to measure similar constructs.

For all four of the subtests that required an oral response, I used a digital audio recorder to capture the students’ responses. These responses were then stored as sound files (.wav) that could be accessed to verify the initial responses recorded on the protocol. In addition, student responses were carefully transcribed using the International Phonetic Alphabet.

*English Reading Assessments*

Two different assessment tools were used for the English reading portion of this study. The Word Identification and Word Attack subtests of the WRMT-R (Woodcock, 1998), form G, were administered. In addition, the Paragraph Reading of the TORC-3 (Brown et al., 1995) was used. Each of these assessment tools was examined for reliability and validity.

The WRMT-R (Woodcock, 1998), form G, was developed and standardized using a normed sample that was representative of the American population. The authors of this assessment tool took into consideration the variables of socioeconomics, ethnicity, region, age, and gender to ensure an accurate reflection of the sampling population. Statistical analyses were conducted to ensure reliability for each grade or age level. In addition, test items were developed with input from outside experts to ensure content validity.

The TORC-3 (Brown et al., 1995) was normed on an American sample that was geographically diverse and representative of the nation. Characteristics of ethnicity,
disability, gender, and age were considered in the sample population. To ensure test reliability, the authors of the TORC-3 analyzed the error variance related to content and time sampling, as well as scorer differences. In addition, content, construct, and criterion related validity was carefully considered in the construction of the TORC-3.

**Word Reading**

The Word Identification subtest of the WRMT-R, form G (Woodcock, 1998), was used to measure English word recognition. This subtest consists of a list of 106 words in isolation, beginning with simple words and increasing in difficulty. Testing is stopped when the participant has six consecutive errors on one given page, with each page having one to nine words on it. The content sampling error, or internal consistency reliability, for the Word Identification subtest is 0.97 for Grade 3 students.

**Word Decoding**

The Word Attack subtest of the WRMT-R (Woodcock, 1998) was used to measure English word decoding. This subtest has a total of 45 nonsense words that follow English language orthographic patterns. The test ceiling is reached when the participant has six consecutive errors on a given page. Each page consists of two to six words. The internal consistency reliability for the Word Attack subtest is 0.91 for Grade 3 students.

**Text Reading**

Text reading in English was measured using the Paragraph Reading subtest of the TORC-3 (Brown et al., 1995). This subtest has a total of six short paragraphs with five multiple-choice comprehension questions per paragraph. The ceiling is reached when the participant answers incorrectly two or more questions for any story. The internal
consistency reliability for the Paragraph Reading subtest is .91 for 8-year-olds and .93 for 9-year-olds.

KARAT Test Construction

The KARAT is a criterion-referenced diagnostic test that was used to examine reading difficulties in primary-aged French immersion students. Each of the three subtests included tasks based on common sources of reading errors as determined by the professional literature and my own experience as a French immersion teacher. The items within the subtests were developed for early French immersion students who were learning a second language and were used to pinpoint specific reading errors.

Construction Procedure

The first step in constructing the KARAT was to identify and clearly state the learning objectives to be measured. The Revised Bloom’s Taxonomy (Krathwohl, 2002) was used in order to identify the appropriate domains and form a table of specifications.

Table 1

Table of Specifications for the Karen Andrews Reading Assessment Tool

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Comprehends</th>
<th>Applies</th>
<th>Analyzes</th>
<th>Total number of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>Meanings</td>
<td>Skills</td>
<td>Inferences</td>
<td></td>
</tr>
<tr>
<td>Word reading</td>
<td>-</td>
<td>20</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>Word decoding</td>
<td>-</td>
<td>20</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>Paragraph reading</td>
<td>10</td>
<td>-</td>
<td>15</td>
<td>25</td>
</tr>
</tbody>
</table>

The primary focus was the taxonomy in the cognitive domain, in the class of intellectual abilities and skills. The second step was to develop a test plan, which indicated the learning outcomes to be measured, such as decoding skills and recognizing detail. The item characteristics were then used to measure student performance. These

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test specifications were then arranged in a chart, acting as a blueprint for the test construction. The third step in test construction was to determine the item types to be used for each subtest. These item types were selected based on “the most direct measures of student performance specified by the intended learning outcome” (Gronlund, 1993, p. 28). In other words, because the KARAT is a measurement of reading errors, the student was asked to read orally and silently. For example, the student was asked to read real and nonsense words out loud during the Word Identification and Word Attack subtests. During the reading comprehension subtest, the student was asked to read silently to himself or herself. The fourth step was to write test items in simple, clear language that were free from bias. For example, I was careful to select topics for the paragraph comprehension that were culturally relevant to the students so as not to bias the test. Topics included eating pizza and going to the park. Following these guidelines prevented the distortion of test results. In addition, careful selection of the test format such as placing linguistically less complex words, such as une and mon, at the beginning of the test, motivated students to continue with the other test items. Finally, clear and simple directions ensured effective test taking.

Framework for Valid and Reliable Results

A methodological construction procedure aids in reducing the misinterpretation of test results, or test validity. It further limits unintended errors, which affect the test’s reliability. According to Gronlund (1993), there are several steps that can be followed to ensure more reliable and valid test results. In constructing the KARAT, I selected test item types that were appropriate to the learning outcomes. I further ensured that the learning outcome task corresponded to the task demanded in the test item and that these
tasks were clearly explained by using simple language that was grammatically correct. Age-appropriate test items were determined in consultation with a Francophone primary teacher who has extensive experience teaching French immersion. In addition, French immersion teachers of the school where the study took place had prepared a list of sounds that should be taught at each grade level of French immersion for the purpose of ensuring that there was continuity in the teaching of phonics from one grade level to the next. For example, *ch-* should be acquired in Grade 2, whereas *-oi-* is not acquired until Grade 3. This list was used in determining the order in which the Word Identification and Word Attack test items were presented. To ensure that the test items were presented free of distracting nonfunctional material, for both the Word Identification and Word Attack subtests, only five test items were presented at a time. The reading comprehension subtest was organized such that only one paragraph with its respective questions was presented per page. Irrelevant factors such as trick questions that led the student to focus on the wrong aspect of the task were also avoided. In addition, I guarded against test items that contained irrelevant clues that would allow a non-conversant student to correctly respond by properly phrasing the stem of the item in a multiple-choice type question. Finally, the test items were written such that there was only one undisputed answer by avoiding multiple-choice questions that ask for the best answer.

**Content- and Construct-Related Validity**

Validity refers to the extent to which a test measures the learning outcomes that it is intended to measure. There are two types of interrelated validity, content and construct, which provided evidence to support the validity of the KARAT.
Content-related validity was achieved by building it into the test. In other words, I ensured that the subtests of the KARAT included a sampling of items that were representative of the content domain. For example, because the KARAT examined basic reading, two broad learning outcomes were assessed: decoding skills (phonetic analysis) and word identification. In addition, the domain of reading comprehension encompassed several learning outcomes such as recognizing detail and making inferences.

The KARAT was designed as a measure of student reading with each subtest focusing on a different aspect of this skill. Based on the observed performance on each subtest, I was able to make inferences and interpretations about the unobservable construct or dimension of the reading skill. For example, the Paragraph Reading subtest score was an observed measure of the complex skills which form the construct of reading comprehension. It was therefore important that when the test score was interpreted using behavioural descriptions, such as reading comprehension, the constructs that were thought to be reflected in the test scores, actually did account for differences in test performance (Gronlund, 1993). Construct-related evidence was provided through the comprehensive development of the KARAT.

Both content- and construct-related evidence were provided through on-line surveying of several French immersion teachers. The teachers were asked to assess the degree of congruence between the content and format of each test item and the learning outcome it measured. In addition, an experienced teacher at the Francophone school, who has taught Grades 2 and 3 French immersion students, provided feedback on the wording of the paragraphs and multiple-choice questions of the Paragraph Reading subtest. This teacher also concurred with my ordering of the words in the Word Identification and
Word Attack subtests. Furthermore, my supervisor, Dr. Andrew Kitchenham, who has extensive experience in test construction and intermediate-level French proficiency, provided expert knowledge throughout the process of reviewing the subtests for content and construct validity.

*KARAT Subtests*

The KARAT consisted of three subtests based on reading skills and were chosen because they represented the key elements of the reading process. The Word Identification subtest consisted of sample items that a primary-aged French immersion student, seven to nine years old, would be able to read even if the student had never seen the word before. For example, primary-aged French immersion students should be able to identify correctly the word *brouillard* even though it is a word that they have probably never seen written. The Word Attack subtest consisted of nonsense words, or letter combinations that were not actually words such as *cauche* and *flanouille*. Test items represented French phonemes that were taught to early French immersion students. For example, the final phonemes *-ier* and *-eur* were incorporated in the spelling of nonsense words. The Paragraph Reading subtest included a series of short stories written with high frequency vocabulary such as *chien* and *jouer*. This subtest was based on the interpretive exercise model (Gronlund, 1993), where a series of questions related to each story were asked. For example, the student was asked what the best title for the story would be or was asked to recall story details.

These three subtests were developed with test items grouped together according to the learning outcomes. Within each subtest, the test items were arranged according to difficulty from most easy, for example *une*, to most difficult, *soigneusement*. In addition,
the first five words in each of the Word Identification and Word Attack subtests were listed on a page due to their limited linguistic complexity.

*Word Identification Subtest*

The Word Identification subtest required that the student read aloud isolated words that were typed in large, lower case letters. The 20 test items were arranged from more frequently encountered in written French to less frequently encountered. Examples from frequent to less frequent included: *mon, soeur, couteau, agrafeuse,* and *soigneusement.* The student had to naturally read the test item within approximately five seconds in order for the test item to be scored correct. I recorded any mispronunciations on the protocol.

*Word Attack Subtest*

The Word Attack subtest was performance based, meaning that the student’s reading was evaluated in progress. This subtest consisted of 20 nonsense words that the student read aloud. These nonsense words were made up of letter combinations that were not actual words. This subtest measured the application of structural analysis and phonic skills that a student employed in order to pronounce unfamiliar words.

Unlike the English equivalent of this subtest, the student was asked to try all 20 of the test items since there was not a clear ceiling for this unnormed test. The items represented most French language phonemes in at least one of their major spelling patterns that were introduced to primary-aged French immersion students. Examples of phonemes included *-elle, -ier, ch-, -ou,* and *-eau.* The items began with simple consonant-vowel combinations, for example *pon,* and finished with multisyllabic nonsense words such as *patomelle.* The examiner scored student responses by recording
the phonic and structural components. For example, the examiner noted if the student had
misread p for b or if the student read the small words within the nonsense word rather
than blending sounds. This line-by-line analysis of student errors provided useful
diagnostic information about the student’s basic reading skills.

**Paragraph Reading Subtest**

The Paragraph Reading subtest employed interpretive exercises, basing a series of
multiple-choice questions on a single short story. This format allowed for the measuring
of complex learning outcomes based on knowledge, comprehension, and application.
Specifically, for each of the five stories, there were questions about the overall theme,
details recalled, positive inference, and negative inference (Brown, Hammill, & Wierholt,
1995). The subtest was arranged from easier stories to more difficult ones.

When constructing the multiple-choice test items, I followed the guidelines
outlined by Gronlund (1993, see pp. 47-60 for a full explanation).

1. Each item is situated around a problem that is related to the learning outcome.
2. The problem is clearly stated in the positive form in the stem of the item.
3. The stem includes as much of the wording as possible, reducing the amount of
time needed to read each alternative answer.
4. The intended answer is unquestionably the best choice to ensure that there are not
any disputable partial answers.
5. To avoid giving clues to the answer, the stem and the items match grammatically
and are worded in parallel form.
6. Careful selection of words is given to avoid unwanted clues.
7. Incorrect answers are plausible.
8. Correct answers are randomly positioned.

9. Items are formatted one per line, and listed using letters.

In this way, proper formatting and wording of choices of answer were ensured to maximize the strength of the test.

Test Directions

Directions were written for the tester to read out loud to the student prior to the administration of each of the subtests. The directions gave brief information about the purpose of the assessment, the time allotted, how to indicate the correct answer, and whether or not the student could guess if unsure of the answer. The tester recorded student responses on a separate answer sheet.

Interpretation

Criterion-referenced test results describe student performance according to learning tasks. The descriptions include interpretation of line-by-line analysis and item-by-item analysis. In interpreting student results, I was guided not only by my experience as a French immersion classroom teacher but also by my graduate course in individual assessment and by my undergraduate specialty in linguistics and second language acquisition.

As examiner, I analyzed the student’s individual errors directly on the protocol. This type of analysis provided a description of the student’s performance on precisely-defined skills. For example, a student who guessed at an unfamiliar word by saying a word that starts with the same letter or syllable was using a certain strategy. For example, the word *chien* was substituted for the test item *chienne*. In addition, detailed analysis revealed that a student had difficulties in initial or final consonants, indicating skill
deficiencies. For example, the initial consonant blend $ph-$ ($/[f]$) was mispronounced as $p-$ ($/p/$). In sum, analysis of individual errors was used to provide information about word reading, word decoding, and reading comprehension.

On-line Survey Construction

The interactive method of an on-line questionnaire was used to gather data from French immersion teachers. This technique was chosen over the use of an interview for several reasons, which are discussed in Palys (2003). First, an on-line survey is relatively inexpensive compared to a face-to-face interview. Also, an on-line survey is a good way to gather a lot of data in a short period of time. In addition, an on-line survey ensures respondent anonymity and comfort as the questionnaire can be accessed and completed at any time during the day. Although it is not possible to verify who actually responded to the on-line survey, it was not a concern as invitations were sent out to a select group of known participants. Because it was a small sample size, it was felt that the benefits of offering participant anonymity were more important than participant verification. The use of an on-line survey does not allow for the researcher to clarify ambiguities or misinterpretations of the questions. However, the questions were carefully worded and following the guidelines of Rea and Parker (2005), reduced the possibility of participant misunderstandings.

Following the basic guidelines of designing a questionnaire (Rea & Parker, 2005), I began by seeking expert advice from my supervisor, Dr. Andrew Kitchenham. Because of his wealth of experience in designing questionnaires, he was able to offer me invaluable insight throughout the design and implementation stages.
During the research proposal stage, I gathered preliminary information about the respondents, such as the names and e-mail addresses of the French immersion teachers in the school district. I also considered the issues that were important to the research question. I then reflected on the type of teacher feedback that would be most useful for my thesis. I determined that validity for the subtests of the KARAT was the most valuable information that I could gather from the teachers because “validity is the most important quality to consider in the preparation and use of achievement tests” (Gronlund, 1993, p. 159). Validity ensures that the assessment is meaningful and appropriate. In other words, the French immersion teachers provided assurance that the KARAT test items provided accurate test scores.

I proceeded to organize the information, choosing to group questions related to each of the KARAT subtests together. I then created a draft survey, which due to the need for precise timing to launch the survey for school year end, was pretested by my supervisor only. He was able to comment on the clarity, comprehensiveness, and acceptability of not only the wording but also the format of the questionnaire. I revised the questionnaire several times before it was ready for distribution.

To begin the survey process, the invited respondent read an introduction to my research, hosted on my supervisor’s UNBC website. To enter the survey, the respondent first gave his or her consent to participate or declined to participate by not choosing the “I consent” button. By clicking on the consent button, the respondent was hyperlinked directly to my survey. The on-line questionnaire was created on Zoomerang, a web-based survey software.
The survey began with demographic-related questions, such as teaching grade level and years of teaching experience. The survey then progressed into related questions including specific courses taken. Filter questions were included to ensure that coding and statistical analysis could accurately reflect the experience of the respondent. For example, a filter question was “Have you taught or are you currently teaching Grade 2 and/or Grade 3 French immersion?”.

Following the demographic questions were KARAT-content specific questions. The Word Identification and Word Attack subtest questions were organized into five word groupings. Within this grouping, the words were alphabetized to eliminate the possibility that the respondent could determine the researcher’s predetermined order. Using a modified Delphi technique (Delbecq, Van deVen, & Gustafson, 1975, cited in Wicklein, 1993), the respondent was asked to rank the words in order of the ease of pronunciation. This form of ranking was chosen because the respondents were experts in the field of French immersion so their feedback could provide a level of reliability to the KARAT subtests.

The KARAT Paragraph Reading subtest survey questions used a four-point Likert scale. The four-point scale was chosen to avoid central tendency with the acknowledgement that reliability would decrease. In addition, respondents were given only one word at either end of the scale (e.g., Strong) to avoid potentially value-laden words. Furthermore, at one end of the scale the word, “Strong” was chosen over “Excellent” because semantically, the latter implied perfection. The respondents might have been reluctant to rate a question as being excellent but not so reluctant to rate the same question as being strong.
Throughout the survey, closed-ended questions were selected because I wanted to collect quantitative data that could offer reliability for the KARAT subtests. I did not feel that open-ended questions would provide me with useful data that would inform my research. In addition, closed-ended questions were less onerous to complete. Because the survey took place during the summer months, I wanted to create a survey that would not be too taxing or time-consuming for the participants. In fact, the survey took approximately 15 minutes to complete, which is the recommended length for a questionnaire (Rea & Parker, 2005).

I made all of the survey questions mandatory, with the exception of one, which was only applicable for Grades 4 to 7 teachers. By making the questions mandatory, the respondents should have felt compelled to complete the survey. In addition, I placed a maximum of six questions per page so that if a respondent opted out, then I could gain partial information which was explained in the informed consent form.

An on-line survey of French immersion teachers was used to collect data as one portion of this study. The participants were asked to respond to a series of questions that would provide validity of the KARAT test items. The survey was constructed following guidelines, ensuring the accuracy of this interactive method.

Methodology

A mixed-methods research approach was chosen for this study due to the complexity of data that was collected (Tashakkori & Teddlie, 1998). Restricting the study to either qualitative or quantitative methodology would have limited the thoroughness of the research. On the other hand, the mixed-methods approach allowed for meaning to be extracted using both qualitative and quantitative methodology, limiting discrepancy in
analyses and interpretation of the data. Kitchenham (2009) purported that using this combination of techniques "enhances legitimation as the qualitative analyses involve descriptive precision and the quantitative analyses ensure numerical precision" (p. 562). In other words, combining elements of qualitative and quantitative approaches complement the strengths of each other.

Following the principles of mixed-methods research, I approached this single study by employing both qualitative and quantitative strategies in the collection and analysis of data as well as during the final stage of data interpretation. More specifically I used a sequential exploratory procedure, as outlined by Creswell (2003) and Creswell, Plano Clark, Gutmann, and Hanson (2003), to expand the findings of qualitative data collection and analysis with quantitative data collection and analysis. According to Creswell et al. (2003), this procedure is especially useful for the development and testing of an instrument. The sequential exploratory procedure allowed me to look for emerging themes within the assessments and to expand on quantitative findings. As shown in Figure 2, both qualitative and quantitative approaches were integrated throughout this study.

**Sequential Exploratory Design**

![Sequential Exploratory Design](image)

*Figure 2. Sequential exploratory design implemented for this study.*

The initial stage in the study involved qualitative data collection through the assessment of primary-aged French immersion students who were identified by their
classroom teachers as exceeding, meeting, and not yet meeting the provincial reading
learning outcomes. The selected participants were individually assessed in English using
the Word Attack and Word Identification subtests from the WRMT-R and the Paragraph
Reading subtest of the TORC-3. In French, the participants were assessed using the
KARAT. The next stage involved a qualitative analysis of the data collected from the test
scores. Themes of reading difficulties were identified and classified in this phase through
a line-by-line analysis of both the English and French word reading and word decoding
subtest items. The subtests of the TORC-3 and WRMT-R were scored and interpreted
based on my knowledge of bilingualism and on second language acquisition research, as
argued by McLaughlin (1985). My supervisor, Dr. Andrew Kitchenham, who is
experienced in test construction, administration, and interpretation, served as an expert
checker throughout the analysis procedure. Together these results helped determine if
there was a cross-linguistic transfer of reading difficulties from French into English.

As described earlier, quantitative data were gathered through an on-line French
immersion teacher survey. The survey was developed using Zoomerang, a computer
survey software program. The teachers were asked to rate the strength of the Paragraph
Reading response questions of the KARAT using a Likert scale. In addition, the teachers
were asked to place the words in order of difficulty, from most basic to most difficult, for
both the Word Identification and Word Attack subtests. The analysis of the teachers’ data
provided test face validity of the KARAT.

The final stage of the study involved interpreting the entire data. Collecting and
analyzing these diverse types of data provided a better understanding of French
immersion reading difficulties.
Participants

French Immersion Students

Children enrolled in French immersion Grades 2 and 3 classes in an urban community school within a northwestern BC school district were invited to participate in this study in the spring and summer of 2009. More specifically, the participants were chosen from a list of students, identified by their classroom teachers, as exceeding, meeting, and not yet meeting learning outcomes in reading difficulties in comprehension, and phonetic awareness. In addition, all of the students spoke English as a first language and lived in a community where they were not exposed to or had minimal exposure to French language outside of school hours. The process of selecting participants followed “purposive sampling,” defined by Palys (2003) as “people .... [who] are intentionally sought because they meet some criterion for inclusion in this study” (p. 142). A total of 13 consent forms were distributed, with a return rate of 100% (n = 13). Of these, 13 students (100%) participated in the English assessments. One student was unavailable during the summer prior to the French assessment; therefore the final sample consisted of 12 students. The school included in the study was a dual-track school with both English and French immersion programs of study offered in the same school.

The participants included five boys, two of whom were in Grade 2 and three of whom were in Grade 3. Seven girls participated of whom four were in Grade 2 and three of whom were in Grade 3. The students were assessed in English in the late spring and in French in the summer; a difference of one month between English and French testing.
French Immersion Teachers

French immersion teachers in a northwestern BC school district were invited to participate in this study in the summer of 2009. A total of ten consent forms were distributed, with a response rate of 50% (n=5). All five teachers participated in the online survey. The teachers included in the study were current French immersion teachers who taught in dual-track schools and who had experience teaching elementary school grades.

The participants included two teachers with five or fewer years of French immersion teaching experience, two teachers with six to 10 years of French immersion teaching experience, and one teacher with 15 to 20 years of French immersion teaching experience. Although all of the teacher participants had taught French immersion at the elementary grades, only one had previous experience specifically teaching Grades 2 and 3. All of the teachers in this study had taken a second language acquisition methodology course.

Procedures

Student

Consent forms were sent home to Grade 2 and Grade 3 students whose French immersion teachers had identified as exceeding, meeting, and not yet meeting learning outcomes in reading difficulties in comprehension, and phonetic awareness. Parents of the selected students were asked to complete and sign the consent form (see Appendix C). In addition, a letter outlining the study (see Appendix D) accompanied the consent form. Because the purpose of this research was to study the effects of second language learning with a population of first language students, those students whose first language
was not English were excluded. My personal knowledge of the participants’ linguistic experience ensured that students who were learning a third language were excluded from this study. This selection allowed for consistency across the sample and removed the influence of third language factors. In addition to the parent consent, the students were also asked for their assent (see Appendix E). There were no students who were unwilling to participate in the research study.

Once consent was obtained, the students were individually administered a series of assessments (see Appendix F for the design table) at both the spring and summer data collection sessions. The testing took place in a quiet room, during non-instructional hours, that was convenient for both the child and the parent. I completed all of the testing, thereby maintaining consistency in test administration.

At both of the data collection sessions, the individual assessments took no longer than 40 minutes. Assessing young students for any greater length of time could hinder their performance due to test fatigue. The two separate administration periods also ensured that the students were not confused between the English and the French assessments. Data collected included wording reading, word decoding, and reading comprehension in English (spring session) and then in French (summer session). Instructions were given in English, for both the French and English assessments, to ensure that the students understood the tasks. In addition, the word reading and word decoding assessments were digitally recorded during both sessions to ensure accurate transcribing of the data.

Teacher

A letter outlining the research project and consent forms (see Appendix G and
Appendix H) were e-mailed to all French immersion teachers within a northwestern BC school district who had experience teaching French immersion at the elementary grade levels. Once a teacher agreed to participate in the research, he or she was directly forwarded to an on-line survey. The on-line survey was available to teachers during an 18-day period in the month of July.

Conclusion

This chapter began with a discussion of the methods used in this study and included details about the standardized assessment tools, the WRMT-R and the TORC-3, followed by a description of the KARAT, an experimental assessment tool. In addition, information was detailed about the construction of the KARAT. The section on methods finished with a description of the on-line survey used in the data collection phase of the research. Following the methods discussion was a section on the methodology used for this study. I discussed the relevance of using a sequential exploratory procedure for the study. In addition, I detailed the mixed-methods research approach of qualitative and quantitative data collection, analysis, and interpretation. This chapter concluded with a description of the participants in the study and the rationale for their inclusion. The following chapter will discuss the results of the study.
CHAPTER FOUR

RESULTS

This chapter will outline the results of the data collected. These results will support the research questions of test validity as well as participant reading errors made in both French and English. The first section of this chapter will delineate results from the teacher on-line survey. Following this section the English Word Identification assessment score results and a detailed break down of reading errors taken from the Woodcock Reading Mastery Tests-Revised (WRMT-R) will be presented. In addition, the French Word Identification assessment scores and reading errors derived from the Karen Andrews Reading Assessment Tool (KARAT) will be delineated. Both English (WRMT-R) and French (KARAT) Word Attack subtest findings will be presented, including assessment scores and reading errors. Results from the English Paragraph Reading subtest of the Test of Reading Comprehension-Third Edition (TORC-3) and the French Paragraph Reading subtest of the KARAT follow this section. Individual participant assessment scores will conclude this chapter.

On-Line Survey Measures

The following section presents the results of the French immersion teacher on-line survey. To investigate the question of the validity of the KARAT, as rated by French immersion teachers, the data were analyzed using descriptive statistics. Tables are used to delineate teacher responses to the Word Identification, Word Attack, and Paragraph Reading subtests of the KARAT.
**Word Identification**

Teacher participants were asked to rank each grouping of words in order of *most easy* to *most difficult*. In Table 2, the original list of words is presented in order from 1 through 20. The mean teacher agreement of word order was calculated by adding the ranking given to the word by each teacher and dividing this total by five (the number of teachers). In addition, this table presents the word order ranking according to teacher participant grade level. These rankings were derived directly from the on-line survey, as there was only one teacher respondent per grade level.

As indicated in Table 2, two words, *tien* and *éventail*, had mean ranking agreement with the original word order. However, not every teacher individually agreed with the placement of these two words. Twelve of the 20 words, or 60%, were ranked on average within one point of the original list. The Grade 3/4/5 teacher ranked seven of the words in the exact order as the original list and an additional eight more words were within one point. This teacher ranked words 9 through 11 the same as the original list.

**Word Attack**

Table 3 presents the original order of the Word Attack subtest words from *most easy* to *most difficult*. Adding the rankings given by each teacher and dividing by five calculated the overall mean of the order of Word Attack words. In addition, the teacher agreement of word order, derived directly from the survey, is presented according to grade level.

As indicated in Table 3, there is complete teacher agreement on the placement of the word *oilumeuille*. In addition, 10 of the 20 words were ranked within one point of the
Table 2

*Teacher Ranking of Word Identification Order According to Grade Level*

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<th>Word list</th>
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<th>K</th>
<th>1</th>
<th>3/4/5</th>
<th>6/7</th>
<th>8/9/10/11/12</th>
<th>Mean</th>
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</table>
original list. The Grade 3/4/5 teacher had the most words within one point of the original list, 15 in total. The Grade 1 and secondary teachers had the most exact agreement with seven words each.

*Paragraph Reading*

Table 4 presents the results of the teacher ratings of the KARAT Paragraph Reading subtest broken down by paragraph and teacher grade level. The teachers were asked to rate each question of each paragraph on a four-point Likert scale, with 1 being “weak” and 4 being “strong”. Adding up all five of the question ratings for the given paragraph and dividing by 25 calculated the mean ranking for each paragraph. As seen in Table 4, the paragraph with the highest overall mean is Paragraph I (2.96 out of 5). The paragraph with the lowest overall mean is Paragraph II (2.28 out of 5), a difference of 0.68 points.

Table 4 also presents the mean for each paragraph according to teacher participant grade level. This mean was calculated for each paragraph by adding all of the question type rankings (from the four-point Likert scale) per teacher and dividing by five. Table 4 shows that a Kindergarten teacher gave the highest ranking, 3.6, for Paragraph III. Paragraph II has the lowest mean ranking, 1.8, which was given by an upper intermediate teacher as well as a secondary teacher. The difference between the two rankings is 1.8.

Table 5 presents the results of the teacher rankings for each of the four question types (detail, title, inference, and negative inference). For each paragraph, the teachers were asked to rate each of the questions on a scale of 1 to 4, with 1 being “weak” and 4 being “strong”. The overall mean, calculated by adding up all of the teacher rankings for each of the question types and dividing by five, is presented in Table 5. Title-type
Table 4

*Paragraph Rankings by Teacher Grade Level*

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<th>Paragraph</th>
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<th>3/4/5</th>
<th>6/7</th>
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<td><strong>2.28</strong></td>
</tr>
<tr>
<td>III</td>
<td><strong>3.6</strong></td>
<td>2.0</td>
<td>2.6</td>
<td>2.8</td>
<td>2.0</td>
<td><strong>2.60</strong></td>
</tr>
<tr>
<td>IV</td>
<td>3.2</td>
<td>2.6</td>
<td>2.6</td>
<td>2.8</td>
<td>3.2</td>
<td><strong>2.88</strong></td>
</tr>
<tr>
<td>V</td>
<td>3.0</td>
<td>2.4</td>
<td>2.8</td>
<td>3.0</td>
<td>3.0</td>
<td><strong>2.84</strong></td>
</tr>
</tbody>
</table>

*Note.* The highest possible mean was 5.

Table 5 also presents the mean ranking for each of the question types according to teacher grade level. For each grade level, adding the 10 rankings (from the four-point Likert scale) given by the teacher and dividing by five calculated the mean for the detail-type questions. Adding the five rankings and dividing by five calculated the mean for each of the other question types. A Kindergarten teacher ranked negative inference-type questions the highest (3.8 out of 4). Detail-type questions were ranked the lowest (1.1 out of 4) by a Grade 3/4/5 teacher.

The on-line teacher survey results are presented in tables to clearly present the data gathered during the research phase of this study. These data were collected to better inform the question of validity of the KARAT. The following sections will present the data gathered during the assessment phase of the study.
Table 5

*Question Type Rankings by Teacher Grade Level*

<table>
<thead>
<tr>
<th>Question type</th>
<th>K</th>
<th>1</th>
<th>3/4/5</th>
<th>6/7</th>
<th>8/9/10/11/12</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detail</td>
<td>3.3</td>
<td>3.0</td>
<td>1.1</td>
<td>2.3</td>
<td>2.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Inference</td>
<td>2.6</td>
<td>3.0</td>
<td>2.0</td>
<td>3.5</td>
<td>2.6</td>
<td>2.76</td>
</tr>
<tr>
<td>Title</td>
<td>3.0</td>
<td>3.2</td>
<td>2.8</td>
<td>3.2</td>
<td>2.6</td>
<td>2.96</td>
</tr>
<tr>
<td>Negative inference</td>
<td>3.8</td>
<td>3.0</td>
<td>3.0</td>
<td>2.6</td>
<td>1.8</td>
<td>2.84</td>
</tr>
</tbody>
</table>

*Note.* The highest possible ranking was 4.

**Word Reading Measures**

The following section presents data collected during the assessment phase of the current study. First, the results of the English Word Identification subtest of the WRMT-R are delineated, including test scores and reading error types. Then, the results of the KARAT Word Identification subtest are shown. These data support the research question of reading error types French immersion students make when reading in French as well as when reading in English.

*English Word Identification*

The results of the English Word Identification subtest of the WRMT-R are presented in this section. This assessment, used to assess the English word reading ability of the French immersion students, was administered to investigate the question of whether French immersion students made the same types of errors when reading in French as when they were reading in English. Tables are used to delineate percentile ranks and reading errors made for this subtest.
Because the WRMT-R is a standardized assessment tool, the individual raw scores were converted into standard scores and percentile ranks. Table 6 delineates the mean percentile ranks for the Word Identification subtest broken down into reading ability groups (below average, average, and above average). Taking the sum of the percentile ranks for all 12 participants and dividing it by 12 calculated the overall mean percentile rank, 53.42. The mean for each reading group was calculated by dividing the sum of the four percentile ranks by the number of participants in the group.

Table 6

*Word Identification Mean Percentile Ranks by Reading Ability Group*

<table>
<thead>
<tr>
<th>WRMT-R</th>
<th>Percentile rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Identification (n=12)</td>
<td>53.42</td>
</tr>
<tr>
<td>Below average (n=4)</td>
<td>32.0</td>
</tr>
<tr>
<td>Average (n=4)</td>
<td>53.25</td>
</tr>
<tr>
<td>Above average (n=4)</td>
<td>75.0</td>
</tr>
</tbody>
</table>

The WRMT-R Word Identification subtest provided not only percentile ranks of students but also afforded the opportunity to individually analyze the reading responses for each test item. For the purpose of coding and categorizing, I analyzed each of the 759 test items, which resulted in the emergence of seven distinct categories: real-word substitutions, substitution of vowel and consonant phonemes, insertion of consonants and vowels, deletion of consonants and vowels, visual discrimination, and atypical errors. The categories of insertion and deletion were further subdivided into initial, medial, and final position. After considerable study of the data, an inductive process allowed for the emergence of these categories. This deep analysis was conducted in order to investigate
not only the types of errors made but also whether the errors made were the same in both French and English, a central focus of the current study.

It should be noted that the test items errors were transcribed using the International Phonetic Alphabet (IPA) during the data analysis stage to ensure accurate transcription of the data. However, for the purpose of the presentation of the results, most of the test items have been written using French and English orthography rather than using the IPA symbols. This decision was made for ease of readability of the resulting errors and the ensuing discussion. However, in situations where the pronunciation would be ambiguous or a specific phoneme needed to be identified, IPA is used.

For the purpose of coding errors, test items that were substituted for a different real word were counted under the category of real-word substitution. For example, the test item *miser*, misread as *mister*, was coded under the category of real-word substitution. In addition, because this test item involves the insertion of a /t/, it was further coded as medial insertion of a consonant. In other words, some test items were coded in more than one category. This decision was made to ensure accurate coding of all error types.

Table 7 details the errors made when French immersion students read the individual words presented in the Word Identification subtest of the WRMT-R. The students read 759 words in total, of which 200 were mispronounced (26.35%).

As delineated in Table 7, the most frequent error made by the students was substituting one word for another. Forty-five real-word substitutions were made of which 39 were English words and six were French. Examples of English substitutions include *bed* read as *bad* and *swim* as *seem*. Examples of French substitutions include *bleu* for
Table 7

*English Word Identification Error Analysis*

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Sample of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real-word substitutions</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>39</td>
<td>help for up</td>
</tr>
<tr>
<td>French</td>
<td>6</td>
<td>bleu for blue</td>
</tr>
<tr>
<td>Insertion of consonant</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>2</td>
<td>armazement for amazement</td>
</tr>
<tr>
<td>Medial position</td>
<td>14</td>
<td>mister for miser</td>
</tr>
<tr>
<td>Final position</td>
<td>3</td>
<td>furnits for furnace</td>
</tr>
<tr>
<td>Insertion of vowel</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>1</td>
<td>dawarf for dwarf</td>
</tr>
<tr>
<td>Medial position</td>
<td>2</td>
<td>amazeument for amazement</td>
</tr>
<tr>
<td>Final position</td>
<td>2</td>
<td>furnacie for furnace</td>
</tr>
<tr>
<td>Deletion of consonant</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>2</td>
<td>ugent for urgent</td>
</tr>
<tr>
<td>Medial position</td>
<td>9</td>
<td>quinessence for quintessence</td>
</tr>
<tr>
<td>Final position</td>
<td>18</td>
<td>amazem for amazement</td>
</tr>
<tr>
<td>Deletion of vowel</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Medial position</td>
<td>1</td>
<td>gasoline for gasoline</td>
</tr>
<tr>
<td>Final position</td>
<td>4</td>
<td>stigm for stigma</td>
</tr>
<tr>
<td>Visual discrimination</td>
<td>4</td>
<td>dead for bed</td>
</tr>
<tr>
<td>Atypical error</td>
<td>17</td>
<td>ildak for yardage</td>
</tr>
</tbody>
</table>

*Note.* There were 759 test items read.
blue and mathématique for mathematician. It was noted that the WRMT-R consisted of six test items that are spelled the same in French as in English (table, expert, miser, urgent, passage, and artesian). Of these six bilingual words, three were pronounced as French words (table, expert, and miser) and were coded as real-word substitutions: French.

The insertion of consonants interfered with the pronunciation of the test items 19 times. Of the 19 insertions, two were initial, 14 were medial, and three were final. The two most common consonants that were inserted were /t/ and /l/. In fact, 12 of the 19 insertions were one of these two consonants. Examples of these insertion types include pederstrain (medial insertion of /t/) and metchanic (medial insertion of /l/).

Vowels were also inserted in the initial, medial, and final positions. Five vowel insertions were noted: 1 initial, 2 medial, and 2 final. Examples of vowel insertion errors include vehichaisle (medial insertion of [ai]) and alreadyue (final insertion of [u:]).

The second most frequent error type is that of the deletion of consonants. This type of error was observed 29 times: 2 initial, 9 medial, and 18 final. Examples of deletion of consonants include ugent (initial deletion of /t/), pronosis (medial deletion of /g/), and even (final deletion of ing ending).

Vowels were also deleted five times: once in the medial position and four times in the final position. There were no vowel deletions in the initial position. In the medial position there was one item pronounced without the vowel, gasoline for gasoline. An example of a vowel deletion in the final position is yardge for yardage.
Student responses were also analyzed for visual discrimination. The letters /p/, /d/, and /b/ were confused four times. *Bed* was read as *dead* and *torpedo* was read as *torbeto* for example.

Atypical errors were counted for test items that did not follow any of the coded themes. These were mispronunciations that were beyond insertion, deletion, or visual discrimination errors. Two test items that caused particular pronunciation difficulties were the irregular words *yacht* (mispronounced 5 times) and *cologne* (mispronounced 6 times). These words were mispronounced in a variety of ways that did not follow any pattern that could be coded. For example, *yacht* was read as *hatsh* and *cologne* as *kalorng*. Six other atypical errors were noted including *lidz* for *laugh* and *eeg* for *night*.

Substitutions of consonant and vowel phonemes are delineated in Table 8. These substitutions were coded if the error occurred more than once within the subtest or if the error reappeared in either the English Word Attack subtest or either of the French subtests. This decision was made in order to answer the research question of whether or not students make the same types of errors in French as they do in English.

Table 8 indicates that the most common consonant phoneme substitution made was the use of an [s] when a [z] was required. This error type was made eight times. For example, *miser* was misread as *mi[s]er* and *amazement* was misread as *ama[s]ement*. The inverse substitution occurred twice. Other common consonant phoneme substitutions included [ʃ] for [k] and [k] for [s].

The most common vowel substitution was the phoneme [iː] for [i]. This substitution occurred 12 times. For example, *milk* was read as *m[iː]lk* and
Table 8

Consonant and Vowel Substitutions in WRMT-R Word Identification

<table>
<thead>
<tr>
<th>Target Sound</th>
<th>Substitution</th>
<th>Frequency</th>
<th>Sample of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>[s]</td>
<td>[k]</td>
<td>5</td>
<td>/k/ertain for certain</td>
</tr>
<tr>
<td>[k]</td>
<td>[s]</td>
<td>3</td>
<td>/s/alendar for calendar</td>
</tr>
<tr>
<td>[ʃ]</td>
<td>[s]</td>
<td>2</td>
<td>judi[s]ious for judicious</td>
</tr>
<tr>
<td>[ʃ]</td>
<td>[k]</td>
<td>2</td>
<td>judi[k]ious for judicious</td>
</tr>
<tr>
<td>[k]</td>
<td>[ʃ]</td>
<td>7</td>
<td>meʃ/anic for mechanic</td>
</tr>
<tr>
<td>[dʒ]</td>
<td>[ɡ]</td>
<td>4</td>
<td>lar[ɡ]est for largest</td>
</tr>
<tr>
<td>[ɡ]</td>
<td>[dʒ]</td>
<td>2</td>
<td>ru[dʒ] for rug</td>
</tr>
<tr>
<td>[θ]</td>
<td>[t]</td>
<td>3</td>
<td>zeni[t] for zenith</td>
</tr>
<tr>
<td>[s]</td>
<td>[z]</td>
<td>2</td>
<td>progno[z]is for prognosis</td>
</tr>
<tr>
<td>[z]</td>
<td>[s]</td>
<td>8</td>
<td>cau[z]ation for causation</td>
</tr>
<tr>
<td>[ʌ]</td>
<td>[uː]</td>
<td>2</td>
<td>j[uː]mp for jump</td>
</tr>
<tr>
<td>[ʌ]</td>
<td>[oʊ]</td>
<td>3</td>
<td>c[oo]me for come</td>
</tr>
<tr>
<td>[aː]</td>
<td>[ɪ]</td>
<td>2</td>
<td>w[iʃ]ch for watch</td>
</tr>
<tr>
<td>[e]</td>
<td>[iː]</td>
<td>1</td>
<td>b[iː]d for bed</td>
</tr>
<tr>
<td>[e]</td>
<td>[æ]</td>
<td>3</td>
<td>b[æ]d for bed</td>
</tr>
<tr>
<td>[iː]</td>
<td>[ɪ]</td>
<td>5</td>
<td>sl[iʃ]p for sleep</td>
</tr>
<tr>
<td>[ɪ]</td>
<td>[iː]</td>
<td>12</td>
<td>sw[iː]m for swim</td>
</tr>
<tr>
<td>[æ]</td>
<td>[ɛr]</td>
<td>5</td>
<td>f[ɛr]st for fast</td>
</tr>
<tr>
<td>[au]</td>
<td>[iː]</td>
<td>3</td>
<td>f[iː]nd for find</td>
</tr>
<tr>
<td>[au]</td>
<td>[ɪ]</td>
<td>5</td>
<td>m[ɪʃ]er for miser</td>
</tr>
</tbody>
</table>

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mathematician was read as mathemat[iː]cian. The inverse substitution occurred five times. Other common vowel phoneme substitutions were [œ] for [æ] and [i] for [ai].

**French Word Identification**

In this section, the results from the Word Identification subtest of the KARAT are presented. These assessments were conducted in order to investigate the central research question: what types of errors do early French immersion students make when reading in French? The student scores and reading errors are presented in tables.

The students’ French reading abilities were assessed using the Word Identification subtest of the KARAT. The KARAT is an experimental, unnormed, and non-standardized assessment tool; therefore the raw scores were converted into percentages rather than percentiles. Table 8 delineates the mean percentages for the Word Identification subtest for the three reading ability groups (below average, average, and above average). Taking the sum of the percentages for all 12 participants and dividing it by 12 calculated the overall mean percentage for each of the subtests. The overall mean percentage for the Word Identification is 46.25. In addition, the mean percentage for each reading group was calculated by taking the sum of the four percentages and dividing it by four.

<table>
<thead>
<tr>
<th>[æ]</th>
<th>[œ]</th>
<th>2</th>
<th>down</th>
</tr>
</thead>
<tbody>
<tr>
<td>[u:]</td>
<td>[œ]</td>
<td>1</td>
<td>two</td>
</tr>
<tr>
<td>[œ]</td>
<td>[œ]</td>
<td>3</td>
<td>torpedo</td>
</tr>
</tbody>
</table>
The KARAT Word Identification subtest resulted in 228 test items that were read by the 12 participants. Of the 228 test items that were read, 117 were mispronounced (51.31%). These 117 misread words were then analyzed for errors such as insertion and deletion of consonants and vowels. Table 10 presents the categories of error, frequency, and error examples.

As indicated in Table 10, the most frequent error was the insertion of a consonant within the test item. This error type occurred 24 times, of which eight were in the initial position. For example, /h/ was incorrectly added to the pronunciation of habitent. In the medial position, there was one consonant insertion, soigreneusement for soigneusement. Final insertion errors occurred 13 times. Examples include the addition of an /s/ in pois and a /d/ to noeud of which both endings should be silent.

The second most frequent error type was that of real-word substitutions, occurring 20 times. Seventeen of these substitutions were French real words. For example, un was misread as une and orteilles was substituted with oreilles. The other three real-word substitutions were into English. The French word oeil was substituted for the English word oil, for example.
Table 10

French Word Identification Error Analysis

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Sample of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real-word substitutions</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>17</td>
<td>chenille for chien</td>
</tr>
<tr>
<td>English</td>
<td>3</td>
<td>pharmacy for pharmacien</td>
</tr>
<tr>
<td>Insertion of consonant</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>8</td>
<td>trien for tien</td>
</tr>
<tr>
<td>Medial position</td>
<td>1</td>
<td>soigreneusement for soigneusement</td>
</tr>
<tr>
<td>Final position</td>
<td>13</td>
<td>noeurd for noeud</td>
</tr>
<tr>
<td>Insertion of vowel</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>1</td>
<td>borillard for brouillard</td>
</tr>
<tr>
<td>Medial position</td>
<td>1</td>
<td>évieantail for éventail</td>
</tr>
<tr>
<td>Final position</td>
<td>10</td>
<td>habitant for habitent</td>
</tr>
<tr>
<td>Complete deletion final position</td>
<td>14</td>
<td>te for tien</td>
</tr>
<tr>
<td>Visual discrimination</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Atypical errors</td>
<td>2</td>
<td>kashon for couteau</td>
</tr>
</tbody>
</table>

*Note.* 228 test items were read.

A detailed analysis of the error types revealed that vowels were inserted into the misread words 12 times. Specifically, a vowel was inserted once in the initial position *(borillard for brouillard).* In the medial position, a vowel was inserted once as well.
(évieantail for éventail). In the final position, the insertion of a vowel occurred 10 times. Examples include habitant for habitent and évantali for éventail.

Analysis of the deletion of consonants and vowels determined that this error type occurred 14 times in the final position. These errors were a result of complete omission of the ending, meaning that the students attempted the beginning of the word only. For example, the word couteau was read as cou and pharmacien was read as pharma. Because the endings included both vowel and consonant phonemes, these deletions were coded as deletion: final position.

There were no instances of visual discrimination in the KARAT Word Identification subtest items. However, there were two words that were coded under the category of atypical error. The target word soignusement was read as pwasnioisomsermon and the word couteau was read as kashon. These pronunciations did not follow any patterns such as insertion or deletion that could easily be coded.

Substitutions of consonant and vowel phonemes were coded and are presented in Table 11. The most common consonant phoneme substitution was [l] for [j], occurring 18 times. Examples of this substitution include chevreuil for chevreuil and oreilles for orteilles. The second most common phoneme substitution was [z] substituted for [s], occurring 10 times. For example, agrafeuse was pronounced as agrafeu[s]e and soignusement was pronounced as soigneu[s]ement.

The most common vowel phoneme substitutions were [æ] for the phoneme [a] and [ɔ] for [œ], occurring nine times each. Examples of these substitutions include [æ]grafeuse and év[ɔ]ntail. Another vowel substitution was [ʊn] for the phoneme [œ], oeil was pronounced as [ʊn][il] for example.
Table 11

Vowel and Consonant Substitutions in KARAT Word Identification

<table>
<thead>
<tr>
<th>Target Sound</th>
<th>Substitution</th>
<th>Frequency</th>
<th>Sample of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>[f]</td>
<td>[p]</td>
<td>4</td>
<td>[p]armacien for pharmacien</td>
</tr>
<tr>
<td>[s]</td>
<td>[k]</td>
<td>3</td>
<td>le[k]on for leçon</td>
</tr>
<tr>
<td>[k]</td>
<td>[j]</td>
<td>1</td>
<td>[f]outeau for couteau</td>
</tr>
<tr>
<td>[n]</td>
<td>[g]</td>
<td>4</td>
<td>soif[g]neusement for soigneusement</td>
</tr>
<tr>
<td>[j]</td>
<td>[l]</td>
<td>18</td>
<td>chevreuil[l] for chevreuil</td>
</tr>
<tr>
<td>[j]</td>
<td>[r]</td>
<td>3</td>
<td>papi[r] for papier</td>
</tr>
<tr>
<td>[r]</td>
<td>[w]</td>
<td>2</td>
<td>b[w]ouillard for brouillard</td>
</tr>
<tr>
<td>[z]</td>
<td>[s]</td>
<td>10</td>
<td>soigneu[s]ement for soigneusement</td>
</tr>
<tr>
<td>[a]</td>
<td>[a:]</td>
<td>5</td>
<td>ph[a:]rmacien for pharmacien</td>
</tr>
<tr>
<td>[a]</td>
<td>[æ]</td>
<td>9</td>
<td>[æ]bitent for habitent</td>
</tr>
<tr>
<td>[o]</td>
<td>[oo]</td>
<td>2</td>
<td>cout[oo] for couteau</td>
</tr>
<tr>
<td>[œ]</td>
<td>[oø]</td>
<td>4</td>
<td>n[oø]d for noeud</td>
</tr>
<tr>
<td>[ɛ]</td>
<td>[ei]</td>
<td>1</td>
<td>ort[ei]les for orteilles</td>
</tr>
<tr>
<td>[ɛ]</td>
<td>[i:]</td>
<td>3</td>
<td>ort[i:]les for orteilles</td>
</tr>
<tr>
<td>[ɛ]</td>
<td>[ei]</td>
<td>3</td>
<td>[ei]ventail for éventail</td>
</tr>
<tr>
<td>[œ]</td>
<td>[ɔ]</td>
<td>9</td>
<td>soigneuse[œ] for soigneuse[œ]</td>
</tr>
<tr>
<td>[œ]</td>
<td>[ɔ]</td>
<td>3</td>
<td>pharmaci[œ] for pharamci[œ]</td>
</tr>
</tbody>
</table>

This section delineated the data collected for both the English and the French Word Identification subtests. Tables were used to present test scores as well as the
findings of the analysis of reading errors. The following section will present data from
the English and French Word Attack subtests.

Nonsense Word Measures

Data gathered from the Word Attack subtests of the WRMT-R and the KARAT
are presented in this section. Test scores according to teacher pre-determined reader
ability are delineated. In addition, test item reading errors are presented in tables. These
data are evidence to support the investigation of error types that French immersion
students make and whether or not the errors are the same when reading in French as
when reading in English.

*English Word Attack*

Phonological awareness and decoding skills were assessed using the Word Attack
subtest of the WRMT-R. Table 12 delineates the mean percentile ranks for the Word
Attack subtest according to the three reading ability groups. The overall mean percentile
rank was calculated by taking the sum of the percentile ranks for all 12 participants and
dividing it by 12. The overall mean percentile rank for the Word Attack subtest is 48.83.
In addition, each reading group’s mean was calculated by taking the sum of the four
percentile ranks and dividing it by four (the number of participants in each group).

As indicated in Table 13, the most common error that emerged was substituting a
real word for a nonsense word. Students substituted a real word 47 times of which 44
were English substitutions and three were French substitutions. Examples of English real-
word substitutions include *strict* for *straced* and *very* for *wrey*. The nonsense word *gouch*
was substituted for a real French word *couche*. It should be noted that one of the
nonsense words was a real French word, *un*. This nonsense word was pronounced as the
Table 12

WRMT-R Word Attack Mean Percentile Ranks

<table>
<thead>
<tr>
<th>KARAT</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Attack (n=12)</td>
<td>48.83</td>
</tr>
<tr>
<td>Below average (n=4)</td>
<td>30.25</td>
</tr>
<tr>
<td>Average (n=4)</td>
<td>49.5</td>
</tr>
<tr>
<td>Above average (n=4)</td>
<td>66.75</td>
</tr>
</tbody>
</table>

French real word, *un*, by two participants.

Table 13 delineates the errors made when students were reading the nonsense words presented in the WRMT-R Word Attack subtest. There were 328 test items read of which 89 were mispronounced (27.13%). These test items were coded for errors such as real-word substitutions, insertion and deletion of vowels, and visual discrimination.

The insertion of consonants was noted 15 times, five in the initial position, three in the medial position, and seven in the final position. Three of the initial position insertions involved the test item, *knoink*. Students added the phoneme [k] to the beginning of the nonsense word. Six of the 10 consonant insertions were adding /r/ or /t/.

Examples of insertions include *strackert* for *straced* (final insertion of /r/) and *ziterdn’t* for *zirdn’t* (medial insertion of /t/).

Vowels were also inserted in the initial, medial, and final positions for a total of 10 times. Four insertions were in the initial position. For example, the vowel sound [ʌ] was inserted initially in the nonsense word *wheie* (read as *wuhie*). Two insertions were made in the medial position. For example, the vowel sound [ə] was inserted in...
Table 13

*English Word Attack Error Analysis*

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Sample of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real-word substitutions</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>44</td>
<td><em>dust</em> for <em>dud’s</em></td>
</tr>
<tr>
<td>French</td>
<td>3</td>
<td><em>un</em> for English <em>un-</em></td>
</tr>
<tr>
<td>Insertion of consonant</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>5</td>
<td><em>ziterdinth</em> for <em>zirdn’t</em></td>
</tr>
<tr>
<td>Medial position</td>
<td>3</td>
<td><em>mancingdeful</em> for <em>mancingful</em></td>
</tr>
<tr>
<td>Final position</td>
<td>7</td>
<td><em>sharp</em> for <em>shab</em></td>
</tr>
<tr>
<td>Insertion of vowel</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>4</td>
<td><em>wuhie</em> for <em>whie</em></td>
</tr>
<tr>
<td>Medial position</td>
<td>2</td>
<td><em>bufity</em> for <em>bufty</em></td>
</tr>
<tr>
<td>Final position</td>
<td>4</td>
<td><em>dudies</em> for <em>dud’s</em></td>
</tr>
<tr>
<td>Deletion of consonant</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>2</td>
<td><em>trasid</em> for <em>straced</em></td>
</tr>
<tr>
<td>Medial position</td>
<td>7</td>
<td><em>maningful</em> for <em>mancingful</em></td>
</tr>
<tr>
<td>Final position</td>
<td>7</td>
<td><em>cha</em> for <em>chad</em></td>
</tr>
<tr>
<td>Deletion of vowel</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Visual discrimination</td>
<td>6</td>
<td><em>shad</em> for <em>shab</em></td>
</tr>
<tr>
<td>Atypical error</td>
<td>3</td>
<td><em>seedrib</em> for <em>cigbet</em></td>
</tr>
</tbody>
</table>

*Note.* There were 378 test items read.
mancingful (read as mancingeful). There were four final position vowel insertions including dudies for dud’s.

There were no vowel deletions; however, deletion of consonants occurred 16 times. Two were initial, seven were medial, and seven were final position deletions. Examples include trasid for straced (initial position), maningful for mancingful (medial position), and ad for adjex (final position).

Six letter reversals occurred in the English nonsense words and were coded as visual discrimination errors. Confusion with certain phoneme-grapheme relationships was noted between /p/, /b/, and /d/. Examples include bee for dee and sharp for shab.

Atypical errors occurred three times. These were errors that could not be explained by any of the other coding categories. Examples of atypical errors include knoink pronounced as nooemp and naksin.

Table 14 delineates substitutions made of consonant and vowel phonemes. These substitutions were coded if they occurred more than once within the Word Attack subtest or if the substitution also occurred in one of the other reading measures.

The most common consonant error made was substituting the phoneme [k] for [s]. This substitution occurred 11 times including [k]igbet and [k]yr. Other consonant substitutions included the phoneme [s] for [z] (tran[s]libsodge) and [dʒ] for [g] (po[dʒ]e).

Twenty substitutions of the phoneme [i:] for the phoneme [ai] were coded, making this error the most common. Examples of this substitution include wh[i:] for the test item whie and s[i:] for the test item sy. Other vowel phoneme substitutions included substituting [u:] for [ʌ] (b[u:]fity) and [æ] for [æt] (sh[æt]p).
Table 14

**Consonant and Vowel Substitutions in WRMT-R Word Attack**

<table>
<thead>
<tr>
<th>Target Sound</th>
<th>Substitution</th>
<th>Frequency</th>
<th>Sample of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>[s]</td>
<td>[k]</td>
<td>11</td>
<td>stra[k]ed for straced</td>
</tr>
<tr>
<td>[g]</td>
<td>[dʒ]</td>
<td>2</td>
<td>ci[dʒ]bet for cigbet</td>
</tr>
<tr>
<td>[ð]</td>
<td>[ð]</td>
<td>2</td>
<td>[ð]an't for than't</td>
</tr>
<tr>
<td>[z]</td>
<td>[s]</td>
<td>4</td>
<td>dud[s] for dud's</td>
</tr>
<tr>
<td>[ʌ]</td>
<td>[uː]</td>
<td>12</td>
<td>b[uː]fty for bufty</td>
</tr>
<tr>
<td>[ɛ]</td>
<td>[iː]</td>
<td>2</td>
<td>tw[iː]m for twem</td>
</tr>
<tr>
<td>[ɪ]</td>
<td>[iː]</td>
<td>6</td>
<td>[iː]ft for ift</td>
</tr>
<tr>
<td>[iː]</td>
<td>[ʌ]</td>
<td>2</td>
<td>w[ʌ]t for weat</td>
</tr>
<tr>
<td>[æ]</td>
<td>[ei]</td>
<td>11</td>
<td>n[ei] for nigh</td>
</tr>
<tr>
<td>[æ]</td>
<td>[iː]</td>
<td>20</td>
<td>n[iː] for nigh</td>
</tr>
<tr>
<td>[æ]</td>
<td>[ɪ]</td>
<td>3</td>
<td>qu[iː]les for quiles</td>
</tr>
<tr>
<td>[e]</td>
<td>[æ]</td>
<td>12</td>
<td>l[æ]p for laip</td>
</tr>
<tr>
<td>[au]</td>
<td>[oʊ]</td>
<td>3</td>
<td>g[oʊ]ch for gouch</td>
</tr>
<tr>
<td>[uː]</td>
<td>[oʊ]</td>
<td>4</td>
<td>r[oʊ] for roo</td>
</tr>
<tr>
<td>[ɔː]</td>
<td>[oʊ]</td>
<td>6</td>
<td>[oʊ]ss for oss</td>
</tr>
</tbody>
</table>

**French Word Attack**

The test scores from the KARAT Word Attack subtest are delineated in Table 15.

The overall mean was calculated by adding all 12 of the participants' percentages and dividing by 12. The resulting mean percentage was 46.25. Each reading group's mean percentage was calculated by adding up the four percentages and dividing by four.
The KARAT Word Attack subtest resulted in 240 nonsense words being read. Of these 240 words, 153 words were incorrectly pronounced (63.75%). These 153 test items were then analyzed for pronunciation errors such as real-word substitutions and vowel and consonant substitutions. These errors are delineated in Tables 16 and 17.

As indicated in Table 16, real-word substitutions were made 13 times. Nine of the nonsense words were substituted for French real words. For example, *méchant* replaced the test item *naïcant* and *gâteau* replaced the nonsense word *choutaille*. In addition, four of the test items were replaced by real English words. The nonsense word *grien* was read as *green* and *phier* was read as *pear*, for example.

The Word Attack test items were examined for insertion of consonants in the initial, medial, and final positions. There were 34 such errors, all occurring in the final position. For example, in the final position, /s/ was added in *dunis* and /t/ in *rabut* to otherwise silent endings. Another example of a final consonant insertion is /ks/ in the nonsense word *troineux*.

There were 14 deletions of entire endings of nonsense words meaning that the student read only the initial onset of the test item. Because the endings included both

---

**Table 15**

**KARAT Word Attack Mean Percentages**

<table>
<thead>
<tr>
<th>KARAT</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Attack (n=12)</td>
<td>36.25</td>
</tr>
<tr>
<td>Below average (n=4)</td>
<td>16.25</td>
</tr>
<tr>
<td>Average (n=4)</td>
<td>36.25</td>
</tr>
<tr>
<td>Above average (n=4)</td>
<td>56.25</td>
</tr>
</tbody>
</table>
Table 16

*French Word Attack Error Analysis*

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Sample of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real-word substitutions</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>9</td>
<td><em>mon</em> for <em>pon</em></td>
</tr>
<tr>
<td>English</td>
<td>4</td>
<td><em>pear</em> for <em>phier</em></td>
</tr>
<tr>
<td>Insertion of consonant</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Medial position</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Final position</td>
<td>34</td>
<td><em>bemilt</em> for <em>bemite</em></td>
</tr>
<tr>
<td>Insertion of vowel</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>2</td>
<td><em>sapaveillante</em> for <em>spaveillante</em></td>
</tr>
<tr>
<td>Medial position</td>
<td>9</td>
<td><em>greeien</em> for <em>grien</em></td>
</tr>
<tr>
<td>Final position</td>
<td>13</td>
<td><em>bemita</em> for <em>bemite</em></td>
</tr>
<tr>
<td>Deletion of consonant</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>7</td>
<td><em>twaneux</em> for <em>troineux</em></td>
</tr>
<tr>
<td>Medial position</td>
<td>3</td>
<td><em>flauie</em> for <em>flanouille</em></td>
</tr>
<tr>
<td>Final position</td>
<td>1</td>
<td><em>bemie</em> for <em>bemite</em></td>
</tr>
<tr>
<td>Deletion of vowel</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Initial position</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Medial position</td>
<td>7</td>
<td><em>gren</em> for <em>grien</em></td>
</tr>
<tr>
<td>Final position</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Complete deletion final position</td>
<td>14</td>
<td><em>te</em> for <em>teur</em></td>
</tr>
<tr>
<td>Visual discrimination</td>
<td>1</td>
<td><em>dorme</em> for <em>bemite</em></td>
</tr>
<tr>
<td>Atypical error</td>
<td>3</td>
<td><em>floloer</em> for <em>flanouille</em></td>
</tr>
</tbody>
</table>

*Note.* 240 test items were read.
vowels and consonants, these deletions were coded as deletion: final position. For example, the word *dunis* was read as *duh* and *cauche* was read as *ku*.

One letter reversal occurred in the French nonsense words and was coded as a visual discrimination error. The letters /b/ and /d/ were confused in the test item *bemite*. The resulting nonsense word, *dorme*, was also coded as an atypical error.

Three words contained multiple errors, which substantially interfered with the comprehensibility of the test item. These words were not pronounced anything close to the given test item and therefore placed in the category of atypical error. An example of this error type is *kwadair* for *poides*.

Table 17 presents the consonant and vowel phoneme substitutions in the Word Attack test items. The most common consonant phoneme substitution, [l] for [j], occurred 18 times. The nonsense word *spaveillante* was read as *spavei[l]ante* and *choutaille* was read as *choutai[l]*, for example. As presented in Table 17, other consonant phoneme substitutions were coded such as [p] for [f].

The most common vowel substitution was the phoneme [a:] for the phoneme [a]. This substitution was coded 20 times including *lom[a]ttes* (*lomattes*) and *fl[a]nouille* (*flanouille*). The second most common substitution, occurring 10 times, was [æ] for the phoneme [a]. An example of this substitution type is *p[æ]tomelle* (*patomelle*). Eight other vowel phoneme substitutions were coded, as presented in Table 17.

Both the English and the French Word Attack subtest data were presented in this section. Tables were used to delineate the test scores. In addition, reading errors were categorized and examples of error types were given. In the following section, data from the Paragraph Reading assessments will be presented.
Table 17

Consonant and Vowel Substitutions in KARAT Word Attack

<table>
<thead>
<tr>
<th>Target Sound</th>
<th>Substitution</th>
<th>Frequency</th>
<th>Example of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>[f]</td>
<td>[p]</td>
<td>3</td>
<td>[p]ier for phier</td>
</tr>
<tr>
<td>[k]</td>
<td>[ʃ]</td>
<td>1</td>
<td>cauʃʃ for cauche</td>
</tr>
<tr>
<td>[s]</td>
<td>[k]</td>
<td>2</td>
<td>naiʃ[ʃ]ant for naiçant</td>
</tr>
<tr>
<td>[n]</td>
<td>[g]</td>
<td>1</td>
<td>piɡne for pigne</td>
</tr>
<tr>
<td>[j]</td>
<td>[l]</td>
<td>18</td>
<td>flanouil for flanouille</td>
</tr>
<tr>
<td>[i]</td>
<td>[r]</td>
<td>6</td>
<td>phieɾ for phier</td>
</tr>
<tr>
<td>[a]</td>
<td>[aː]</td>
<td>20</td>
<td>r[aː]but for rabut</td>
</tr>
<tr>
<td>[a]</td>
<td>[æ]</td>
<td>10</td>
<td>lom[æ]tes for lomattes</td>
</tr>
<tr>
<td>[o]</td>
<td>[oʊ]</td>
<td>6</td>
<td>l[ʊ]mattes for lomattes</td>
</tr>
<tr>
<td>[œ]</td>
<td>[oː]</td>
<td>3</td>
<td>troin[oː] for troineux</td>
</tr>
<tr>
<td>[ɛ]</td>
<td>[ɛ]t</td>
<td>1</td>
<td>n[ɛt]cant for naiçant</td>
</tr>
<tr>
<td>[ɪ]</td>
<td>[iː]</td>
<td>2</td>
<td>n[iː]çant for naiçant</td>
</tr>
<tr>
<td>[œ]</td>
<td>[œ]</td>
<td>8</td>
<td>naiç[œ] for naiçant</td>
</tr>
<tr>
<td>[ɛ]</td>
<td>[ɛ]</td>
<td>2</td>
<td>gr[ɛ] for grien</td>
</tr>
<tr>
<td>[y]</td>
<td>[uː]</td>
<td>8</td>
<td>rab[uː]t for rabut</td>
</tr>
<tr>
<td>[y]</td>
<td>[ʰ]</td>
<td>5</td>
<td>d[ʰ]nis for dunis</td>
</tr>
</tbody>
</table>

Paragraph Reading Measures

The following section presents the results of the English and French Paragraph Reading subtests. These assessments were administered to young French immersion students to investigate the question of whether students made the same types of errors...
when reading in French as when they were reading in English. Tables are used to
delineate student scores and student responses for both the TORC-3 and the KARAT.

*English Paragraph Reading*

The TORC-3 was used to assess English reading comprehension of French
immersion participants. Because the TORC-3 is a standardized test, the raw scores were
converted into standard scores and percentile ranks. The percentile ranks for each of the
three reader ability groups (below average, average, and above average) are shown in
Table 18. Taking the sum of the percentile ranks for all 12 participants and dividing it by
12 calculated the overall mean percentile rank, 39.75. The mean for each reading group
was calculated by taking the sum of the four percentile ranks and dividing it by four.

Table 18

*TORC-3 Paragraph Reading Mean Percentile Ranks*

<table>
<thead>
<tr>
<th>TORC-3 Paragraph Reading (n=12)</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below average (n=4)</td>
<td>23.25</td>
</tr>
<tr>
<td>Average (n=4)</td>
<td>39.5</td>
</tr>
<tr>
<td>Above average (n=4)</td>
<td>56.5</td>
</tr>
</tbody>
</table>

The TORC-3 Paragraph Reading subtest consisted of five questions per
paragraph, two of which were related to detail, and one of each related to the title, a
positive inference, and a negative inference. In Table 19, the total number of correct
answers for each question type is presented. For example, each TORC-3 subtest consisted
of 12 detail-type questions, which was multiplied by 12 participants giving a total of 144
detail questions that could have been answered. The TORC-3 also consisted of six of
Table 19

*TORC-3 Correct Number of Responses According to Question Type and Reading Ability*

<table>
<thead>
<tr>
<th>Question type</th>
<th>Correct responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detail (n=144)</td>
<td>41</td>
</tr>
<tr>
<td>Below average (n=48)</td>
<td>8</td>
</tr>
<tr>
<td>Average (n=48)</td>
<td>15</td>
</tr>
<tr>
<td>Above average (n=48)</td>
<td>18</td>
</tr>
<tr>
<td>Title (n=72)</td>
<td>15</td>
</tr>
<tr>
<td>Below average (n=18)</td>
<td>2</td>
</tr>
<tr>
<td>Average (n=18)</td>
<td>6</td>
</tr>
<tr>
<td>Above average (n=18)</td>
<td>7</td>
</tr>
<tr>
<td>Inference (n=72)</td>
<td>14</td>
</tr>
<tr>
<td>Below average (n=18)</td>
<td>3</td>
</tr>
<tr>
<td>Average (n=18)</td>
<td>4</td>
</tr>
<tr>
<td>Above average (n=18)</td>
<td>7</td>
</tr>
<tr>
<td>Negative inference (n=72)</td>
<td>10</td>
</tr>
<tr>
<td>Below average (n=18)</td>
<td>1</td>
</tr>
<tr>
<td>Average (n=18)</td>
<td>4</td>
</tr>
<tr>
<td>Above average (n=18)</td>
<td>5</td>
</tr>
</tbody>
</table>

each of title, inference, and negative inference-type questions, which were multiplied by 12 participants giving a total of 72 of each type of question that could have been answered. In addition, each question type is further broken down into the three reading ability groups (below average, average, and above average). The total possible number of
correct responses is in brackets. The number of correct answers was calculated by adding the participants’ raw score results for each of the question types. This information informed the discussion about the overall performance of each of the question types. In addition, the break down by reading ability group allowed for detailed examination of the difficulty level of each question type.

French Paragraph Reading

The KARAT Paragraph Reading subtest was used to assess the reading comprehension of the French immersion students in this study. Because the KARAT is an experimental assessment tool and therefore, not normed or standardized, raw scores could not be converted into percentile ranks. Instead, raw scores were reported as percentages of correct reading comprehension questions answered as shown in Table 20. Adding up all of the raw scores and dividing this sum by the total number of Paragraph Reading questions calculated the overall average percentage, 38.67%. The mean percentage for each reading ability group was calculated by adding up the raw scores for the students in each ability group and dividing by four.

Table 20

<table>
<thead>
<tr>
<th>KARAT Paragraph Reading Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>KARAT</td>
</tr>
<tr>
<td>Paragraph Reading (n=12)</td>
</tr>
<tr>
<td>Below average (n=4)</td>
</tr>
<tr>
<td>Average (n=4)</td>
</tr>
<tr>
<td>Above average (n=4)</td>
</tr>
</tbody>
</table>

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Table 21

*KARAT Correct Number of Responses According to Question Type and Reading Ability*

<table>
<thead>
<tr>
<th>Question type</th>
<th>Correct responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detail (n=120)</td>
<td>46</td>
</tr>
<tr>
<td>Below average (n=40)</td>
<td>4</td>
</tr>
<tr>
<td>Average (n=40)</td>
<td>15</td>
</tr>
<tr>
<td>Above average (n=40)</td>
<td>27</td>
</tr>
<tr>
<td>Title (n=60)</td>
<td>26</td>
</tr>
<tr>
<td>Below average (n=20)</td>
<td>5</td>
</tr>
<tr>
<td>Average (n=20)</td>
<td>7</td>
</tr>
<tr>
<td>Above average (n=20)</td>
<td>14</td>
</tr>
<tr>
<td>Inference (n=60)</td>
<td>33</td>
</tr>
<tr>
<td>Below average (n=20)</td>
<td>2</td>
</tr>
<tr>
<td>Average (n=20)</td>
<td>8</td>
</tr>
<tr>
<td>Above average (n=20)</td>
<td>13</td>
</tr>
<tr>
<td>Negative inference (n=60)</td>
<td>22</td>
</tr>
<tr>
<td>Below average (n=20)</td>
<td>4</td>
</tr>
<tr>
<td>Average (n=20)</td>
<td>6</td>
</tr>
<tr>
<td>Above average (n=20)</td>
<td>12</td>
</tr>
</tbody>
</table>

The KARAT Paragraph Reading subtest consisted of five questions per paragraph: two detail-type, and one of each related to title, inference, and negative inference. In Table 21, the total of number of correct answers for each question type is

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presented. For example, the subtest consisted of 10 detail-type questions, which was multiplied by 12 participants giving a total of 120 detail questions that could have been answered. Each of the other question types were multiplied by 12 participants giving a total of 60 of each question type that could have been answered. In addition, Table 21 presents the number of correctly-answered question types according to the three reading ability groups. The total possible number of correct responses is in brackets. The number of correct answers was calculated by adding the participants’ raw score results for each question type. This breakdown of results by reader ability group and question type allows for detailed examination of the results.

In this section, data collected from the Paragraph Reading subtests were given. Test scores were broken down by paragraph, reader ability, and question type. The section that follows will present individual test scores from the English measures as well as the French measures.

Individual Assessments

This section presents the participants’ individual test scores derived from the both the English and the French measures. Results from the Word Identification and Word Attack subtests of the WRMT-R and of the KARAT are presented. Also included are the test scores from both the TORC-3 and the KARAT Paragraph Reading subtests. This data is presented to support the research question of whether or not French immersion students make the same types of errors when reading in French as they do when reading in English.

In Table 22, the individual student scores for each of the assessments conducted are delineated. The English measures of Word Identification, Word Attack, and
Table 22

*Individual Participant Percentile Ranks (in plain text) and Percentages (in italics)*

<table>
<thead>
<tr>
<th>Student</th>
<th>English WI</th>
<th>English WA</th>
<th>English PR</th>
<th>French WI</th>
<th>French WA</th>
<th>French PR</th>
<th>Teacher Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>FM</td>
<td>37</td>
<td>37</td>
<td>9</td>
<td>25</td>
<td>10</td>
<td>8</td>
<td>below</td>
</tr>
<tr>
<td>TB</td>
<td>18</td>
<td>21</td>
<td><strong>50</strong></td>
<td>15</td>
<td>15</td>
<td>24</td>
<td>below</td>
</tr>
<tr>
<td>MB</td>
<td>47</td>
<td>36</td>
<td>9</td>
<td>35</td>
<td>20</td>
<td><strong>8</strong></td>
<td>below</td>
</tr>
<tr>
<td>BR</td>
<td>26</td>
<td>27</td>
<td>25</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>below</td>
</tr>
<tr>
<td><strong>CZ</strong></td>
<td>5</td>
<td><strong>23</strong></td>
<td>9</td>
<td><strong>30</strong></td>
<td>15</td>
<td>8</td>
<td>average</td>
</tr>
<tr>
<td><strong>UC</strong></td>
<td>92</td>
<td>91</td>
<td>37</td>
<td>45</td>
<td>30</td>
<td>24</td>
<td>average</td>
</tr>
<tr>
<td><strong>NS</strong></td>
<td>44</td>
<td>36</td>
<td>37</td>
<td>50</td>
<td>50</td>
<td>32</td>
<td>average</td>
</tr>
<tr>
<td><strong>QB</strong></td>
<td>72</td>
<td>48</td>
<td><strong>75</strong></td>
<td><strong>70</strong></td>
<td><strong>50</strong></td>
<td><strong>80</strong></td>
<td>average</td>
</tr>
<tr>
<td><strong>NB</strong></td>
<td>86</td>
<td>87</td>
<td>63</td>
<td>65</td>
<td>60</td>
<td>68</td>
<td>above</td>
</tr>
<tr>
<td><strong>CB</strong></td>
<td><strong>54</strong></td>
<td><strong>35</strong></td>
<td><strong>16</strong></td>
<td><strong>70</strong></td>
<td><strong>50</strong></td>
<td><strong>28</strong></td>
<td>above</td>
</tr>
<tr>
<td><strong>NR</strong></td>
<td>80</td>
<td>75</td>
<td>84</td>
<td>75</td>
<td>60</td>
<td>70</td>
<td>above</td>
</tr>
<tr>
<td><strong>CS</strong></td>
<td>80</td>
<td>70</td>
<td>63</td>
<td>55</td>
<td>55</td>
<td>92</td>
<td>above</td>
</tr>
</tbody>
</table>

*Note.* WI = Word Identification. WA = Word Attack. PR = Paragraph Reading.

Paragraph Reading scores are presented as percentile ranks. The French measures, on the other hand, are presented as percentages. The pre-determined teacher ranking of the student based on his or her French reading ability is also given.

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The spread between each of the English measures was considered. The difference between the highest (92\textsuperscript{nd} percentile) and the lowest (5\textsuperscript{th} percentile) English Word Identification assessment scores was calculated as 87 percentile points. Between the highest (91\textsuperscript{st} percentile) and the lowest (21\textsuperscript{st} percentile) scores on the Word Attack subtest is a difference of 70 percentile points. The TORC-3 percentile difference between the highest score (84\textsuperscript{th} percentile) and the lowest (9\textsuperscript{th} percentile) is 75 percentile points.

The differences were also calculated for each of the KARAT measures. Between the highest score and the lowest score on the French Word Identification is 60 percentage points. There is a 50 percent point difference between the highest and the lowest scores on the Word Attack subtest. The percentage point difference between the highest and lowest scores on the Paragraph Reading subtest is 84 percentage points.

Although Table 22 presents all participant test scores, there are three students in particular that are highlighted in this section for consideration. These students are singled out because their test scores do not accurately reflect the teachers' pre-determined ranking of their French reading abilities.

The first student, CZ, scored in the 5\textsuperscript{th} percentile on the WRMT-R Word Identification, 23\textsuperscript{rd} percentile on the WRMT-R Word Attack, and 9\textsuperscript{th} percentile on the TORC-3 Paragraph Reading. On the KARAT measures CZ scored 30\% on the Word Identification, 15\% on the Word Attack and 8\% on the Paragraph Reading. This student was considered to be average in French reading abilities, as pre-determined by the classroom teacher.

CB was considered to be above average in French reading abilities according to the student's teacher. CB's test scores on the WRMT-R were 54\textsuperscript{th} percentile Word
Identification, 35th percentile Word Attack, and 16th percentile on the TORC-3 Paragraph Reading. CB scored 70% on the Word Identification, 50% on the Word Attack and 28% on the Paragraph Reading subtests of the KARAT.

QB’s scores on the English assessments were 72nd percentile Word Identification, 48th percentile Word Attack, and 75th percentile Paragraph Reading. On the French assessments this student scored 70% Word Identification, 50% on the Word Attack and 80% on the Paragraph Reading subtests. QB’s teacher considered this student to have average French reading abilities.

This section presented individual test scores from the English and French assessments that were conducted during the data collection phase of the current study. These scores were presented in relation to the pre-determined teacher reader ability groups. As well, three specific students’ assessment scores were highlighted. These data give evidence to support the question of types of reading errors made by young French immersion students.

Conclusion

In this chapter, the data gathered during the collection period of this study were presented in tables. First, the results of the teacher on-line survey were presented as evidence to support the validity of the KARAT. This section was followed by data collected from the English and French word reading and decoding measures. Then, data from the English and French Paragraph Reading assessments were presented. The final data delineated were individual student scores on the six different assessments that were conducted. These data were presented to answer the central research question of what types of errors do French immersion students make when reading French? And, do these
young students make the same types of errors when reading in French as they do when reading in English? The answers to these research questions and the supporting data will be discussed in the following chapter.
CHAPTER FIVE

DISCUSSION

This chapter will investigate the findings derived during the data collection phase of the study. The discussion will begin with the on-line teacher survey results, examining the validity of the Karen Andrews Reading Assessment Tool (KARAT). The English and French Word Identification subtest data will then be interpreted. Following this section will be a discussion of the English and French Word Attack subtest findings. The findings from the English and French Paragraph Reading subtests will then be interpreted. These discussions will be guided by the research question of reading error types made by French immersion students. An interpretation of individual student assessment results will conclude the chapter.

Study Findings

On-line Survey

According to McLaughlin (1985), one of the major deficiencies in language assessment tools is the lack of validity. The on-line survey attempted to address this concern through French immersion teacher feedback on the appropriateness and meaningfulness of the KARAT test items. The following section will discuss the results of the survey, including teacher opinion on struggling readers. In addition, the KARAT Word Identification, Word Attack, and Paragraph Reading subtest results will be discussed.

Struggling Readers

Participants with experience teaching upper-elementary French immersion were asked to respond to the question: “Do you find that students who struggle with French
reading also struggle with English reading?”. Of the three participants who had experience teaching upper-elementary French immersion, two responded in the affirmative. These two teachers had taught French immersion for at least five years, giving them the knowledge and insight to make an informed judgment about struggling readers. The other teacher responded that there was “no evidence” on which to base this teacher’s answer. Because this teacher had fewer than five years experience teaching French immersion, it is possible that a lack of teaching experience led to this inconclusive answer.

Word Identification

The teacher with the most agreement within one point of the original Word Identification list was a Grade 3/4/5 teacher. Specifically, this teacher ranked 15 out of the 20 words, or 75%, within one point. In addition, this teacher was in complete agreement on the order of three consecutive words from nain to chienne. These words, forming the beginning of the second quarter of the list, corresponded to words that should be familiar to Grade 2 students. Four other words, scattered throughout the list, were also in exact agreement. This teacher had the most agreement and also had previous French immersion experience teaching Kindergarten, Grade 1, and Grade 2 in addition to the current teaching assignment. The fact that this teacher demonstrated the most agreement and that this teacher had the French immersion teaching experience suggests that the survey was valid.

In addition, a secondary teacher with elementary French immersion teaching experience ranked 13 of the 20 words (65%) within one point agreement of the original list. For three consecutive words found in the upper middle section of the list, from
habitent to brouillard, the teacher was in exact agreement. Five others words, scattered throughout the list, were also in agreement. This teacher had the most French immersion teaching experience out of all of the survey respondents (15-20 years). The fact that this teacher had the most experience and the most exact word agreement further supports the validity of the survey and the order of the KARAT test items.

The teacher displaying the least agreement within one point of the original list was a Kindergarten teacher. This teacher ranked six words exactly the same as the original list and six within one point, making a total of 12, or 60%. This teacher had fewer than five years of teaching experience, all of which had been at the Kindergarten level. This teacher would therefore have limited classroom-based experience with Grades 2 and 3 French immersion students' reading abilities. As the teachers were chosen randomly, I had no control over the teachers' grade level or years of teaching experience.

Word Attack

The most agreement of the placement of the Word Attack test items came from the Grade 3/4/5 teacher. Specifically, five words were ranked in the same order and 10 were within one point, giving a total of 15 out of 20, or 75%. This teacher had previous French immersion experience teaching Kindergarten and Grades 1, and 2. This teacher would therefore have a wealth of classroom experience upon which to rank the word order.

The secondary teacher with elementary experience ranked 14 of the 20 words (70%) within one point of the original list. Of these 14 words, seven were ranked the same including the first 2 and the last 2 items on the list. Given that this teacher had the
most teaching experience and also a high rate of agreement suggests that the order of the
test items and the data provided in the survey were quite valid.

The teacher with the least agreement within one point of the original list was a
Kindergarten teacher. This teacher ranked five words exactly the same as the original list
and six within one point, making a total of 11 out of 20, or 55%. This teacher had fewer
than five years of teaching experience, which had all been at the Kindergarten level. This
teacher would have had limited experience with Grades 2 and 3 students’ reading
abilities.

Garcia, McKoon, and August (2008) argued that experience does play a role in
reading assessment as they reported that:

Even a simple task such as assessing children’s ability to read a list of individual
words aloud requires knowing enough about the similarities and differences
between the two languages to take into account [sic], for example, which [French]
words will be especially difficult for a child acquiring [French] and how this
compares with fluent monolinguals. Moreover, accurate understanding of the
similarities and differences between the two languages and between bilingual and
monolingual language processing is essential if lists of words that will assess the
whole range of the child’s ability are to be constructed. (p. 268)

Although all of the teacher participants reported having taken a second language
methodology course, this knowledge does not ensure that the teacher is aware of the
specific nuances between French and English languages, nor does it reflect the teacher’s
awareness of French language processing skills as it relates to children’s French language
acquisition.

*Paragraph Reading*

When the questions for each story were combined, the two teachers with primary
experience gave the highest overall rating to the easiest story, Paragraph I. Conversely,
the secondary school teacher gave the highest overall ranking to the two most
challenging stories, Paragraphs IV and V. These ratings reflect the teachers’ areas of familiarity with students’ reading abilities at their respective grade levels.

Although title-type questions were the highest rated overall (2.96 out of 4.0), each teacher had a preference for a certain question type. For example, the Kindergarten teacher rated negative inference question types the highest (3.8 out of 4) whereas the Grade 6/7 teacher rated positive inference questions the highest (3.5 out of 4). Therefore, no conclusion can be drawn that one question type was better than another. However, it does suggest that teacher experience could play a role. For example, the teacher with the most French immersion teaching experience (15-20 years) rated detail questions most favourably (2.8 out of 4) with negative inference-type questions rated the least favourable (1.8 out of 4). This lack of consensus is supported by Anderson and Krathwohl (2001) who found that "placing an objective in the Taxonomy table requires that one determine the intentions for the teacher in relation to the meaning of the objective, the purpose of the instructional activities, and the aim of the assessments" (p. 97). The primary focus of the Paragraph Reading subtest was the taxonomy in the cognitive domain, in the class of intellectual abilities and skills. Each type of question was placed in the Taxonomy table to determine its value. However, the teacher participants were unable to determine whether or not the question was useful, as they were not given the parameters upon which to rate the question type. Although there was lack of consensus on the rating of the question types for the Paragraph Reading subtest, on average the questions for each story were rated favourably. The fact that the various question types were rated positively overall indicates that the KARAT Paragraph Reading is a valid assessment of student reading.
Summary

In sum, the on-line survey teacher feedback indicated that the KARAT test items were appropriate and meaningful. It was found that the teachers positively rated the KARAT subtest items that corresponded with their classroom experience. In addition, teachers with years of French immersion experience responded positively to the test items presented in the survey, providing further validity to the KARAT.

Word Reading Measures

The following section begins with a discussion of the English Word Identification results followed by an interpretation of the French Word Identification findings. Predetermined categories of reader ability were maintained for the discussion of the results. These reader groups were created by the students' teachers, based on the students' French reading ability. First, the percentile ranks are discussed followed by a detailed analysis of the errors made for each subtest item.

English Word Identification Assessment Scores

English word recognition was assessed using the WRMT-R Word Identification subtest, a standardized assessment tool. The raw scores from this subtest were converted to standard scores and percentiles and the results are presented as percentile ranks. The below-average readers had a mean percentile rank of 32, indicating that this group consisted of low-average readers of English. The average readers had an overall percentile rank of 53.25, placing this group slightly above average. The above-average readers had an average percentile rank of 75. This percentile rank indicated that this group of readers was high average in English word reading.
The difference in percentile ranks between each group was examined. Between the low-average readers and the average readers is a 21.25 percentile rank difference. The percentile rank difference between the average readers and the above-average readers is 21.75. This similarity in percentile rank difference between groups suggests that the reader groups were fairly accurate despite being formed based on French reading ability.

*English Word Identification Reading Errors*

The following section will discuss the results of the reading error types from the English Word Identification subtest. This discussion will inform the research question of the types of errors that French immersion students make when reading in English.

Real-word substitutions were made 45 times of which 39 were substitutions of other English words. Thirty-eight of these substitutions were made by guessing the word based on the initial consonant. For example, the target word *certain* was replaced with *carton* and *little* was replaced with *list*. Only one substitution was made by using the final consonant to guess the word. The final /p/ in *up*, led the student to substitute this word with *help*.

Six French real-word substitutions were made from the English test items. When presented with a bilingual word that could have been pronounced correctly in either French or English, (*table, expert, miser, urgent, passage, and artesian*), three were pronounced as French words (*table, expert, and miser*). The other three French substitutions were made based on the initial consonant and the orthographic similarity between the English and the French word. For example, the test item *amazement*, which was replaced with the French word, *amusement*, has only a medial difference in its orthography. The word *blue* was pronounced as *bleu*, words that only differ in a final
inversion of vowels. Clearly real-word substitutions, whether English or French, were made based on visual cues.

The insertion of a consonant in the initial, medial, and final positions of words interfered with the pronunciation of the test items 19 times. Three of the consonant insertions could be explained by substituting the test item for another real word. For example, a /t/ was inserted medially in *miser* resulting in a new word, *mister*. Three of the other insertions occurred due to a mispronunciation of a consonant or vowel. For example, [j] was added to *urgent* because the student mispronounced the /u/. One of the test items, *work*, was changed from singular to plural with the insertion of a final /s/.

It is worthy to note that two consonants, /r/ and /t/, were inserted more frequently than any other consonant. The consonant /r/ was inserted seven times, four of which were by the same low reader ability student. Examples of /r/ insertion include *armazement* and *pederstrain*. This student was also responsible for three of the nine insertions of the consonant /t/. Examples of /t/ insertion include *galestoline* and *metchanic*. The majority of the /r/ and /t/ insertions occurred in the medial position of words of two syllables or more in length. It appears that these insertions were used as a strategy for students when encountering more lengthy words.

The epenthesis of vowels was noted in the error analysis of the test items on five occasions. Four of these insertions were of a vowel placed in between two consonants or following a word ending in a consonant, resulting in a consonant-vowel (CV) configuration. For example, the insertion of /a/ between the initial two letters of *dwarf* resulted with *dawarf*, creating a consonant-vowel pattern. A consonant-vowel pattern was also created when /i/ was added after the final consonant in *furnace* resulting in *furnacie*,

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for example. It is possible that students were establishing consonant-vowel
configurations as a strategy.

Consonant deletion errors occurred 29 times in the test items. The initial and
medial deletions occurred when two consonants were clustered, resulting in a consonant-
vowel pattern. For example, the /t/ was deleted in urgent creating ugent, and the /t/ was
deleted in quintessence creating quinessence. The majority of the consonant deletions
occurred in the final position. Specifically, these were complete deletions with only the
beginning of the word attempted. Examples include depart (departure) and amazem
(amazement). The strategy employed could be one of avoidance. If the student was not
confident with his or her decoding skills beyond the initial and medial onset, the student
abandoned the word. It is worthy of note that low-ability readers, as identified by the
WRMT-R test scores, made the majority of these final end sound deletions.

Vowel deletion errors occurred five times, four of which were final position
deletions. The vowel /a/ was deleted by three students in the word stigma. The /a/ was
also deleted in yardage resulting in a nonsense word, yardge. It is likely that these
deletions were a result of decoding errors as all but one of these deletions were made by
low-ability readers.

Visual discrimination affected the pronunciation of four test items. The initial
consonants /d/ and /b/ were reversed on three test items (bed, beautiful, and dwarf), all by
the same student. A different student made the medial reversal of /p/ for /d/ in torpedo.
These students, both of whom were identified as having low reading abilities, were
experiencing difficulties with the visual orientation of the phoneme-grapheme
relationship.
There were 17 atypical errors of which two test items in particular caused pronunciation difficulties. The irregular words *cologne* (mispronounced 6 times) and *yacht* (mispronounced 5 times) were decoded incomprehensibly. According to the WRMT-R test book, the word *cologne* is at an estimated reading level of Grades 7-10 and *yacht* is at an estimated reading level of Grade 11 to college. The fact that these irregular words are higher level could explain why they were frequently mispronounced. The remaining six atypical errors, such as *bif* for *because*, were made by students who were experiencing decoding difficulties and were below-average readers according to the WRMT-R assessment scores.

Various consonant substitutions were noted during the analysis of the test items. These substitutions indicated a difficulty with discrepancy between the written letter (grapheme) and the sound (phoneme). For example, the grapheme /c/ caused particular problems with the French immersion students because this grapheme represents more than one phoneme ([s], [k], [ʃ]). In fact, nineteen errors were related to the grapheme /c/.

Students mispronounced *mechanic* as *mechanic*, *calendar* as *salendar*, and *certain* as *kertain*. In addition, the /c/ in *judicious* was pronounced as both a [k], as in *judikious*, and an [s], as in *judisious*.

The students also experienced difficulties with the grapheme /s/ as it represents not just the phoneme [s] but also [z]. There were 10 of these grapheme-phoneme errors including *progno[z]is* and *cau[s]eation*. The grapheme /g/ was also a source of phoneme confusion as it can be pronounced as [dʒ] or [g]. There were six errors involving /g/ such as *ru[dʒ]* and *lar[g]est*. Three errors were made with the grapheme /th/ being pronounced as [t] instead of [θ]. It is worthy to note that although the grapheme /th/
exists in French orthography, its corresponding phoneme is [t] and not [θ]. In fact, the phoneme [θ] is not present in French phonology. Therefore, the student who read zenith as zeni[t] was transferring knowledge of French letter-sound into English. This error type is an example of negative transfer, meaning that the French grapheme-phoneme system interfered with the pronunciation of English words.

The substitution of one vowel sound for another was a common occurrence in the test items, with the vast majority exchanging one English vowel for another. There were six exceptions in which French vowels were substituted for English vowels. These substitutions occurred when the test items were replaced with a French real word. For example, blue was pronounced as bleu.

A thorough analysis of vowel errors indicated that these errors were not due to English vowel articulation difficulties. This finding can be explained by the fact that the first language of the participants in this study was English. It is, however, worthy to note that of the 20 English vowel phonemes only two, [ɔ] and [ɛ], are also found in the French language. There were four errors involving the bilingual phoneme [ɛ]; this vowel was replaced with [i:] (b[ei]d for bed) or [æ] (b[æ]d for bed). These errors can be explained by a grapheme-phoneme discrepancy error, associating /i/ for [i:] or by substituting one real word for another (bad for bed).

There were, however, vowel errors that were influenced by the immersion students’ experience with the French language. For example, in French the letter /i/ is pronounced as [i], a sound close to the English long vowel [i:]. Students erroneously made this French grapheme-phoneme association 12 times. Examples of this grapheme-
phoneme discrepancy error include $sw[i:]m$ for swim and $w[i:]th$ for with. This transfer of French letter-sound knowledge into English is a clear example of negative transfer.

English grapheme-phoneme discrepancy also interfered with the pronunciation of vowels. Confusion was noted 12 times with the grapheme /a/ associated with the phoneme [eɪ], such as $p[eɪ]ssage$ for passage. In addition, the letter /o/ in two was pronounced as [ou], another example of letter-sound error. Furthermore, the phoneme [ʌ] was substituted with [u:] in jump and [ʊʊ] in woman, indicating that students relied on the grapheme to determine the vowel sound.

Students also demonstrated a lack of knowledge about the English orthographic rules guiding the pronunciation of vowels. For example, the /i/ in miser was mispronounced as [ɪ], misser, indicating that students were unaware that the silent /e/ at end of the word dictates the use of a long vowel instead of a short one. Another orthographic rule that interfered with the pronunciation of the test items was that of doubling the vowel to create a long vowel sound. The long vowel [i:] in sleep, was pronounced as the short vowel [i], for example. These errors were due to the fact that the French immersion students in this study had not yet been taught English orthographic rules. In fact, they had not yet received English language instruction.

Summary

In sum, the findings of the detailed error analysis of the Word Identification subtest indicate that the students use a variety of strategies to decode these real words. The participants' French language experience influenced the pronunciation of English consonants and vowels, indicating that there is a transfer from one language into the
other. In the following section, findings from the French Word Identification subtest will be explored.

**French Word Identification Assessment Scores**

The students' abilities to read individual French words were assessed using the Word Identification subtest of the KARAT. Raw scores from this subtest were converted to percentages rather than percentiles due to the fact that the KARAT is an experimental assessment tool. The resulting percentages were presented according to the pre-selected reader groups. The below-average group correctly read 23.75% of the words, which is slightly less than a quarter of the possible test items. The average group read 48.75%, almost half, of the words correctly. The above-average group correctly read 66.25% of the words. As the reader group’s abilities increased, so did the percentage of individual words read correctly providing evidence that the KARAT test items were ordered appropriately. In addition, the difference between the below-average and the average readers is 25%. The difference between the average and the above-average reader groups is 17.5%. These differences between reader groups indicate that the KARAT test items were appropriate.

**French Word Identification Reading Errors**

Real-word substitutions were made 20 times when reading the French test items. Seventeen of these real-word substitutions were of other French words. All but one of these substitutions used the initial consonant of the test item to guess the word. For example, *habitant* was substituted as *habitant* and *orteilles* became *oreilles*. The other substitution, *elle* for the word *oeil*, was made based on the final consonant of the test item, /l/, and incorporating it into a familiar word. All three of the English word
substitutions were also made based on the initial consonant. For example, *nain* was replaced with *neigh*, and *pharmacien* became *pharmacy*. Whether the replacement word was French or English, the strategy of using the initial consonant to guess the word was consistent, giving evidence that this reading strategy transfers across the two languages.

The insertion of consonants was noted 24 times. The majority of these consonant insertions occurred due to the application of English letter-sound knowledge to the French words. For example, in English, a word that begins with the letter /h/ is always pronounced as an aspirate /h/. However, in French the /h/ can be silent (mute h) or aspirate. Therefore, students who pronounced the mute /h/ in *habitant* incorrectly applied an English letter-sound association. Students also inappropriately applied English letter-sound knowledge to the final end sounds of the test items. In French, the /d/ or /s/ endings are silent. However, students erroneously voiced these endings, indicating that their knowledge of English letter-sound interfered with their French pronunciation. Examples of this error type included voicing the silent /s/ in *pois* as well as the silent /d/ in *noeud*.

There were five consonant insertions that were not grapheme-phoneme related. Four were insertions of the phoneme [r] and one was the insertion of [l]. For example, [r] was inserted in *tien* creating the nonsense word *trien* and in *soigneusement* creating the nonsense word *soigreneusement*. These insertions occurred in the initial, medial, and final position of the words. In addition, they were inserted in words of varying syllable length. After careful consideration of the data, it was determined that only low-ability readers, as determined by the KARAT test results, made these error types.
The insertion of a vowel occurred 12 times in the test items, of which 10 were epenthesis in the final position. These final vowel epenthesis errors were due to the application of English letter to sound orthography rules. In French, endings of words are often silent. For example, the -ent ending of habitent is not pronounced. However, seven students inserted the nasal vowel [ã] at the end of this test item resulting in the word habitant. This error type indicates that the French immersion students transferred their knowledge of English letter to sound orthography to their French oral reading. The two other vowel insertions occurred in the initial and the medial positions. One of these insertions resulted in the creation of a consonant-vowel pattern (borillard for brouillard). The other resulted in the addition of an extra syllable (évieantail for éventail).

There were 14 deletion errors, all of which were complete deletions of the final syllable. In other words, only the initial onset of the word was attempted. For example, tien was truncated as te, leaving the final [e] phoneme unpronounced. It is possible that these complete deletions were a result of the student abandoning a word that he or she perceived as too difficult to decode. In fact, the majority of final end sound deletions were made by low-ability readers as identified by the KARAT test scores. However, the deletion of the final ending of the test item, chienne, could be explained by real-word substitution. Five students of all reading ability levels erroneously pronounced this test item as chien, a very familiar word to young French immersion students.

Visual discrimination errors did not interfere with the test items. However, there were limited opportunities for these letter reversals to occur. Only one test item started with the consonant /b/, and only three with the letter /p/, of which two were pronounced as the phoneme [p] with the other as [f]. There were no test items with /d/ as the initial
consonant. Given that there was such a limited opportunity for visual discrimination to interfere with the Word Identification test items, its absence should not be interpreted as a non-issue.

There were two test item responses that did not exhibit features that would have placed them in the other error categories. One of the test items, soigneusement, was decoded as pwasnioisomsermon. This test item was the last word of the assessment and, as such, the most difficult. The student who mispronounced this word did not pronounce the test item prior to it, pharmacien. It is possible that the student blended the two words together to create this nonsense word. The other atypical error occurred in the eighth test item, couteau, placing it within the Grade 3 range of reader ability. It is possible that the final syllable of the test item prior, leçon (mispronounced as lekon,) carried over to couteau, creating the nonsense word, kashon. It is worthy of note that low reader ability students made both of these atypical errors.

Various consonant substitutions were noted during the analysis phase of the test items. Of the consonant substitutions, only one involved a French specific phoneme, [n]. Four students substituted this sound for [g] in the word soigneusement, indicating that the students were using a letter to sound strategy. In addition, this strategy was responsible for 18 substitution errors involving the letter /l/. Students applied their knowledge of the English letter /l/ and its corresponding phoneme [l] to the French test items, not recognizing that in French, the letter /l/ in the final position is pronounced as [j]. Furthermore, many of the students did not recognize that the combination of letters -ill is pronounced as [j] and not determined by the grapheme /l/. Examples of substitutions of [l] for [j] include chevreu[i:][l] (chevreuil) and ortei[l][i:][s] (orteilles). The phoneme
[j] was also mispronounced as [r] three times in the word *papier*, another example of English grapheme-phoneme interference. Three students also had difficulty with the /ç/ in *leçon*. They incorrectly equated the accented /ç/ with the phoneme [k] instead of [s]. Because English orthography does not have accents, it is possible that the students did not see the accent or they perhaps they did not know its function. Clearly, the French immersion students were relying on their English grapheme-phoneme knowledge to make these substitutions.

The immersion students made other substitutions of consonants that have the same letter-sound correspondence in both English and French. Students experienced difficulties with the grapheme /s/ as this letter represents not only the phoneme [s] but also [z]. Ten errors were made due to this grapheme-phoneme discrepancy. For example, *agrafeuse* was mispronounced as *agrafeu[s]e* and *soigneusement* was mispronounced as *soigneu[s]ement*. The /ph/ letter combination was another source of difficulty for four students. They incorrectly substituted the phoneme [p] for [f] in the word *pharmacien*, indicating that they were not aware that /ph/ is pronounced as [f]. One student exhibited a decoding error when [j] was substituted for [k] in the test item *couteau*. Finally, two students substituted [w] for [r] in the word *brouillard*. This substitution was probably due to an articulation error and not letter-sound discrepancy.

In addition to the consonant substitutions, there were numerous vowel substitutions that were made by the French immersion students. The nasal vowels [ã] and [ê] were the source of confusion for many of the students. The phoneme [ã] was substituted with [ɔ] nine times. For example, *éventail* was mispronounced as *év[ɔ]ntail*. On three occasions, the phoneme [ê] was also substituted with [ɔ], *pharmaci[ɔ]* for *pharmaci[ɔ]*.
example. These substitution errors were possibly due in part to the lack of familiarity with which vowel-consonant combinations correspond to which nasal vowel.

The large majority of the errors were due to the substitution of an English vowel sound for a French one. The most common vowel phoneme substitution was the English phoneme [æ] for the phoneme [a], [æ]bitent (habitent) and [æ]grafeuse (agrafeuse), for example. The phoneme [a] was also substituted with the English phoneme [ə:] on five occasions, including the word pharmacien. The French phoneme [ɛ] was replaced by the English phonemes [ɛi] and [i:] in the word orteilles. The [o] in couteau was substituted twice with the English sound [ou]. [ɔɔ] was also used in the place of the French phoneme [œ] four times. The test item oeil was pronounced as [ɔɛ̯il], for example. In addition, the vowel [ɛ], which is both an English and French phoneme, was substituted with [ɛi] on three occasions, all in the word événtail. Perhaps the accent on the /ɛ/ was the cause for the phoneme substitution for these students. It is evident from the detailed error analysis that English vowels interfered with the pronunciation of numerous test items, a finding that is supported by previous researchers, Cashion and Eagan (1990). French immersion students applied their English vowel system on French words, an example of negative transfer.

Summary

In sum, the findings from the detailed error analysis of the KARAT Word Identification subtest were discussed. The French immersion students’ first language, English, does interfere with the pronunciation of many consonants and vowels. In the following section the results of both the English and the French Word Identification will be compared.
Comparison of English and French Word Reading Measures

The findings of the French and English Word Identification subtests point to a reciprocal relationship between English and French reading skills. Many of the strategies and errors were evident in both assessments.

The results of the Word Identification assessment scores indicate a sharing of reading skills between the two languages. The low-ability readers scored below average on both subtests, indicating that students who experience difficulties in French reading also have difficulties in English. In addition, the average-ability readers scored similarly on both language word reading subtests, supporting the notion that reading skills transfer from one language to the other. This transfer of reading skills is also evidenced in the assessment scores of the high-ability readers. In both language assessments, their scores were above average. Clearly the word reading measure scores indicate that French immersion students transfer their reading knowledge from one language to the other.

A detailed error analysis of the two Word Identification subtests indicate that the students used the strategy of using the initial consonant as the basis for the substitution of a real word. In addition, it was found that more real-word substitutions were made in the target language of the assessment. In other words, reading in English would generate more English real-word responses as would reading in French. This finding would indicate that the young readers were aware of the language of which they were reading.

In both languages, students were found to insert additional consonants and vowels. The addition of the consonants /r/ and /t/ was a strategy that was employed in both assessments. Students also inserted vowels when reading in both languages; however, there were more vowel insertions in French due to grapheme-phoneme
discrepancy errors. There is also some evidence to suggest that students were inserting vowels or consonants to produce a consonant-vowel pattern in both languages. In addition, the voicing of final silent consonants of the French test items suggests that the students were applying English letter-sound correspondence rules.

There was a tendency for complete final end sound deletions in both English and French. This error could in fact be an avoidance strategy as low-ability readers made the majority of these complete deletions. It is possible that the unskilled reader, faced with an unknown word, chose to abandon the word rather than try to decode it.

The low-ability readers were also responsible for the atypical errors made in both languages. This finding would indicate that this group of readers lacked the decoding skills necessary that would allow them to make sensible readings of the words. The more skilled readers, in contrast, relied to a greater extent on lexical retrieval through partial visual analysis of the target words.

The young readers of varying ability encountered difficulties with certain consonants and vowels in both languages. The phonemes [k] and [s], because of their polygraphic representation, were the source of numerous decoding errors. Vowel substitutions were related to letter-sound correspondence errors as well. The students equated the grapheme /i/ with the phoneme [i:] when decoding the English test items, indicating that French letter-sound correspondence was accessed. Conversely, English vowel sounds interfered with the pronunciation of French test items. Students read the French words using English vowels, often approximations of the French vowels. These findings would indicate that there is a transfer of letter-sound correspondence between French and English.
**Summary**

The findings of the English and French word reading measures provide evidence that French immersion students make the same types of errors when reading in either language. Furthermore, it would appear that the strategies utilized in reading French are the same ones utilized in reading English. The findings would, therefore, support the transfer of reading skills from one language to the other. In the following section, the results of the nonsense word reading measures will be discussed.

**Nonsense Word Reading Measures**

The findings of the WRMT-R and the KARAT Word Attack subtests will be discussed in this section. The test score results, based on the pre-determined reader ability groupings, will be interpreted followed by a discussion of error types. A comparison of the English and French Word Attack subtests will conclude this section. These discussions will be guided by the research question of error types made by French immersion students.

**English Word Attack Assessment Scores**

The Word Attack subtest of the WRMT-R was administered to assess the reading of English nonsense words. The raw scores from these assessments were converted into standard scores and percentiles. The results were presented as percentile ranks. The pre-determined below average reader group had a mean percentile rank of 30.25, placing this group in the low-average range. The average readers had an overall percentile rank of 49.5, indicating that this group slightly below average. The overall percentile rank of the above-average readers was 66.75. This percentile rank indicated that this group of readers was average in the reading of English nonsense words.
The percentile ranks were examined for the difference between the reader groups. Between the below and average readers, there is a 19.25 difference in percentile rank. The percentile difference between the average and above-average reader groups is 17.25. The difference between these reader groups indicates that the reading abilities of each group are significant.

*English Word Attack Reading Errors*

The oral reading errors were analyzed in an effort to determine what types of errors French immersion students make when reading in English. Real-word substitutions were the most common error type made when French immersion students were reading the English nonsense words. Of the 47 substitutions, 44 were English real-word substitutions. When making the substitutions, the initial syllable or letter of the test item was usually used in the formation of the real word. For example, the /sh/ in *shab* led the student to read the word as *sharp*. In addition, phonological errors in decoding resulted in real words. For example, the nonsense word *laip* was read as both *lap* and *lip*, indicating that the students had difficulties decoding the vowel sound.

The remaining three substitutions were French real words, one of which was substituting the test item *gouch* for the French word *coche*. The end phoneme [tʃ] guided the student to make this substitution. The remaining two real-word substitutions were for the nonsense word *un*. However, *un* is a real word in the French language. The students recognized this word as a real French word and pronounced it accordingly. This substitution provides evidence that French orthography does transfer into English.

Although the focus of the reading analysis was on error type, there were a few student comments that were noted during the administration of the Word Attack
assessment that are relevant to this discussion. One of the participants, identified by the classroom teacher as a low-ability reader, read the test item *un* as a French word. This student then stated, "that’s English", revealing an inability to decipher English phonetics from French. A different low-ability reader remarked, upon reading the test item *whie* as *wuh*, “these sound like French words”. These two student comments indicated that they were not able to distinguish phonological differences between the two languages.

Comments such as these were made during this subtest only.

It is also worth noting the strategy of self-correction employed during this assessment. An average reader, as identified by the classroom teacher, read the English nonsense words *un* and *cigbet* as French real words and then self-corrected. This student initially read *cigbet* as *Québec*. This student was able to recognize initial decoding errors and corrected them to the target language. This self-correction strategy was verbalized only during this particular subtest.

The detailed error analysis revealed that students inserted consonants in the initial, medial, and final positions. Some of the insertions were due to the pronunciation of a consonant that should have been silent. For example the initial letter /k/ was pronounced in *knoink*. This insertion type indicated that students were decoding words based on their knowledge of letter-sound correspondence. Other errors involved the insertion of /r/, such as *cigerbet* for *cigbet*, or /t/, such as *ziterdint* for *zirdn’t*. Low-ability readers, as identified by the WRMT-R assessment scores, made these consonant insertions. The insertion of the consonant /s/ in the test item *weat* resulted in a consonant-vowel pattern (*wusat*) as well as the addition of a syllable. This result was also noted in the test item, *mancingful*, with the medial insertion of /d/ (*mancingdeful*).
The error analysis further revealed that students inserted vowels in the initial, medial, and final positions. The majority of these insertions made consonant-vowel (CV) patterns, as the vowel was inserted between two consonants. In addition, the insertion of a vowel lengthened the word, creating the addition of syllables. Examples of consonant-vowel and syllable addition include ifit (ift), bufiti (bufty), and wuhie (whie). It is probable that the insertions were made to fulfill a need to create a consonant-vowel construction, which also resulted in the addition of a syllable.

Deletions of consonants were noted in the test items. There were two initial consonant deletions, both in the word straced, in which the /s/ was not pronounced. Perhaps these individuals did not see the initial consonant, leading to its deletion. Medial position deletions occurred seven times, of which four involved the deletion of /h/ in vunhip. Another example is the /n/ deleted in translibsodge. These deletions suggest that the students paid little attention to the individual letters within the words.

In the final position, three of the deletions were complete, meaning that only the initial onset of the word was attempted. For example, laip was read as li and adjex was read as ad. It is possible that the students perceived these words as too difficult to decode; therefore, only an initial attempt to pronounce the word was made. The majority of the final end sound deletions were made by below-average readers, according to the assessment test scores.

Analysis of the test items indicated that vowels were not deleted in the nonsense words. One explanation for the lack of vowel deletion could be that students were using decoding strategies that led them to pronounce, albeit sometimes incorrectly, all vowel sounds that occurred within the words.
Visual discrimination errors occurred six times. The letters /b/, /d/, and /p/ were reversed. Of the six reversals, only one, shab, created another nonsense word, shad. This reversal was made by a below-average reader, according to the WRMT-R test scores. The remaining five letter reversals resulted in real words. For example, shab was read as sheep as well as sharp and tadding was misread as tabbing. It is possible that these particular letter reversals were an outcome of the real-word substitution and not due to a visual discrimination error. However, it is worthy of note that a student who exhibited visual discrimination errors on other subtests made two of these real-word reversals.

There were three atypical errors that did not follow any pattern for error types. The nonsense word knoink was misread as noemp and naksin. In addition, cigbet was pronounced as seedrib. A low-ability reader made two of these atypical errors, indicating that this student lacked decoding skills.

The French immersion students in this study made a variety of consonant substitutions when reading the Word Attack test items. The most common substitution was the phoneme [k] for the phoneme [s]. These 11 error types can be directly attributed to the orthography of the test items as students related the letter /c/ to the sound [k]. For example, cigbet was read as [k]igbet and straced was read as stra[k]ed. Students also did not recognize that the letter /s/ represents two phonemes, [s] and [z], leading to the error dud[s] for dud’s. The letter /g/ was also misinterpreted as the phoneme [dʒ] by two students. An example of this error is the test item, cigbet, read as ci[dʒ]bet. Another letter combination, /th/, caused difficulties for two students as this grapheme can be pronounced as either [θ] or [ð] in the English language. Both errors occurred in the test item than’t which was read as [ð]an’t. However, it is worthy of note that although the
grapheme /th/ exists in French orthography, its corresponding phoneme is [t]. These consonant substitutions demonstrate that the French immersion students were using a grapheme-phoneme correspondence strategy when decoding the test items.

Vowel substitutions were the source of numerous errors in the test items. One pattern that emerged upon examination of the findings is that French immersion students applied their knowledge of French grapheme-phoneme correspondence to the decoding of the English words. Specifically, test items with the letter /i/ caused these discrepancy errors because in French, the letter /i/ corresponds to the phoneme [i], a close approximation to the English long vowel [iː]. On thirteen occasions, students decoded the nonsense words whie and nigh, both of which contain the letter /i/, with the phoneme [iː] instead of [ai]. The French immersion readers also substituted [iː] for [i] in the test items ift, bim, plip, and vunhip six times. Clearly this error supports the notion of transference of grapheme-phoneme knowledge from French into English.

The most substituted phoneme, by far, was the vowel sound [ai]. Not only was [ai] replaced by [iː], as noted above, but it was also replaced with [ei] on 11 occasions and with [i] three times. It is possible this particular vowel sound was the source of the majority of vowel substitutions due to the fact that not only does this sound not exist in the French language, but also there is not even a close approximation to it in French phonology.

The vowel sound [ei] was substituted with the sound [æ] 12 times. In two of the three test items (gaked and straced) the silent /e/ at end of the word should have indicated to the students the use of a long vowel instead of a short one. Instead, it appears that the
French immersion students were unaware of English orthographic rules guiding the pronunciation of vowels.

Students connecting the orthography of the letter to the sound demonstrated a grapheme-phoneme correspondence strategy. For example, the test items un, dud’s, and bufty all contain the letter /u/. On twelve occasions, the /u/ was pronounced as [uː] instead of [ʌ]. An additional example of the employment of the grapheme-phoneme strategy is with the test item roo. Four students connected the letter /o/ to the sound [ɔ] instead of the phoneme [uː], again demonstrating the grapheme-phoneme strategy.

The French immersion students also demonstrated a general lack of knowledge of English vowels. The vowel sound [ɔː] was replaced with [ɔ] six times in a variety of test items such as vauge and bafmotbem. Students substituted [ɔ] for the phoneme [əʊ] in the test item gouch. Other substitutions were made: [iː] for [e] in twem and [ʌ] for [iː] in weat. These vowel substitution errors can be explained by the fact that the French immersion students in this study had not yet received English reading instruction.

Summary

In sum, the findings of the detailed error analysis of the Word Attack subtest indicate that the French immersion students used various strategies when decoding the English nonsense words. The students’ knowledge of the French language was evident as this language interfered with the pronunciation of English vowels. In the following section, results from the French Word Attack subtest will be discussed.

French Word Attack Assessment Scores

The ability to read French nonsense words was assessed through the administration of the KARAT Word Attack subtest. Percentages were computed from the
raw data. The low-average reading group accurately read 16.25% of the nonsense words. The average reading group read 36.25% of the test items. The above-average readers correctly pronounced 56.25% of the words. As demonstrated by the percentage gains, each reader group’s ability to read the nonsense words increased accordingly, providing evidence that the KARAT subtest is robust. Garcia et al. (2008) concluded, upon reviewing various language-minority studies, that phonological awareness measures could “differentiate low performers from average or high performers, identifying students with possible reading disabilities” (p. 262). Furthermore, the percentage difference between the low and average reader ability groups is 20% and the difference between the average and the above-average groups is 20%. Again, these equal percentage differences validate not only the order of the test items but the nonsense words themselves.

French Word Attack Reading Errors

The types of errors that the French immersion students make when reading in French will be the primary focus of this discussion. Real-word substitutions were made for the nonsense word test items. Of the 13 real-word substitutions, nine were French words. Students used the initial phoneme to guess the word on six occasions. For example, pigne was misread as pain and phier was replaced with fière. Two other real-word substitutions were made by using the final phoneme. Naiçant was substituted with méchant and pon was replaced with mon, for example. However, one substitution did not appear to be related to guessing using a phoneme in the test item. Choutaille was substituted with the real word gâteau. It is possible that this substitution was made as a complete guess in an effort to finish the assessment, as this was the third to last test item.
The four English real-word substitutions indicated that the students were engaging in only partial analysis of the French words and were over-reliant on initial letters. For example, griev was replaced with green and teur was substituted with tear. These substitutions reflect the influence of the student’s first language, English, on reading these French nonsense words.

Consonants were inserted in the final position only. The inappropriate application of English letter-sound knowledge to the final end sounds of the test items produced these 34 errors. Specifically, students pronounced word endings that should have been silent. For example, the final consonant /t/ was pronounced seven times in the test item rabut. In addition, the /r/ was pronounced six times in phier. These errors clearly indicate that the French immersion students applied English phonological rules resulting in the voicing of silent endings of these nonsense words.

There was one consonant insertion that was not related to the voicing of the end sound. An /l/ was inserted in the test item bemite, creating bemelt. This error was made by a student with below average reading ability.

Vowel epenthesis occurred in the initial, medial, and final positions. In the initial position, the vowel /a/ was inserted between the two consonants /s/ and /p/, creating a consonant-vowel construction in the word spaveillante. The phoneme [oɔ] was added in oïlumeuille ([oɔ]ilumeuille). This insertion was probably due to a letter to sound discrepancy error. The medial vowel insertions added an extra syllable to the test items. For example, the one syllable word griev became two-syllabled with the addition of the sound [i:]. Seven final position insertions involved the only test items that ended in -es, poides and lomattes. The silent -es ending was voiced as [eɪ] possibly due to a visual
miscue, with the young immersion readers mistaking the -es ending for the -er ending. The -er ending would be pronounced as [e], an approximation of the English phoneme [ɛ]. The remaining four insertions were additions to the end of the test items as a result of decoding errors. For example, the nasal vowel [ɔ̃] was added to the end of the word grien, resulting in grienon.

There were seven consonant deletions in the initial position. Six of these deletions involved the /r/ being dropped in the nonsense word troineux. This error is an example of approximation as the [r] sound is a challenging vocalization for non-native speakers of the French language. The other deletion was the /w/ in troineux. This deletion indicated a letter to sound error, as the student was unaware of the [rw] combination in French. In the medial position, there were three consonant deletions such as the deletion of /l/ in oilumeuille. There was one final consonant deletion; the /t/ in bemite was dropped. However, the /e/ at the end of this word required the pronunciation of the /l/. The student who made this error over-generalized the orthographic pattern that many French words have silent endings.

Vowels were deleted in the medial position only. Of the seven errors, all but one were a deletion of /i/. For example, phier was reduced to pher. The other vowel, /u/, was deleted from the test item oilumeuille. These deletions indicated that the French immersion readers paid little attention to the visual cues within the words.

There were 14 complete deletions of the mid to final position of the test item. In other words, only the initial onset of the word was attempted. For example, dunis was read as duh and cauche was read as ku. It is possible that the students perceived these words as too difficult to decode; therefore, only an initial attempt to pronounce the word
was made. The majority of the final end sound deletions were made by below average readers according to the assessment test scores.

A visual discrimination error occurred once between the letters /b/ and /d/. The student, identified as a low-ability reader, read *dorme* for *bemite*. It should be noted that there was only one other possibility of a /b/-/d/ confusion in the test items. An additional five test items began with the letter /p/; however, *phier* starts with the phoneme [f].

Atypical errors occurred three times. These were errors that did not follow any particular error pattern. The nonsense word *flanouille* was misread as *floloer* and *poides* was misread as *kwadair* for example. Two different low-ability readers were responsible for all three of these atypical errors.

A variety of consonants were substituted in the Word Attack test items. Of the consonant substitutions, only one involved a French specific phoneme, [ŋ]. One student substituted this phoneme for [g] in the word *pigne*, indicating that the student was using a letter to sound strategy. This strategy was also responsible for 18 substitution errors involving the letter /v/. Students applied their knowledge of the English letter /l/ and its corresponding phoneme [l] to the French test items. However, the combination of the letters *-ill* produces the phoneme [j] in French. An example of this grapheme-phoneme error is *choutai[l]* for the test item *choutaille*. The phoneme [j] was also mispronounced as [r] once in the nonsense word *phier*. This substitution is another example of English letter-sound interference. Two students also had difficulty with the letter /ç/ in *naiçant*, incorrectly equating this grapheme with the phoneme [k] instead of [s].

The immersion students also made substitutions of consonants whose letter-sound correspondence is the same in both English and French. The /ph/ letter combination was
mistakenly pronounced as [p] by three students. They incorrectly substituted the phoneme [p] for [f] in the word *phier*, indicating that they were not familiar with the /ph/ letter combination and its corresponding phoneme. One student substituted [ʃ] for [k] in the test item *cauche*, the result of a decoding error.

French specific vowels caused great difficulty for the immersion students. Nasal vowels were mispronounced as other nasal vowels indicating unfamiliarity of grapheme-phoneme relation. For example, both phonemes [ã] and [ẽ] were mispronounced as [ɔ]. For example, students mispronounced the word *spaveillante* by replacing the nasal vowel [ã] with [ɔ]. The students appear to be unfamiliar with the vowel-consonant combinations that correspond to the nasal vowel sound.

Substituting an English vowel sound for a French one was the cause of a large majority of the errors. The most common vowel-phoneme substitution was the English phoneme [a:] for [a], which occurred 20 times. For example, students used the letter /a/ in *rabut* to pronounce this test item as *r[a:]but*. The phoneme [a] was also substituted with [æ] 10 times. The test item *lomattes* was pronounced as *lom[æ]ttes*, for example. The French phoneme [e] was replaced by the English phonemes [ei] and [i:] in the test item *naïcant*. The French vowel [o] was substituted with both [ou] in *lomattes* [æ] in *troineux*. These substitutions were a result of English letter-sound interference. In addition, the French phoneme [y] was approximated with the English phoneme [u:] on eight occasions. This phoneme was also replaced five times with the English sound [ʌ]. The French immersion students were again applying their knowledge of English vowel sounds to the French test items, an example of negative transfer.
Summary

In sum, it is clear that the English language interfered with the pronunciation of numerous Word Attack test items. The English consonant and vowel phonology influenced the decoding of these French nonsense words. In the section following, the findings of the English and French Word Attack measures will be compared.

Comparison of English and French Nonsense Word Reading Measures

The present study aimed to identify the types of errors that French immersion students make when reading in French and when reading in English. The findings of the English and French Word Attack measures indicate that there is a commonality between the errors and strategies employed when decoding these nonsense words. This section will discuss these similarities.

The Word Attack assessment scores indicate that French immersion students performed, on average, as well in French as they did in English. Specifically, the low-ability readers achieved low scores in both language assessments. The average-ability reader test scores indicated average reading abilities. The high-ability readers scored above average on both the French and the English subtests.

The detailed error analysis provided a thorough comparison of the reading skills in both languages. Students substituted English and French nonsense words for real words on both of the assessments. However, more real-word substitutions were made in the language of the assessment. In other words, the English Word Attack subtest generated more English real-word substitutions than French ones and vice versa for the French subtest. The language of the assessment and visual cue reading, which entails
guessing the word based on the initial consonant, guided the young readers in their choice of replacement words.

The detailed analysis of errors showed that many oral reading errors involved the insertion of letters. Consonants that should have remained silent were voiced, an error that occurred in both languages. In English, the /k/ in *knoink* and in French, the /r/ in *phier* were voiced, for example. Additional letters were inserted in both the middle and end positions. In English, the majority of the insertions involved the consonants /r/ and /t/. In French, the insertion involved the letter /l/. On both subtests, low-ability readers were found to have made these errors.

A comparison of the two subtests revealed that vowels were inserted in the initial, medial, and final positions. In both languages, many times the insertion of a vowel elongated the word, resulting in the addition of an extra syllable. In French, the insertion at the end position was often due to the voicing of a silent ending. This error was not noted in the English test items as all of the endings required voicing.

In both English and French oral readings, consonants were deleted in all three positions. However, the majority were complete end sound deletions made by low-ability readers. It is probable that this group of readers felt overwhelmed by the necessity to decode and therefore, attempted only the initial onset of the test item.

No vowel-only deletion errors occurred in the English Word Attack test items. Instead, the vowel deletions occurred in combination with consonant deletions in the final position. The few vowel-only deletion errors in the French Word Attack test items occurred in the medial position only. This finding indicates that the French immersion students paid little attention to the visual cues when decoding the test items.
Visual discrimination errors were made on both the English and French subtests; however, there were more opportunities for this error type with the English test items. The findings indicate that students substituting the test item for a real word made the majority of these letter orientation errors. However, the same low-ability reader made the few errors that resulted in nonsense words on both subtests.

The low-ability readers also accounted for the atypical errors made in both English and French. It would appear that this group of readers lacked the decoding skills necessary to access the nonsense words accurately.

French immersion students of varying reading ability encountered difficulties with certain consonants and vowels in both languages. They were unsure of some of the most regular grapheme-phoneme correspondences, such as the long vowel sound in English and the nasal vowels in French. The students equated the letter /i/ with the phoneme [i:] when decoding the English test items, a French letter-sound correspondence. Conversely, students read the French test items using English vowel sounds, often approximations of the French phonemes. These findings point towards a transfer of letter-to-sound correspondence between French and English oral reading.

Summary

In sum, the findings of the English and French nonsense word reading measures provide evidence that young French immersion students make the same types of reading errors in both languages. In addition, the results would suggest that the reading strategies employed are the same whether reading in French or in English. The findings would, therefore, indicate that reading skills are transferred from one language to the other. In the following section, the Paragraph Reading measures findings will be discussed.
Paragraph Reading Measures

In this section, the results of the Paragraph Reading subtests of the TORC-3 and the KARAT will be interpreted. The discussion will include student scores according to reading ability and question types for both the English and French measures.

**English Paragraph Reading**

French immersion students’ English reading comprehension was assessed using the Paragraph Reading subtest of the TORC-3. Because the TORC-3 is a standardized assessment, the raw scores were converted to standard scores and percentiles and the results are presented as percentile ranks. The reader groups were created by the students’ teachers, based on their French reading ability. These pre-determined groups were maintained for the discussion of the results. The below-average readers had an average percentile rank of 23.25, indicating that this group consisted of low-average readers of English. The average readers had an overall percentile rank of 39.5, placing this group within the higher low-average range. The percentile rank difference between below-average readers and average readers was 16.25. This difference indicates that the average readers performed better in reading comprehension than the below-average group. The above-average readers had an average percentile rank of 56.5. This percentile rank indicated that this group was slightly above average in English reading comprehension. The difference between the average readers and the above-average readers was 17 percentile ranks, indicating that the above-average group had stronger reading comprehension skills than the other group.

Of the four question types asked for each paragraph, detail-type questions were the most correctly-answered for all levels of readers. A sample detail question that all but
one student answered correctly is “What did Juan do?”. All three reader ability groups were able to answer these types of questions because detail-type questions are less cognitively demanding. As such, students were able to recognize the answers from the readings. In other words, students who were identified by their teacher as being below, average, and above-average readers were, overall, most successful with questions that involved details about the paragraph.

Conversely negative inference questions were, on average, the least correctly-answered question type for all three levels of readers. Negative inference question types were the most challenging as they are found in the inferring category of Bloom’s Taxonomy (Krathwohl, 2002). In addition, average-ability readers, on average, found inference-type questions equally challenging. Again, these question types would be more difficult as they require a higher level of cognitive thinking according to Bloom’s Taxonomy. Of the eight students that read Paragraph II, all but one answered the implicit knowledge question #3 incorrectly. This question asks, “What might have caused the train to wreck?” (Brown et al., 1995). It was noted during the assessment that students had a particularly difficult time with the answer to this question due to unfamiliar vocabulary. Five of the students inquired about the word “derailed”, wondering what it meant. These French immersion students not only had to work on a cognitively challenging question type but they also had to overcome unfamiliar vocabulary, making the question twice as difficult. This example underscores the need for cautious interpretation of test scores on standardized assessment tools when the norming sample does not include second language learners.
The TORC-3 assessment data supported the findings of researchers (Kirby, 2007; Paris, 2007) who reported that certain types of reading comprehension questions are more difficult than others. Specifically, Paris (2007) found that "children usually have more difficulty answering questions based on implicit information, such as inferences in the text and the author's purpose, as opposed to explicit text information, such as facts and details" (p. 4). In sum, detail-type questions were typically easier for students to answer than those of title, inference, and negative inference.

**French Paragraph Reading**

French immersion students' reading comprehension was assessed using the KARAT Paragraph Reading subtest. Percentages were calculated from the raw scores for this experimental assessment tool. The mean percentage of correct answers in the below-average group was 15%. The average readers correctly answered 35% of the test items. The difference between these two reader groups was 20%, indicating that the reading comprehension skills of the average group were stronger than the below-average group. The above-average readers correctly answered 66% of the questions on average. The difference between the average and above-average reading groups was 31%, representing a large discrepancy between the achievement of these two groups. The fact that the percentage of correctly-answered questions increased for each reading group suggests that the KARAT Paragraph Reading subtest was valid.

The data were also analyzed for student responses to question type, as they were for the TORC-3. Unlike the TORC-3, however, students who were identified by their teachers as being below-average readers answered more title-type questions correctly (5 out of 20) than the other question types of detail, inference, and negative inference. In
addition, negative inference question types were similarly answered correctly (4 out of 20). Although these question types were thought to be more cognitively challenging according to Bloom’s Taxonomy, careful attention to vocabulary and wording of the questions made these question types more accessible even to lower ability students.

Conversely, inference and detail-type questions were the most challenging for the low-average readers. Three of the four students in this group incorrectly answered the detail-type question *Comment s'appelle le chien de Claire?* (What is the name of Claire’s dog?) with *chien* (dog). This response indicates that the students selected the familiar word (*chien*) out of the four choices without searching for the detail in the paragraph. This result corroborates the findings of an earlier study of young at-risk ESL students conducted by Geva (2000). She reported, “efficient word recognition plays a significant role in facilitating the comprehension of simple narratives” (p.18). The below-average French immersion students, like the at-risk ESL students, are learning a second language. Being identified by their teachers as low-average readers, these students would have limited reading strategies and limited word recognition skills. If an answer were not apparent upon first read, these students did not go back to the paragraph to seek out the necessary information, a strategy that a more advanced reader would employ.

Average readers, as identified by their teachers, correctly answered inference-type questions the most frequently (8 out of 20) followed closely by detail- (15 out of 40) and title-type questions (7 out of 10). Negative inference-type questions were correctly answered the least for this group of readers (6 out of 20).

The two-point difference between the four question types indicates that the average reader ability group did not truly excel in one question type over another. In fact,
there was not one question that all four readers answered incorrectly. In addition, there was only one question that all four readers answered correctly: *Qu'est-ce que Claire aime sur sa pizza?* (What does Claire like on her pizza?). Students in this group appeared to have varying strengths when it came to knowledge of vocabulary and reading strategies.

Above-average readers correctly answered title-type questions (14 out of 20) the most frequently. However, detail- (27 out of 40), inference- (13 out of 20), and negative inference-type questions (12 out of 20) were similarly successfully answered.

Similar to the average reader ability group, the above-average group had only a two-point difference between the most and least correctly-answered question types. Again, this minimal difference indicates that the students have varying vocabulary knowledge and reading strategies. For example, the last two paragraph stories of the KARAT required not only prior knowledge of vocabulary but also the ability to use context clues to determine the meaning of new words. Words like *bâtiment* (building), *orage* (storm), and *essence* (gasoline) were specifically selected when creating the KARAT for their limited use within the French immersion classroom.

It should be noted that the number of correctly-answered questions, regardless of the type, increased on average as the ability of the reader improved. For example, consider detail-type questions: below-average readers answered four, average readers 15, and above-average 27 out of 40. The construction of the KARAT was such that with each following paragraph, the vocabulary and verb tenses increased in difficulty. Therefore, the stronger reader group should have been able to accurately answer more questions than the struggling readers. This increase in correct responses suggests that the KARAT Paragraph Reading subtest is valid.
It was expected that detail-type questions, like those in the English Paragraph Reading subtest, would be the easiest question types for all levels of readers. According to Cummins’ (2000) theory of common underlying proficiency, reading comprehension questions that are cognitively demanding, such as inference, should be more difficult than questions that are undemanding, such as detail. In addition, Paris (2007) purports that questions about details and facts are usually easier to answer than other question types. However, the current study findings are supported by an earlier study conducted by Cashion and Eagan. These researchers noted that when reading French texts, immersion students in Grade 3 “could get the ‘gist’ of the text, but could not answer questions that entailed reading for detail” (Cashion & Eagan, 1990, p. 39). In addition, the ease of various question types other than those of detail can be explained by the fact that these students have only been offered literacy instruction in French. Genesee (2007b) reported that, “(i)mersion students were often found to exhibit lags in English reading … skills during those school grades when English was not taught” (p. 2). In other words, the French immersion students should have been more successful at correctly answering various question types in French than they were in English because they had received formal reading instruction in French and not yet in English. In addition, students who have not “experienced a strong culture of literacy (in English) in the home” (Cummins, 2000, p. 21) during their pre-school years have been found not to have an “automatic transfer” (Cummins, 2000, p. 20) of literacy skills from French into English. Therefore, these 12 primary-aged French immersion students, whose sole exposure to literacy is in the classroom, could be expected to have limited English literacy skills. This explanation
could account for the students’ abilities to answer various question types in French beyond those of detail.

Careful construction of the KARAT in regards to grammar and familiar content could have also provided for the students’ abilities to answer diverse question types. Because I am an experienced primary French immersion teacher, I was able to select story content that would be familiar and of interest to young readers. For example, the first paragraph is about a dog that likes pizza. Both the topic and the vocabulary should be accessible to these young students regardless of their reading ability. In addition, my knowledge of teaching a second language guided me in writing paragraphs using verb tenses that should be known to Grade 2 and 3 French immersion students. For example, the beginning paragraph uses the present tense, a construct that these learners utilize not only in their oral language but also in their written work. In her synthesis of second language reading research, Bernhardt (2000) pointed out that readers must utilize their prior knowledge of text, language structure, meaning, and vocabulary in order to comprehend the reading. All of these factors were taken into account when constructing the Paragraph Reading subtest of the KARAT, adding to the validity of the assessment results.

Summary

In sum, the French immersion students were able to answer a variety of question types on the KARAT Paragraph Reading subtest. Students with low reading abilities made more comprehension errors than those with greater reading abilities. The following section will discuss individual participant assessment scores.
Student Reading Groups

For the purpose of this study, French immersion teachers were asked to identify students who were below, average, and above-average readers in their classes. Because English language arts are not formally introduced until Grade 4, the reading ability of the student could only be based on teacher knowledge of how the student performs in French.

Upon analyzing the data, it became clear that there were three students, one from each ability level, whose reading performance differed from their teachers’ placement. Based on the performance of the three KARAT subtests, these students were not correctly identified by their teachers. One Grade 3 student, QB, was nominated by the classroom teacher as an average reader. However, upon analysis of the data, it was determined that QB should have been placed in the exceeding reading outcomes ability group. QB correctly read 70% of the Word Identification French words. This student successfully read 50% of the Word Attack French nonsense words and correctly answered 80% of the KARAT Paragraph Reading questions.

In addition, two Grade 2 students were misplaced according to their performance on the KARAT. CB was placed in the exceeding ability group; however, this student should have been identified as an average reader. CB’s French Paragraph Reading (28%) supports this placement. Another student, CZ, was nominated by the classroom teacher for the average reading ability group. However, according to CZ’s performance on the KARAT, this student should have been placed in the below expectations reading ability group. CZ read 30% of the Word Identification French words, and 15% of the Word
Attack French nonsense words. This student correctly answered 8% of the KARAT Paragraph Reading questions.

Although the teachers were asked to rate the student based on his or her reading ability, it is possible that the teachers took into consideration French language arts as a whole. The students would thereby be placed according to oral, aural, written, and reading learning outcomes. Researchers Garcia, McKoon, and August (2008) purported “when teachers made errors in determining [French] language learners’ reading performance, it usually was because they over-relied on the students’ oral language proficiency in [French] in making this determination” (p. 262). The French immersion teachers in this study may have specifically emphasized oral language when rating these three students’ reading abilities, thereby erring in their reading ability placement. McLaughlin (1985) also emphasized that “all teachers need to be aware that children who are learning in a second language may have language problems in reading and writing that are not apparent if their oral abilities are used to gauge their [French] proficiency” (p. 6). In other words, the two students who should have been placed one ability group below, CZ and CB, were strong orally, thereby masking their true reading ability. Conversely, the student who should have been placed one group higher (QB) was weak orally, influencing the reading placement.

In addition, the reading ability placement of the students could have been made without much thought or perhaps the criteria were not clear enough. Teachers were asked to use the French language arts learning outcomes for reading, specifically reading comprehension and phonetic awareness to determine if a student was below expectations, meeting expectations, or exceeding expectations. However, the teachers may not have
referred to their classroom assessments and report card grades, relying on their memory and opinions. Garcia et al. (2008) reported “teachers were found to be more reliable … when they were asked to respond to specific criteria, rather than to express their opinions spontaneously” (p. 262). Because I had to rely on information about student reading abilities from another teacher, I had no control over how seriously the teacher took into account the given criteria.

Summary
In sum, an investigation of the assessment results gave rise to the questioning of the accuracy of the reader ability placement of three French immersion students. Placement of these students was pre-determined by the classroom teacher, who perhaps made the decision hastily or over-relied on oral ability. The following section will summarize the interpretations of the findings.

Summary of Reading Measures
In this section the reading assessment results will be summarized. The relationships between the word reading, decoding measures, and the paragraph reading will be explored. This discussion will provide evidence that literacy skills acquired in French are applied to English reading.

In all six of the reading subtests, the low-average reader ability group performed below average. These low readers demonstrated difficulties in English and French word reading, decoding, and reading comprehension. Genesee (2007b) also reported in his review of French immersion studies, “the reading profiles of poor readers tend to be the same in their first and second languages” (p. 3), a finding that was further supported by
Kirby (2007). In addition, Geva (2000) linked reading comprehension with efficient word recognition skills in her study of young at-risk English as second language readers.

The results of this study indicate that the young French immersion students may not be able to comprehend the text because their word recognition skills are weak. However, there were a few exceptions in the findings. First, TB’s word reading and decoding skills in both languages were much weaker than her English Paragraph Reading score, in which she came out in the 50\textsuperscript{th} percentile. This abnormality could be explained by TB having an unidentified reading disability. Olson, Wise, Conners, and Rack (1990) reported that “disabled readers with normal IQ and educational background tend to be more deficient in measures of isolated word recognition than in measures of reading comprehension” (cited in Carr & Levy, 1990, p. 264). Another exception occurred with students UC and MB. These two students were found to have higher word reading skills in both languages, but had some language comprehension difficulties that interfered with their reading comprehension, a finding that was also reported by Kirby (2007) in his study on reading comprehension.

In general, however, English and French performance on the Word Identification subtests was stronger than the Word Attack subtests. These results indicate that the French immersion students were better sight word readers, using visual cues in guessing many real words, a strategy that could work for sight words but not nonsense words. The use of this strategy, applied in both languages, is evidence of cross-transference of reading skills between the first and second language.

Despite the lack of English literacy instruction, the French immersion students with average to above-average reader abilities were able to achieve just as well in French
as they were in English. This finding may be due to the transfer of language skills from French to English. Genesse (1979) argued that "there are certain processes which are basic to reading and once learned can be applied to reading any or almost any language (cited in McLaughlin, 1992, p. 66). This argument and the current research findings provide support for Cummins' common underlying proficiency theory in which literacy skills are shared between languages.

Conclusion

In this chapter, the findings of the study were discussed in relation to the research questions. The results of the teacher on-line survey were interpreted, providing evidence supporting the validity of the KARAT. This section was followed by an interpretation of the English and French Word Identification and Word Attack subtests. The English and French Paragraph Reading findings were then discussed. The results of the individual student scores on the six different assessments were interpreted in the final section. These discussions focused on the types of errors that French immersion students make when reading in French, the central research question of this study. The findings indicate that these young readers make the same types of errors when reading in French as they do when reading in English. The following chapter concludes this research paper with a summary of the purpose for the research, the educational implications, and recommendations for further research resulting from the study.
CHAPTER SIX
CONCLUSION

This chapter begins with a review of the purpose of the current study, including the questions that were the focus of the research. Following this review the relationship between French and English literacy skills will be summarized. The implications of the study and recommendations for future research will follow. Concluding remarks complete this chapter.

Review of Purpose

The main intent of this study was to determine if young French immersion students make the same types of reading errors in French as they do when reading in English. The assumption was that a student who experiences reading difficulties should experience these difficulties in either language, an example of a cross-linguistic transfer. Using Cummins’ (1984) common underlying proficiency theory as a framework, the research specifically focused on phonetic awareness and reading comprehension skills.

The secondary aim of this study was to establish the validity of the Karen Andrews Reading Assessment Tool (KARAT), an experimental measure created specifically for young French immersion readers. The construction of this assessment tool was based on Gronlund’s (1993) framework for valid and reliable test results. In addition, an on-line survey was developed following the guidelines of Rea and Parker (2005). French immersion teachers were asked to participate in order to provide content- and construct-related evidence for the KARAT.

Relationship Between French and English Literacy Skills

The results of the current study confirm previous findings on the relationship...
between first and second language reading skills (for example, Comeau, Cormier, Grandmaison, & Lacroix, 1999; Genesee, Geva, Dressler, & Kamil, 2008; Geva, & Clifton, 1994). However, whereas other research involving French immersion students has focused on quantitative analysis of phonological awareness, the current study specifically focused on a qualitative detailed error analysis of not only phonological awareness but also reading comprehension. The use of the KARAT in conjunction with the *Woodcock Reading Mastery Tests-Revised* and the *Test of Reading Comprehension-Third Edition*, provided ample evidence that French immersion students make the same types of errors when reading in French as they do when reading in English. These young readers deleted final end sounds and guessed words based on the initial consonant in both languages, for example. In addition, students applied their knowledge of English vowels when reading the French test items. In reading comprehension, students who had difficulties responding to the text displayed similar difficulties in both languages, indicating that there is a transfer of skills between the first and second languages.

Research and Educational Implications

This study adds to the current literature by demonstrating that the cross-linguistic transfer as hypothesized by Cummins (1984) is applicable to a group of early French immersion students who live in an environment where they are not exposed or have limited exposure to French outside of school. It also extends the research previously conducted on students in French immersion programs by comparing the errors made in three reading-related measures: word reading, word decoding, and reading comprehension.
The development of a valid French immersion reading assessment has implications for researchers and educators alike. For researchers, the KARAT could meet the demand for a technically sound reading measure (Genesse, 2007b; Jared, 2008). However, the KARAT should be used with a larger population, which would allow for the reliability of this measure to be established. The implementation of one assessment tool, such as the KARAT, across research studies would provide consistency, allowing for the comparison of results from one study to another. For educators, the KARAT could be useful in identifying students at risk for reading difficulties. Specifically, this assessment tool, comprising of three subtests, would allow educators to establish if a student were struggling in the areas of word recognition, word decoding, and reading comprehension.

Recommendations for Further Research

Because cross-linguistic transference of reading skills in young French immersion students is a relatively new field, there remains much more research to be explored. While the current study investigated French and English reading errors made by Grade 2 and Grade 3 students, there are several directions for further investigation. First, enlarging the participant population to include students from both single and dual track schools could expand this study. A more diverse population might uncover an even greater transference of reading skills in students whose exposure to French language and culture is increased within a single-track school environment compared to a school in which both English and French programs are offered.

Future research could also be longitudinal in its approach, taking in students from Grade 2 and following them through to the end of Grade 4. Such an approach would
allow future researchers to determine if reading error types change over time as the student gains more experience in reading. Following the same group of students would also provide insight into how reading errors change with the formal introduction of English literacy in Grade 4. This type of study would expand the evidence for cross-linguistic transference of skills.

Concluding Remarks

Upon the completion of this study, I feel confident not only as a researcher but also as a primary French immersion teacher, in responding to my students' parents concerns about the suitability of the French immersion program for those struggling to read in the second language. The answer to my initial concern about the appropriate placement of the primary French immersion student, experiencing reading difficulties, is that there would be no benefit for him or her to be placed in the English program. As supported by my research, students who make reading errors in French such as visual discrimination, insertion of vowels and consonants, as well as grapheme to phoneme over-generalizations tend to make the same errors when reading in English.

Although it would not be beneficial to remove a student from the French immersion program based on reading difficulties, it would be advantageous to have a valid reading measure available. The KARAT, constructed specifically for young French immersion students, could be used to assist in the early identification of students at risk for reading problems. The results of this research indicate that both the standardized English measures and the experimental French measures could be used by educators to assist them in diagnosing students with possible reading difficulties. However, testing in English only could give the students and educators the impression that their French
language skills are not important (Alberta Department of Education, 1990). In contrast, testing in French could strengthen the French immersion program by validating the importance of the language. In addition, through early identification, the young struggling readers could benefit from early literacy intervention programs that would focus on phonological awareness and reading comprehension strategies.

In sum, a student with a reading difficulty should not be encouraged to leave the French immersion program, as he or she will likely have the same problems reading regardless of the language. It is hoped that this thesis provides the evidence needed for BC educators and parents to best make an informed decision about the placement of the student and that the locally-developed Karen Andrews Reading Assessment Tool would assist in helping to make this decision.
References


phonological processing skills in children learning to read in a second language.


Hoge, R., & Khan, N. (1994). Psychological factors associated with the early immersion experience. Ottawa, ON: Carlton University, Department of Psychology.


Majhanovich, S. (1993). The mainstreamed environment in Canada: Is there a place in


Appendix A: Karen Andrews Reading Assessment Tool

KARAT Word Identification Instructions

Instructions: I want you to read the following French words. What is this word? (after student responds to the first word, say: Go ahead with the others)

If the student hesitates, encourage the student to try to pronounce the word. Skip the word if the student does not wish to try. Administer all of the words. If you do not clearly hear the student’s response to a specific test item, wait until the section has been reached and then ask the subject to repeat the word in question.

Scoring: For a response to be correct, the student must read the word naturally in about 5 seconds.
## Word Identification

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<th>Score</th>
<th>Error response</th>
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<td>1. ___ une</td>
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<td>2. ___ mon</td>
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<td>16. ___ agrafeuse</td>
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17. ____ éventail
18. ____ chevreuil
19. ____ pharmacien
20. ____ soigneusement
KARAT Word Attack Instructions

Instructions: I want you to read some words that are not real words. I want you to tell me how they sound in French.

If the student hesitates, encourage the student to try to pronounce the word. Skip the word if the student does not wish to try. Administer all of the words. If you do not clearly hear the student's response to a specific test item, wait until the section has been reached and then ask the subject to repeat the word in question.

Scoring: For a response to be correct, the student must read the word naturally in about 5 seconds. If the student doesn't respond, encourage a response. If the student still fails to respond, continue to the next test item and say “try this word”.

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17. ___ flanouille
18. ___ choutaille
19. ___ spaveillante
20. ___ oilumeuille
KARAT Paragraph Reading Instructions

Instructions: I want you to read each story to yourself. I will read to you five questions that follow each story. For each question you are to put an X over the letter A, B, C, or D that best answers that question. Do you have any questions about how to do these?

Testing is stopped when students miss two or more of the five questions for any one story.

Scoring: Record correct answers as 1 and incorrect answers as 0. Correct items are counted up to and including those for the paragraph where two or more items were missed.
Claire aime manger la pizza. Son chien, Luc, adore la pizza, lui aussi. Claire préfère des oignons et des tomates sur la pizza. Luc préfère du pepperoni.

1. Comment s'appelle le chien de Claire?
   A. Claire
   B. Lui
   C. Luc
   D. Chien

2. Quelle est la pizza préférée du chien?
   A. aux oignons
   B. aux oignons et aux tomates
   C. au pepperoni et aux oignons
   D. au pepperoni

3. Qu’est-ce que Claire aime sur sa pizza ?
   A. des légumes
   B. de la viande
   C. de la sauce
   D. de la saucisse

4. Quel est le meilleur titre pour cette histoire?
   A. Luc mange
   B. Claire adore Luc
   C. La pizza
   D. Les tomates et le pepperoni

5. Quelle phrase ne va pas avec cette histoire ?
   A. Luc et Claire mangent de la pizza.
   B. Le chien n’aime pas la pizza.
   C. Claire mange de la pizza végétarienne.
   D. Luc préfère du pepperoni sur sa pizza.
II

Paul veut jouer au parc. Sa maman dit : "Non, Paul. Tu ne peux pas aller au parc parce que tu n’as pas fini tes devoirs." Paul commence tout de suite à travailler.

1. Qu’est-ce que Paul fait?
   A. Il va au parc.
   B. Il va travailler.
   C. Il va à l’école.
   D. Il va jouer.

2. Qui dit à Paul de faire ses devoirs?
   A. le parc
   B. maman
   C. papa
   D. professeur

3. Qu’est-ce que Paul veut faire ?
   A. glisser sur la glissoire
   B. regarder la télévision
   C. travailler dans le jardin
   D. danser avec ses amis

4. Quel est le meilleur titre pour cette histoire?
   A. Allons au parc!
   B. La mère de Paul va au parc
   C. Pas de parc pour Paul
   D. Paul va jouer

5. Quelle phrase ne pourrait pas aller avec cette histoire ?
   A. Paul fait son travail.
   B. Paul travaille vite.
   C. Paul ne fait pas son travail.
   D. Paul n’est pas allé au parc.
III

Pendant le week-end, moi et ma famille allons aller chez ma grand-mère. Nous allons célébrer son soixante-deuxième anniversaire. Son amie, Suzanne, va apporter des ballons et un bon gâteau au chocolat. Nous allons lui donner un joli bouquet de fleurs comme cadeau. J'ai hâte d'y aller!

1. Quel âge a la grand-mère ?
   A. 60
   B. 72
   C. 62
   D. 70

2. Qu'est-ce que la famille va donner à la grand-mère ?
   A. des ballons
   B. des fleurs
   C. du chocolat
   D. un gâteau

3. Quelle phrase est vraie de la grand-mère ?
   A. Son amie s'appelle Sandra.
   B. La grand-mère n'aime pas les ballons.
   C. C'est la fête de la grand-mère.
   D. Sa famille ne vient pas célébrer.

4. Le meilleur titre pour cette histoire est :
   A. L'anniversaire de grand-maman
   B. Les vacances
   C. Un cadeau
   D. Ma famille et moi

5. Quelle phrase ne pourrait pas aller avec cette histoire ?
   A. La grand-mère ne va pas recevoir de cadeau.
   B. L'anniversaire de la grand-mère est samedi.
   C. Nous allons manger du gâteau.
   D. Nous apportons des cadeaux pour la fête.
Quand Robert est allé au camping avec ses amis, Philip et Thomas, il était très excité. C’était sa première fois d’y aller cette année. Ils ont monté la tente au terrain de camping. Puis, ils ont allumé le feu de camp. Tout à coup, il a commencé à pleuvoir et le vent a soufflé très fort. Robert s’est caché dans la tente. Les deux autres garçons se sont protégés dans un bâtiment.

1. Robert est allé au camping :
   A. avec sa classe
   B. avec sa famille
   C. avec deux amis
   D. avec Thomas et Paul

2. Qu’est-ce que les garçons ont fait premièremenent au terrain de camping ?
   A. se sont protégés dans le bâtiment
   B. se sont cachés dans la tente
   C. allumé le feu
   D. monté la tente

3. Qu’est-ce que Robert devait apporter au camping ?
   A. un toboggan
   B. une tuque
   C. un manteau de pluie
   D. un bateau

4. Le meilleur titre pour cette histoire est :
   A. Les meilleurs amis
   B. Le camping
   C. Le feu de camp
   D. Comment se protéger

5. Quelle phrase ne pourrait pas aller avec cette histoire ?
   A. Il y avait un orage.
   B. Les garçons restaient dans la pluie.
   C. Philip et Thomas sont des amis de Robert.
   D. Les garçons aîmeraient rôtir des hotdogs.
Le vaisseau spatial circulait rapidement autour de la planète Zénith. Ses astronautes s’inquiétaient car il ne restait presque plus d’essence. Il fallait qu’ils atterrissent le vaisseau spatial toute suite. Le capitaine cherchait la station d’essence. Soudainement, il a vu des lumières devant lui. “Est-ce que c’est là ou je pourrais acheter de l’essence?” , a-t-il pensé. Malheureusement, ce n’était que des comètes qui traversaient le ciel noir.

1. Où était le capitaine ?
   A. à la planète Zénith
   B. à la station d’essence
   C. aux comètes
   D. au vaisseau spatial

2. Qu’est-ce que les astronautes cherchaient ?
   A. les comètes
   B. la planète Zénith
   C. la station d’essence
   D. la Terre

3. Pourquoi est-ce qu’il fallait atterrir le vaisseau spatial ?
   A. parce que le capitaine cherchait des comètes
   B. parce qu’ils voulaient voir la planète Zénith
   C. parce qu’il y avait des lumières dans le ciel
   D. parce qu’il n’y avait pas beaucoup d’essence

4. Quelle phrase ne pourrait pas aller avec cette histoire ?
   A. Les lumières étaient des comètes.
   B. Les occupants du vaisseau spatial étaient contents.
   C. Le vaisseau spatial avait besoin d’essence.
   D. Ils voyageaient en espace.

5. Le meilleur titre pour cette histoire est :
   A. Un voyage terrifiant
   B. À la recherche de l’essence
   C. La planète Zénith
   D. Les extra-terrestres voyagent en espace
Thank you for submitting the above-noted research renewal proposal and requested amendments to the Research Ethics Board. Your proposal has been approved.

We are pleased to issue approval for the above named study for a period of 12 months from the date of this letter. Continuation beyond that date will require further review and renewal of REB approval. Any changes or amendments to the protocol or consent form must be approved by the Research Ethics Board.

Good luck with your research.

Sincerely,

Henry Harder
Appendix C: Parent Consent Form

Parent/Guardian Consent Form

I understand that Karen Andrews, who is a graduate student in Education at the University of Northern British Columbia, is conducting a research study in reading difficulties in early French immersion students as part of her MEd 799 Thesis for her Master’s degree. The purpose of the research study is to determine if reading difficulties in French transfer into reading difficulties in English. The study will be conducted at xx School during non-instructional time in June, either before or after school or during the lunch hour, when it is mutually convenient for both Ms. Andrews and me.

I understand that my son/daughter was chosen as a participant in this study because he/she is in Grade 2 or Grade 3 French immersion. I also understand that Ms. Andrews will be assessing the reading of my son/daughter in both French and English to use in her analysis. Information from this study will be used to enhance future teaching and support the professional literature.

1. Consent for the inclusion of my son’s/daughter’s data is given on the understanding that Ms. Andrews will use her best efforts to guarantee that my son’s/daughter’s identity will be protected and his/her confidentiality maintained both directly and indirectly.

2. I understand that participation in the study is completely voluntary and that my son/daughter may choose to withdraw or I may choose to have my son/daughter withdrawn from the study at any time without penalty. If my son/daughter is withdrawn from the study, his/her information will be withdrawn automatically as well.

3. I understand that the data to be collected will be at xx School during non-instructional time for either one or two sessions.

4. I understand that my son’s/daughter’s responses may be audio recorded.

5. I understand that the data collected will not be used in any way for the purposes of my son’s/daughter’s report card.

6. I understand that the data collected will be treated in the following manner:
   a. The data will be stored in a secured filing cabinet or computer at Ms Andrews’ private residence or in a secured filing cabinet or computer at xx School.
   b. The data will be used only by Ms. Andrews, and only for her MEd thesis or presentation at learned conferences or published in learned journals and books.
   c. The data will be shredded or deleted at the end of the study by Ms. Andrews or I may have the data returned to me in September 2010.

7. I understand that if I have any comments or concerns that I may contact Ms. Andrews at xxx-xxx-xxx, Dr. Andrew Kitchenham at xxx-xxx-xxxx, or the Office of Research, UNBC at 250-960-5820.
I hereby give permission for my son/daughter, ________________________, to take part in the study to be conducted by Ms. Andrews at xx xx School.

My son’s/daughter’s first language is ________________________. 
My son/daughter began French immersion in Grade _______________________.

Name: _______________________

Signed: ________________________ Date: ________________________

Researcher: _______________________

Signed: ________________________ Date: ________________________

(A copy of this agreement will be retained by all signed parties listed on this agreement.)
Appendix D: Parent Letter

Dear Parent or Guardian,

A select number of students in Grades 2 and 3 French immersion at xx xx School will be asked to participate in a research study to determine if reading errors in French transfer into English. The research will be used as the basis for the thesis that Ms. Andrews will be writing as part of her Master's degree. Ms. Andrews is a French immersion teacher at xx xx School.

Students who partake in the research study will be asked to read out loud known and unknown words in both French and English. These responses will be audio recorded. Students will also be asked to silent read in French and English several paragraphs and answer comprehension questions. These reading assessments will be administered individually and will take approximately 45 minutes in total. The assessments will take place during non-instructional time in June, before or after school or at lunchtime, when it is convenient for you, your child, and Ms. Andrews.

During the study, data that are collected will be used without reference to the student and the identity of the students will not be used. Confidentiality will be maintained as the identity of the students will not be reported and collected data will be stored in secured filing cabinets and computers. As well, once the data have been used they will be shredded, deleted, or, upon request, students or their parents/guardians may ask to have their personal data returned.

The study is designed to help identify the types of reading errors that occur in French that also occur in English. By collecting the information we hope to identify whether or not a student, who is experiencing reading difficulties in French, would experience reading difficulties in English. This information could lead to future recommendations about the appropriateness of the French immersion program for students who are experiencing reading difficulties.

Participation in the study is completely voluntary and the student may choose to withdraw or his/her parent/guardian may choose to have the student withdrawn from the study at any time without penalty. If the student is withdrawn from the study, his/her information will be withdrawn automatically as well.

Sincerely,

Karen Andrews
Appendix E: Student Assent

Program Information Form – Student Assent

(say to student) I am trying to find out what type of things help children to read. I am interested in finding out if there are some reading skills in French that will help you to read in English. I am asking students like you to do some reading for me in both French and English. These activities will help me know how to best help students learn to read. Today I will ask you to read to me in English and then we will meet again in the summer to have you read to me in French. I would like to record you reading to me so that I can make sure that I heard you correctly. If at any time you change your mind, just let me know and we will stop. Is that okay?
### Appendix F: Design Table

<table>
<thead>
<tr>
<th>Literacy Variables</th>
<th>English</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Reading</td>
<td>WRMT-Word Identification</td>
<td>KARAT-Word Identification</td>
</tr>
<tr>
<td>Word Decoding</td>
<td>WRMT-Word Attack</td>
<td>KARAT-Word Attack</td>
</tr>
<tr>
<td>Reading Comprehension</td>
<td>TORC-Paragraph Reading</td>
<td>KARAT-Paragraph Reading</td>
</tr>
</tbody>
</table>
Appendix G: Teacher Consent Form

Teacher Consent Form

I understand that Karen Andrews, who is a graduate student in Education at the University of Northern British Columbia, is conducting a research study on a French immersion reading diagnostic assessment tool as part of her MEd 799 Thesis for her Master’s degree. The purpose of the research study is to help provide test validity for the French immersion reading diagnostic assessment tool. The study will be conducted on-line, in the form of a survey.

I understand that I was chosen as a participant in this study because I am a French immersion teacher. I also understand that Ms. Andrews will be using my on-line survey responses in her analysis. Information from this study will be used to enhance future reading assessments of French immersion students and support the professional literature.

1. Consent for the inclusion of my data is given on the understanding that Ms. Andrews will use her best efforts to guarantee that my identity will be protected and my confidentiality maintained both directly and indirectly.

2. I understand that participation in the study is completely voluntary and that I may choose to withdraw from the study at any time without penalty. If I withdraw from the study, my information will be withdrawn automatically as well.

3. I understand that the data will be collected on-line through the use of a survey.

4. I understand that if the survey is conducted through an American website, then the Patriot Act would allow the United States’ government access to my answers.

5. I understand that the data collected will be treated in the following manner:
   - The data will be stored in a secured filing cabinet or computer at Ms Andrews’ private residence.
   - The data will be used only by Ms. Andrews, and only for her MEd thesis or presentation at learned conferences or published in learned journals and books.
   - The data will be shredded and deleted at the end of the study by Ms. Andrews or I may have the data returned to me in September 2010.

6. I understand that if I have any comments or concerns that I may contact Ms. Andrews at xxx-xxx-xxxx, Dr. Andrew Kitchenham at xxx-xxx-xxxxx, or the Office of Research, UNBC at 250-960-5820.

I hereby give my permission to take part in the study to be conducted by Ms. Andrews.

Name: __________________________________________

Signed: ____________________________ Date: __________________________

Researcher: ______________________________________

Signed: ____________________________ Date: __________________________
(A copy of this agreement will be retained by all signed parties listed on this agreement.)
Appendix H: Teacher Letter

Dear Teacher Colleague,

Several French immersion teachers from [unnamed school district] will be asked to participate in a research study to rate test items on a French immersion reading diagnostic assessment tool. The research will be used as the basis for the thesis that Ms. Andrews will be writing as part of her Master's degree.

Teachers who partake in the research study will be asked to individually complete an online survey. Teachers will be asked to assess the degree of congruence between the content, format, and wording of each test item of the diagnostic assessment tool and the learning outcome it measures. The survey will take approximately 30 minutes to complete and will be available for completion at the teacher's convenience.

During the study, data that are collected will be used without reference to the teacher and the identity of the teachers will not be used. Confidentiality will be maintained as the identity of the teachers will not be reported and collected data will be stored in secured filing cabinets and computers. As well, once the data have been used they will be shredded or, upon request, teachers may ask to have their personal data returned.

The study is designed to help provide test validity for the French immersion reading diagnostic assessment tool. Test validity is the degree to which the test scores measure what the assessment tool claims to measure. By collecting this information we hope to identify which test items could be valid in identifying reading difficulties in French. This information could lead to future recommendations about the appropriateness of a French immersion reading diagnostic assessment tool for students who are experiencing reading difficulties.

Participation in the study is completely voluntary and the teacher may choose to withdraw from the study at any time without penalty. If the teacher withdraws from the study, his/her information will be withdrawn automatically as well.

Sincerely,

Karen Andrews