Abstract

This dissertation is comprised of three studies that investigate characteristics of reading comprehension difficulties among children who receive school instruction in a second language (L2) in Canadian French immersion programs. The first study examines the overlap and stability of poor reading comprehension in English and French for a group of 8-year-old children enrolled in early French immersion programs. The primary aim of this study was to determine the extent to which those identified as having poor reading comprehension in English also demonstrate poor reading comprehension in French. Poor comprehenders of English and French, of English-only, and of French-only were compared on English and French vocabulary measures, concurrently and retrospectively. Children who were poor comprehenders in English and French scored significantly lower on English vocabulary at ages 6 and 8 compared to poor comprehenders in French-only. Lower scores on French vocabulary at age 8 distinguished poor comprehenders in French-only from poor comprehenders in English-only.

The second study supplements the above findings through a retrospective case study that examines the early development of English and French decoding and vocabulary skills for a poor and average comprehender in French immersion. The findings suggest that relative to average
comprehenders (who demonstrate average decoding and vocabulary combined with average reading comprehension) poor comprehenders show early and persistent difficulties with English and French vocabulary despite average decoding ability in both languages.

Finally, the third study explores similarities and differences in components of English and French language comprehension among 10- to 11-year-old English-French bilingual children in French immersion and English monolingual children in mainstream programs. Three groups of comprehenders matched on age, nonverbal reasoning, English word reading accuracy and fluency were identified in each program: poor, average, and good. The three groups differed in English vocabulary, morphological awareness, and inference in both bilingual and monolingual groups, with poor comprehenders performing significantly lower than good comprehenders on these tasks. English inference also distinguished between poor and average comprehenders. Similar results were found in French for the bilingual group. French vocabulary and morphological awareness distinguished between poor and good comprehenders, and French semantics and inference distinguished between poor and good comprehenders and poor and average comprehenders. Together, these studies suggest that poor comprehenders experience similar and persistent difficulties with components of language in both L1 and L2.
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Chapter 1. Introduction

Understanding what we read is a complex yet essential skill for both academic and economic success. In the early stages of reading, comprehension is heavily dependent on the ability to decode printed text. As children progress through school and decoding skills are automatized, the ability to understand language becomes increasingly important (Catts, Hogan, & Adlof, 2005; Stanovich, Cunningham, & Freeman, 1984). A breakdown in these components (the ability to decode or comprehend language or both) can result in problems with reading comprehension (Gough & Tunmer, 1986).

Much of the research attention on reading comprehension difficulties has focused on poor decoders, children who demonstrate early weaknesses in aspects of decoding, such as word reading and phonological processing (e.g., Storch & Whitehurst, 2002). Recently, there has been growing interest in the existence of poor comprehenders (sometimes referred to as unexpected comprehenders), whose reading problems are not explained by their decoding skills (e.g., Cain & Oakhill, 2007; Tong, Deacon, Kirby, Cain, & Parilla, 2011). Poor comprehenders consist of an estimated 5-10% of English-speaking monolingual children who experience challenges specifically in reading comprehension, meaning that they are able to read accurately and fluently at age-appropriate levels, but have difficulties understanding much of what they read (for a review, see Nation, 2005).

According to the simple view of reading model (Gough & Tunmer, 1986; Hoover & Gough, 1990), poor comprehenders who have adequate decoding skills should show difficulties with language comprehension (e.g., Catts, Adlof, & Weismer, 2006; Nation, Cocksey, Taylor, & Bishop, 2010). Indeed, several studies have documented a wide range of language difficulties that are related to poor reading comprehension (e.g., Catts et al., 2006;
Clarke, Snowling, Truelove, & Hulme, 2010; Nation, Snowling, & Clarke, 2007). However, given that poor comprehenders are often overlooked in the classroom as a result of their ability to read aloud accurately and fluently (Leach, Rescorla & Scarborough, 2003; Nation, et al., 2007), only a small number of studies have investigated the mechanisms underlying reading comprehension difficulties for this group of readers. Even less is known about the characteristics of poor comprehenders who are acquiring a second language and whether poor reading comprehension manifests in a similar manner in a first (L1) and second (L2) language (Geva & Herbert, 2012; Geva & Massey-Garrison, 2013). The current thesis addresses this issue by examining the characteristics of poor reading comprehension among emerging English-French bilinguals in early French immersion programs in Canada.

This thesis consists of three studies reported in Chapters 3, 4, and 5, respectively. Chapter 2 describes the educational context of early French immersion programs from which the samples were drawn. Chapter 6 presents a general conclusion of the three studies, their educational implications, and directions for future research.

The first study examined the overlap and stability of poor reading comprehension in English and French for a group of 8-year-old children enrolled in early French immersion programs. The primary aim of this study was to determine the extent to which those identified as having poor reading comprehension in English also demonstrate poor reading comprehension in French. Poor comprehenders of English and French, of English-only, and of French-only were compared on English and French vocabulary measures, concurrently and retrospectively.

The second study illustrates the development of English and French phonological awareness, word reading accuracy, and vocabulary skills for a poor and average comprehender from grades 1 to 3 in an early French immersion program. The main objective of this study was
to investigate the feasibility of early identification for poor comprehenders in an immersion program through a retrospective approach.

The third study explores components of language comprehension (vocabulary, grammar, and higher-level language skills) for 10- to 11-year-old children in French immersion. Three groups of bilingual comprehenders (poor, average, and good) were identified based on English reading performance and their language comprehension skills were compared in English L1 and French L2. The purpose of this study was to determine whether poor comprehenders experience similar language comprehension difficulties in English and French. Additionally, three groups of monolingual comprehenders from English-stream programs were identified and compared on English language comprehension skills.
Chapter 2. French Immersion Programs in Canada

French immersion in Canada is an additive dual language program that promotes high levels of oral and written language proficiency in French, the language of classroom instruction, and English, the dominant societal language (Swain & Johnson, 1997). The program was initially created over 50 years ago, in response to the demands of predominantly English-speaking parents who wanted their children to develop language and literacy skills in both English and French (Official Languages Act; Lambert & Tucker, 1972; Genesee & Lindholm-Leary, 2007). Since then, French immersion has spread rapidly throughout Canada primarily due to parents’ favourable views toward the cognitive, social, and economical benefits of being functionally bilingual in a global economy (Heller, 1994; Roy, 2008).

There are three forms of French immersion programs in Canada that vary with respect to grade entry, the amount of French instructional time, and the number of years of intensive French instruction: *early immersion* (beginning in kindergarten or grade 1), *middle immersion* (beginning in grades 4 or 5), and *late immersion* (beginning in grade 7). In middle and late immersion programs, children receive core French instruction in the school years prior to the start of immersion (Genesee & Lindholm-Leary, 2007). In early immersion programs, the amount of French instruction can either be partial, (50% of school instruction is presented in French and 50% in English), or total (all instruction is presented in French). The participants in the current studies were enrolled in early total immersion programs, in which non-francophone children receive integrated language and content instruction exclusively in French beginning in

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1 Similar models exist in the United States and are usually referred to as *dual language programs* or *immersion education* (for a review, see Genesee & Lindholm-Leary, 2007).
senior kindergarten or grade 1. English language arts instruction is typically initiated in grade 4, and by the end of grade 8, children may receive up to 50% of their classroom instruction in English. According to the Ontario curriculum, children receive at least 3,800 hours of French instruction by the end of Grade 8 (Ontario Ministry of Education, 2013).

Evaluative research has consistently demonstrated that English-speaking monolingual children in early French immersion programs achieve advanced levels of functional proficiency in speaking, reading, and writing in French, while, at the same time, develop English proficiency comparable to students in English-only programs within one or two years of receiving English language instruction (Genesee, 2004; Genesee & Jared, 2008; Lambert & Tucker, 1972). Remarkably similar findings have been reported for children in French immersion who speak an L1 other than English (Au-Yeung et al., 2015).

Despite the clear benefits of an additive dual language program, there have been several criticisms. For example, some have argued that students in immersion understand French in the classroom, but struggle with the language outside of the school context (Bibeau, 1991; Lyster, 1987). Another popular criticism is that French immersion caters to only the highest achievers who come from high socioeconomic backgrounds (educational elitism; Mady & Arnett, 2009; Safty, 1992). Students who have underdeveloped English skills are less likely to enter early immersion programs. Moreover, special education services are often not provided within the French immersion school system (Genesee, 2007; Genesee & Jared, 2008; Mady & Arnett, 2009; Wise, 2011), and there is a tendency for children who struggle with reading acquisition to transfer to the English-only stream to access support (Cummins, 1984; Stern, 1991).

Given that poor comprehenders are typically identified in the middle to late elementary grades (Leach, Scarborough, & Rescorla, 2003), little is known about the prevalence of these
children in early immersion settings. It is likely that poor comprehenders’ difficulties remain unnoticed in early French immersion programs because of their adequate decoding ability and late-emerging comprehension difficulties. The children who participated in the current studies were enrolled in Canadian early French immersion programs growing up in predominantly English-speaking environments. These children had similar and limited levels of French proficiency upon school entry. This context made it possible to assess and compare English and French language and literacy outcomes among poor comprehenders who were acquiring both languages.
Chapter 3. Study One

The Overlap and Stability of Poor Reading Comprehension in English and French

There is considerable evidence to suggest that children who are at risk for reading difficulties in a second language (L2) can be identified through early assessment of word reading and cognitive skills in their first language (L1), before their oral language proficiency is fully developed in the L2 (Da Fontoura & Siegel, 1995; Geva & Clifton, 1994; MacCoubry, Wade-Woolley, Klinger, & Kirby, 2004). Much of this previous research is based on the premise that certain skills, such as phonological processing, transfer across languages (e.g., August & Shanahan, 2006; Comeau, Cormier, Grandmaison, & Lacroix, 1999). A more recent approach to the identification of reading difficulties examines the extent to which children identified as poor readers in an L1 can be also identified as poor readers in L2 (Manis & Lindsey, 2010; McBride-Chang et al., 2013). This overlap in classification allows one to examine all possible profiles of reading difficulties for children in bilingual contexts. In the present study, we examined the overlap and stability of L1 and L2 profiles for poor comprehenders, who are a specific subgroup of readers with late-emerging reading difficulties. Our participants were enrolled in French immersion programs in Canada and received school instruction in French, an additional language, while being exposed to English, their primary language, at home and in the community.

Reading comprehension is a complex process that involves the integration and coordination of various skills, including word decoding and oral language. Most research into reading difficulties has focused on children with poor decoding (often referred to as dyslexia) whose weaknesses manifest early in reading development as phonological awareness and word reading deficits (e.g., Snowling, 2000). More recently, researchers have documented the
existence of another group of children with reading difficulties—*poor comprehenders*. These children have intact decoding skills but experience weaknesses in oral language that affect both their language and reading comprehension (simple view of reading; Gough & Tunmer, 1986). In contrast to poor decoders, poor comprehenders’ difficulties emerge in the later elementary grades as decoding becomes automatized and more variance in reading comprehension is accounted for by oral language skills (Catts, Compton, Tomblin, & Bridges, 2012). Studies have demonstrated that poor comprehenders show impairments relative to typically developing children on a wide range of oral language skills, including receptive and expressive vocabulary (Nation & Snowling, 1998), semantic processing (Cain, Oakhill, & Lemmon, 2004; Nation, Clarke, Marshall, & Durand, 2004), inference making (Cain & Oakhill, 1999), and written and oral narrative expression (Cain, 2003; Cragg & Nation, 2006). Weaknesses in oral language tend to be masked by poor comprehenders’ age-appropriate decoding skills, and as a result, early indicators of later reading comprehension difficulties are often overlooked.

Until now relatively few studies have used longitudinal data to investigate the stability of children’s comprehension deficits in the absence of decoding problems. Of the existing studies, most have used a retrospective approach to examine poor comprehenders’ deficits across previous grades, and suggest that poor comprehenders’ oral language difficulties in L1 are persistent and stable over time (Catts, Adlof, & Weismer, 2006; D’Angelo, Hipfner-Boucher, & Chen, 2014; Nation, Cocksey, Taylor, & Bishop, 2010). For example, Nation and colleagues (2010) identified poor comprehenders based on reading achievement at age 8 and retrospectively examined their reading and language skills beginning at age 5. While poor comprehenders’ phonological processing and word reading skills progressed over time, their oral language skills remained persistently weak. These studies suggest that early weaknesses in understanding and
using spoken language contribute to poor comprehenders’ comprehension difficulties.

Investigating the stability of poor reading comprehension is even more challenging in a bilingual context in which children are learning to read in L1 and L2 simultaneously. Since these children are still in the process of acquiring the language of instruction, it may be difficult to determine whether weaknesses in L2 oral language skills reflect typical L2 development or are indicative of a language or reading impairment (D’Angelo et al., 2014; Li & Kirby, 2014; Paradis, Genesee, & Crago, 2010). For example, in a recent study, Li and Kirby (2014) investigated the comprehension profiles of grade 8 emerging Chinese-English bilinguals in an English immersion program in China. Poor comprehenders were distinguished from average comprehenders on the basis of their performance on English vocabulary measures. The authors concluded that because the groups did not differ on Chinese L1 word reading and reading comprehension, poor comprehenders’ reading comprehension difficulties were due to limited English proficiency. However, the comprehender groups in this study were selected using English L2 assessments only. Because no Chinese L1 oral language comparisons were made, it is unclear whether the children’s weak vocabulary was attributable to an underlying oral language impairment or typical L2 development.

In a preliminary study, we sought to investigate this issue by retrospectively examining the reading and language abilities of a small sample of English-speaking children in French immersion who were identified as poor and average comprehenders, respectively, on the basis of their English and French reading performance in grade 3 (D’Angelo et al., 2014). We found that poor comprehenders demonstrated relatively consistent English and French vocabulary difficulties in grade 1 and grade 3. The current study extends this earlier work to a large, representative sample to facilitate comparison. The purpose is to determine the extent to which
those identified as having poor reading comprehension in English also demonstrate poor reading comprehension in French.

Previous research suggests that there is transfer of common core skills (e.g., phonological processing) across languages (e.g., August & Shanahan, 2006; Comeau et al., 1999; Gottardo, Yan, Siegel, & Wade-Woolley, 2001; Jared, Cormier, Levy, & Wade-Woolley, 2011), indicating that it is possible to identify children at-risk for L2 reading difficulties based on their performance in L1 (Da Fontura & Siegel, 1995; Geva & Clifton, 1994). Recently, researchers have examined the extent to which overlap in reading difficulties occurs between an L1 and L2. In a study of fifth grade Spanish-speaking children learning to read in English, Manis and Lindsey (2010) found that 55% of children who met the criteria for reading difficulties in English (i.e., scores on a decoding composite at or below the 25th percentile) were also identified with reading difficulties in Spanish. Similarly, McBride-Chang et al. (2013) tested the overlap of poor readers in Chinese and English (defined as those at or below the 25th percentile on Chinese and English word reading tests) among a sample of 8-year-old Chinese-English bilingual children in Beijing. They found that 40% of poor readers in Chinese were also poor readers in English. The overlap in McBride-Chang et al. (2013) was lower probably because Chinese and English are two diverse orthographies, and therefore, are more distantly related than Spanish and English. Regardless of language distance, in each study, children who were identified as poor readers in both languages scored lower on decoding tasks than children who were poor readers in only one language. On the other hand, children with poor reading in one language did not necessarily have difficulties in the other. However, these studies focused on the overlap status of poor readers on the basis of poor decoding. We were interested in whether such overlap occurs for poor comprehenders who show discrepancies between their reading comprehension and
decoding skills.

Thus, in the present investigation, we used a similar approach to examining the issue of overlap in a sample of poor comprehenders in early French immersion programs. The majority of children who participated in our study grew up in a predominantly English-speaking environment with limited exposure to French outside of the classroom. Therefore, any differences in French oral language and reading abilities between children would be unlikely a result of differences in the amount of exposure the children had to French. Since French and English share many linguistic similarities, we had reason to believe that there would be a relatively strong overlap in poor reading comprehension in our sample. For those children with poor reading comprehension in both English and French, we could be confident that below average performance was the result of a pervasive impairment in oral language proficiency rather than poor language related to typical L2 developmental trajectories.

Whereas previous studies have examined overlap with decoding scores at or below an arbitrary cut-off score, the present study utilized a regression technique to predict children’s reading comprehension scores from age, nonverbal reasoning, word reading accuracy and fluency in both languages (e.g., Deacon & Kirby, 2004; Lesaux, Lipka, & Siegel, 2006; Li & Kirby, 2014; Nation et al., 2004, 2005). In this way, we could more precisely select comprehender groups based on relative as opposed to absolute discrepancies between word reading and reading comprehension abilities in English and French.

A second objective of the present study was to determine the stability and overlap of poor comprehender status by retrospectively examining children’s oral language skills across time. We identified and compared poor, average, and good comprehenders at 8-years-old on English and French vocabulary and looked back at their performance at age 6. We also examined the
overlap in comprehender status at ages 6 and 8. We anticipated that children identified as poor comprehenders in English and French would show early and persistent oral language difficulties in both languages.

Method

Participants

The participant groups in the study were comprised of children from two longitudinal samples of English-speaking children in Canadian early French immersion programs followed from ages 6 to 8. The samples were recruited from urban and suburban schools in London, Hamilton, and Moncton (sample A; \( n = 130 \); Jared, Cormier, Levy, and Wade-Woolley, 2011), and Toronto (sample B; \( n = 74 \); D’Angelo et al., 2014) for a total of 204 children (97 girls, 107 boys; \( M_{age} = 104 \) months, \( SD = 3.72 \)). For a detailed description of sample A, refer to Jared et al. (2011). Similarly, refer to D’Angelo et al. (2014) for earlier work with a subcomponent of sample B. Participants in London (\( n = 57 \)), Hamilton (\( n = 37 \)), and Toronto (\( n = 74 \)) grew up in a predominantly English-speaking environment, whereas the participants in Moncton (\( n = 36 \)) had some exposure to French outside of the classroom. As part of the inclusion criteria, children selected for this study were non-native speakers of French receiving full-time French instruction in school. Out of the 204 children, 151 (74%) spoke English as a primary language. Forty-five children (22%) were exposed to additional languages at home.

Measures

Measures in English and French for both samples are described below. Reliabilities from manuals are reported where calculated test reliabilities were not available.

Nonverbal reasoning was administered at age 6 only for both samples. English and French word reading fluency and reading comprehension were administered at age 8 only for
sample B, and as such, only this time point is reported for these measures in the current study. All other tasks were administered at ages 6 and 8 for both samples. Trained undergraduate and graduate research assistants, who were fluent in the respective test language, administered English and French measures, in randomized order and in separate sessions that lasted approximately 45 minutes each.

**Nonverbal reasoning.** All children were administered the Matrix Analogies Test in English to assess nonverbal reasoning at age 6 (expanded form; Naglieri, 1985). For each item, children were asked to complete a figural matrix by choosing the missing piece from five to six possible choices. Reported reliability is .95.

**Word reading accuracy.** Children in sample A were tested in English with the Word Identification subtest of the Woodcock Reading Mastery Test–Revised consisting of 106 items (Form G; Woodcock, 1998) and in French with the word identification subtest of the Batterie d’Épreuves Multidimensionnelles d’Évaluation de la Lecture (Cormier, Desrochers, & Sénéchal, 2006). The split-half reliability of the English word identification subtest reported in the manual for children at age 6 is .98 and .94 at age 8. The split-half reliability of the French word identification test was .97 at age 6 and .96 at age 8.

Those in sample B were administered the Letter-Word Identification subtest from the Test of Achievement, Woodcock Johnson-III (WJ-III; Woodcock, McGrew, & Mather, 2001) to assess reading accuracy in English. Children were asked to read a series of 76 letters and words that were presented in order of increasing difficulty. Reliability of the Letter-Word Identification subtest was .95 at age 6 and .92 at age 8. French word reading accuracy was assessed using an experimental task (Au-Yeung et al., 2015). Items were arranged in sets of eight words in increasing order of difficulty. Children were asked to read each word accurately and fluently.
The total score was the number of words read correctly. Internal reliability was .96 at age 6 and .98 at age 8.

*Word reading fluency.* In both samples, children’s word reading fluency in English at age 8 was measured by the Sight Word Efficiency subtest of the Test of Word Reading Efficiency (TOWRE Form A; Torgesen, Wagner, & Rashotte, 1999). Children were provided with 45 seconds to identify as many words as they could from a vertical list. The manual reports reliability at .97. The calculated reliability of this test in English was .88 for sample B. A similar test was developed in French for children in sample A. Cronbach’s alpha was .87 at age 8. A French adaptation of the subtest, Form B, was used to measure word reading fluency in French for the sample B, with an internal reliability of .95.

*Reading comprehension.* The Gray Oral Reading Test-Fourth Edition (GORT-4; Wiederholt & Bryant, 2001), Form B, was used to assess English reading comprehension at age 8 for sample A. Children were asked to read a series of short passages and answer five corresponding multiple-choice questions. Form A of the test was translated into French. Cronbach’s reliability was .95 and .89 for the English and French tests, respectively.

The comprehension subtest Level C Form 3 (48 items) of the Gates-MacGinitie Reading Tests’ second Canadian edition (MacGinitie & MacGinitie, 1992) was used to assess English reading comprehension at age 8 for children in sample B. Children were asked to read short passages and answer corresponding multiple-choice questions. To reduce testing time, students were allotted 20 minutes to complete as many items as possible. The score was the total number of correct answers. Form 4 of the test was translated into French and administered in the same way as the English task. The reliability of this test was $\alpha = .90$ in English and $\alpha = .95$ in French.

*Vocabulary.* The Peabody Picture Vocabulary was used to measure English receptive
vocabulary in sample A (PPVT-III Form A; Dunn & Dunn, 1997) and sample B (PPVT-IV Form A; Dunn & Dunn, 2007). Each time a tester orally presented a target word, the child was required to point to one of four pictures that best corresponded to that word. Reported split-half reliability from the norms ranges from .89 to 97 (Dunn & Dunn, 1997).

The Échelle de Vocabulaire en Images Peabody (EVIP Form A and B; Dunn, Theriault-Whalen, & Dunn, 1993) was used to assess French receptive vocabulary in both samples. The examiner read a target word and the child was asked to identify the picture that best represented the word from a set of four pictures. Reported internal reliability from the norms for native francophone speakers ranges from .74 to .93.

Results

Groups of comprehenders (poor, average, and good) at age 8 were selected relative to their respective sample using a regression technique to predict children’s English reading comprehension scores from age, nonverbal reasoning, English word reading accuracy and fluency. These variables have been widely used for identifying comprehender subgroups and control for potential confounding effects (e.g., Tong et al., 2014). We chose the regression method as opposed to cut-off scores used in previous studies because it has shown to be a more reliable technique that examines relative discrepancies between various skills that are related to reading comprehension and distinguishes poor comprehenders from both average comprehenders, who perform as expected on reading comprehension, and good comprehenders.

Given that 75% of the 228 items on the PPVT-IV are consistent with items on the PPVT-III (Hoffman, Templin, & Rice, 2012), common items were linked and raw scores were calculated. Analyses were conducted with both raw scores and standard scores, yielding no difference in results. Therefore, we deemed appropriate to report standard scores as a comparison guideline for our study.
who perform better than expected on reading comprehension, and therefore, differ from average comprehenders (Li & Kirby, 2014; Tong, Deacon, Kirby, Cain, & Parrila, 2011).

Together, the predictors explained a total of 40% of the variance in English reading comprehension for children in each sample. The observed reading comprehension scores were then plotted against the standardized predicted scores. Children below the lower 65% confidence interval of the regression line were identified as poor comprehenders and those above the upper 65% confidence interval were identified as good comprehenders. Those children who scored within the 15% confidence interval were identified as average comprehenders. To effectively match children on age, nonverbal reasoning, word reading accuracy and fluency, children with predicted values 1 SD above or below the mean were not selected and excluded from analyses (Li & Kirby, 2014). This method eliminates those with poor word reading and poor reading comprehension and those with good word reading and good reading comprehension.

We calculated z-scores from raw scores based on the $M$ and $SD$ of each sample at both time points. Multivariate analysis of variance (MANOVA) revealed that there were no significant group differences between the comprehenders in each sample on English and French selection measures. Therefore, samples were combined and raw scores were converted to standard scores ($M = 100, SD = 15$) using age-based norms for all standardized assessments. In total, there were 25 poor comprehenders (14 girls; 8 years 7 months), 21 average comprehenders (8 girls; 8 years 7 months), and 20 good comprehenders (7 girls; 8 years 7 months) selected using the regression technique with English measures. Fifteen out of the 25 poor comprehenders identified as English-speaking. The remaining children ($n = 10; 40\%$) came from diverse linguistic backgrounds and were exposed to additional languages at home, including Russian ($n$

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3 In order for children to be classified as English-speaking, parents had to indicate that English was spoken in the home environment 50% of the time or more.
These children met the inclusion criteria (non-native speakers of French) and were therefore retained in the sample.

Table 1 summarizes the performance of the three groups on the English selection measures. The standard scores demonstrate poor comprehenders’ performance relative to average and good comprehenders and allow for direct comparison across different tests. As illustrated, there were no significant differences between the three groups on age, nonverbal reasoning, English word reading accuracy and fluency. However, as expected, poor comprehenders differed significantly from average \( (p < .001) \) and good comprehenders \( (p < .001) \) on English reading comprehension.

**Poor Comprehenders’ Oral Language Weaknesses in English and French**

To determine whether poor comprehenders of English demonstrate oral language weaknesses in English L1, we conducted a 2 (age: 6 vs. 8) x 3 (group: poor vs. average and good) mixed analysis of variance (ANOVA) with raw scores for English vocabulary.\(^4\) There was a significant main effect of age, \( F(1, 60) = 377.73, p = < .001, \eta^2_p = .86 \), and a significant effect of group, \( F(2, 60) = 14.62, p < .001, \eta^2_p = .33 \).\(^5\) Tukey’s HSD post-hoc comparisons revealed significantly lower scores for poor comprehenders than average \( (p < .001) \) and good \( (p < .001) \) comprehenders on English vocabulary at age 8, \( F(2, 62) = 27.00, p < .001 \). Group differences on English vocabulary were also seen retrospectively, at age 6, \( F(2, 62) = 8.27, p = .001 \), with poor comprehenders performing significantly lower than good comprehenders \( (p < .001) \). There was no interaction effect, \( F(2, 60) = 2.26, p = .11, \eta^2_p = .07 \).

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\(^4\) Separate analyses were conducted comparing the groups of comprehenders from sample A and sample B. Similar results were obtained.

\(^5\) Partial eta squared, \( \eta^2_p \), was used to report the effect size of significant results (values greater than .50 = large).
A second analysis was conducted for French vocabulary. Again, raw scores were analyzed using a 2 (age: 6 vs. 8) x 3 (group: poor vs. average and good) mixed ANOVA. Similarly, there was a significant main effect of age, $F(1, 60) = 128.76, p < .001, \eta^2_p = .67$, and group, $F(2, 60) = 3.82, p = .03, \eta^2_p = .11$. There was no interaction effect, $F(2, 60) = 2.82, p = .07, \eta^2_p = .09$. Univariate and post-hoc analyses revealed that lower scores on French vocabulary at age 8, $F(2, 60) = 3.46, p = .04, \eta^2_p = .11$, distinguished poor comprehenders from good comprehenders ($p = .03$). However, there were no group differences at age 6, $F(2, 60) = 2.64, p = .08, \eta^2_p = .08$. This finding is somewhat expected considering the limited variation in the amount of exposure children had to French prior to beginning school.

Figure 1 shows the performance of poor and good comprehenders relative to average comprehenders. English and French vocabulary scores were converted to $z$-scores and the mean differences between poor and average comprehenders and those between good and average comprehenders at ages 6 and 8 were plotted. As illustrated, the difference between good and average comprehenders on both English and French vocabulary decreased with age, whereas the difference between poor and average comprehenders substantially increased.
Figure 1. Mean score differences between poor and average comprehenders and good and average comprehenders on English and French vocabulary at ages 6 and 8.
Table 1
*Mean Standard Scores (Standard Deviations) of Poor, Average, and Good Comprehenders Selected with English Measures at Age 8*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Poor ($n = 25$)</th>
<th>Average ($n = 21$)</th>
<th>Good ($n = 20$)</th>
<th>$F$ (2, 63)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (months)</td>
<td>103.74 (3.38)</td>
<td>103.64 (3.98)</td>
<td>103.91 (4.13)</td>
<td>0.03</td>
</tr>
<tr>
<td>Nonverbal reasoning SS</td>
<td>107.92 (13.02)</td>
<td>117.70 (14.42)</td>
<td>112.44 (16.35)</td>
<td>2.54</td>
</tr>
<tr>
<td>Word reading accuracy SS</td>
<td>109.40 (13.12)</td>
<td>112.14 (10.67)</td>
<td>116.00 (8.89)</td>
<td>1.93</td>
</tr>
<tr>
<td>Word reading fluency SS</td>
<td>112.71 (9.57)</td>
<td>110.71 (8.24)</td>
<td>113.67 (3.71)</td>
<td>0.42</td>
</tr>
<tr>
<td>Reading comprehension SS</td>
<td>84.28 (8.78)</td>
<td>106.33 (11.02)</td>
<td>113.40 (11.02)</td>
<td>48.23***</td>
</tr>
</tbody>
</table>

*p < .001*
Predicting Group Membership at Age 6

We extended the above results by asking whether poor comprehenders’ early L1 oral language skills predicted comprehender status at age 8. To determine the contribution of early L1 oral language skills to comprehender status we conducted a discriminant function analysis using raw scores of English word reading accuracy and English vocabulary at age 6 to predict English poor comprehender classification at age 8. The canonical correlation was 0.47 and the best-fitting function had a chi-square value of 15.26, \( (df = 4) p = .004 \). English vocabulary was the strongest predictor of comprehender status with an absolute value of 0.99 (compared to English word reading accuracy, 0.42). The classification results revealed that 54% of participants were classified accurately into poor, average, or good comprehender subgroups, with 15 out of 25 (60%) of poor comprehenders correctly classified.

Overlap of Poor Comprehender Status

The main objective of this study was to determine the extent of overlap between reading comprehension difficulties in English and French. In other words, we wanted to know how many children with poor comprehension in English also had poor comprehension in French. To answer this question, we selected comprehender groups in French using the regression technique described above, predicting French reading comprehension scores from age, nonverbal reasoning, French word reading accuracy and fluency. We identified 25 poor comprehenders (15 girls; 8 years 8 months), 21 average comprehenders (6 girls; 8 years 6 months), and 20 good comprehenders (9 girls; 8 years 8 months) using the regression technique with French measures. Six out of the 25 poor comprehenders (24%) in French spoke an additional language other than English at home (i.e., Czech, Russian, Filipino, Polish, Hebrew, and Mandarin).

Three possible subgroups of reading comprehension difficulties in the two languages
were considered in this study: poor comprehenders in both English and French \( (n = 10; 40\%) \),
poor comprehenders in English-only \( (n = 13; 52\%) \), and poor comprehenders in French-only \( (n = 12; 48\%) \). The remaining children were three poor comprehenders of English who were average \( (n = 1) \) and good \( (n = 2) \) comprehenders in French and four poor comprehenders of French who were average \( (n = 3) \) and good \( (n = 1) \) comprehenders in English.\(^6\) Table 2 illustrates the
distribution of overlap for subgroups identified in English and French. Chi-square results
demonstrated that the chance of poor comprehenders in English also being poor comprehenders
in French was significant, \( \chi^2 (4, N = 28) = 13.18, p = .01. \)

\(^6\) The distribution of poor comprehenders who spoke an additional language at home was as
follows: English-French poor comprehenders, \( n = 4 \) (Polish, Russian, Hebrew, and Mandarin);
English-only poor comprehenders, \( n = 5 \) (4 Russian and 1 Hebrew); French-only poor
comprehenders, \( n = 2 \) (Filipino and Czech).
Table 2
Overlap and Distribution of English and French Poor Comprehenders

<table>
<thead>
<tr>
<th>Comprehender subgroup</th>
<th>French poor comprehender</th>
<th>French average comprehender</th>
<th>French good comprehender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>English poor comprehender</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>English average comprehender</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>English good comprehender</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>8</td>
<td>6</td>
<td>28</td>
</tr>
</tbody>
</table>

χ² (4, N = 28) = 13.18, p = .01
Table 3
Mean Standard Scores (Standard Deviations) and Comparisons of Poor Comprehenders in English and French, English-only, and French-only on English and French Measures of Vocabulary Over Time

<table>
<thead>
<tr>
<th>Measure</th>
<th>English-French (n = 10)</th>
<th>English-only (n = 13)</th>
<th>French-only (n = 12)</th>
<th>Pairwise comparison&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>English vocabulary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 6</td>
<td>96.40 (8.92)</td>
<td>101.42 (8.28)</td>
<td>108.73 (6.69)</td>
<td>PCB = PCE &lt; PCF</td>
</tr>
<tr>
<td>Age 8</td>
<td>91.80 (7.21)</td>
<td>99.08 (8.31)</td>
<td>104.36 (13.74)</td>
<td>PCB = PCE &lt; PCF</td>
</tr>
<tr>
<td>French vocabulary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 6</td>
<td>59.40 (8.75)</td>
<td>59.67 (7.41)</td>
<td>53.78 (3.70)</td>
<td>ns</td>
</tr>
<tr>
<td>Age 8</td>
<td>56.30 (8.92)</td>
<td>64.17 (15.08)</td>
<td>45.91 (7.16)</td>
<td>PCF &lt; PCE = PCB</td>
</tr>
</tbody>
</table>

*Note.* Standard scores are relative to age-matched sample ($M = 100, SD = 15$). PCB = Poor comprehender both; PCE = Poor comprehender English; PCF = Poor comprehender French

<sup>b</sup>Equal sign indicates nonsignificant difference, and less-than symbol indicates $p < .05$ or less.
The next step in our analyses was to retrospectively examine the stability of overlap in English and French reading comprehension difficulties for the three subgroups of poor comprehenders. Performance on English and French vocabulary measures at ages 6 and 8 for each subgroup is shown in Table 3.

A 2 (age: 6 vs. 8) x 3 (group: English-French vs. English-only and French-only) mixed ANOVA for English vocabulary revealed a statistically significant effect of age, $F(2, 30) = 192.32, p < .001, \eta_p^2 = .87$, and a significant main effect of group, $F(2, 30) = 6.79, p = .004, \eta_p^2 = .31$. There was no significant interaction effect, $F(2, 30) = .55, p = .58, \eta_p^2 = .04$. Univariate analyses revealed that there was a significant effect of group for English vocabulary at age 8, $F(2, 32) = 3.99, p = .03, \eta_p^2 = .21$, and retrospectively, at age 6, $F(2, 32) = 6.34, p = .005, \eta_p^2 = .27$. Children who were poor comprehenders in English and French scored significantly lower on English vocabulary compared to children who were poor comprehenders in French-only at both time points ($p = .004; p = .02$). No differences were found between poor comprehenders in English and French and poor comprehenders in English-only at age 8 ($p = .23$) or age 6 ($p = .32$).

Next, we conducted a 2 (age: 6 vs. 8) x 3 (group: English-French vs. English-only and French-only) mixed ANOVA for French vocabulary. There was a significant main effect for age, $F(2, 30) = 24.25, p < .001, \eta_p^2 = .46$, and significant effect of group, $F(2, 30) = 3.59, p = .04, \eta_p^2 = .20$. There was no significant interaction effect, $F(2, 30) = 1.64, p = .21, \eta_p^2 = .11$. Children who were poor comprehenders in French-only scored significantly lower on French vocabulary at age 8, $F(2, 30) = 3.53, p = .04, \eta_p^2 = .22$, compared to children who were poor comprehenders in English-only ($p = .03$). There were no significant differences between poor comprehenders in English and French and poor comprehenders in English-only ($p = .51$) and French-only ($p = .33$). Moreover, no group differences were found for French vocabulary at age 6, $F(2, 30) = 2.13, p =
.14, $\eta^2_p = .15$. Figures 2 and 3 display poor comprehender subgroups’ mean performances on English and French vocabulary at each age.

*Figure 2.* Poor comprehender subgroups’ mean standard scores on English vocabulary at age 6 and age 8.

*Figure 3.* Poor comprehender subgroups’ mean standard scores on French vocabulary at age 6 and age 8.
Discussion

The aim of the present study was to investigate the overlap and stability of comprehension difficulties for poor comprehenders acquiring literacy in two languages simultaneously. We selected poor comprehenders, in English and French, at age 8 and used a regression technique to predict reading comprehension scores from children’s cognitive and word reading abilities. We compared their English and French vocabulary skills, retrospectively and concurrently, to matched groups of average and good comprehenders. In addition, we examined the overlap in comprehension difficulties to determine whether children with poor reading comprehension in English experienced poor reading comprehension in French. The current study demonstrates that there is a moderate degree of overlap in comprehension difficulties in English and French among poor comprehenders with equivalent amounts of exposure to French and these difficulties are persistent over time. However, our findings also indicate that children, who have reading comprehension difficulties in one language, do not necessarily have difficulties in another.

Our results are consistent with those of previous studies that have shown that deficits in oral language are characteristic of children with reading comprehension difficulties (e.g., Catts et al. 2006; Nation et al., 2004; Nation et al., 2010). Building on previous work (D’Angelo et al., 2014), we found that poor comprehenders of English who received classroom instruction in French demonstrated concurrent vocabulary weaknesses in English and French relative to average and good comprehenders, despite comparable word reading accuracy skills. Lower English vocabulary scores distinguished poor comprehenders from average and good comprehenders, whereas lower French vocabulary scores distinguished poor comprehenders from good comprehenders but not from average comprehenders. Our retrospective analyses
indicated that differences between the three groups in English vocabulary were apparent at ages 8 and 6, confirming poor comprehenders’ L1 oral language weaknesses are evident in the early stages of learning to read. Although our study examines poor comprehenders in a bilingual context, these results are strikingly similar to findings reported by Catts et al. (2006) and Nation et al. (2010), and confirm that L1 vocabulary weaknesses are apparent before poor comprehenders’ reading comprehension difficulties emerge.

Despite the pervasiveness of English poor vocabulary, we found no group differences in French vocabulary at age 6. This is not surprising since our inclusion criteria ensured that children had equivalent and limited levels of French language exposure prior to school entry. In the same way, the finding that poor comprehenders differed from good but not average comprehenders on French vocabulary at age 8 suggests that the average comprehenders in this study had not yet reached a level of L2 proficiency to move beyond the performance of the poor comprehenders. Acquiring vocabulary in L2 may be more challenging for immersion children because of their limited exposure to French outside of the classroom. Thus, future research should include measures of cognitive abilities, such as phonological short-term memory, that may be better at distinguishing group differences in the early grades (e.g., Farnia & Geva, 2011).

The retrospective analyses confirmed the consistency of poor comprehenders’ L1 vocabulary weaknesses from ages 6 to 8. To substantiate the stability of poor comprehender status across time, we conducted a discriminant function analysis, which revealed that English vocabulary and English word reading accuracy at age 6 uniquely contributed to the prediction of comprehender status at age 8, accounting for 47% of the group variance. These results suggest that children who would later experience reading comprehension difficulties in English tended to be low in English vocabulary at age 6, and support the hypothesis that low reading
comprehension may arise from vocabulary difficulties (Farnia & Geva, 2011; Geva & Farnia, 2012).

Of particular interest to the present study was the overlap of children’s poor reading comprehension in English and French. We found that 40% of children classified as poor comprehenders at age 8 were poor comprehenders of both English and French. Because English and French are alphabetic orthographies and share many linguistic features, we expected greater overlap between English and French poor comprehender status (e.g., Li & Kirby; McBride-Chang et al., 2013). However, it is worth noting that children in this study had been receiving French instruction for three years at the time of comprehender classification. It is possible that children’s poor comprehension in French would have been more apparent had they been exposed to French for a longer period of time. This explanation is consistent with that of previous research, which has demonstrated that relative to poor decoders, poor comprehenders’ difficulties with reading comprehension are not evident until age 10, when performance in reading comprehension is equally accounted for by oral language and decoding skills (e.g., Elwér, Keenan, Olson, Byrne, & Samuelsson, 2013). Therefore, it seems plausible that there would be a greater overlap of poor comprehender status with more exposure to the French language in spoken and written form. Future research is needed to investigate this overlap in the later elementary grades, comparing children who are poor comprehenders of L1 and L2 to children who are poor decoders of L1 and L2.

This study is the first to demonstrate that poor reading comprehension can occur in English-only, in French-only, and in both English and French, and that the overlap in poor comprehender status is relatively stable over time. Of these groups, children who were poor comprehenders in both English and French consistently scored the lowest on English vocabulary
at ages 6 and 8, suggesting that severe vocabulary weaknesses in poor comprehenders’ L1 may contribute to comprehension difficulties in English L1 and French L2. Although the English-French poor comprehenders had lower scores in French vocabulary compared to the English-only poor comprehenders, there were no significant differences between these groups. However, our participants were still in the early grades of primary school. We suspect that as children with poor comprehension in both languages progress through school and the text they are expected to read becomes linguistically complex, vocabulary weaknesses in French will manifest.

On the other hand, children who were poor comprehenders in French-only performed significantly lower on French vocabulary relative to the English-only poor comprehenders. The finding that the French-only subgroup demonstrated the weakest scores on French vocabulary is particularly interesting considering that this group scored the highest on English vocabulary among the three subgroups. It is unlikely that the children in this study with comprehension difficulties in only French had insufficient exposure to the language relative to the other two subgroups, since there were no group differences in French vocabulary at age 6. It is possible that children in the French-only deficit group made greater progress in English vocabulary because of richer English language experiences, given that only two out of 12 children in the French-only group spoke an additional language other than English. Although English and French appear to be typologically related languages, considerable differences exist in vocabulary, morphology and syntax. For example, French has grammatical genders (e.g., masculine vs. feminine nouns) whereas English does not. Therefore, it is possible that somewhat different skills are involved in acquiring oral language proficiency in the two languages. We interpret this finding by suggesting that, while there is a moderate degree in overlap of comprehender status across languages, differences in poor comprehenders’ oral language skills
are somewhat specific to English or French.

We must be cautious when interpreting these results. To generate a sufficient sample size for poor comprehender classification, we combined early French immersion children from two separate longitudinal studies. For this reason, we were not able to conduct group comparisons with French experimental measures and the set of measures we did utilize were limited. This is unfortunate given that a number of different reading and language measures, such as grammar, are important to reading comprehension in English and French. However, it is reassuring to find consistency between our results and those from previous studies (e.g., Nation et al., 2010).

Another reason for caution in interpreting our findings is the use of a single measure of reading comprehension in this study. We used a standardized text-based measure of reading comprehension in which children are asked to read passages and answer multiple-choice questions about the passages. It is difficult to determine whether poor comprehenders performed poorly on the reading comprehension measure because they did not comprehend the passage or because they were unable to read the question. In future work, it is important to replicate this study using multiple measures of reading comprehension, particularly oral format tests that draw on listening comprehension.

Finally, it is important to note that 40% of the poor comprehenders in English and French were exposed to another language at home in addition to English. Future research should explore whether or not significant differences exist between children identified as poor comprehenders from English monolingual backgrounds and those who speak additional languages.

Taken together, the present study demonstrates that oral language weakness in the absence of decoding problems is a potential early indicator of later reading comprehension difficulties for children in French immersion programs who are learning to read in English, the
dominant societal language, and French, the language of instruction. We took a somewhat novel approach in testing the overlap of reading comprehension difficulties across the two languages and found that the children in this study were either poor comprehenders of English, French, or both. Although the prediction of later comprehension difficulties from ages 6 to 8 is not completely accurate, our results suggest that poor comprehenders’ vocabulary weaknesses can be tracked early in reading development. Hence, there is a need to monitor children’s oral language skills in L1 and L2 at each grade to make more accurate classification based on language and reading skills. In future work, we would like to use methods of dynamic assessment to monitor children’s language and literacy learning and to predict their learning potential, rather than level of ability, in both L1 and L2 at the start of early immersion programs.
Chapter 4. Study Two

Poor Comprehenders in French Immersion: Implications for Identification and Instruction

Learning to read is a complex process that begins with the acquisition of skills needed to identify words quickly and accurately. However, the ultimate goal of reading is to understand the message that words convey. Approximately 5–10% of school-aged children experience poor reading comprehension despite average decoding skills (e.g., Cain & Oakhill, 2007; Catts, Adlof, & Weismer, 2006; Nation, 2005). These children are typically referred to as poor comprehenders. In contrast to children with poor decoding, who have difficulties learning to recognize printed text, poor comprehenders’ difficulties with reading comprehension are attributed to below average oral language skills, including vocabulary (Cain, 2003; Catts et al., 2006; Nation, Cocksey, Taylor, & Bishop, 2010; Tong et al., 2011). Although early identification is key for the remediation and prevention of later reading comprehension difficulties (National Reading Panel, 2000), poor reading comprehension often goes unnoticed in the early elementary school grades since the focus is on developing accurate and fluent word reading skills (Hulme & Snowling, 2011).

The early identification of poor comprehenders who are learning to read in a second language (L2) may be particularly problematic. Since these children are still in the process of acquiring the language of instruction, it may be difficult to determine whether weak L2 language comprehension outcomes simply reflect less developed language or are indicative of a language or reading impairment. However, delaying identification of L2 learners who are at risk for reading difficulties is detrimental to their academic learning (Geva, 2000; Geva & Herbert, 2013; Paradis, Genesee, & Crago, 2011). Substantial research has shown that children who are at risk for word-based reading difficulties in L2 can be identified by assessing their language and
cognitive skills in the first language (L1) at an early age before their L2 oral language proficiency is fully developed (Da Fontoura & Siegel, 1995; Geva & Clifton, 1994; Jared, Cormier, Levy, & Wade-Woolley, 2011; MacCoubry, Wade-Woolley, Klinger, & Kirby, 2004). Thus, it is possible to identify children as at risk for L2 reading difficulties based on performance in their L1. If there is overlap—meaning equivalent deficits in skills in each of the child’s two languages—it can be assumed that below average performance is the result of a pervasive impairment rather than limited L2 proficiency.

Given that poor comprehenders are typically identified in the middle to late elementary school grades (Leach, Scarborough, & Rescorla, 2003), very little is known about the early reading difficulties experienced by these learners. Even less is known about the prevalence of poor comprehenders in immersion settings in the early primary grades. The children who participated in our research project were Canadian French immersion students growing up in a predominantly English-speaking environment. In early French immersion programs, children receive integrated language and content instruction in French beginning in grade 1 without prior exposure to the French language. They receive no formal English language arts instruction in the first three years of school. For the purposes of the study described in this article, the children’s English L1 and French L2 language and literacy skills were assessed in the spring of grades 1 to 3. The aim of this article is to (1) examine similarities and differences in the English and French reading comprehension profiles of children identified as poor comprehenders in a French immersion program, and (2) to investigate the feasibility of early identification for poor comprehenders in an immersion program through a retrospective approach.

There is an important advantage to examining these questions among young, French immersion students. Because these children are growing up in an environment in which there is
little, if any, opportunity to hear and speak French outside of the classroom, the children in the study had approximately equal amounts of exposure to spoken and written French at the time of testing. Therefore, any differences in French language and literacy abilities between children are not the result of differences in the amount of exposure the children had to French. Specifically, for poor comprehenders who experience difficulties in French oral language proficiency, there may be an underlying problem in acquiring oral language skills that is also evident in English, their dominant language.

**Characteristics of Poor Comprehenders**

A useful framework for understanding reading comprehension difficulties is the *simple view of reading* (SVR) which states that good readers are proficient at two relatively separate skills: decoding and oral language comprehension (Gough & Tunmer, 1986; Hoover & Gough, 1990; Tunmer & Chapman, 2012). Decoding is the ability to make mappings between word orthography (spelling) and phonology (sound) when learning to read. It is facilitated by phonological awareness, which is the ability to attend to, isolate, and manipulate the sound structure of oral language at the level of syllables, onset-rimes, and phonemes (Wagner, Torgesen & Rashotte, 1999). Language comprehension is comprised of vocabulary, discourse comprehension, and grammatical skills, and it is essential for understanding the meaning of words and sentences in different contexts and in spoken and written form. The contribution of decoding skills to reading comprehension diminishes over time in typically developing monolingual learners, while the influence of language skills becomes stronger (Droop & Verhoeven, 2003; Lesaux, Crosson, Kieffer, & Pierce, 2010). This shift occurs as children’s word-level skills become automatized and the texts they are expected to read as they progress through school become increasingly complex, placing greater demands on their language skills.
According to a classification system derived from the SVR, readers can be categorized into four subgroups on the basis of their strengths and weaknesses in decoding and language comprehension (Catts, Hogan, & Fey, 2003). Successful readers have good decoding and language comprehension skills, while poor decoders have poor word decoding and adequate language comprehension skills (see Figure 4). Children with reading comprehension difficulties are presented in the lower half of the figure. Poor readers have poor word decoding and poor language comprehension abilities. In contrast to poor readers, poor comprehenders, the focus of this article, have average decoding but poor language comprehension skills.

Figure 4. Poor comprehenders have poor language comprehension skills in the presence of adequate word recognition and phonological awareness skills.

Existing longitudinal studies have found that weaknesses in oral language are prevalent in monolingual poor comprehenders before their reading comprehension difficulties are identified (e.g., Catts et al., 2006; Clarke, Snowling, Truelove, & Hulme, 2010; Nation et al., 2010). In a retrospective study, Catts and colleagues (2006) examined the language comprehension skills of
57 poor comprehenders at ages 6, 8, 10, and 14. Poor comprehenders had lower language comprehension scores than typically developing readers at each time point. Although poor comprehenders initially had low phonological awareness scores, these skills progressed over time; whereas, vocabulary, discourse comprehension, and grammatical understanding scores were persistently weak. In the same way, Nation et al. (2010) found that children demonstrated weaknesses in expressive and receptive vocabulary, listening comprehension, and grammatical understanding at age 5 prior to being identified as poor comprehenders at age 8.

Due to the complexity of reading comprehension processes in L1 and L2, relatively few studies have examined poor comprehenders in a bilingual context. Li (2012) investigated the comprehension profiles of grade 8 emerging Chinese-English bilinguals in an English immersion program in China. Poor comprehenders were distinguished from average comprehenders on the basis of their performance on measures of vocabulary. However, these students were identified using English L2 assessments only. Without Chinese L1 measures to examine possible L1-L2 overlap, it is unclear from this study whether the children’s weak vocabulary was attributable to a less developed L2 or an underlying oral language problem.

In summary, poor comprehenders demonstrate consistent difficulties in the area of oral language, particularly in learning and understanding the meaning of new words. Previous research conducted with monolingual children points to an oral language weakness for this group of learners (e.g., Cain & Oakhill, 2011). What is not known is whether children who are identified as poor comprehenders in L1 experience similar language weaknesses in their L2. Because oral language skills are often less developed in L2 than L1, teasing apart language and reading comprehension difficulties that reflect typical L2 reading acquisition from early signs of reading failure is challenging. A comprehensive examination is needed to understand the
processes underlying poor reading comprehension in L1 and L2 for this subgroup of readers. Therefore, this article explores the characteristics of comprehension difficulties in English L1 and French L2 for children educated in an immersion context in order to inform screening and educational practices for children learning in an L2.

Profiles of Reading Comprehension in L1 and L2

The study described here compares characteristics of English and French reading and language abilities for 95 grade 3 students ($M_{age} = 103$ months) enrolled in a French immersion program. These students were part of a larger longitudinal study that investigated English-French reading and language development in French immersion from grade 1 to grade 3. The current study focused on non-francophone Canadian children acquiring French as an additional language through classroom instruction. English was the dominant societal language. This study is designed to replicate previous studies by demonstrating the persistence of oral language difficulties in poor comprehenders over time. In addition, it extends the research by exploring comprehension difficulties of poor comprehenders in their L1 and L2 simultaneously.

We identified three subgroups of comprehenders (poor, average, and good) by examining associations between reading comprehension scores, age, nonverbal ability, word recognition, and word reading fluency (e.g., Tong et al., 2011; White & Kirby, 2008). Students were identified on the basis of their English L1 reading performance because poor L2 oral language and reading skills among L2 learners may lead to the over-identification of poor comprehenders (Geva & Massey-Garrison, 2013). Eleven students were classified as poor comprehenders, with average word recognition but poor reading comprehension; 14 students were good comprehenders with average word recognition and good reading comprehension; and 13 students
were classified as average comprehenders, with average word recognition and average reading comprehension.

To determine whether variations in reading and language skills were associated with different profiles of reading comprehension, statistical analyses were used to compare the three groups of comprehenders on English and French measures of phonological awareness and vocabulary (statistical results from this sample are reported in Study One). The findings show significant differences between the groups for English and French vocabulary knowledge and phonological awareness. Specifically, poor comprehenders performed worse than good comprehenders on English and French vocabulary; whereas, there were no differences on these measures between poor and average comprehenders. For English and French phonological awareness, poor comprehenders performed at a higher level than average comprehenders, but no differences were found between poor and good comprehenders. Although the small sample size makes it difficult to show significant differences among the three groups, the overall pattern was clear—poor comprehenders demonstrated weak vocabulary combined with strong phonological awareness skills in English and French when compared to average and good comprehenders.

**Identifying Poor Comprehender in L1 and L2**

Consistent with the monolingual literature, poor comprehenders in French immersion demonstrated relatively poor vocabulary in comparison with other French immersion students, in the presence of above average phonological awareness skills, in both English and French. This finding suggests that poor comprehenders may indeed have an underlying problem in oral language, which raises the question: Are poor comprehenders in L1 also poor comprehenders in L2? Drawing from the sample of poor comprehenders and average comprehenders in the study, students were classified on the basis of their English L1 and French L2 reading performance.
Four out of eleven students were classified as poor comprehenders in English and French. Similarly, four out of thirteen students were classified as average comprehenders in English and French.

Figures 5 and 6 illustrate the English and French reading profiles of a poor comprehender and average comprehender, respectively. The students, whose case studies are presented in the following sections, were identified as either poor comprehenders or average comprehenders in grade 3 based on their English and French word recognition, word reading fluency, and reading comprehension ability. The profiles below present a retrospective illustration of the students’ English and French word recognition, phonological awareness, and vocabulary measured at the end of grades 1, 2, and 3.7

**Case 1: Mark, a Poor Comprehender**

Mark was 8 years and 10 months and in grade 3. He had been enrolled in the French immersion program since the beginning of grade 1 and was learning French as an L2 in addition to English as an L1. Mark spoke English only at home and engaged in reading activities with family, friends, or on his own at least once a week. In grade 1, Mark’s parents reported that Mark experienced “little” enjoyment reading (Table 4).

His early progress in the literacy program was satisfactory (see Figure 5). In grade 1, Mark had average nonverbal reasoning scores in English, and below average word recognition, phonological awareness, and vocabulary scores in English and French. By grade 2, after a year of French language instruction, Mark’s word recognition skills approached average in both English and French, with above average phonological awareness skills. In grade 3, Mark had above average word recognition and phonological awareness scores in English and French relative to

---

7 Pseudonyms were used.
his French immersion peers. In spite of these strengths, Mark continued to perform below average in English and French vocabulary. Most notably, his French vocabulary remained relatively weak. Mark had difficulties understanding what he read in English and French despite his age-appropriate word recognition and phonological awareness skills. Mark was identified as a poor comprehender.

**Case 2: Sarah, an Average Comprehender**

Sarah was also a grade 3 student enrolled in the French immersion program. She was 8 years and 11 months and had been learning French as an L2 since the beginning of grade 1. Sarah spoke English only at home and participated in home literacy practices at least once a week. Sarah started reading at a young age and according to parent report, enjoyed reading very much (Table 4).

In grade 1, Sarah had average nonverbal reasoning scores and above average word recognition, phonological awareness, and vocabulary skills in English (see Figure 6). By grade 2, Sarah was scoring slightly above average in English and French word recognition and phonological awareness in the presence of strong vocabulary skills. In grade 3, she continued to score slightly above average in word recognition, phonological awareness, and vocabulary. Relative to her word recognition abilities, Sarah’s English and French reading comprehension scores were average. Therefore, Sarah was an average comprehender.

Mark represents the typical profile of children who struggle to understand what they read despite having age-appropriate levels of word recognition. Sarah, on the other hand, had average rather than exceptional reading comprehension skills and therefore, is a useful point of comparison for assessing the development of reading skills. From grade 1 to grade 3, Sarah consistently demonstrated higher English and French vocabulary skills than Mark. However, in
Table 4

<table>
<thead>
<tr>
<th></th>
<th>Poor comprehender (Mark)</th>
<th>Average comprehender (Sarah)</th>
</tr>
</thead>
<tbody>
<tr>
<td>English L1?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Parent education</td>
<td>Completed college/university</td>
<td>Completed university</td>
</tr>
<tr>
<td>Age started reading</td>
<td>3 years</td>
<td>13 months</td>
</tr>
<tr>
<td>Language(s) spoken at home</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td>Enjoyment of reading</td>
<td>A little</td>
<td>Very much</td>
</tr>
<tr>
<td>Reads with family members</td>
<td>Every day</td>
<td>Every day</td>
</tr>
<tr>
<td>Reads with friends</td>
<td>Once or twice a week</td>
<td>Once or twice a month</td>
</tr>
<tr>
<td>Independent reading</td>
<td>Once or twice a week</td>
<td>Every day</td>
</tr>
<tr>
<td>Educational media</td>
<td>Once or twice a week</td>
<td>Once or twice a month</td>
</tr>
</tbody>
</table>
Figure 5. English L1 and French L2 word recognition, vocabulary, and phonological awareness scores of a poor comprehender from grades 1 to 3.
Figure 6. English L1 and French L2 word recognition, vocabulary, and phonological awareness scores of an average comprehender from grades 1 to 3.
grade 3, Mark surpassed Sarah in English and French phonological awareness ability despite his below average vocabulary scores. Overall, this profile comparison illustrates the finding that vocabulary is a persistent weakness for poor comprehenders and is a characteristic of oral language difficulty that is evident in the early stages of L1 and L2 reading development.

Implications and Conclusions

What can be done to help poor comprehenders? The key to success lies in effective vocabulary instruction starting in the early primary grades (Biemiller, 2006). Systematic vocabulary teaching that builds on children’s background knowledge and is embedded in authentic learning tasks is the cornerstone of a successful immersion classroom. For children like Mark, it is critical. Beck, McKeown, and Kucan (2002) propose an evidence-based approach to teaching vocabulary that includes guidance in selecting words for instruction, developing student-friendly explanations of new words, and creating meaningful, engaging learning activities that encourage students to notice, think about, and use new words over and over again in a variety of contexts.

Dialogic reading techniques that actively involve the child in the storybook reading have been shown to be particularly effective in supporting vocabulary development (Hargrave & Sénéchal, 2000; Sénéchal & LeFevre, 2001). Notably, storybooks introduce children to literate language—words and phrases that are more sophisticated and complex than those heard and used in conversation. Because of this, they serve as an effective springboard for L2 teaching and learning in an immersion classroom. Pre-teaching of vocabulary using tools such as word maps, as well as post-reading activities, such as story enactment and story mapping, support children’s understanding of story events and the language used to relate them. Furthermore, they allow
children to focus their attention on specific words featured in the book. In addition, storybook
reading allows struggling readers to engage with text in a motivating way. Research shows that
motivation to read is critical to reading success (Gambrell, 1996).

For bilingual children, a unique strategy that has been found to be effective in promoting
L2 vocabulary development is instruction in the use of cognates. Cognates are words that have
the same meaning and same or similar spellings (e.g., the English word *family* and French word
*famille*). Closely related languages such as French and Spanish share thousands of cognates with
English (less so for distant languages such as English and Chinese). Cognates allow children to
use word knowledge acquired in their L1 to infer the meaning of unfamiliar words they
encounter in their L2, including words appearing in text. Despite their similarities, children often
fail to see the relationship between cognates in their two languages. However, research has
shown that children can be taught to recognize cognates and that cognate instruction has a
positive impact on reading comprehension, beginning in the early primary grades (Hipfner-
Boucher, Chen, Pasquarella, & Deacon, 2014).

Based on the findings described earlier, frequent assessment of L2 vocabulary is
recommended from an early age. Systematic, curriculum-based teacher assessment of word
knowledge is critical from both a formative and summative perspective. Assessment can take
many forms: teachers may ask children to provide a definition or a synonym of a word, to
“show” their understanding of a word through gesture or facial expression, to name an
illustration that depicts a target word, or to choose a picture that represents a given word. At the
same time, teachers should create opportunities for students to use the words they have been
taught in multiple contexts, and be attentive to students’ spontaneous use of these words in their
oral and written language. The presence in the classroom of a word wall is an effective means of
supporting student use of specific vocabulary items.

Should a child demonstrate a particular weakness in vocabulary, it is possible and advisable to assess L1 vocabulary knowledge to determine whether word learning is problematic in the child’s two languages. Intervention in the form of intensive vocabulary teaching may be necessary, with ongoing monitoring of the child’s responsiveness to the intervention. It may also be beneficial to solicit parent involvement in the intervention process so that the child receives L1 support in the home. Home language and literacy activities that expand the child’s world and word knowledge, such as interactive storybook reading, are key supports for reading comprehension (e.g., Dickinson, Griffith, Michnick-Golinko, & Hirsh-Pasek, 2012).

To conclude, this article presents preliminary evidence that oral language weaknesses are evident in poor comprehenders in French immersion in both their L1 and L2. The finding of an overlap in English and French reading skill profiles among children with equivalent amounts of French exposure suggests that the below average reading comprehension outcomes of poor comprehenders may be the result of a pervasive oral language difficulty rather than a less developed L2. The results point to the importance of providing explicit and systematic vocabulary instruction in the early grades. In addition, findings from this study can extend to other bilingual contexts where children are learning an L2 without support for their L1. However, because of the relatively small sample size, the results of this study need to be interpreted with caution and replicated by future studies in immersion programs.
Chapter 5. Study Three

Language Profiles of Poor Comprehenders in English and French

Research has long focused on the early phonological decoding difficulties of children who experience problems with word reading. Recently, studies have investigated the role of language for successful reading comprehension. These studies indicate that for some children poor reading comprehension can occur despite average decoding skills. Instead, their reading comprehension difficulties arise from underlying problems in comprehending language (Catts, Adlof, & Weismer, 2006). The identification of poor reading comprehension in the absence of poor decoding is challenging, particularly in the early elementary grades when the focus of classroom learning is on word reading. For children in immersion programs who are educated in a second language (L2), recognizing poor reading comprehension is even more problematic since these children are reading in a language they have not yet mastered orally. It becomes difficult to disentangle poor language that is indicative of an underlying problem in understanding text from typical L2 acquisition (Geva & Massey-Garrison, 2013). The present study focused on Canadian bilingual children in French immersion, who speak English as a primary language but receive school instruction in French, an additional language. The goal of this study was to determine whether children who have English reading comprehension difficulties in the absence of decoding problems also have comprehension difficulties in French.

Language and Reading Comprehension

According to the simple view of reading model, reading comprehension involves two primary processes: decoding, the ability to decipher or recognize printed words, and language comprehension, the ability to understand what is decoded in written and spoken form (Gough & Tunmer, 1986). As decoding becomes more accurate and less effortful, language comprehension
becomes a stronger predictor of reading comprehension (Catts, Hogan, & Adlof, 2005). Since poor comprehenders have adequate decoding skills, it is expected their difficulties can be found within language comprehension (Catts, Fey, Tomblin, & Zhang, 2002).

Language comprehension involves many different processes at the word-, sentence-, and text-level (Reading Systems Framework; Perfetti, Stafura, & Adlof, 2013). Readers draw on language skills to decode and retrieve word meanings, construct sentence meanings, and integrate information between different sentences and text, using prior knowledge to make inferences and build a complete representation of text (e.g., Perfetti, Landi, & Oakhill, 2005). Research has demonstrated that when considered together, several language skills predict reading comprehension, with a greater proportion of variance accounted for in poor comprehenders than good comprehenders (Cain, 2015). In this paper, we focus on components of language that are critical for retrieving word meanings (vocabulary, semantics), manipulating word and sentence structures (morphological awareness, syntactic awareness), and constructing a cohesive representation of text (inference).

Several studies demonstrate that poor comprehenders show weaknesses in vocabulary and semantics, experiencing difficulties with understanding, deriving, and learning new word meanings from context (e.g., Cain, Oakhill, & Lemmon, 2004; Ricketts, Bishop, & Nation, 2008). For example, Nation and colleagues (2010) identified poor comprehenders on the basis of reading performance at age 8 and retrospectively examined their language skills over time. While poor comprehenders’ word reading accuracy and fluency progressed across grades, their receptive and expressive vocabulary skills remained weak. In a series of studies, Nation and colleagues (1998, 1999) observed that 10-year-old poor comprehenders were slower and made more errors when making semantic judgements and produced fewer category members in the
semantic fluency task, suggesting weaknesses in processing information about word meanings and relationships.

In addition to difficulties in learning and understanding words and word relations, studies show that poor comprehenders are characterized by weaknesses in two aspects of grammatical awareness: morphological awareness or the ability to reflect on and manipulate the morphemic structures of words, and syntactic awareness, the ability to manipulate the syntactic structure of sentences (Nation & Snowling, 2000). In a retrospective study, Tong and colleagues (2011) found that poor comprehenders performed less well than average comprehenders in understanding derived words (e.g., write → writer) in grade 5 but not grade 3, suggesting that morphological awareness weaknesses may emerge over time for poor comprehenders. On the other hand, studies examining syntactic awareness in poor comprehenders have produced mixed results. Some researchers have found that the relationship between syntactic awareness and reading comprehension may not be direct, but mediated by other skills, such as vocabulary and working memory (Cain, 2007). Others demonstrate syntactic awareness weaknesses in poor comprehenders after controlling for vocabulary and working memory (Tong et al., 2014).

Besides vocabulary and grammar, higher-level language skills, such as inference, have been implicated in poor reading comprehension (Oakhill & Cain, 2012). Inference involves going beyond the literal meaning of words and includes integrating information between different sentences, text, and prior knowledge to fill in details about what is not explicitly stated. Studies show that poor comprehenders have difficulties generating inferences, with or without written text as a reference (Cain & Oakhill, 1999). Generally, poor comprehenders differ from good comprehenders in their ability to make two types of inferences: cohesive or text-connecting inferences, which are required to integrate different parts of a text (e.g., and, so, because), and
elaborative or gap-filling inferences, in which prior knowledge (from outside the text) is connected with text information to fill in missing details and extend the representation of the text (Bowyer-Crane & Snowling, 2005).

In summary, there is a persistent weakness in language that contributes to monolingual poor comprehenders’ reading difficulties and this weakness becomes more apparent as children progress through school and individual variation in language increases (e.g., Catts, Adlof, & Hogan, 2005). These findings underscore the importance of further investigating language comprehension in poor comprehenders, particularly for children in immersion programs who are simultaneously developing L2 reading and language skills.

**Reading Comprehension in L2**

The linguistic interdependence hypothesis posits that language and literacy skills developed in one language facilitate learning to read in another language (Cummins, 1979). Indeed, the same language skills necessary for successful reading comprehension among monolingual children, contribute to literacy development in bilingual children (e.g., Gottardo & Mueller, 2009; Mancilla-Martinez & Lesaux, 2010). We would expect then that poor comprehenders demonstrate similar profiles in L1 and L2. However, few studies have investigated L2 reading difficulties beyond the primary grades, and those that have, show that L2 language scores fall below grade level even after years of school (e.g., Farnia & Geva, 2011). It is not clear from this research whether children’s poor L2 language skills are reflective of typical L2 acquisition or an underlying language or reading problem that may also be evident in their dominant language.

Previous studies have examined poor reading comprehension in English L2 learners. In a study of grade 7 English L1 and L2 children, Lipka and Siegel (2012) identified poor
comprehenders based on their English reading comprehension and word reading accuracy. Regardless of their L1 background, poor comprehenders scored lower than good comprehenders on morphological and syntactic awareness measures. In a study of grade 8 English immersion adolescents in China, Li and Kirby (2014) identified poor, average, and good comprehenders by using a regression technique to predict English reading comprehension scores from word reading measures, whereas previous studies have selected comprehender groups based on arbitrary cut-off scores. Poor comprehenders performed significantly lower than average and good comprehenders on English vocabulary and semantics; they also performed lower than good comprehenders on English inference and strategy. No differences were found on Chinese L1 reading measures. In both studies, poor comprehenders were identified based on L2 reading performance without considering L1 language skills. Limiting assessment to L2 only may have underestimated children’s language abilities.

Only one known study has selected poor comprehenders based on their L1, rather than L2 reading performance, to avoid over-identification of poor comprehender status. D’Angelo, Hipfner-Boucher, and Chen (2014) selected poor, average, and good comprehenders among grade 3 English-French bilinguals in French immersion using the regression method to predict English reading comprehension. Poor comprehenders scored relatively lower on English and French vocabulary across grades 1 to 3, despite average phonological awareness and word reading skills in both languages. These results suggest that bilingual poor comprehenders demonstrate weaknesses in vocabulary, a word-level skill, consistent with those of monolingual poor comprehenders. There is a need to better understand how grammar and higher-level language skills contribute to successful reading comprehension for bilingual learners in L1 and L2.
The Present Study

Previous research has shown that poor reading comprehension may be attributed to difficulties with a wide range of skills necessary for comprehending language (for a review see Nation, 2005). In this study, we explored components of language comprehension (vocabulary, grammar, and higher-level language) for poor comprehenders in L1 and L2. We identified poor comprehenders based on English reading performance and examined their language comprehension skills in English and French.

Our first question was whether bilingual poor comprehenders demonstrated relative weaknesses on vocabulary, grammar, and higher-level language skills in both English and French. The children in our sample came from predominantly English-speaking environments and had similar limited levels of French proficiency upon school entry, making it possible to assess and compare English and French language skills among poor comprehenders who were acquiring both languages. We expected that any differences in French language between children would be the result of an underlying language difficulty that is also evident in English, their primary language. Second, we asked whether bilingual poor comprehenders in French immersion programs demonstrated a similar pattern of English language weaknesses compared to monolingual poor comprehenders in mainstream schools. These data enabled us to make comparisons across bilingual and monolingual learning contexts.

We utilized a regression technique to predict children’s reading comprehension scores from age, nonverbal reasoning, word reading accuracy and fluency in English. This method was chosen because it examines relative discrepancies between various skills that are related to reading comprehension and distinguishes poor comprehenders from both average comprehenders, who perform as expected on reading comprehension, and good comprehenders,
who perform better than expected on reading comprehension, and therefore, differ from average comprehenders (Li & Kirby, 2014; Tong et al., 2011).

**Method**

**Participants**

The participants in this study were selected from a sample of 145 (61 boys, 84 girls) 10- to 11-year-old children from three early French immersion programs \(n = 83; 51 \text{ girls, } M_{\text{age}} = 130 \text{ months}\) and two English-stream programs \(n = 62; 33 \text{ girls, } M_{\text{age}} = 130 \text{ months}\) located in a large, multicultural city in Ontario, Canada. Children in the early French immersion programs received classroom instruction in French with some English instruction and were classified as bilingual learners. The English-stream comparison group received instruction in English only and were referred to as monolingual learners. Participating children did not have any known developmental delays or learning disabilities and spoke English at home most of the time.

Information about parental education was obtained for 62% of the sample and indicated that 54% of parents had completed a college or university degree.

Student assent and signed parental consent was obtained for all participants. Teachers were consulted regarding convenient times during the school day to collect data. Trained research assistants, who were fluent in the respective test language, individually administered tasks to participants at school. The bilingual learners were administered English and French measures in two separate sessions that lasted approximately 45 minutes each. The monolingual learners were administered English measures only in one session that lasted approximately 45 minutes. The order of the sessions was counterbalanced across participants and within each session the order of task administration was randomized.

**Measures**
Nonverbal reasoning. Nonverbal reasoning was assessed in English using the Matrix Analogies Test (expanded form; Naglieri, 1985). Two of the four subtests consisting of 16 items (reasoning by analogy and spatial visualization) were used for the present study. For each item, children were asked to complete a figural matrix by choosing the missing piece from five to six possible choices. Cronbach’s alpha was .91.

Word reading accuracy. Word reading accuracy in English was assessed by the Letter-Word Identification subtest from the Test of Achievement, Woodcock Johnson-III (WJ-III; Woodcock, McGrew, & Mather, 2001). Children were asked to read a series of 76 letters and words that were presented in order of increasing difficulty. Reliability was \( \alpha = .87 \).

An experimental task was designed to assess French word reading accuracy (Au-Yeung et al., 2015). The test included a total of 120 items that were arranged in sets of eight words in increasing order of difficulty. Children were asked to read each word accurately and fluently. The task was discontinued at the end of a set when the child had made 4 or more errors. The Cronbach alpha reliability was \( \alpha = .98 \).

Word reading fluency. English word reading fluency was measured by the Sight Word Efficiency subtest of the Test of Word Reading Efficiency (TOWRE Form A; Torgesen, Wagner, & Rashotte, 1999). Children were provided with 45 seconds to identify as many words as possible from a vertical list. A French adaptation of subtest Form B was used to measure French word reading fluency. Reliabilities were \( \alpha = .86 \) in English and \( \alpha = .96 \) in French.

Reading comprehension. The Gates-MacGinitie Reading Comprehension Test, Second Edition (GMRT-II; MacGinitie & MacGinitie, 1992), Level D4 – D5/6, Form 3 was used to assess children’s English reading comprehension at the passage level. Children were asked to read short passages and answer corresponding multiple-choice questions. The test consisted of
12 passages and 48 items. A total score was the number of correct answers completed within a 35-minute time limit. Form 4 of the test was translated into French and administered in the same way as the English task. Reliabilities were $\alpha = .88$ in English and $\alpha = .95$ in French.

**Vocabulary.** The Peabody Picture Vocabulary Test- Fourth Edition (PPVT-IV Form A; Dunn & Dunn, 2007) was used to measure English vocabulary breadth. Each time a tester orally presented a target word, the child was required to point to one of four pictures that best corresponded to that word. Testing was discontinued when the child had made eight or more errors in a set. Reliability for this test was $\alpha = .98$.

The Échelle de Vocabulaire en Images Peabody (EVIP Form A; Dunn, Theriault-Whalen, & Dunn, 1993) was used to assess French vocabulary breadth. The examiner read a target word and the child was asked to identify the picture that best represented the word from a set of four pictures. The test included a total of 170 items and was discontinued after six consecutive errors were made in a set. Reliability was $\alpha = .98$.

**Semantics.** English semantics were assessed using a multiple meaning task adapted from Biemiller (2006). There were 21 target words and each word had four possible definitions. Children were asked to choose all definitions that correctly corresponded to the target word. One of the four definitions was a false definition. For example, the target word *desert* had three correct definitions, *ignore*, *run away from duty*, *leave behind*, and one false definition, *assist*. The items for this task are listed in Appendix A. A total score was calculated based on a point for every correct definition selected and a point deducted for every incorrect definition for a maximum score 63. A French version was created following the same format and scoring as the English task and consisted of two practice items and 20 test items (see Appendix E). Reliabilities were $\alpha = .98$ in English and $\alpha = .87$ in French.
**Morphological awareness.** English morphological awareness was assessed using a derivation task adapted from Carlisle (2000). The measure contained three practice items and 16 test items. Children were asked to modify the target word to complete the sentence. For half of the items, children were required to produce a derived form of a root word to complete the sentence (e.g., *mystery*: the dark glasses made the man look *mysterious*). For the remaining items, children were presented with a derived word and were asked to produce its root form to complete a sentence (e.g., *width*: the mouth of the river is very *wide*). The items included in this task are listed in Appendix B. A French experimental task was designed following the same testing format and scoring as the English task, and consisted of three practice items and 17 test items (see Appendix F). The Cronbach’s alpha reliability was $\alpha = .85$ for the English measure and $\alpha = .54$ for the French measure.

**Syntactic awareness.** Children were presented with 18 grammatically incorrect sentences, orally and in print, and were asked to modify the sentences to make them correct. For example, the experimenter would say an incorrect sentence “*The boy found the book what you lost.*” A correct response would be “*The boy found the book that you lost.*” A French adaptation was created following the same format and scoring as the English task. The items included in these tests are listed in Appendices C and G, in English and French, respectively. The reliability of this test was $\alpha = .66$ in English and $\alpha = .97$ in French. Item analysis indicated that one item could be deleted to increase the English test reliability to .67. However, there was no difference in results, so this item was retained.

**Inference.** Adapted from Cromley and Azevedo (2007), this task used five passages chosen from the Gates-MacGinitie Reading Tests, First Edition (Level D; GMRT, 1980) to measure children’s ability to draw inferences. We developed four multiple-choice questions per
passage that tapped inferential information (text-connecting and gap-filling), and literal information at the sentence level of the text, not at the passage level as tapped by the Gates-MacGinitie questions. A French version was created using five passages from the Compréhension de lecture subtest of the WIAT-II (Wechsler, 2007). Each passage was associated with four-multiple choice questions and assessed the same skills as the English task. The English and French inference tasks can be found in Appendices D and H, respectively. The Cronbach’s alpha reliabilities were $\alpha = .91$ in English and $\alpha = .97$ in French.

**Results**

Prior to the regression analysis, formal inference tests used to calculate the values of skewness and kurtosis demonstrated departures from normality for measures with $z$-score values (i.e., statistic/standard error $> < \pm 2.00$) outside the acceptable range (Tabachnick & Fidell, 2007). Reflected square root transformations were used to correct negative skews on English morphological awareness and semantics, and French semantics. Scores were then re-reflected so that higher scores represent better performance. Subsequent analyses revealed that the transformed values did not change the pattern of correlations among variables. Accordingly, statistical analyses were carried out using raw scores.

Correlations among performance on English and French measures for the entire sample ($n = 145$) are reported in Table 5. Both groups of learners, emerging bilingual (lower diagonal) and monolingual (upper diagonal) showed a similar pattern of relations among English measures. English reading comprehension was significantly and moderately to strongly correlated with English vocabulary ($r = .60$), morphological awareness ($r = .55$), syntactic awareness ($r = .52$), and inference ($r = .70$) for the monolingual group. In the bilingual group, English vocabulary ($r = .56$), morphological awareness ($r = .62$), and inference ($r = .70$) had significant moderate to
strong correlations with English reading comprehension. There were also significant correlations between languages for the bilingual learners. English reading comprehension was significantly and moderately correlated with French vocabulary \( (r = .56) \), morphological awareness \( (r = .54) \), and inference \( (r = .62) \).

Three groups of comprehenders (poor, average, and good) were selected from each language group using a regression technique to predict children’s English reading comprehension scores from age, nonverbal reasoning, English word reading accuracy and fluency (e.g., Tong et al., 2014). The predictors explained a total of 34% of the variance for bilingual learners and 48% of the variance for monolingual learners in English reading comprehension. The observed English reading comprehension scores were then plotted against the standardized predicted scores from the regression analysis for the bilingual and monolingual learners. Children below the lower 65% confidence interval of the regression line were identified as poor comprehenders and those above the 65% confidence interval were identified as good comprehenders. Those children who scored within the 15% confidence interval were identified as average comprehenders (Figure 7). Children with very good or poor word reading skills (1 SD above or below the mean) were not selected for analyses.

This procedure identified 14 poor comprehenders (6 girls), 14 average comprehenders (10 girls), and 14 good comprehenders (8 girls) from the bilingual group. In the monolingual group, there were 11 poor comprehenders (5 girls), 11 average comprehenders (5 girls), and 11 good comprehenders (5 girls). Table 6 summarizes the performance of the bilingual and monolingual groups of comprehenders on the English selection measures. Standard scores demonstrate poor comprehenders’ performance relative to average and good comprehenders and allow for direct comparison across different tests. In each language group, there were no
significant differences between the poor, average, and good comprehenders on age, nonverbal reasoning, English word reading accuracy and fluency. However, the three groups differed on English reading comprehension with poor comprehenders performing worse than average comprehenders, who performed worse than good comprehenders ($p < .001$).

Figure 7. Regression predicting English reading comprehension from age, nonverbal reasoning, word reading accuracy, and word reading fluency for bilingual poor comprehenders (BPC), bilingual average comprehenders (BAC), bilingual good comprehenders (BGC), and children not selected for analyses (NSC).
Table 5  
*Correlations among English and French Measures for Bilingual (Lower Diagonal) and Monolingual (Upper Diagonal) Learners*

<table>
<thead>
<tr>
<th>Measures</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. English word reading accuracy</td>
<td>--</td>
<td>.61**</td>
<td>.56**</td>
<td>.41**</td>
<td>.26*</td>
<td>.56**</td>
<td>.50**</td>
<td>.45**</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2. English word fluency</td>
<td>.67**</td>
<td>--</td>
<td>.51**</td>
<td>.44**</td>
<td>.52**</td>
<td>.52**</td>
<td>.28*</td>
<td>.45**</td>
<td>--</td>
<td>--</td>
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</tr>
<tr>
<td>3. English reading comprehension</td>
<td>.51**</td>
<td>.50**</td>
<td>--</td>
<td>.60**</td>
<td>.30*</td>
<td>.55**</td>
<td>.52**</td>
<td>.70**</td>
<td>--</td>
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</tr>
<tr>
<td>4. English vocabulary</td>
<td>.57**</td>
<td>.61**</td>
<td>.56**</td>
<td>--</td>
<td>.36**</td>
<td>.64**</td>
<td>.53**</td>
<td>.69**</td>
<td>--</td>
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</tr>
<tr>
<td>5. English semantics</td>
<td>.19</td>
<td>.22</td>
<td>.35**</td>
<td>.30**</td>
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<td>.50**</td>
<td>.25</td>
<td>.35**</td>
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</tr>
<tr>
<td>6. English morphological awareness</td>
<td>.58**</td>
<td>.62**</td>
<td>.62**</td>
<td>.54**</td>
<td>.17</td>
<td>--</td>
<td>.51**</td>
<td>.57**</td>
<td>--</td>
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<tr>
<td>7. English syntactic awareness</td>
<td>.44**</td>
<td>.45**</td>
<td>.38**</td>
<td>.36**</td>
<td>.12</td>
<td>.39**</td>
<td>--</td>
<td>.41**</td>
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</tr>
<tr>
<td>8. English inference</td>
<td>.42**</td>
<td>.44**</td>
<td>.70**</td>
<td>.47**</td>
<td>.27*</td>
<td>.50**</td>
<td>.37**</td>
<td>--</td>
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<td>--</td>
</tr>
<tr>
<td>9. French vocabulary</td>
<td>.35**</td>
<td>.39**</td>
<td>.56**</td>
<td>.52**</td>
<td>.18</td>
<td>.52**</td>
<td>.37**</td>
<td>.38**</td>
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</tr>
<tr>
<td>10. French morphological awareness</td>
<td>.51**</td>
<td>.50**</td>
<td>.54**</td>
<td>.41**</td>
<td>.07</td>
<td>.61**</td>
<td>.34**</td>
<td>.42**</td>
<td>.52**</td>
<td>--</td>
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<td>--</td>
</tr>
<tr>
<td>11. French syntactic awareness</td>
<td>.40**</td>
<td>.38**</td>
<td>.29**</td>
<td>.25*</td>
<td>.11</td>
<td>.30**</td>
<td>.34**</td>
<td>.20</td>
<td>.30**</td>
<td>.53**</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>12. French inference</td>
<td>.44**</td>
<td>.41**</td>
<td>.62**</td>
<td>.51**</td>
<td>.30**</td>
<td>.56**</td>
<td>.29**</td>
<td>.48**</td>
<td>.41**</td>
<td>.54**</td>
<td>.28*</td>
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</tr>
</tbody>
</table>

*p < .05; **p < .01
Table 6  
Mean Standard Scores (Standard Deviations) of Bilingual Poor, Average, and Good Comprehenders and Monolingual Poor, Average, and Good Comprehenders on English Group Selection Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Bilingual Comprehenders</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor ( (n = 14) )</td>
<td>Average ( (n = 14) )</td>
<td>Good ( (n = 14) )</td>
<td>Poor ( (n = 11) )</td>
<td>Average ( (n = 11) )</td>
<td>Good ( (n = 11) )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (months)</td>
<td>131.86 (4.98)</td>
<td>129.57 (6.25)</td>
<td>132.00 (8.51)</td>
<td>0.57 (131.36 (8.57))</td>
<td>129.91 (7.42)</td>
<td>132.45 (8.75)</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td>Nonverbal reasoning</td>
<td>19.29 (6.23)</td>
<td>22.79 (5.01)</td>
<td>19.93 (7.11)</td>
<td>1.27 (20.18 (6.90))</td>
<td>18.36 (4.06)</td>
<td>21.09 (3.27)</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>Word reading accuracy SS</td>
<td>110.93 (9.92)</td>
<td>112.71 (7.66)</td>
<td>117.21 (9.25)</td>
<td>1.42 (107.73 (10.02))</td>
<td>114.45 (8.48)</td>
<td>110.73 (9.61)</td>
<td>1.42</td>
<td></td>
</tr>
<tr>
<td>Word reading fluency SS</td>
<td>102.57 (11.76)</td>
<td>104.36 (12.95)</td>
<td>108.14 (9.25)</td>
<td>0.82 (100.64 (10.48))</td>
<td>107.82 (11.40)</td>
<td>104.91 (13.38)</td>
<td>1.36</td>
<td></td>
</tr>
<tr>
<td>Reading comprehension SS</td>
<td>94.36 (7.12)</td>
<td>110.71 (5.11)</td>
<td>127.07 (5.74)</td>
<td>101.52*** (95.36 (5.61))</td>
<td>107.82 (5.53)</td>
<td>121.36 (9.29)</td>
<td>37.63***</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Standard scores are relative to age-matched sample \( M = 100, SD = 15 \); SS = Standard score
*** \( p < .001 \)
We conducted three separate multivariate analyses of variance (MANOVAs), in each language group, to determine whether poor comprehenders differed from average and good comprehenders on English measures of vocabulary (vocabulary, semantics), grammar (morphological awareness, syntactic awareness), and higher-level language (inference). In each analysis, group (poor vs. average and good) was entered as the between-subjects factor. Results are summarized in Table 7, for the bilingual learners, and Table 8 for the monolingual learners.

For the MANOVA conducted with English vocabulary and semantics, there was a significant group effect for bilingual, Wilks’ $\lambda = 0.72$, $F(4, 74) = 3.36$, $p = .01$, $\eta_p^2 = .15$, and monolingual learners, Wilks’ $\lambda = 0.64$, $F(4, 58) = 3.61$, $p = .01$, $\eta_p^2 = .20$. Univariate tests indicated that there was a significant effect of group on English vocabulary for bilingual, $F(2, 39) = 6.35$, $p = .004$, $\eta_p^2 = .25$, and monolingual learners, $F(2, 30) = 7.32$, $p = .003$, $\eta_p^2 = .33$. Follow-up comparisons, using Tukey’s post hoc showed that bilingual poor comprehenders performed less well than bilingual good comprehenders on English vocabulary ($p = .005$). Similarly, monolingual poor comprehenders scored lower than monolingual average ($p = .24$) and good comprehenders ($p = .001$) on English vocabulary.

The second MANOVA performed with morphological awareness and syntactic awareness revealed a significant group effect for bilingual, Wilks’ $\lambda = 0.74$, $F(4, 74) = 2.88$, $p = .03$, $\eta_p^2 = .14$, and monolingual learners, Wilks’ $\lambda = 0.63$, $F(4, 58) = 2.65$, $p = .04$, $\eta_p^2 = .15$. Pairwise comparisons indicated that lower scores on English morphological awareness, $F(2, 39) = 5.89$, $p = .006$, $\eta_p^2 = .24$, distinguished bilingual poor comprehenders from bilingual good comprehenders ($p = .007$). Lower scores on both English morphological awareness, $F(2, 30) = 3.38$, $p = .04$, $\eta_p^2 = .18$, and English syntactic awareness, $F(2, 30) = 3.37$, $p = .04$, $\eta_p^2 = .18$,
distinguished monolingual poor comprehenders from monolingual good comprehenders ($p = .02$, $p = .04$).

A one-way ANOVA was performed to compare the groups on English inference. Results revealed a significant group difference for both bilingual, $F (2, 39) = 15.76$, $p < .001$, and monolingual learners, $F (2, 30) = 8.79$, $p = .001$, with poor comprehenders performing less well than bilingual average and good comprehenders on inferential items.

To examine whether group differences existed among bilingual learners in French, similar analyses were conducted (Table 9). For the first MANOVA with French vocabulary and semantics, there was a significant group effect, Wilks’ $\lambda = 0.50$, $F (4, 62) = 6.35$, $p < .001$, $\eta_p^2 = .29$. Univariate analysis revealed that group had a significant effect on French vocabulary, $F (2, 39) = 6.99$, $p < .003$, $\eta_p^2 = .30$, and French semantics, $F (2, 39) = 9.66$, $p = .001$, $\eta_p^2 = .38$. Follow-up comparisons showed that bilingual poor comprehenders scored lower on French vocabulary than bilingual good comprehenders ($p = .002$). Additionally, poor comprehenders performed less well than bilingual average ($p = .01$) and good comprehenders ($p = .001$) on French semantics.

For French morphological awareness and syntactic awareness, there was a significant group effect, Wilks’ $\lambda = 0.65$, $F (4, 62) = 3.95$, $p = .006$, $\eta_p^2 = .19$. Bilingual poor comprehenders scored lower on French morphological awareness, $F (2, 39) = 8.51$, $p = .001$, $\eta_p^2 = .33$, than bilingual good comprehenders ($p < .001$). There were no group differences on French syntactic awareness, $F (2, 39) = .54$, $p = .59$, $\eta_p^2 = .13$.

The groups also differed on French inference, $F (2, 39) = 10.12$, $p < .001$, with bilingual poor comprehenders performing worse than bilingual good and average comprehenders on both inferential and literal items.
We performed a MANOVA to compare bilingual comprehenders on French reading measures, Wilks’ $\lambda = 0.57$, $F(6, 66) = 3.56$, $p = .004$, $\eta_p^2 = .25$ (Table 3). No group differences were found on French word reading accuracy and fluency. However, bilingual poor comprehenders performed significantly lower than bilingual good comprehenders on French reading comprehension, $F(2, 39) = 12.73$, $p < .001$, $\eta_p^2 = .42$. 
Table 7
Means (Standard Deviations) and Comparisons for Bilingual Poor, Average, and Good Comprehenders on English Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Poor (n = 14)</th>
<th>Average (n = 14)</th>
<th>Good (n = 14)</th>
<th>F (2, 39)</th>
<th>Pairwise comparisons(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>English vocabulary</td>
<td>172.14 (10.20)</td>
<td>174.62 (10.53)</td>
<td>187.64 (15.41)</td>
<td>6.35**</td>
<td>BPC = BAC &lt; BGC</td>
</tr>
<tr>
<td>English semantics</td>
<td>33.71 (11.94)</td>
<td>39.85 (11.71)</td>
<td>41.36 (10.64)</td>
<td>1.74</td>
<td>ns</td>
</tr>
<tr>
<td>English morphological awareness</td>
<td>10.50 (2.98)</td>
<td>12.15 (1.62)</td>
<td>13.14 (1.03)</td>
<td>5.89**</td>
<td>BPC = BAC &lt; BGC</td>
</tr>
<tr>
<td>English syntactic awareness</td>
<td>12.50 (3.25)</td>
<td>13.85 (1.62)</td>
<td>13.71 (1.82)</td>
<td>1.36</td>
<td>ns</td>
</tr>
<tr>
<td>English inference</td>
<td>10.29 (3.10)</td>
<td>13.07 (2.99)</td>
<td>15.43 (1.79)</td>
<td>15.76***</td>
<td>BPC &lt; BAC = BGC</td>
</tr>
</tbody>
</table>

Note. BPC = Bilingual poor comprehenders; BAC = Bilingual average comprehenders; BGC = Bilingual good comprehenders

\(^b\) Equal sign indicates nonsignificant difference, and less-than symbol indicates \(p < .05\) or less.

\(*p < .01, **p < .001\)
Table 8
Mean (Standard Deviations) and Comparisons for Monolingual Poor, Average, and Good Comprehenders on English Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Poor (n = 11)</th>
<th>Average (n = 11)</th>
<th>Good (n = 11)</th>
<th>F (2, 30)</th>
<th>Pairwise comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>English vocabulary</td>
<td>166.55 (14.30)</td>
<td>179.36 (12.11)</td>
<td>187.00 (11.42)</td>
<td>7.32**</td>
<td>MPC &lt; MAC = MGC</td>
</tr>
<tr>
<td>English semantics</td>
<td>40.00 (10.80)</td>
<td>38.91 (6.74)</td>
<td>41.27 (10.72)</td>
<td>0.17</td>
<td>ns</td>
</tr>
<tr>
<td>English morphological awareness</td>
<td>10.73 (1.01)</td>
<td>11.73 (2.05)</td>
<td>12.64 (1.91)</td>
<td>3.38*</td>
<td>MPC = MAC &lt; MGC</td>
</tr>
<tr>
<td>English syntactic awareness</td>
<td>11.45 (3.62)</td>
<td>12.90 (2.69)</td>
<td>14.64 (2.29)</td>
<td>3.37*</td>
<td>MPC = MAC &lt; MGC</td>
</tr>
<tr>
<td>English inference</td>
<td>10.45 (2.38)</td>
<td>12.64 (3.08)</td>
<td>14.73 (1.42)</td>
<td>8.79***</td>
<td>MPC &lt; MAC = MGC</td>
</tr>
</tbody>
</table>

Note. MPC = Monolingual poor comprehenders; MAC = Monolingual average comprehenders; MGC = Monolingual good comprehenders

b Equal sign indicates nonsignificant difference, and less-than symbol indicates $p < .05$ or less.

**$p < .01$, ***$p < .001$
### Table 9
Means (Standard Deviations) and Comparisons of Bilingual Poor, Average, and Good Comprehenders on French Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Poor (n = 14)</th>
<th>Average (n = 14)</th>
<th>Good (n = 14)</th>
<th>F (2, 39)</th>
<th>Pairwise comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>French word reading accuracy</td>
<td>47.67 (19.38)</td>
<td>54.92 (35.30)</td>
<td>63.54 (23.36)</td>
<td>2.48</td>
<td>ns</td>
</tr>
<tr>
<td>French word reading fluency</td>
<td>65.08 (8.70)</td>
<td>69.77 (12.81)</td>
<td>74.54 (10.21)</td>
<td>2.41</td>
<td>ns</td>
</tr>
<tr>
<td>French reading comprehension</td>
<td>20.58 (5.89)</td>
<td>26.38 (7.47)</td>
<td>34.62 (7.44)</td>
<td>12.73***</td>
<td>BPC = BAC &lt; BGC</td>
</tr>
<tr>
<td>French vocabulary</td>
<td>96.36 (14.79)</td>
<td>110.55 (17.08)</td>
<td>121.00 (16.28)</td>
<td>6.99**</td>
<td>BPC = BAC &lt; BGC</td>
</tr>
<tr>
<td>French semantics</td>
<td>22.82 (8.77)</td>
<td>33.09 (5.58)</td>
<td>34.23 (5.88)</td>
<td>9.66***</td>
<td>BPC &lt; BAC = BGC</td>
</tr>
<tr>
<td>French morphological awareness</td>
<td>7.36 (2.06)</td>
<td>8.64 (2.87)</td>
<td>11.31 (2.63)</td>
<td>8.51***</td>
<td>BPC = BAC &lt; BGC</td>
</tr>
<tr>
<td>French syntactic awareness</td>
<td>6.18 (2.48)</td>
<td>6.18 (3.31)</td>
<td>7.38 (2.57)</td>
<td>0.53</td>
<td>ns</td>
</tr>
<tr>
<td>French inference</td>
<td>9.18 (3.43)</td>
<td>11.82 (2.56)</td>
<td>13.77 (2.13)</td>
<td>10.12***</td>
<td>BPC &lt; BAC = BGC</td>
</tr>
</tbody>
</table>

*Note. BPC = Bilingual poor comprehenders; BAC = Bilingual average comprehenders; BGC = Bilingual good comprehenders

*Equal sign indicates nonsignificant difference, and less-than symbol indicates \( p < .05 \) or less.

**\( p < .01 \), ***\( p < .001 \)
Discussion

This study investigated characteristics of reading comprehension difficulties for poor comprehenders who are acquiring English, their primary language, and French, an additional language, at school. We compared poor comprehenders’ performance with that of average and good comprehenders on components of language comprehension: word meanings (vocabulary, semantics), grammar (morphological awareness, syntactic awareness), and higher-level language (inference) in English and French. We discuss these findings in relation to our monolingual comparison group.

Our results are consistent with monolingual research that has shown that weaknesses in understanding word meanings and relations are characteristic of children with poor reading comprehension (e.g., Catts et al. 2006). We found that lower English and French vocabulary scores distinguished bilingual poor comprehenders from good comprehenders, and bilingual average comprehenders from good comprehenders; while, lower English vocabulary scores distinguished monolingual poor comprehenders from both average and good comprehenders. A possible explanation for the difference between language groups is that the bilingual average comprehenders in this study may have not yet acquired the language needed to move beyond the proficiency of poor comprehenders, in English and French. We expect that with richer language experiences, the differences between bilingual poor and average comprehenders would emerge (Cain & Oakhill, 2011).

Interestingly, neither bilingual nor monolingual poor comprehenders demonstrated weaknesses in English semantics, whereas lower French semantic scores distinguished bilingual poor comprehenders from average and good comprehenders. It is worth noting that learning French L2 skills is a challenging task for immersion children because of limited exposure,
especially to contextualized language. Therefore, it was expected that poor comprehenders would experience French semantic weaknesses. With regard to English semantics, previous studies have demonstrated that monolingual poor comprehenders can correctly make links between words and word relationships, but experience difficulties developing and sustaining semantic representations (Ricketts, Bishop, & Nation, 2008). Such findings suggest that it may not be the processing of new words and meanings that relate to poor comprehenders’ difficulties, but rather, the inability to acquire these representations. Future studies should include methods of dynamic assessment to monitor and predict learning potential, rather than level of ability.

With regard to grammar, our results show that morphological awareness weaknesses distinguished poor comprehenders from good but not average comprehenders, in both language groups. We also found that lower French morphological awareness distinguished bilingual poor comprehenders from good comprehenders. As with vocabulary, differences between poor and average comprehenders morphological awareness emerge during the course of development (Tong et al., 2011). Thus, these findings support the notion that morphological awareness facilitates reading comprehension when a certain level of language proficiency has been attained.

The findings for syntactic awareness demonstrated that monolingual poor comprehenders scored lower than monolingual good comprehenders on English syntactic awareness; however, there were no significant differences for the bilingual group on English or French syntactic awareness. This is somewhat expected considering the inconsistent findings of both monolingual and bilingual studies. It is likely that factors such as vocabulary, morphological awareness, and working memory, mediate the relationship between syntactic awareness and reading comprehension (e.g., Cain, 2007; Pasquarella, 2014). Thus, future research controlling for these influences is needed.
We examined higher-level language using an inference task that tapped both inferential and literal information. In doing so, we were able distinguish between difficulties specific to making inferences, and those resulting from problems with comprehension. In both language groups, weak inference ability in English distinguished poor comprehenders from average and good comprehenders. These differences were significant for inferential, but not literal items, suggesting that poor comprehenders had specific difficulties with inferences in English. Moreover, French inference distinguished bilingual poor comprehenders from good but not average comprehenders, with bilingual poor comprehenders scoring lower on both inferential and literal items. Although our findings demonstrate the importance of children’s inference skills to L2 reading comprehension, further research is needed to establish the causal direction of this relationship. It may be that difficulties with vocabulary lead to poor reading comprehension, which in turn weakens higher-level language skills, such as inference (Perfetti, 1985).

The similarity in findings between language groups suggests that bilingual learners, who speak English at home and are schooled in French, do not differ from monolingual learners in skills related to language comprehension. Thus, intervention strategies should be targeted at poor comprehenders’ underlying language difficulties regardless of language of instruction. In addition, assessment should include multiple rather than single measures given the dimensionality of language skills needed to support reading comprehension.

It is important to acknowledge several limitations of the current study. First, we used a single measure of reading comprehension: the Gates-MacGinitie Reading Comprehension Test (GMRT-II; MacGinitie & MacGinitie, 1992). Using this standardized test makes our sample of poor comprehenders comparable to those in the existing monolingual literature (e.g., Tong et al., 2014). However, the results reported here need to be replicated with more varied reading
comprehension measures to disentangle whether poor comprehenders perform poorly on reading comprehension because they do not comprehend the passage or because they are unable to read the question. Second, the inference task used in the current study was an offline measure. There is a clear distinction between offline and online inferences. Online measures (e.g., think-aloud protocols) test whether participants draw inferences while reading, whereas offline measures (e.g., recall tasks) assess whether participants can draw inferences after reading (Graesser, Singer, & Trabasso, 1994). Future research should include both online and offline measures of inference to investigate whether poor comprehenders would perform differently with online inferences in English and French. Third, some experimental measures in the current study had low reliabilities (i.e., English syntactic awareness and French morphological awareness). Thus, these results should be treated with caution.

To summarize, our findings indicate that bilingual poor comprehenders in French immersion programs who have age-appropriate decoding skills and receive French L2 classroom instruction, exhibit comprehension difficulties that may be indicative of an underlying language problem. It seems likely that children identified as poor comprehenders in English also experience reading comprehension difficulties, as a result of language comprehension difficulties, in French. Instructional strategies and interventions are needed to support these children’s language weaknesses that may be related to an underlying impairment. Further research, particularly longitudinal and intervention studies, is needed to substantiate these results.
Chapter 6. General Conclusions

Reading comprehension involves the ability to retrieve words and understand their meaning and requires the reader to connect words to language to make meaning. For emerging bilingual children who are being educated in a second or additional language, the process of comprehending language may be particularly challenging because their L2 reading and language skills develop simultaneously. The results presented in the current thesis contribute to the existing literature by demonstrating that children in early French immersion who have poor reading comprehension despite adequate decoding skills experience relative language weaknesses that are evident in the early elementary school years and these weaknesses manifest in a similar manner in their L1 and L2.

To recapitulate, the first study examined the overlap and stability of poor reading comprehension in English and French. The primary aim of this study was to determine whether children identified as poor comprehenders in English are also poor comprehenders in French. Several important findings emerged. First, consistent with the monolingual literature (e.g., Catts et al., 2006; Nation et al., 2010), this study demonstrated that poor comprehenders in French immersion, who are learning in an L2, experience weaknesses in vocabulary that are evident before reading develops and are moderately stable over time. Second, the results of this study suggest that while there is some degree of overlap in poor reading comprehension across languages, it is possible to be a poor comprehender in only one of two languages.

The second study corroborates these findings by illustrating the persistence and pervasiveness of poor comprehenders’ vocabulary weaknesses in English and French, despite adequate word reading accuracy and fluency. The finding of an overlap in English and French reading skill profiles among children with equivalent amounts of French exposure suggests that
the below average reading comprehension outcomes of poor comprehenders may be the result of a pervasive oral language difficulty rather than a less developed L2. The results of this study point to the importance of providing explicit and systematic vocabulary instruction in the early elementary grades.

Finally, the third study explored the similarities and differences in components of English and French language comprehension among English-French bilingual children in French immersion and English monolingual children in mainstream programs. Groups of comprehenders differed in English vocabulary, morphological awareness, and inference in both bilingual and monolingual groups, with poor comprehenders performing significantly lower than good comprehenders on these tasks. Similar results were found in French for the bilingual group. French vocabulary and morphological awareness distinguished between poor and good comprehenders, and French semantics and inference distinguished between poor and good comprehenders and poor and average comprehenders. The results of this study suggest that children identified as poor comprehenders in L1, also experience reading comprehension difficulties as a result of language comprehension difficulties, in their L2.

Taken together, the evidence reviewed here demonstrates that poor comprehenders experience similar and persistent difficulties with components of language in both English and French, that are present before reading develops, and therefore, likely indicators of their later reading-comprehension difficulties in both languages. These results also show while there is a moderate degree of overlap in English and French reading comprehension difficulties, not all poor comprehenders of English are poor comprehenders of French, suggesting that somewhat different skills may be involved in acquiring oral language proficiency in English and French.
Implications for Practice

Overall, the results of the three studies examine the learning needs of poor comprehenders in immersion education and have important implications for the assessment and remediation of reading comprehension difficulties in emerging bilingual learners. First, this research demonstrated that poor comprehenders exhibit pervasive oral language difficulties from the onset of reading that manifest similarly in English, their primary language, and French, the language of instruction. Since many children begin French immersion with limited levels of French language proficiency, it is beneficial to gather information on children’s language abilities with parallel measures in L1 and L2. Although English and French are typologically related languages, considerable differences exist in vocabulary, morphology and syntax. Therefore, it is possible that somewhat different skills are involved in acquiring oral language proficiency in the two languages. Limiting assessment to French L2 only may underestimate children’s language ability or misattribute language difficulties to a lack of French proficiency (Geva & Herbert, 2012). In addition, assessment should include multiple rather than single measures given the dimensionality of language skills needed to support reading comprehension.

The current research also suggests that intervention strategies should be targeted at poor comprehenders’ underlying language difficulties regardless of language of instruction. While there have been relatively few intervention studies with poor comprehenders, existing studies have shown that intervention practices that promote oral language skills and text comprehension strategies are effective supports for monolingual children with poor reading comprehension (Snowling & Hulme, 2012).

Evidently, there is a need for future intervention research that fosters the development of children’s oral language skills in immersion programs. These studies should examine children’s
oral language learning potential, rather than level of ability, in order to accurately identify immersion children who are at-risk for poor reading comprehension in the early grades. By targeting learning capacity, researchers can determine how poor comprehenders’ difficulties emerge, offering insight into early identification and remediation for this group of struggling readers who are often overlooked in school because of their adequate decoding skills.
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Appendices
Appendix A

English Multiple Meaning Task

1. Angle
   A. point of view
   B. a border
   C. to move or turn something
   D. a sharp corner

2. Article
   A. a piece of writing
   B. a particular object
   C. ‘a’, ‘an’, or ‘the’ in a sentence
   D. a part of a poem or song

3. Back
   A. to go on the other way
   B. to transport by boat
   C. around behind
   D. in the past

4. Backward
   A. in advance
   B. toward the rear
   C. in reverse order
   D. towards a worse situation

5. Break
   A. to make an escape
   B. to stop or bring to an end
   C. to hesitate
   D. to interrupt

6. Cell
   A. part of a battery
   B. a unit of living matter
   C. salt
   D. a small room in jail

7. Center
   A. a place where people gather
   B. a building
   C. to put in the middle
   D. point of origin

8. Character
   A. amusing person
   B. moral strength
   C. a person in a story
   D. animated

9. Chief
   A. a person in charge
   B. insignificant
   C. most important
   D. boss

10. Choice
    A. indulge
    B. carefully selected
    C. high quality
    D. big selection to pick from

11. Class
    A. group of like plants or animals
    B. a room
    C. group within school
    D. kind or sort

12. Close
    A. block or stop
    B. end
    C. beyond
    D. shut down

13. Concern
    A. deep interest
    B. have to do with
    C. refuse to notice
    D. cause to worry

14. Cross
    A. draw a line through
    B. continue to be in place
    C. go from one side to another
    D. pass from different directions

15. Deep
    A. great in degree
    B. hard to understand
    C. low in pitch
    D. superficial

16. Demand
    A. desire to get
    B. ask
    C. need
    D. require firmly

17. Desert
    A. ignore
    B. run away from duty
    C. assist
    D. leave behind

18. Direct
    A. speak
    B. guide
    C. straight
    D. control
19. Draft
   A. plan
   B. lead
   C. current of air
   D. recruit

20. Drive
   A. road
   B. money-making campaign
   C. pull
   D. an auto trip

21. Ease
   A. make more comfortable
   B. wrap
   C. loosen
   D. comfort
Appendix B

English Morphological Awareness Task

Practice items:

A. Beauty  This drawing is _______________. (beautiful)
B. Runner  She loves to _________________. (run)
C. Curl  His hair is very _________________. (curly)

Test items:

1. Compare  The prices of these two balls are quite ___________. (comparable)
2. Five  The horse came in ___________. (fifth)
3. Calculator  The answer to this math question is easy to ___________. (calculate)
4. Music  The lady with the piano is a_________. (musician)
5. Mystery  The dark glasses made the man look ___________.(mysterious)
6. Profitable  In summer selling ice cream makes a ___________. (profit)
7. Boldly  These people are so ___________.(bold)
8. Glory  The view from the hilltop was ___________.(glorious)
9. Strong  He wanted to show off his ___________. (strength)
10. Continue  She loved to talk, she talked ___________. (continuously)
11. Density  The smoke in the room was very ___________. (dense)
12. Width  The mouth of the river is very ___________.(wide)
13. Real  The deadline set by the teacher was___________. (realistic)
14. Original  The painter was known for his ___________. (originality)
15. Permit  Father refused to give ___________. (permission)
16. Decompose  I am interested in the study of chemical ___________. (decomposition)
Appendix C

English Syntactic Awareness Task

Practice items:
1. The girl opened door. (*The girl opened the door*).
2. What he is doing? (*What is he doing?*)
3. She brushed them teeth. (*She brushed her teeth.*)

Test items:
1. The boy found the book what you lost. (*The boy found the book that you lost.*)
2. Peter goes sometimes to church. (*Peter sometimes goes to church. / Peter goes to church sometimes.*)
3. I wonder how old is he. (*I wonder how old he is.*)
4. The girl lost her money who lives across the road. (*The girl who lives across the road lost her money. / The girl who lost her money lives across the road.*)
5. The teacher read to the children the story. (*The teacher read the story to the children.*)
6. She will be angry if you will break it. (*She will be angry if you break it.*)
7. He wants a white new bike. (*He wants a new white bike.*)
8. Found in the ocean are whales. (*Whales are found in the ocean.*)
9. She swims not. (*She doesn’t swim.*)
10. Since he was angry therefore I said nothing. (*Since he was angry I said nothing. / He was angry; therefore, I said nothing.*)
11. Herself likes to dress Celina. (*Celina likes to dress herself.*)
12. Thank you for the best dinner which I have ever eaten. (*Thank you for the best dinner that I have ever eaten.*)
13. The boy gave the ball who was crying to the baby. (*The boy gave the ball to the baby who was crying.*)

14. From the library were stolen the books. (*The books were stolen from the library.*)

15. The broken pipe was first appeared last month. (*The broken pipe first appeared last month.*)

16. This story is too interesting. (*This story is very interesting.*)

17. She is superior than you in strength. (*She is superior to you in strength.*)

18. One of the most common causes of skin cancer is excess exposure to a sun. (*One of the most common causes of skin cancer is excess exposure to the sun.*)
Appendix D

English Inference Task

When Linda was about seven years old, her playing times became shorter and she took over some of the work of the household. In planting and harvest time, she worked in the fields near her African village. When she was fourteen, she would be expected to know all about separating the cotton from the seed and rolling it out into thread.

1. Why did Linda take over some housework when she was about seven?
   A. She didn’t like to play
   B. Her house wasn’t nice
   C. Her family needed help with the work
   D. She didn’t like to go to school

2. What did Linda’s family grow?
   A. cotton
   B. thread
   C. harvesting
   D. seed

3. What is the best title for this passage?
   A. What a girl needs to do when she is 7
   B. What African children do
   C. The unhappy life of African children
   D. What a girl needs to do when she is 14

4. Which of the following is most likely to happen next?
   A. Linda would go to university.
   B. Linda would learn to make cloth from thread.
   C. Linda would spend more time playing.
   D. Linda would buy cotton.

   One bright, sunny morning, Allison was playing in front of her house when she saw a truck loaded with furniture drive slowly down the street.
   “Please stop next door,” Allison said. She crossed her fingers. There was a loud crashing “bang,” and the truck stopped. Allison crawled under the hedge – her favourite hideout. Time seemed to go slowly while she played with her paints and watched the moving men unload the truck. At last Allison saw a bicycle. There must be someone for me to play with, she thought.

5. What was Allison hoping for?
   A. a new friend
   B. a bicycle
   C. a paint set
   D. new furniture
6. How old is Allison?
   A. under 2 years old
   B. 5 to 10 years old
   C. 15 to 20 years old
   D. 20 to 30 years old

7. Why was Allison excited when she saw a bicycle?
   A. She thought that it was a present for her.
   B. She thought that she could ride the bicycle to school.
   C. She liked the color of the bicycle.
   D. She could play with the person who owned the bicycle.

8. Which of the following would be most useful to know to understand the passage?
   A. Allison was sick at home and couldn’t go to school to play with other children.
   B. Allison’s parents were busy.
   C. Allison was alone and had nobody to play with.
   D. Allison was anxious to find a bicycle.

Vitamin D, needed for good teeth and bones, is called the sunshine vitamin. It forms when sunlight hits certain oils on your skin. It will not form if the oils have been washed off or if the light first passes through a window. Most of us cannot depend on the sun for all the vitamin D we need. We must get it from other sources, such as animal liver, where it is stored naturally, or milk to which a form of the vitamin has been added.

9. What do the oils mentioned in the passage come from?
   A. animal liver
   B. sunshine
   C. natural product of your body
   D. Vitamin D

10. To get more of this vitamin D a person might
    A. stay out of the summer sun
    B. eat fresh fruits and vegetables
    C. keep the windows closed
    D. not bathe just before going outside

11. Vitamin D is stored in
    A. teeth
    B. animal liver
    C. sunshine
    D. window glass

12. What is the main idea of this passage?
    A. Sources of Vitamin D
    B. Vitamin D is formed from the sunlight when it hits oils on your skin
    C. Vitamin D is needed for good teeth and bones
D. Vitamin D can be obtained from liver or milk

The central square with its fountain, the narrow streets, the arcades along the main street, the thick walls of the houses and their small windows, all are examples of the way in which the farmers of the Tierra de Campos have learned to live on the plateau. They fight the sun with the arcades. They fight the wind with their narrow streets. They shut out the heat and the cold with their walls. They group themselves around the fountain, which brings them water.

13. What is an arcade?
   A. a fountain
   B. a plateau
   C. a covered part of the street
   D. a thick wall

14. The story suggests that many of the people want to live close to
   A. water
   B. the Tierra de Campos
   C. the main road
   D. the fort

15. What is the best title of the passage?
   A. Living in the central square
   B. Living near the fountain
   C. Living in difficult conditions
   D. Living in narrow streets

16. Which of the following would be most useful to know in order to understand the passage?
   A. to know the meaning of plateau
   B. to see a picture of the houses
   C. The name of their country
   D. to understand why they live there

   Peter was very tired on his horse. The moment he had long feared was upon him, the moment when he must give the order that might take his people forever from the land of winding waters. For himself he would rather stay and fight to the death for the land he loved. And yet he had but one task; he must always do what he thought best for his tribe.

   Peter knew now that the soldiers and the settlers would never rest until they had beaten him and his people. Their only hope was escape.

   Peter sat up straight on his horse. He spoke clearly for all to hear. “There is no other way. We must take the Lolo Trail. We must cross through the Bitterroot to Montana. No longer is there room in Idaho for us.”

   The chiefs heard him and knew that he spoke the truth.

17. What are the Bitterroots?
   A. Peter’s horse
   B. mountain
C. a part of grassland
D. river

18. The tribe was being driven out by
   A. settlers and soldiers
   B. other tribes
   C. hungers
   D. floods

19. Peter was going to leave
   A. Idaho
   B. Montana
   C. the Lolo Trail
   D. the tribe

20. Which of the following is most likely to follow this passage?
   A. The chiefs refused to follow him
   B. People went to Idaho
   C. People had a big fight with the soldiers and settlers
   D. People immediately left for Montana
Appendix E

French Multiple Meaning Task

1. Glace
   A. un miroir
   B. une surface gelée
   C. un verre
   D. un dessert servi dans un cornet

2. Nature
   A. le caractère
   B. artificiel
   C. les plantes et les animaux
   D. sans rien ajouté

3. Régler
   A. mesurer
   B. payer
   C. ajuster
   D. résoudre

4. Bouton
   A. un bourgeon
   B. sert à fermer un vêtement
   C. sert à faire fonctionner un appareil électrique
   D. ce qui est à la fin

5. Plat
   A. une pièce de vaisselle
   B. une partie d’un repas
   C. intéressant
   D. sans relief

6. Carte
   A. un document sur lequel sont tracées les routes
   B. un petit véhicule
   C. un menu
   D. sert pour jouer à divers jeux

7. Addition
   A. une opération mathématique
   B. une extension
   C. une note
   D. une recette

8. Vers
   A. un chapitre
   B. en direction de
   C. un petit animal allongé vivant dans la terre
   D. à peu près

9. Note
   A. un petit mot écrit
   B. un son musical
   C. une évaluation
   D. une bonne idée

10. Milieu
    A. le centre
    B. la classe sociale
    C. un nid d’oiseau
    D. l’environnement

11. Clé
    A. sert à ouvrir une serrure
    B. un ustensile
    C. un outil pour serrer ou démonter quelque chose
    D. signe musical

12. Numéro
    A. un nombre
    B. une personne bizarre
    C. une adresse
    D. un petit spectacle

13. Pied
    A. un meuble
    B. la base
    C. une partie du corps
    D. une unité de mesure

14. Droit
    A. l’inverse de gauche
    B. sans courbe
    C. honnête
    D. la justice

15. Juste
    A. possible
    B. seulement
    C. petit
    D. équitable

16. Sens
    A. la manière de comprendre
    B. la signification d’un mot
    C. une émotion
    D. une direction

17. Figure
    A. un visage
    B. une forme géométrique
    C. un dessin
    D. la forme physique

18. Langue
    A. une forme étroite et allongée
    B. un instrument de musique
    C. une partie du corps
    D. sert à communiquer
19. Rayon  
A. une tablette  
B. un comptoir d’un magasin  
C. **une colonie d’abeilles**  
D. une partie d’une bicyclette

20. Racine  
A. **ce qui a rapport à la race**  
B. l’origine  
C. une partie de la plante  
D. le base d’un mot
Appendix F

French Morphological Awareness Task

Practice items:

A. Jouer  Tous les enfants aiment ________. (jouer)
B. Confort  Ma nouvelle chaise est très ________. (confortable)

Test items:

1. Vitesse  Il parle toujours trop ___________. (vite)
2. Difficulté  À mon avis, la science n’est pas un sujet___________. (difficile)
3. Fierté  Aux Olympiques, les athlètes participant___________. (fièrement)
4. Curiosité  Le singe est un animal très___________. (curieux)
5. Rêver  Cette nuit en dormant, j’ai fait un___________. (rêve)
6. Finir  Nous avons tant mangé de pommes qu’elles sont___________. (finies)
7. Courageux  Pour éteindre le feu, les pompiers ont travaillé___. (courageusement)
8. Liberté  L’été en vacances, je me sens_______. (libre)
9. Perdre  Les clés sont _______. (perdues)
10. Choisir  Monsieur Simard a fait son_____. (choix)
11. Photographier  Tout le monde sourit sur la _________. (photo)
12. Défendre  Au hockey, Manuel joue en___________. (défense)
13. Faiblement  En vieillissant, la vue commence à___________. (faiblir)
14. Forestier  Nous aimons nous promener en___________. (forêt)
15. Effroyable  Les fantômes s’amusent à nous___________. (effrayer)
16. Pluie  On peut jouer dehors parce qu’il a arrêté de_______. (pleuvoir)
17. Diversement  Au Canada, nous valorisons la_______. (diversité)
Appendix G

French Syntactic Awareness Task

Practice items:
1. La fille ouvre le porte. (*La fille ouvre la porte.*)
2. Mon maman est gentille. (*Ma maman est gentille.*)

Test items:
1. Ce crayon est mon. (*Ce crayon est le mien.*)
2. Il a donné le cadeau à lui. (*Il lui a donné le cadeau.*)
3. Marie a fait un gâteau, puis elle a mangé le. (*Marie a fait un gâteau, puis elle l’a mangé.*)
4. J’ai voyagé sur un train. (*J’ai voyagé en train.*)
5. En automne, j’aime regarder les rouges feuilles. (*En automne, j’aime regarder les feuilles rouges.*)
6. Je dois laver mes mains. (*Je dois me laver les mains.*)
7. Nous allons à le parc ce matin. (*Nous allons au parc ce matin.*)
8. Elle pas fait son travail. (*Elle ne fait pas son travail / Elle n’a pas fait son travail.*)
9. La jupe est vert. (*La jupe est verte.*)
10. Le garçon a regardé à mon livre. (*Le garçon a regardé mon livre.*)
11. L’enfant est triste qui a perdu son chat. (*L’enfant qui a perdu son chat est triste.*)
12. L’ami de moi a un chien. (*Mon ami a un chien.*)
13. Quoi avez-vous fait aujourd’hui? (*Qu’avez-vous fait aujourd’hui? Qu’est-ce que vous avez fait aujourd’hui?*)
14. Tout mangé as-tu? (*As-tu tout mangé? / Est-ce que tu as tout mangé?*)
15. L’école que je vais est loin de la maison. (*L’école où je vais est loin de la maison.*)
16. Elle a vu le roi et reine. (*Elle a vu le roi et la reine.*)

17. Je ne sais pas qu’est-ce qu’il veut. (*Je ne sais pas ce qu’il veut.*)

18. On va à la maison très vite. (*On va très vite à la maison.*)
Appendix H

French Inference Task


1. Qu’est-ce qui se passe dans cette histoire?
   A. Les enfants apprennent à nager.
   B. Léo n’est pas content.
   C. La maman joue avec les enfants.
   D. Les enfants font un pique-nique au bord de l’eau.

2. Pourquoi Paul et son chien sont-ils venus jouer avec les enfants?
   A. Ils avaient faim.
   B. Ils étaient amis.
   C. Il faisait trop chaud.
   D. Son chien voulait nager.

3. Quel est le meilleur titre pour ce passage?
   A. Maman fait le déjeuner
   B. En jouant dans l’eau
   C. Déjeuner au bord de l’eau
   D. Une journée bien chaude

4. Quelle situation a la plus de chance de se produire par la suite?
   A. Le chien mange le déjeuner des enfants.
   B. Les enfants déjeunent au bord de l’eau.
   C. Le papa rentre à la maison.
   D. La maman se baigne.

5. Pourquoi est-ce que Martin a reçu un cadeau?
   E. parce que c’est son anniversaire
   F. parce qu’il est content
   G. parce qu’il est bon élève
   H. parce que la classe commence
6. Pourquoi Martin a-t-il oublié ses livres?
   A. parce qu’il joue avec son avion
   B. parce qu’il ne pense qu’à son avion
   C. parce qu’il a peur de Madame Colette
   D. parce qu’il se dépêche de sortir de l’école

7. Pourquoi Martin voulait-il un avion pour son anniversaire?
   E. Parce que le rouge est sa couleur préférée.
   F. Pour pouvoir oublier ses livres à la maison.
   G. Pour pouvoir jouer avec.
   H. Pour impressionner ses amis.

8. Quelle est l'idée principale de ce texte?
   A. C'est excitant de recevoir des cadeaux d'anniversaire.
   B. Les enseignants veulent que les enfants viennent en classe avec leurs livres.
   C. Les avions rouges sont amusants.
   D. Les meilleurs cadeaux sont ceux des pères.


9. Qu’est-ce que Brunet doit avoir à la fin de l’histoire?
   A. une longue queue
   B. une chenille
   C. beaucoup de pattes
   D. des ailes

10. Que veut dire “tisser une couverture”
    A. fabriquer une couverture
    B. manger une couverture
    C. se reposer dans une couverture
    D. disparaître dans une couverture

11. Où Brunette se repose-t-elle?
    A. sur une petite branche
    B. dans la forêt
    C. sur un lit
    D. sur une feuille

12. Quel est le meilleur titre pour ce passage?
    A. Une chenille fatiguée
    B. Tisser un cocon
    C. De la chenille au papillon
D. Brunette la chenille


13. En quelle saison se passe cette histoire?
   A. en été
   B. au printemps
   C. en automne
   D. en hiver

14. Comment Georgette a-t-elle su que le geai bleu était tout près?
   A. Le geai bleu a déchiré le silence
   B. Le cri du geai bleu était très fort
   C. Le lapin s’est sauvé
   D. Les feuilles tombaient

15. Pourquoi Georgette et Jean-Luc se promenaient-ils en forêt?
   A. Ils cherchent des écureuils.
   B. Ils sont perdus.
   C. Ils cueillent des fleurs.
   D. Ils observent les oiseaux.

16. Que faut-il savoir pour comprendre au mieux le passage?
   A. L’âge de Georgette et de Jean-Luc
   B. comment observer les oiseaux
   C. les bruits de la forêt
   D. quels animaux habitent la forêt


Le Saint-Laurent sort des Grands Lacs et se jette dans l’Océan Atlantique à l’est. Il passe de grandes villes comme Montréal et Québec. On trouve également de beaux villages et des fermes sur ses rives. De nombreux grands bateaux, venant de tous les pays du monde, le remontent jusqu’au port de Montréal.

16. On ne peut pas descendre le Mackenzie au mois mars. C’est probablement parce que
   A. il ya trop de bateaux venant de tous les pays du monde.
   B. il est bloqué par la glace.
   C. c’est la saison de la chasse.
D. les Indiens et les Esquimaux ne laissent pas passer les bateaux

18. En quelle direction coule le Saint-Laurent?
   A. du sud au nord
   B. de l’ouest à l’est
   C. du nord au sud
   D. de l’est à l’ouest

19. Pourquoi les bateaux montent-il le fleuve St. Laurent?
   A. pour voir du pays
   B. pour faire la pêche
   C. pour l’importation et l’exportation des biens
   E. pour atteindre la rivière Mackenzie

20. Quel est le meilleur titre pour ce passage?
   A. Le fleuve St. Laurent
   B. L’histoire canadienne
   C. Voyager sur un fleuve
   D. Les grands fleuves canadiens