The Language Abilities of Children Considered At-Risk for Academic
Difficulty Enrolled in Early French Immersion

by

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Abstract

Children with additional learning needs are disproportionately excluded from dual language education programs, in part because of concerns that bilingualism will exacerbate existing difficulties with language (Marinova-Todd et al., 2016). To address these concerns, this thesis investigates syntactic and morphosyntactic development in children with additional learning needs, who are registered in early French immersion (EFI). Participants were children who are often considered at-risk for academic difficulty (AR) enrolled in EFI (n = 13), children who were AR enrolled in an English-only program (ELoI; n =15), and children who were not AR enrolled in EFI (n = 10). No group differences were found between participant groups. The grammatical errors produced by children in each group were also examined and similar error patterns were observed across the three groups. These findings illustrate that children with additional learning needs are developing both English and French abilities when enrolled in EFI.

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Chapter One: Introduction

Much concern has been expressed by parents, educators, and other service delivery professionals, such as speech-language pathologists and educational psychologists, regarding the suitability of dual language education programs for children with a diverse range of additional learning needs[1] (Barrett DeWiele & Edgerton, 2021; Marinova-Todd et al., 2016). Accordingly, this thesis examines bilingual (English and French) development of children with additional learning needs who are enrolled in French immersion (FI), a particularly popular dual language education program within Canada (Genesee & Lindholm Leary, 2021). Although FI programs have been shown to successfully promote L2 learning alongside academic skill development amongst children with typical development (TD) (Barrett DeWiele & Edgerton, 2021), the suitability of these programs for children with additional learning needs remains controversial, and children with additional learning needs have been disproportionately excluded from FI programs when compared to their peers with TD (Barrett DeWiele & Edgerton, 2021; Marinova-Todd et al., 2016).

Dual language education programs are a form of content-based language instruction, where students get instruction about academic material (e.g., science or social studies) via their second language (L2), which allows for regular exposure and experience with the L2 (Genesee & Lindholm-Leary, 2021). The goal of these programs is to allow students to develop the L2 without compromising development in the community language, which is often the first language (L1) of students. FI is an example of a dual language education program. FI was

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[1] When broadly referring to children with additional learning needs or learning disabilities, the present study will use person-first language (i.e., child with DLD) rather than identity-first language (i.e., DLD child), as members of this community have indicated this is their preference (Campbell, 2020).

originally designed for children with English as an L1 to provide them with an opportunity to

develop proficiency in French (Genesee & Lindholm Leary, 2021). With FI being a popular

education option for children in Canada, it is important to consider the suitability of such

programs for a diverse range of learners, including those with additional learning needs.

Children who have additional learning needs are those children who, for example, have

specific language or reading disabilities (e.g., developmental language disorder [DLD] and

dyslexia). Autistic children[2] can also be included in this category of learner. For the purposes of

this present study, children with additional learning needs will be identified by whether or not the

child is considered to be at-risk for academic difficulty (AR). For the purposes of the current

study, a child being considered AR means that the child has been identified by their

parent/guardian as having language or literacy-based differences or disabilities (such as language

delay or dyslexia). Children whose parents reported their children as having ADHD or autism

were also included. Collectively, this group of children often require additional supports in the

classroom and there are often concerns that these children are at risk for academic difficulty.

Children who are considered AR are disproportionately excluded from FI (Genesee & Lindholm-

Leary, 2021).

In terms of children who are considered AR in dual language programs, there is a

growing body of empirical evidence that suggests children considered AR (particularly children

with DLD) can be successful in dual language programs. (Bruck, 1978; Kay-Raining Bird et al.,

2016; Kay-Raining Bird et al, 2020). It is the goal of this current research to further investigate

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[2] The present study has chosen to use identity-first language (i.e., autistic child) rather than person-first language (i.e., person with autism) when referring to autistic children, based on the opinions and perspectives from the autistic community (Kapp et al., 2013), which suggest that autistic individuals view autism as a part of their identity (Kenny et al., 2016).

the language abilities of children who are considered AR and who are enrolled in FI programs. Specifically, this study will consider whether children who are considered AR and who are registered in early French immersion (EFI) show parallel English development as compared to children who are considered AR and who are enrolled in English language of instruction (ELoI). EFI is a subtype of FI programs, where children enrolled begin FI before the fourth grade, typically in kindergarten or in the first grade, depending on the jurisdiction (Kay-Raining Bird et al., 2020; OCDSB, 2022). Children enrolled in EFI complete education in French and in English throughout the early elementary school years and are continually educated in French. Other FI programs include middle FI, where children begin FI in the fourth grade. However, for the purposes of the present study, the focus will be on children enrolled specifically in EFI. Further, this study will also investigate the extent to which children considered AR have developed French language proficiency after several years in an EFI program.

The Cumulative Effects Hypothesis

With the popularity of dual language education programs in Canada, it is important to understand how children with a variety of learning abilities develop their language skills within such programs. Research in this area is necessary because children considered AR have been disproportionately excluded from dual language education programs due, in part, to concerns about their language abilities influencing their ability to succeed in dual language education programs (Barrett DeWiele & Edgerton, 2021; Marinova-Todd et al., 2016). A driving concern for educators and parents is that if learning one language is hard, learning two languages might place an additional burden on these children (Orgassa & Weerman, 2008; Paradis, et al., 2017). This concern has most commonly been labelled as the cumulative effects hypothesis (CEH)

(Paradis et al., 2017) but has also been referred to as a double deficit (Novogrodsky & Meir, 2020).

The CEH is a theoretical framework that suggests that bilingualism has an additive effect in terms of the language difficulties experienced by children with DLD, which would make learning two languages exceptionally difficult for this group of children (Orgassa & Weerman, 2008; Paradis et al., 2017). Although studies have been conducted on the language abilities of children with additional learning needs in bilingual education programs for many years now, and most studies provide counter evidence to the CEH (Bruck, 1978; Kay-Raining Bird et al., 2020; Kohnert, 2010), patterns of enrollment that appear within dual language education programs suggests that the CEH persists (Barrett DeWiele & Edgerton, 2021; Genesee & Lindholm Leary, 2021). Notably, while the CEH was originally proposed to explain beliefs about the language learning abilities of children with DLD, this theoretical framework can be applied to a wider group of children who have been found to be at a higher risk of exclusion from dual language education programs, such as children who are considered AR (Marinova-Todd et al., 2016).

Crucially, existing evidence has not found support for the CEH. For example, research investigating bilingualism in children with DLD (formerly specific language impairment) has shown that children with DLD who are raised in bilingual homes do not have more severe language impairments than children with DLD who are raised in monolingual homes (Paradis et al., 2003). Further, a study considering the academic abilities of children with individualized education plans (IEPs) enrolled in a bilingual education program found that participants with IEPs enrolled in the bilingual education program had comparable reading, writing, and math abilities to their peers with IEPs enrolled in a monolingual education program (Kay-Raining Bird et al., 2020).

Despite the growing body of evidence challenging the CEH, the CEH persists. A 2016 study conducted by Marinova-Todd et al. surveyed a variety of service delivery professionals working with children in six regions, three of which were in Canada. Participants included in this study were speech language pathologists, teachers, early childhood educators, and other professionals working with young children in an educational capacity. The results of this survey suggested that many professionals were in favor of dual language education programs for children with TD, however opinions on the suitability of these programs for children with developmental disabilities were mixed. Overall, the survey responses of participants in this study suggested that many of the respondents held the belief that children with additional learning needs, that were considered "mild" were more likely to be successful in dual language education programs than children with developmental disabilities whose additional learning needs were considered more "severe". Additionally, this study found that respondents were more likely to report concerns about bilingual language learning for autistic children who had higher support needs or intellectual disability (ID), children with a specific disability relating to language or reading, and children utilizing an augmentative or alternative form of expressive communication (AAC). Looking at the language abilities of children with such developmental disabilities are particularly relevant in the context of understanding enrollment of children who are considered AR into FI. The authors of this paper suggest that it is possible that the specific concerns about these groups of children are related to the idea that children within these groups are likely to experience language learning difficulties. These findings emphasize the prevalence and persistence of the CEH among service professionals, including those who may be advising families about enrollment in FI programs. Accordingly, more work is needed that evaluates the CEH.

The goal of this present study is to further evaluate the CEH by investigating language abilities amongst children who are considered AR enrolled in EFI. To achieve this goal, this study will look at narrative macrostructural abilities, lexical development, syntactic complexity, and use of morphemes in obligatory contexts in bilingual children considered AR as compared to monolingual children considered AR. By comparing the language abilities of children who are AR enrolled in EFI to the language abilities of children who are AR enrolled in ELoI, the CEH can be evaluated by investigating whether bilinguals show significantly more difficulty in their language abilities than their monolingual counterparts. If participants who are considered AR and are enrolled in EFI exhibit equal or stronger performances than their peers enrolled in ELoI, then this result would support the notion that bilingualism does not negatively influence language development in children who are considered AR, thus offering additional evidence contra the CEH. To date, emerging evidence from research with children being raised in bilingual households as well as those attending dual language programs offers such counter evidence.

Bilingualism & Children with Additional Learning Needs

Studies that have been conducted on the language abilities of children who have a broad range of additional learning needs provide evidence that these children can become bilingual (Marinova-Todd et al., 2016; Kay-Raining Bird et al., 2020). One such study looked at the vocabulary and morphological awareness abilities of school-aged (4;11-10;10) autistic children who were bilingual (Gonzalez-Barrero & Nadig, 2018). Standardized tests in English, French, and Spanish were used to measure the language abilities of autistic children and those of a neurotypical comparison group. Vocabulary was measured using the PPVT standardized vocabulary measure and used the word structure subtest of the CELF-4 to measure

morphosyntactic abilities. The results from these standardized tests suggested that autistic participants were likely to have lower scores on vocabulary and morphosyntax measures compared to TD participants. Although autistic children were found to exhibit more difficulty on these aspects of language compared to TD peers, this can be anticipated given their autism diagnosis. Interestingly, this study found that the most significant predictor of vocabulary and morphosyntactic abilities amongst both participant groups was language exposure, regardless of whether the participants were autistic or not. The authors of this study suggest that the importance of language exposure on language abilities indicated that autistic participants could develop two languages given adequate ongoing exposure to each language.

Kay-Raining Bird et al (2005) came to a similar conclusion in their study examining the English language abilities of English dominant or English balanced bilinguals with Down's Syndrome (DS). In this study, they compared bilinguals with DS to three comparison groups; monolingual children with DS, monolingual children with TD, and bilingual children with TD (Kay-Raining Bird et al., 2005). This study considered broadly the English language abilities of participants using speech samples as well as a series of standardized language measures. The findings of this study suggest that overall, bilingual participants with DS were capable of becoming bilingual. Participants with DS did exhibit lower scores on expressive vocabulary and MLU compared to participants with TD, however this would be expected given participants' DS diagnosis. Crucially, bilingual participants with DS showed English language abilities comparable to those of monolingual participants with DS. This was a key finding because it suggests that the bilingual environment was unlikely to have harmed the L1 English language development of bilingual children, providing support for the idea that children with DS can successfully learn two or more languages.

While much of the current literature considers whether children with additional learning needs can be bilingual and focuses on whether bilingualism adds an additional burden for these children, one study looked at introducing bilingualism to children with dyslexia as a possible advantage to their language abilities (Vender et al., 2021). This study considered previous findings that suggested that bilingualism could improve the morphosyntactic abilities of children. Participants in this study were Italian-speaking children. Four groups of participants were involved: a group of monolingual L1 Italian speakers with dyslexia, a group of monolingual L1 Italian speakers with TD, a group of bilingual L2 Italian speakers with dyslexia, and a group of bilingual L2 Italian speakers with TD. The L1 of bilingual participants varied from participant to participant, with L1s including Arabic, Albanian, and Spanish. To measure Italian morphosyntactic abilities, participants completed a pluralization task, where participants' ability to pluralize common nouns as well as non-words were measured. All groups performed at ceiling on common nouns, however monolingual participants with dyslexia were found to exhibit lower accuracy on non-word pluralization when compared to bilinguals with dyslexia, whose scores were similar to those of TD comparison groups. The key finding from this study for the purposes of this present literature review is that children with dyslexia who were in a bilingual language environment did not exhibit additional difficulty compared to children with dyslexia in a monolingual language environment; in fact, the bilingual children with dyslexia outperformed the monolingual children with dyslexia. Thus, this study provides further evidence that runs counter to the CEH.

The above studies provide convincing evidence as to the possibility, and even possible advantage of, bilingualism for children with a variety of additional learning needs. These studies have concentrated on children who are being raised in bilingual households and/or communities

(e.g., children who have moved with their families and speak one language at home and are learning the majority-language at school). Few studies have been conducted on the broad group of children with additional learning needs in a dual language education context. Thus, more information is needed to specifically address the extent to which children with additional learning needs learn two languages in a bilingual education environment, such as French immersion.

Success within Early French Immersion & Dual Language Education Programs

Before reviewing the existing literature on dual language education for children who are considered AR, it is important to note that the existing literature is varied. Current research typically focuses on either: (a) a particular subset of children who are considered AR, such as studies conducted with children with DLD (e.g., Bruck, 1978); or (b) a wide range of additional learning needs, (e.g., Kay-Raining Bird et al., 2020). In this literature review, I draw on studies with both sample types throughout as they are both relevant for setting the stage for the present study. In describing the extant literature, I describe each sample using the terminology of each paper so as to clearly describe the specific samples of children who have been included in each study.

Past studies have shown that children who have additional learning needs that are enrolled in FI often have similar language and academic abilities to their peers with additional learning needs who are enrolled in an ELoI education program (Bruck, 1978; Kay-Raining Bird, Genesee, & Verhoeven, 2016; Kay-Raining Bird et al., 2020). These studies examined the academic and language abilities of children with a variety of additional learning needs, termed

special education needs (SEN)[3] by the researchers, as is common in research and in education

settings. These studies typically define children with additional learning needs broadly, with

inclusion criteria that allows for participants with diverse education needs to be included. For

example, Kay-Raining Bird et al. (2020) investigated the academic and language abilities

amongst children enrolled in an EFI program. Nine different categories of SEN were identified,

based on categories of SEN determined by the Ministry of Education of Ontario that are used in

the school board. The categories were: autism, behavioural, Deaf or hard of hearing, language

impairment, learning disability, mild intellectual disability, speech impairment, and no identified

exceptionality (for participants who were identified as having additional learning needs, but were

not formally diagnosed with an exceptionality). There were two primary participant groups;

children with SEN enrolled in EFI, and children with SEN enrolled in ELoI. These groups were

selected to examine whether there were any significant differences in academic abilities when

children with SEN are enrolled in a monolingual education program in their L1, compared to

when children with SEN are enrolled in a dual language education program, which in this case

was French immersion. This study began by analyzing scores on a provincial standards-based

assessment, the Ontario Education Quality and Accountability Office (EQAO). The EQAO

involves assessments of math, reading and writing, and is administered at four key points in the

child's education. Kay-Raining Bird et al. (2020) examined EQAO data from three years of third

grade and specifically considered the composite scores in math, reading, and writing from $n =$

433 participants enrolled in ELoI, and $n = 272$ participants enrolled in FI. This study found that

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[3] The present study has chosen to move away from the terminology of special education needs (SEN) and is instead using at-risk for academic difficulty (AR) to characterize the population of children with disabilities referred to in this study. This decision was based on findings from adults with disabilities, who have expressed a preference for non-euphemistic language (e.g., person with a disability) over euphemistic language (e.g., SEN) (Gernsbacher et al, 2016).

the participants with SEN enrolled in EFI met provincial standards on math, reading, and writing

as frequently or more frequently than participants with SEN enrolled in ELoI. These results help

to understand how academic and language abilities are affected by dual language education. The

findings from this study suggest that contrary to the predictions of the CEH, children with SEN

enrolled in EFI are not negatively impacted by the dual language education program.

In considering these results, it is important to note that a possible bias exists within these

findings. Children with mild SEN may be more likely to be enrolled in dual language programs

compared to children with more severe SEN (Barrett DeWiele & Edgerton, 2021; Marinova-

Todd et al., 2016) and this difference may have influenced Kay-Raining Bird et al's (2020)

findings. The authors do not provide a measure of severity, however they speculate that

participants enrolled in EFI typically had SEN that were of lower severity, as significantly fewer

participants enrolled in EFI utilized accommodation to complete EQAO testing as compared to

participants enrolled in ELoI. Thus, although participants enrolled in EFI met or surpassed

provincial standards more frequently than their peers in ELoI, it is possible that the number of

children who met the provincial standard in each group was influenced, at least to some extent,

by differences in severity of additional learning needs. To illustrate this bias, consider the results

from direct observations with a small sample of children with SEN, also presented by Kay-

Raining Bird et al., 2020. Their study included measures of receptive vocabulary, following

directions, recalling sentences, word reading, and reading fluency for ten children with SEN

enrolled in EFI and ten children with SEN enrolled in ELoI. Nine out of ten participants enrolled

in ELoI scored below the 25th percentile on English language measures, while four out of ten

participants enrolled in EFI scored below the 25th percentile on the same measures. Thus, if the

pattern from this small sample holds across the larger sample, it seems that more children with

SEN enrolled in ELoI may have had more severe language delays/disorders as compared to those who were registered in EFI. Such biases within research into dual language education are difficult to avoid as they seem to reflect the general pattern of enrollment in EFI across Canada (Barrett DeWiele & Edgerton, 2021). In sum, the results from this study show that the academic and language abilities of children with SEN in EFI are likely developed in a similar fashion to the academic and language abilities of children with SEN who are in ELoI, suggesting that enrollment in EFI may not have a significant impact on the development of these abilities. Still, given the above considerations of the sample in this study, there remains a need for further research in this area.

Kay-Raining Bird et al. (2020) focused on development of academic skills within the community language, English. It is also important to consider the extent to which children with a history of language learning difficulties develop French language abilities when enrolled in EFI. An early study by Bruck (1978) specifically considered this question. Bruck defined language learning difficulties as identified challenges that specifically affect the use of one's language and included children with identified language learning difficulties enrolled in FI, children with identified language learning difficulties enrolled in ELoI, as well as two control groups of children with TD, one control group enrolled in FI, and the other enrolled in ELoI. Participants were recruited while they were in kindergarten, and they were tested annually on cognitive and academic abilities until they reached the third grade. The results from this study suggested that participants with identified learning difficulties in FI saw benefits from their enrollment in the dual language education program. Additionally, this study found that while children with language learning difficulties in FI did fall slightly behind same-age TD peers in their French development, they did learn the language. The difficulties with language and academic abilities

that were found amongst participants with language learning difficulties when compared to children with TD are not surprising given that language is the crux of these children's disabilities. Crucially, the observed difficulties mirrored those noted in children with language learning difficulties enrolled in ELoI, suggesting that enrollment in FI does not lead to delays or increased difficulties in developing language or academic abilities. This study provided strong evidence that when looking broadly at language and academic abilities, enrollment in a dual language education program can be a suitable option for children who are considered AR.

In sum, when looking broadly at language and academic abilities, the aforementioned studies provide evidence that enrollment in FI does not have a negative influence on the language or academic development of children who are AR (Bruck, 1978; Kay-Raining Bird, 2020). A next step is to consider how specific language abilities develop amongst children who are considered AR.

Development of Specific Linguistic Skills

In investigating language development, particularly in relation to evaluating the CEH, it is important to contextualize findings about language development in several ways. First, we must consider the developmental patterns observed for monolingual children with the same disabilities. This is necessary to ensure that we do not incorrectly attribute observed difficulties to bilingualism when they are much more likely stemming from the language-based learning disability. Second, we need to consider what bilingual development looks like, particularly within the context of bilingual education programs. This is necessary to ensure any interpretation takes the learning context into consideration and does not, as one example, expect native-like competence when that is unlikely given the context (Paradis et al., 2017). As such, understanding bilingual development generally is important to provide a baseline for what can be

expected from participants enrolled in EFI. Accordingly, in the following sections, I present a description of research detailing morphological development in monolingual (English) speaking children with DLD, as well as in bilingual children with TD.

This present study will focus on the following linguistic skills: narrative macrostructure, complex syntax, and morphosyntactic development. These skills were chosen because each has been previously suggested as a particularly relevant area of consideration when considering language development in children with DLD (Paradis et al., 2003). Below, the relevant literature for each of these linguistic skills will be reviewed, starting with narrative macrostructure and then detailing the language specific skills. For the language specific skills, the relevant English skills are detailed, followed by French.

Narrative Macrostructure

Description of narrative macrostructure. Narrative macrostructure refers to the use of appropriate story grammar when producing narratives (Blom & Boerma, 2016). Story grammar refers to the components that build a story such as setting, initiating events, and consequences. Compared to some of the morphosyntactic abilities that will be considered in the present study, narrative macrostructure has been found to be a relatively language general ability (e.g., even if there are language specific styles for narratives, a story includes characters, a setting, and a plot regardless of the language in which the story is being told) (Paradis & Kirova, 2014). As such, narrative macrostructure abilities have been suggested to be transferable across languages (Boerma et al., 2016; Paradis & Kirova, 2014).

Previous studies have found that children with DLD were less likely to use appropriate story grammar in their narratives than children with TD (Blom & Boerma, 2016; Squires et al., 2014). Blom & Boerma (2016) demonstrated that, across time, monolingual children with DLD

caught up to their TD peers on a measure of story comprehension, however this same result was

not found for the measure of narrative macrostructure, where participants with DLD continued to

exhibit significantly more difficulty on the task than their TD peers. Thus, narrative

macrostructure may be a particular area of difficulty for children with language learning

difficulties.

These challenges with narrative macrostructure amongst children with language learning

difficulties have been identified in both monolingual and bilingual populations. One study to

address this was conducted by Squires et al. (2014). This longitudinal study looked at the

narrative macrostructure abilities of bilingual children with DLD in kindergarten and in the first

grade. This study once again found that at both time points, participants with DLD had lower

scores on measures of narrative macrostructure as compared to their TD peers. In addition to the

finding that children with DLD struggled more with tasks of narrative macrostructure, this study

found that TD controls were more likely to use structures that were present in both their L1 and

L2 than structures that were present in only one of their languages in all narratives, while this

finding was not found for participants with DLD. The authors of this study suggest that this

difference might be due to the additional input needed by children with language learning

difficulties in order to develop language abilities that children with TD may need less exposure

to fully acquire. It is important to note that the results of this study do not indicate that

bilingualism was harmful to the narrative macrostructure abilities of children with DLD; rather,

it is likely that the differences that were noted between the two participant groups were a result

of the participants with DLD having existing language difficulties. Because this is a noted area of

difficulty for this group of children (Blom & Boerma, 2016), it is difficult to conclude whether

the differences in language abilities across the two groups reflected the difficulties that children

with DLD have been found to have with narrative macrostructure, or whether these differences suggest that bilingualism makes this skill more difficult. As was the case for studies comparing monolingual children with and without DLD, Squires et al., (2014) demonstrate that narrative macrostructure represents a particular area of challenge for bilingual children with language learning difficulties. Given the parallels with the monolingual literature, these findings should not be taken as evidence that bilingualism exacerbates this difficulty.

When the narrative macrostructure abilities of bilingual children with DLD are compared to those of monolingual children with DLD, it seems that bilingualism does not have any significant effect on participants' narrative macrostructure abilities, as is evidenced by research from Boerma and colleagues (2016). Participants were aged 5-6, and all participants had Dutch as an L1, with the two bilingual participant groups (bilinguals with and without DLD) having a variety of L2. Testing was completed in the L1 of participants, and narrative macrostructure abilities were measured using a narrative retell task from the Dutch language version of the Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2019). This study found that whether or not participants were identified as having DLD was a significant predictor for comprehension and production abilities on the MAIN task, but they did not find bilingualism to be a significant predictor of these same variables, indicating that whether or not the child had DLD was a stronger predictor for children's narrative macrostructure abilities.

Bilinguals and narrative macrostructure. To further consider the role that bilingualism may play in narrative macrostructure abilities, it is necessary to consider how language may affect the inclusion of story grammar elements in the L1 and/or the L2. One study that looked at narrative macrostructure abilities across the L1 and L2 of bilingual children considered the English and Spanish narrative macrostructural abilities of Spanish-English bilingual children

with TD and compared participant results across languages to provide an illustration of the cross-language transfer that may occur in the narrative macrostructural abilities of bilingual children (Bitetti et al., 2020). Using a story telling task in English and one in Spanish, this study found that participant's narrative macrostructure abilities in each language were significantly predicted by their narrative microstructure abilities within the same language (i.e., English narrative macrostructure scores could be predicted by English narrative microstructure scores, but not by Spanish narrative macrostructure or microstructure scores). Specifically, this study found that MLU in words and in morphemes were significant predictors of narrative macrostructure abilities. This result serves to suggest that, in bilingual children, even though the child may understand that certain story elements are needed, the ability to include the necessary story grammar elements is likely influenced by the child's language abilities in the language of the narrative. As such, for the present study, we would expect that English narrative macrostructure abilities would be stronger in children who already exhibit a higher MLU in English, and that the same would be true in French, but we would not necessarily anticipate that English MLU would be a significant predictor of French narrative macrostructure abilities in bilingual children. Research suggests that language ability is also a predictor for narrative macrostructure abilities in children who have identified difficulties with language, like children with DLD, who have been found to be likely to struggle with this element of language (Boerma et al, 2016).

English Complex Syntax

Description of complex syntax in English. English is a language that has a fixed subject-verb-object word order. Sentences in English can be broadly divided into two types: simple sentences, and complex sentences. Simple sentences include one clause (O'Grady & Archibald, 2016). Complex sentences include two or more clauses that must be joined together

through coordination or embedding/subordination (Paradis et al., 2022). The present study also investigates the extent to which children who are considered AR use complex syntax in their L1, and in their L2. To accomplish this, the following section will begin by describing how syntax functions in English, followed by an outline of what previous studies have found regarding syntactic complexity in populations of interest for the present study; monolingual English-speaking children with DLD, and bilingual English-speaking children with DLD. This will allow for a stronger idea of what can be anticipated from the English complex syntax abilities of participants in the present study.

Syntactic Complexity in Monolingual English-Speaking Children with DLD. Children with DLD have been found to produce fewer complex sentences than would be anticipated given their age and MLU (Scheule & Dykes, 2005; Owen & Leonard, 2006; Leonard, 2014). As one example, Schuele and Dykes (2005) conducted a longitudinal case study that investigated the syntactic complexity of one monolingual English-speaking child with DLD. This study found that the participant's syntactic complexity did increase over time, however their overall syntactic complexity was lower than what would typically be anticipated given the participant's chronological age, suggesting that syntactic complexity may be decreased in children with DLD.

Complex Syntax in Bilingual Children with DLD. In addition to studies conducted on monolingual children with DLD, use of complex sentences may also represent an area of challenge for bilinguals with additional learning needs. One study that addressed the use of complex sentences within this population looked at a sample of bilingual children with TD and bilingual children with DLD who were L2 speakers of English (Paradis et al., 2022). The authors investigated whether there were any significant differences in the use of complex sentences in

conversation and in the narratives of bilingual children with TD and bilingual children with DLD. This study found that bilingual children with DLD were less likely to use complex sentences in their L2 conversations and in their narratives compared to bilingual children with TD. This finding indicates that using complex sentences is a point of difficulty for bilingual children with DLD, much like it is for monolingual children with DLD. The current study builds on this body of research by considering the development of complex syntax in children who are considered AR and are enrolled in FI.

English Inflectional Morphology Development

English is a language that utilizes both bound and free morphemes and inflectional morphology has been noted as an area of difficulty for children with language learning disabilities, such as DLD (Paradis, 2005).

Of particular relevance to this thesis is children's development of tense or agreement morphemes (tense morphemes), as compared to morphemes that do not mark tense (non-tense morphemes). This is because past research has shown that in English tense morphemes are a particular area of difficulty for children with DLD (Paradis, 2005). Tense morphemes include inflections and function words that denote information such as person, number, and time, to the listener (Guo, Spencer, & Tomblin, 2013). Examples of tense morphemes include the third person singular -s, regular past tense -ed, auxiliary *BE* and copula *BE*. Non-tense morphemes include inflections and function words but do not mark tense or agreement. Examples of non-tense morphemes include the present progressive -*ing,* the nominal plural suffix -s, and the articles *a* and *the* (Paradis, 2005).

Description of English Morphemes

This present study will focus on two non-tense morphemes (articles *a* and *the*) and one tense morpheme (regular past-tense -*ed*). A brief description of these morphemes is provided, followed by a section outlining children's development of these morphemes.

English Articles. In English, articles are used frequently, and are required for grammaticality in most productions. English articles mark definiteness. English articles can thus be split into two groups based on definiteness: definite articles and indefinite articles. The English definite article "the" is used when the noun has been previously introduced – or is apparent from the context – to the listener, and the English indefinite articles "a" and "an" are used when the phrase's noun has not been introduced. English articles are not marked for number or gender. Table 1.1 provides an overview of these English articles as well as examples of how and when they would be used in typical English. For the purposes of this thesis, the English articles "a" and "the" were of particular interest, as these articles were the most directly parallel to French articles which are also being examined (Paradis et al., 2003).

Table 1.1

Summary of English Articles.

	Definiteness	Used When	Example
"the"	Definite	-Subject has already been introduced. -Subject is established between conversational partners via joint-attention.	"A cat was chasing a dog. In the end, **the** dog was too fast for **the** cat."
"a" or "an"	Indefinite	-Subject is being introduced for the first time.	"**A** cat was chasing **a** dog. In the end, the dog was too fast for the cat."

Note. Bold text indicates the article being used in appropriate context.

English Past-Tense Marking. The English regular past-tense is marked with the suffix -*ed* on regular verbs (e.g., the past tense of *jump* is *jumped*). The English irregular past-tense is an alternative form of past-tense marking that occurs on a small number of irregular verbs (e.g., the past tense of *give* is *gave*).

Development of English Inflectional Morphology Abilities

Morphosyntactic development typically occurs throughout early childhood, and English morphemes have been found to develop in a specific pattern in most children (Brown, 1973). Studies on morphosyntactic development in monolingual English-speaking children have provided evidence that morphemes emerge and are mastered by children in a specific order. According to Brown (1973), typically developing monolingual English-speaking children go through five stages in their morphosyntactic development. The first stage, which Brown identified as occurring between 12 and 26 months of age in children with TD, involves acquiring the ability to compose short sentences. The second stage, typically occurring between 27 and 30 months of age, involves the acquisition of the first four morphemes: present progressive -*ing,* preposition *in,* preposition *on,* and regular uses of singular plural -*s.* The third stage occurs between 31 and 34 months of age, and during this stage, children will acquire three morphemes: irregular past tense, plural -*s,* and the incontractible auxiliary. The fourth stage is between 35 and 40 months, and during this phase, children acquire the use of articles, regular past tense forms, and third-person regular past tense forms. The final stage typically occurs between 41 and 46 months and involves the acquisition of the third-person irregular, the incontractible auxiliary, the contractible copula, and the contractible auxiliary (Bowen, 1998).

Inflectional morphology has been found to be an area of particular difficulty for children with DLD and is thus of interest to this present study. Because much of the literature on the

development of inflectional morphology centres on studies conducted on participants with DLD,

much of the evidence provided in the following section will be based on children with DLD.

However, I have taken care to specify the participant group involved in each of the following

studies. Crucially, previous studies have indicated that tense morphemes tend to pose more of a

difficulty to monolingual English-speaking children with DLD compared to non-tense

morphemes (Leonard, 2014).

      I am particularly interested in inflectional morphology because of what the potential

research in this area offers for evaluating the CEH. For example, one study looked at language

development longitudinally in a sample of children with DLD (Paradis, et al., 2017). This study

included participants with DLD from the ages of 8 to 10, who had English as an L2, as well as a

comparison group of children with TD also developing English as an L2. Participants in this

study were described as having a heritage language as an L1, and, crucially, having had primarily

or exclusively used their L1 until they were around 4;0, at which point they began to use English

as an L2. All children involved in this study were residing in a city where English was the

majority language, and all participants had come from immigrant backgrounds (i.e., their parents

had immigrated to Canada, or they themselves had immigrated to Canada). Participants

completed a series of language measures that were targeted to assess participants' abilities with

the use of English tense morphology, including the Test of Early Grammatical Impairment

(TEGI). Scores from bilingual participants with DLD were compared to standard scores of

monolingual children with DLD, provided by the TEGI. Participants' performance on the TEGI

was compared to that of monolingual children who were aged the same number of years as the

bilingual participants had been developing their L2. This analysis found that development of

English tense morphemes amongst bilingual participants with DLD occurred in a similar fashion

to the development of the same skill in the monolingual comparison group. Further, this study

found that bilingual participants with DLD had scores on the use of English tense morphology

that were significantly higher than those of the standard TEGI scores for monolingual children

with DLD when matched based on the age of English onset of the L2 of bilingual participants.

The results from this study suggest that the development of English tense morphemes in

bilingual children with DLD occurs in a similar fashion to what would be anticipated given the

development of the same skills amongst monolingual children with DLD. This finding does not

support the CEH, but rather provides evidence against it, much like many of the other studies

reviewed that suggest that bilingualism has no negative influence on the language abilities of

children with additional learning needs, including children with DLD (e.g., Kay-Raining Bird et

al., 2020; Bruck, 1978). Considering that French-English children with DLD, and by extension

French-English children with additional learning needs exhibit significant differences in their use

of morphemes in obligatory contexts, a next step for the present study will be to look at a number

of specific French and English morphemes, to provide a more nuanced perspective on the

morphosyntactic development of children who are considered AR within an EFI context.

English Past-Tense Marking in Children with TD. L1 English-speaking children have

been found to typically achieve mastery of the regular past-tense morpheme by around age

seven, where they produce the past tense correctly in 90% of contexts, including in spontaneous

speech and on experimental measures (Brown, 1973; Rice & Wexler, 2001). Despite having high

overall accuracy, English speaking children, even into elementary school have been shown to

make over-regularization errors where they produce irregular past tense verbs with regular

morphology (e.g., *gived* instead of *gave*) (Nicoladis et al., 2007). In terms of English past-tense

marking abilities of French-English bilingual children, it seems that their abilities are parallel to

what is seen in monolingual English-speaking children (Nicoladis et al., 2007). In Nicoladis &

Paradis's (2012) study, participants were French-English bilingual children with TD, with a

mean age of 4;7. There were both sequential and simultaneous French-English bilinguals

involved in this study, however the authors of this study did not find any significant differences

between these two groups, so the results of both groups were combined to look at the language

abilities of French-English bilinguals more generally. Specifically, this study focused on the

irregular past-tense forms in French and in English. This study found that, in English, the

bilingual children made a large number of overregularization errors on irregular verbs. However,

they did not make irregularization errors (e.g., using "a prendu" in place of "a pris").

       English Past Tense Marking in Children with DLD. The use of tense inflects has been

found to be a significant point of difficulty for English-speaking children with DLD, and this

pattern of difficulty is so robust that omission of inflectional morphology is considered a reliable

clinical marker for DLD (Rice & Wexler, 2001). A clinical marker is an observable trait or

behaviour that is indicative of and/or associated with a specific disability or disorder (American

Psychological Association, 2022). To illustrate this point, consider the Test of Early

Grammatical Impairment (TEGI), developed by Rice & Wexler (2001). This assessment

involves a series of questions about a set of pictures that, when posed to the child being assessed,

would be likely to require the appropriate use of inflectional morphology for a grammatical

response. This task, including the specific task examining regular past tense morphology has

been shown to have strong reliability for identifying DLD (Rice & Wexler, 2001). The clinical

uses of the TEGI provides insight into the extent to which children who have language-based

learning disabilities, particularly children with DLD, have difficulty with inflectional

morphology. Past tense morphology is a point of interest for the present study because this study

aims to examine whether these specific language abilities are affected by enrollment in a FI program.

English Past-Tense Marking in Children with additional learning needs. In addition to studies that have considered the English past-tense marking abilities of children with DLD, there are studies that have examined a wide range of children with additional learning needs. Because the present study focuses on children with English as an L1 enrolled in EFI to learn French as an L2, the following section will place an emphasis on the English language abilities of English-speakers with additional learning needs. Broadly, these studies suggest that past-tense marking can pose significant difficulties for children with additional learning needs, beyond those with DLD. For example, some autistic children have also been shown to have difficulty with tense inflections (Lindgren, et al., 2009).

A recent study conducted on the rates of use of a variety of tense inflection amongst autistic children provides valuable insights into the tense-marking abilities of their participants (Mondyanova et al., 2017). This study attempted to account for some of the heterogeneity in autistic individuals by creating four participant groups; a group of autistic children without language difficulties (ALN), a group of autistic children with identified language difficulties (ALI), and a comparison group for each group of autistic children, who fell within a similar age range to the autistic participants (autistic participants' age ranged from 4.35 to 16.3, and TD participants age ranged from 3.5 to 17.1). This study found that participants in the ALI group exhibited lower accuracy compared to all other participant groups on past-tense marking, specifically these participants were more likely to produce the bare stem in past-tense contexts compared to the other three participant groups.

French Language Abilities

As was the case for English, I focus on children's development of complex syntax in French, as well as their use of inflectional morphology. Narrative macrostructure is not reviewed given that this is generally accepted as a language general, as opposed to language specific, skill. In French and other Romance languages, children with DLD have been found to exhibit a broader profile of linguistic challenges, including decreased lexical diversity and syntactic complexity, as well as broad challenges with morphosyntax, particularly in the use and application of direct object clitics (Thordardottir & Namazi, 2007). Notably, bilingual children with DLD have been found to exhibit the difficulties associated with each of their languages only when using the affected language (Paradis, 2007). For instance, tense marking, a significant point of difficulty for English-speaking children with DLD would be challenging for a French-English bilingual child when engaging with English, however tense marking in French would likely be relatively uninfluenced by the child's history of DLD (Paradis, 2007). This means that typically, the profile of challenges with morphosyntax within each language that are noted in bilingual children with DLD closely mirrors the morphosyntactic profiles of monolingual children with DLD (Paradis, 2007). This current study will look at the use of grammatical morphology in obligatory contexts in the utterances of participants who are considered AR. While the current literature focuses on children with DLD, as this is a language ability that causes notable difficulty amongst both monolingual and bilingual children with DLD (Paradis, 2010), the current literature review will attempt to incorporate findings from a wide variety of children with additional learning needs, to provide an idea of the language abilities of children who are considered AR, which may be more reflective of the diversity of learning needs in Canada's education system.

French complex syntax

In many ways, French is similar to English in terms of syntax. Both languages primarily use a subject verb object word order, although word order is more flexible in French (Delage & Frauenfelder, 2020). As with English, French simple sentences include one clause, and complex sentences include two or more clauses conjoined using coordination or subordination. For the purposes of the present study, the key piece of French syntax that was looked at was the rate of use of simple sentences compared to complex sentences. The following section will provide an overview of the use of simple and complex sentences in children with DLD, to provide insights as to what can be expected for the complex syntax abilities of participants who are considered AR enrolled in EFI.

French Complex Syntax in Monolingual Children with additional learning needs. In this section, I focus on complex syntax use among French-speaking children with DLD. Complex syntax is an ability that has been found to be particularly impacted in French-speaking children with DLD (Thordardottir & Namazi, 2007). For example, consider the study by Deluge and Frauenfelder (2020) which looked at complex syntax abilities of monolingual L1 French-speaking children with DLD. This study included a group of children with DLD with a mean age of 8;10, as well as a comparison group of L1 French-speaking children with TD, who had a mean age of 9;0. This study looked at spontaneous language samples and found that children with DLD were likely to use significantly fewer complex sentences compared to the children with TD. Interestingly, this study found that children with DLD did not use fewer simple sentences when compared to TD peers, which the authors of this article take to suggest that perhaps French-speaking children with DLD avoid using complex syntax in their speech and rather opt for simple, single clause sentences where possible. The findings from this study provide

evidence that children with DLD are less likely to use complex syntax when compared to same-age children with TD, suggesting that this is an ability that is affected in French-speaking children with DLD. Because previous studies on the language abilities of children with DLD have suggested that the profiles of difficulty for individuals with DLD differs based on the language that they are speaking (Paradis, 2010), it is important to understand how DLD may appear in French-speakers, to investigate whether these same difficulties appear in L2 French speakers.

French Morphosyntactic development

Description of French Morphosyntax.

French Articles. As with English articles, French articles mark definiteness and number. Unlike English, singular articles are marked for gender agreement (masculine and feminine), whereas plural articles do not agree in gender (one form, *des,* is used with both feminine and masculine nouns) (Krecna et al., 2020). Producing the correct form of the article is particularly challenging in French, as the gender of nouns in French is not transparent as it can be in other languages. That is, in French, there are no indicators (e.g., phonological cues) of a noun's gender aside from its associated article (Ayoun, 2007). Table 1.2 provides a summary of French articles along with the information that is marked by each of the definite and indefinite articles in French.

Table 1.2

Summary of French Definite and Indefinite Articles.

	Definiteness	Gender	Number
"le"	Definite	Masculine	Singular
"la"	Definite	Feminine	Singular

	Definiteness	Gender	Number
"les"	Definite	Masculine or Feminine	Plural
"un"	Indefinite	Masculine	Singular
"une"	Indefinite	Feminine	Singular

Note. "des" is used in French as a plural indefinite article, however, this form was not included in this table as this article was not examined in the current study.

French Passé Composé (Past Tense Marking). The passé composé is a periphrastic construction made up of an auxiliary and the past participle form of the verb. The first verb that is included in the passé composé is the auxiliary verb, which is typically the present tense conjugation of the verb *avoir*, however a small number of high-frequency French verbs use the present tense form of the verb *être* instead of *avoir*. The auxiliary verb agrees in person and number with the subject of the sentence. The lexical verb within the passé composé construction is the primary action of the verb phrase and is in the past participle form. Notably, the past participle is conjugated in one of three ways (ending in *-u*, *-é*, and *-i*, based on the infinitive form of the lexical verb). A summary of the passé composé is provided in Table 1.3.

Table 1.3

Summary of passé composé constructions .

	avoir *-re*	avoir *-er*	avoir *-ir*	être *-re*	être *-er*	être *-ir*
Auxiliary	avoir	avoir	avoir	être	être	être
Ending	*-re*	*-er*	*-ir*	*-re*	*-er*	*-ir*
Suffix	*-u*	*-é*	*-i*	*-u*	*-é*	*-i*
Example	Perdre: J'ai perdu (I lost)	Sauter; J'ai sautée (I jumped)	Choisir; J'ai choisi (I chose)	Descendre; Je suis descendu (I went down)	Tomber; Je suis tombée (I fell)	Devenir; Je suis devenu (I became)

An important point to note is that for *-er* verbs the infinitive form of the lexical verb (e.g., *sauter*) is homophonous with the past participle form of the verb (e.g., *sauté*). In these instances, the auxiliary provides an important cue to the tense of the verb when listening, as opposed to reading, French (where the two forms are spelled differently). In addition to the regular forms, there are a small number of French lexical verbs that utilize an irregular form of the past participle, where the final phoneme of the past participle differs from what would typically be anticipated given the infinitive form.

Although French has a variety of past-tense forms, including the passé simple and passé composé, the passé composé was selected for this thesis because is commonly used in typical, colloquial speech and in past tense contexts that are semantically similar to where the English past tense would be used (Paradis et al., 2003). Notably, the French passé composé is structurally more similar to the English past perfective construction and the English past tense is structurally more similar to the French passé simple. Despite the structural similarity between the English past tense and French passé simple, this construction was not chosen because French passé simple is more commonly used in literature or formal contexts and is therefore unlikely to occur given the measures used in this thesis (Kendris & Kendris, 2003).

Development of French Morphology abilities: A Focus on Inflectional Morphology in French-English Bilinguals.

Before turning to the specific morphemes of interest, I first provide an overview of inflectional morphology development in bilingual French-English children with DLD. I focus on DLD because although this thesis investigates morphosyntactic development in the broader category of children with additional learning needs when enrolled in a French immersion program, most research today about French-English bilinguals has focused on DLD.

Inflectional Morphology in French-English Bilinguals with DLD. As discussed,

elements of language that are affected by DLD are likely to be determined by the speakers'

language (Paradis, 2010). In terms of morphosyntax, French-speaking children with DLD have

been shown to have relatively less difficulty with tense inflections as compared to, for example,

direct object clitics (Paradis, 2007; Thordardottir & Namazi, 2007). Despite the fact that the

clinical markers may differ between languages, studying use of tense and non-tense morphemes

is useful in understanding the morphosyntactic development of bilingual children with DLD

(Paradis, 2010), particularly for evaluating the CEH.

One study that investigated this issue was conducted by Paradis et al., in 2003. This study

included two experimental groups; monolingual French-speaking children with DLD, TD

children with English as an L1 who are learning French as an L2, as well as two control groups;

one group of children with TD matched on age to participants with DLD, and one group of

children with TD matched on MLU to participants with DLD. The study looked at the

spontaneous speech samples of children in each participant group and compared them on their

use of grammatical morphology, a noted area of difficulty in both English and French-speaking

children with DLD (Paradis, 2010). This study found that both experimental groups with DLD

used significantly fewer obligatory tense markers in their spontaneous speech samples than

controls. In addition, this study found that L2 French learners exhibited significant difficulty

with the use of direct object clitics. This is reflective of previous findings on French-speaking

children with DLD, where the omission of obligatory direct object clitics has been found to be a

strong indicator of DLD amongst L1 French-speaking children (Paradis, 2010). Further, this

study demonstrated that both French L2 learners and monolingual French speaking children with

DLD had similar rates of determiner omission, both of which were significantly higher as

compared to bilingual toddlers. This finding serves to suggest that L2 morphosyntactic development in children with DLD may closely mirror that of L1 learners of the same language.

As is illustrated by this study, examining the use of morphemes in obligatory contexts amongst children who are considered AR, particularly those with DLD, can additionally be used to evaluate the CEH. By looking at whether this noted area of difficulty appears more challenging for bilingual children who are AR, or for monolingual children who are considered AR, we can evaluate if bilingualism is adding an additional learning challenge for children considered AR. For the purposes of this present literature review, findings on the use of morphemes in obligatory contexts amongst children with additional learning needs will center on studies conducted with children with DLD, due to their prevalence within the literature. Examining the inflectional morphology abilities of bilingual children who are considered AR is important because if bilingual children who are AR exhibit significantly more difficulty with use of morphemes in obligatory contexts than their monolingual counterparts, this would provide support for the CEH. Paradis et al.'s study (2003), thus, provides counter evidence to the CEH.

French Articles in Bilingual L2 French Children. Given differences between articles in English and in French, it might follow that there are a high proportion of gender marking errors in French, particularly in regard to gender.

Because of this key difference between French and English, it is important to understand how L1 English-speaking children learning French as an L2 develop in their use of articles in the French language, and particularly how L2 French-speaking children deal with gender marking on French articles. One study on the use of French definite articles *le* and *la* amongst first and second-grade children with TD enrolled in FI found that participants were very unlikely to make gender marking errors on masculine French nouns, with all participants exhibiting very high

accuracy in their use of masculine articles. However, the same participants exhibited much lower

accuracy on feminine articles compared to masculine articles, suggesting that participants may

have been using the masculine form as the default (Krenca, Hipfner-Boucher, & Chen, 2020).

This follows the typical development of gender marking of determiners amongst L1 French-

speaking children, where the same pattern of over-generalization of the masculine determiner has

likewise been noted (Boloh & Ibernon, 2010). In their 2010 article, Boloh & Ibernon suggest that

L1 French-speaking children with TD can typically be expected to master gender marking on

French articles by around age seven, and that such children would be more likely to exhibit

errors on the gender marking of articles for feminine gender nouns, compared to articles for

masculine gender nouns. Thus, although older than the point that monolingual French-speaking

children learn the correct forms of articles, the first and second-grade participants in Krenca et al.

(2020) showed a similar pattern to what has been shown for L1 French-speaking children.

   French Articles in Children with additional learning needs. Given that monolingual

French speaking children with TD find it challenging to use the appropriate article, based on

gender, it might be expected that children with DLD will have even greater difficulty in this area.

To evaluate this, Royle & Reising (2019) compared the use of determiner phrases (i.e., French

articles "le" and "la") among monolingual French speaking children with DLD to children with

TD. The participants in this study included a group of children who had been identified with

DLD, aged from 5-6 years ($M = 5.7$ years), and two control groups; one that had children with

TD matched to the participants with DLD based on their age, and a second group that had

children with TD matched to participants with DLD based on their average MLU in words.

Participants in this study completed a series of puzzles to elicit the use of determiner phrases on

both feminine and masculine gender nouns. Additionally, this study analyzed participants'

spontaneous speech samples for use of determiner phrases. On the elicited speech sample, the

study found that participants with DLD were more likely than either control group to produce

gender marking errors on adjectives (e.g., producing *vert* as *verte*), but no significant group

differences were found on gender marking of determiners, suggesting that on the elicited speech

task, participants with DLD were as likely as participants with TD to produce gender marking

errors on determiner phrases. Looking to the spontaneous speech samples, this study found again

that there were no significant differences in gender marking errors in participants with DLD

compared to participants with TD. There were, however, significant differences between the

omission and substitution rates of French articles in participant's spontaneous speech sample.

The analysis in this study found that children with DLD were significantly more likely to make

omission or substitution errors when compared to participants with TD matched on age or MLU.

This finding parallels common findings in the DLD literature, which suggest that children with

DLD are more likely to make omission errors than commission errors, which is what gender

marking errors would be (Paradis, 2010).

Another study that was conducted on the use of articles amongst French-speaking

children with DLD also considered children with dyslexia (Delage & Durrleman, 2018). This

study used elicited speech samples, which involved asking participants questions which would

be likely to elicit a response of an article plus an associated noun (e.g., a target response could be

something like *le loup*, or *la balle*). This study included three groups of participants: participants

with dyslexia, who were aged from 8-11 years ($M = 9.10$ years), participants with DLD who

were aged from 7-15 years ($M = 9.11$ years), and a comparison group of children with TD who

were age-matched to participants with dyslexia and participants with DLD. This study found no

significant differences in the accuracy of use of singular or plural determiners in any group, and

all groups exhibited relatively high use of definite articles on the elicitation task, suggesting that

all three participant groups were likely to produce similar rates of errors on French determiners.

This again follows previous findings about the language abilities of L1 French-speaking

children, as this population has been found to exhibit mastery of this morpheme by around age

seven (Boloh & Ibernon, 2010). The findings from this study provide further evidence that while

there are differences in the language abilities of children with DLD and children with dyslexia

compared to their peers with TD, use of articles may be an area of relative strength in

monolingual L1 French-speaking children with DLD and children with DD.

French Passé Composé in L2 French Children. The French language abilities of

children enrolled in FI have been well researched, with many studies finding that children with

TD enrolled in FI develop French in a manner that emphasizes general communication abilities

but might not lead to mastery of more specific elements of the French language, particularly verb

tenses (Harley, 1989).

This point is illustrated by a study examining the verb tense marking abilities of children

enrolled in an Ontario FI program that was conducted by Harley (1989). The participants in this

study were children with TD who were in sixth grade and who were enrolled in French

immersion. The goal of this study was to test a targeted education plan to help children in FI with

their use of the passé composé in appropriate contexts, however participants' scores on a cloze

procedure and on a task where participants were asked to write a narrative based on a given

prompt (composition task) provide information about accuracy in use of passé composé amongst

children enrolled in FI. This study found generally low accuracy scores on the use of passé

composé in both tasks, with both experimental groups scoring an average of less than 60%

accuracy on the composition task and less than 65% accuracy on the cloze procedure task. This

low accuracy in the spontaneous and prompted use of the passé composé serves to suggest that this is an element of the French language that may be particularly difficult for children enrolled in FI.

French Passé Composé in Children with Additional Learning Needs. Previous studies that have been conducted on children with DLD have found that, across many languages, children within this population were more likely to exhibit difficulties with tense marking compared to children with TD (Leonard, 2014). Further, previous studies have found that appropriate tense-marking appeared more challenging for children with DLD on elicitation tasks as compared to spontaneous speech (Royle, St-Denis, Mazzocca & Marquis, 2018). This observation follows previous findings about children with DLD that suggest that they are more likely to omit or substitute inflected forms than they are to produce an inflected form incorrectly.

One study that looked into the use of inflected verb forms amongst children with DLD took this into account by looking at the use of the passé composé amongst French-speaking children with DLD (Royle, St-Denis, Mazzocca & Marquis, 2018). The participants that were involved in this study were children with DLD aged from 5;6 to 7;4 years, as well as a control group with an equal number of children with TD, who were matched to participants with DLD based on a variety of factors including age, education level, and French language exposure. Participants in this study completed an elicitation task which involved a research assistant telling the participant a short story, followed by a question posed to the participant, where the question posed was likely to elicit the use of the passé composé. The results of this study found that the control group of children with TD were more likely to accurately produce the passé composé compared to participants with DLD, which would be anticipated given the literature that states that children with DLD would be likely to experience additional difficulty in the use of

inflectional morphology. An interesting finding from this study was that while participants with DLD were equally likely to accurately produce the three regular, as well as the irregular, past participle forms (see Table 1.3 above), children with TD exhibited significantly more difficulty on the use of the irregular past participle form than any of the regular ones. Previous literature on the inflectional morphology abilities of children with DLD have found that children in this population often do not exhibit significantly more difficulty on irregular verb tenses compared to regular verb tenses (Royle & Thordardottir, 2008). It has been suggested that this finding may be due to children with DLD storing the full inflected form of passé composé verbs in their lexicon, rather than having the rules to compose the past participle forms. The findings from this study suggest that children with DLD are likely to have difficulties in the use of the passé composé compared to children with TD, and that there may be a slightly different pattern of development of the passé composé in French-speaking children with DLD, as where French-speaking monolingual children with TD exhibited relative strength on regular forms of the past participle compared to irregular ones, French-speaking children exhibited comparable levels of difficulty with all French past participle forms.

The Present Study

This present study aims to bring together previous findings regarding the language development of children enrolled in EFI, and the language development of children with additional learning needs. To achieve this, the morphosyntactic abilities of participants who are considered AR enrolled in an EFI program will be analyzed by looking at accuracy in use of morphemes in obligatory contexts, both on a sentence repetition task, and on a narrative retell task, as well as MLU on the narrative task. Additionally, this present study will look at the complex syntax abilities of participants who are AR enrolled in EFI. To measure complex syntax

abilities, the present study will look at accuracy in the reproduction of complex and simple

sentences on a sentence repetition task and clausal density on a narrative retell task. Finally, this

study will look at communicative language abilities generally by measuring participants'

narrative macrostructure abilities and vocabulary on a narrative retell task. The goal of the

present study is to use the data from participants who are AR enrolled in EFI to evaluate the

claims of the CEH. To do this, the language abilities of participants who are AR enrolled in EFI

will be compared to those of participants who are AR enrolled in ELoI, and to participants who

are not considered AR enrolled in EFI. These participant groups will allow the present study to

consider the CEH because the CEH's framework would suggest that children in the EFI-AR

group would exhibit greater difficulties in their L1 and L2 compared to both comparison groups.

The current study will allow for this comparison on morphosyntactic abilities, complex

sentences, and general communicative language abilities, which will help to further evaluate the

claims made by the CEH.

      To evaluate the CEH, this thesis includes data from three groups of students: (a) children

who are considered AR enrolled in EFI; (b) children who are considered AR enrolled in ELoI;

and (c) children who are not considered AR enrolled in EFI. Groups (b) and (c) will serve as

comparison groups to assist in the interpretation of group (a)'s performance. The first group

includes students enrolled in FI who are AR. Participants considered AR were identified by their

parent or guardian as having a language-based disability, autism, or ADHD. Diagnostic status

and disabilities were parent reported. The reason that this group of children was of particular

interest for this present study was because children who require additional support in their

learning have been found to be more likely to be excluded from dual language education

programs such as FI than their peers (Marinova-Todd et al., 2016). Because children who are AR

are likely to experience higher rates of exclusion from FI programs, this group of children who are AR enrolled in EFI were of particular interest for this present study, to examine whether their enrollment in EFI does influence their language abilities. The second group of participants in this study were children who were considered AR enrolled in ELoI. This group was selected for the purposes of this present study to investigate the CEH. The CEH would predict that the language abilities of participants who are AR enrolled in EFI would be significantly reduced compared to those of participants who are AR enrolled in ELoI. Looking at the language abilities of these two groups will allow for a cross-group comparison to examine whether the language abilities of participants who are considered AR enrolled in EFI were affected by their enrollment in the dual language education program. The third group included in this study was a group of children who are not considered AR and were enrolled in EFI. This group was included in the present study as a benchmark for the French and English language abilities that one would anticipate in fourth grade EFI students with typical development (TD). Because the CEH predicts that bilingual language exposure will intensify the language struggles of children with language-based learning difficulties, then it seems logical to extrapolate that the CEH would predict that participants who are considered AR enrolled in ELoI would exhibit stronger English language abilities compared to participants who are considered AR enrolled in EFI. This comparison group was included in the present study to analyze the French language abilities of participants who are considered AR enrolled in EFI. Because we anticipate that participants who are considered AR would experience greater difficulty with language, the goal of including the comparison group of participants who are not considered AR enrolled in EFI is to provide a benchmark for the type of French language abilities that one would expect to see in fourth-grade children enrolled in EFI. This will allow us to examine not only whether the English language abilities of participants who

are considered AR enrolled in EFI are affected by their enrollment in EFI, but also the degree to

which they are learning the French language during their time at school.

The following research questions address the specific goals that we are attempting to

achieve by describing the language abilities of children who are considered AR enrolled in EFI

programs:

1) What are the French and English narrative macrostructure abilities of children who are

   considered AR enrolled in EFI?

   a) How do these abilities compare to peers who are not considered AR enrolled in

      EFI?

   b) How do these abilities compare to peers who are considered AR enrolled in ELoI?

2) What are the French and English complex syntax abilities of children with children who

   are considered AR enrolled in EFI?

   a) How do these abilities compare to peers who are not considered AR enrolled in

      EFI?

   b) How do these abilities compare to peers who are considered AR enrolled in ELoI?

3) What are the French and English inflectional morphology abilities of children who are

   considered AR enrolled in EFI?

   a) How do these abilities compare to peers who are not considered AR enrolled in

      EFI?

   b) How do these abilities compare to peers who are considered AR enrolled in ELoI?

4) What morphosyntactic errors do children who are considered AR enrolled in EFI make

   on an English story retell task?

a) Does the pattern of errors made by children who are considered AR enrolled in

   ELoI differ from that of children who are considered AR enrolled in EFI?

b) Does the pattern of errors made by children who are not considered AR enrolled

   in EFI differ from that of children who are considered AR enrolled in EFI?

5) What morphosyntactic errors do children who are considered AR enrolled in EFI make

   on a French story retell task?

a) Does the pattern of errors made by children who are not considered AR enrolled

   in EFI differ from that of children who are considered AR enrolled in EFI?

6) Do the French and English language abilities of children who are considered AR enrolled

   in EFI provide support for the CEH?

Chapter Two: Methods

Participants

The present study included a total of 38 fourth grade students who were enrolled at the Ottawa Carleton District School Board (OCDSB) consecutively from senior kindergarten through the fourth grade. All participants were enrolled in the same education program throughout their time in school. Participants had a mean age of 9;5 years, with ages ranging from 8;9 to 10;3. Participants in this present study were in three groups. The primary group of interest was children considered AR enrolled in EFI ($n = 13$). This group consisted of children who had been identified by their parent/guardian as having a language based-disability, ADHD, or autism, and who were enrolled in EFI. Participants included in this group had to have been enrolled in the EFI program within the OCDSB for their entire time within school. The first comparison group that was included in this study were children considered AR enrolled in ELoI ($n = 10$). Participants in this group were children who had been identified as having a language based-disability, ADHD, or autism by their parent or guardian, and who were enrolled in ELoI. Participants in this group had to have been enrolled in the ELoI program within the OCDSB for their entire time in school. This comparison group was created to evaluate whether there were any significant differences in the English language abilities of children considered AR if they were enrolled in EFI or in ELoI. A second comparison group was included to help understand the development of French language and literacy skills of students considered AR in EFI. This group included children ($n = 15$) who had not been identified as being AR. Participants in this group had to be enrolled in the EFI program within the OCDSB for their entire time in school. Table 2.1 provides an overview of the participants involved in this study.

Table 2.1.

Participant Demographic Information.

	Age (in months)	Sex	Parental Education Level (in years)
EFI-NotAR	$M = 113.87$, $SD = 3.99$	$n = 7$ boys, $n = 8$ girls	$M = 16.97$, $SD = 2.89$
EFI-AR	$M = 113.58$, $SD = 2.99$	$n = 8$ boys, $n = 4$ girls	$M = 15.85$, $SD = 1.94$
ELoI-AR	$M = 115.1$, $SD = 6$	$n = 8$ boys, $n = 2$ girls	$M = 14.55$, $SD = 1.80$

Note: Overview of demographic information for participants in the present study.

For the purposes of the present study, children could be considered AR due to a variety of additional learning needs. A summary of the parent-reported disabilities experienced by participants in this present study is provided in Table 2.2.

Table 2.2

Participant Breakdown by Parent Reported Disability

	EFI-AR	ELoI-AR
Language Impairment	$n = 2$	$n = 2$
Language Impairment & ADHD	$n = 1$	$n = 1$
Language Impairment, Learning Disability, ADHD, & Other	$n = 0$	$n = 1$
Language Impairment, ASD, & Mental or Psychological Disorder	$n = 0$	$n = 1$
Language Impairment & Deaf or Hard of Hearing	$n = 0$	$n = 1$
Speech Impairment	$n = 7$	$n = 2$
ASD & ADHD	$n = 1$	$n = 0$
Learning Disability & Mental or Psychological Disorder	$n = 1$	$n = 0$
Learning Disability, ADHD, & Other	$n = 1$	$n = 0$
Mental or Psychological Disorder & ADHD	$n = 0$	$n = 1$

Note. Summary of participant's parent reported disability. Includes co-occurring conditions.

Procedures

Data

The current study uses data collected as part of a larger study conducted in partnership with the OCDSB. The larger project included data from the third grade EQAO test, a standardized achievement test given to students in Ontario to test curriculum knowledge in mathematics, reading, and writing, administered at the end of grades 3, 6 and 9. The larger project also collected a series of standardized language and literacy tests at the beginning of grade 4 from a small sub-set of students. Details of the larger samples can be found in Kay-Raining Bird et al. (2020). This publication also includes details about the administration of direct testing methods. Kay-Raining Bird et al. (2020) reported data from twenty children, ten considered AR and ten not considered AR. The children completed a series of one-on-one testing sessions that assessed their cognitive abilities, language abilities, and reading abilities. The measures taken for Kay-Raining Bird et al. were all standardized tasks, and results from Kay-Raining Bird et al. (2020) were based on the raw and standard scores that participants achieved on each of the standardized measures. The present thesis builds on this work by providing further analyses of these language measures. Notably, Kay-Raining Bird et al (2020) provided the standard and raw scores of participants on the recalling sentences (RS) subtest of the CELF, but they did not examine the use of morphemes in obligatory contexts or syntactic complexity. Further, data from participants' story retells on the MAIN task (Gagarina et al., 2019) were not analyzed by Kay-Raining Bird et al (2020).

An ethics application was completed for the use of the secondary data for the purposes of this thesis (ethics protocol #116833). The data provided for the purposes of this study included audio recordings of participants completing the RS subtest of the Clinical Evaluation for

Language Fundamentals, 5th Edition (CELF-5; Wiig, Semel, & Secord, 2013), as well as audio

recordings and transcripts of participants completing a narrative retell task from the MAIN

(Gagarina et al., 2019). This data was provided in English for all participants, and in French for

participants enrolled in EFI. Participants enrolled in ELoI did not complete the French measures.

For the MAIN transcripts that were provided, I moved them into CLAN, verified their accuracy

and when necessary edited them. The school board that was attended by participants in this

present study had bilingual education for all kindergarten students, with instruction 50% in

French and 50% in English. Upon completion of kindergarten, students registered in either ELOI

or EFI. For EFI first grade students learn 80% in French and 20% in English, and second to sixth

grade students learn 60% in French, and 40% in English (Ottawa Carleton District School Board,

2016). In addition to audio recordings and transcripts of participants completing the MAIN, and

audio recordings of the CELF-5, I was also provided data of individual participant's ages,

programs, and parent-reported disability status, as well as the project's original ethics acceptance

form, consent form, and assent script.

Materials

CELF-5: Recalling Sentences (RS) (Wiig, Semel, & Secord, 2013)

This task required participants to listen closely to a model sentence, and then repeat that

sentence back to the examiner. For the purposes of this study, the RS subtest of the CELF-5 was

used to look at participants' ability to accurately reproduce simple and complex sentences, as

well as to look at their ability to include inflectional morphemes of interest. The RS subtest of

the CELF-5 begins with two practice sentences. In the RS subtest of the CELF-5, sentences may

be produced only once, and may not be repeated. This rule is lifted for the two training sentences

to ensure that the participant has a good understanding of the task. There is an English and a

French version of this task. Both French and English versions of the CELF include a variety of simple and complex model sentences, with complex sentence types including complex sentences with relative clauses, coordinated clauses, and sentential complements.

English CELF-5 RS. The English version of the CELF-5 comprises 26 model sentences and two training sentences and is split into two age groups: 5 to 6 and 7 to 8. The model sentences become increasingly difficult over the course of the task, with the sentences that are most likely to be accurately reproduced being in the age 5 to 6 category. For this present study, participants began with the first sentence of the ages 7 to 8 category. If they made an error on the first sentence of the 7 to 8 category, then the research assistant would follow up with the first model sentence from the age 5 to 6 category, and the participant would complete each of the model sentences present in the 5 to 6 category before continuing on with the 7 to 8 category. This task has a ceiling rule of three consecutive incorrect sentences; the task was discontinued if the ceiling rule was met.

French CELF-CDN-FR RS. The procedure for the French CELF (Semel et al., 2009) is similar to that of the English CELF-5, however rather than two categories, the French CELF has four categories across a total of 32 model sentences. These categories are ages 4-8, ages 9-10, ages 11-14, and ages 15-16. As with the English CELF-5, the model sentences became increasingly difficult to reproduce as the task went on, with the sentences in the ages 4-8 category being the least difficult to reproduce. In this present study, the majority of participants began the CELF in French in the 4-8 category, however some participants began in the 9-10 category. If a participant began with the 9-10 category and produced an error on their repetition of the model sentence, they would be moved back to the 4-8 category, and would continue the

rest of the task from the first model sentence of the 4-8 category. The French version also has a ceiling rule of three consecutive incorrect repetitions.

Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2019).

The second instrument that was used to look at the language abilities of participants considered AR enrolled in EFI was the MAIN (Gagarina et al., 2019). A benefit to the use of the MAIN task over other story retell tasks is that the MAIN has been translated into a wide variety of languages. In creating the versions across languages, the MAIN creators paid particular attention to creating parallel model stories across languages. As such, the MAIN is well-designed for use with bilingual children, particularly when the research goals include understanding development across languages. The MAIN task includes a total of four stories: the cat story, the dog story, the baby bird story, and the baby goat story. The cat and dog stories were designed to closely parallel each other in terms of story structure and length. Similarly, the baby bird and baby goat stories also parallel each other. As such, comparisons of children's language skills are ideal if the child completes the cat story in one language and the dog story in the other language (or instead the baby bird and baby goat stories). This allows for the most straightforward comparisons across languages. It becomes more difficult to compare narrative macrostructure across languages if other combinations of these stories are used (e.g., the cat story and the baby bird story do not have a parallel narrative structure or length).

This data was collected with a goal of comparing children across programs and not with the secondary goal of comparing across languages within each child. As such, attention was given to randomizing the stories across children. One consequence of this, however, is that an individual child did not always complete the directly parallel stories in French and English (e.g., one participant completed the cat story in English, but the baby bird story in French). As a result,

caution needs to be used if comparing within or across languages. As was the case for the larger project, the goal of this present study is not to compare language abilities within one participant group but rather to compare language abilities across groups. Thus, the distribution of stories across the sample is not problematic.

To conduct the MAIN task with participants, the research assistant (RA) would begin by sitting across from the participant. The RA would then provide a brief explanation of the task (note: the full script is available in the MAIN user's manual, which is available upon request from the research team; Gagarina et al., 2019). After explaining the task, the RA would begin to tell the participant the model story. Each model story features a set of six images that depict the events of the model story. As the RA read the model story, they would reveal the images one by one. Once the model story was completed, the RA would fold the images such that the participant could only view the first scene and would then prompt the participant to begin their attempt at retelling the story. When the participant reached each relevant point in their story, the images would be revealed in sets of two, for a total of three image sets, such that all images would be visible by the time the participant completed their narrative. The story retell portion of the MAIN task would be terminated when the participant completed their narrative.

Scoring

This present study looked at children's general communication abilities (as estimated with a measure of story grammar), lexical development (as estimated by tallying a type-token ratio on the MAIN), syntactic complexity, and use of morphemes in obligatory contexts. To look at these abilities, a variety of measures were tabulated from the MAIN and the RS subtest of the CELF-5. The following section describes how each score was calculated.

MAIN Task

Story Grammar. Story grammar refers to the inclusion of necessary narrative elements such as setting, initiating event, and outcome. To effectively produce a narrative, it is important that key macrostructural elements be present (Squires et al., 2014). As such, story grammar (i.e., the use of narrative macrostructure in participants' story retell tasks) was used as a measure of general communicative ability for this present study. To measure story grammar abilities, the story grammar checklist from the MAIN manual was used. This checklist includes a set of 16 macrostructural elements present in the MAIN model story that one would anticipate seeing in the child's retelling of the story. These macrostructural elements include setting, use of internal state terms as initiating event and/or reaction, three goals, an attempt to achieve each goal, and the outcome of each goal. Each participant's story retell was compared to this checklist for whether or not they included each narrative element. This produced a possible score out of 17 (as the macrostructural element "setting" was worth two points), which was converted to a proportion of the quantity of macrostructural elements included in the participant's narrative over quantity of macrostructural elements present in the model story. This score was used to comment on the communication abilities of participants.

Type-Token Ratio (TTR). As a measure of participants' general lexical development, a measure of TTR was taken based on the participants' narrative retells from the MAIN task. TTR was calculated at the lemma level for the purposes of this present study, such that inflected forms of the same stem would be counted as separate lexical items (e.g., jump, jumped, and jumping would all be counted separately, for a total of three tokens; by counting at the lemma level these were all counted as tokens of the same type, JUMP). The lemma level was selected to get a better idea of the general lexical development of participants without inflating it with morphosyntactic

skills. To calculate TTR, CLAN was used to analyze the French and English narratives of participants. As with measures of MLU, the French and English lexicons from the CLAN manual were used to apply a morpheme tier to each participant's narrative. The French CLAN lexicon was used to add a morpheme tier to French narratives, and the English CLAN lexicon was used to add a tier to the English narratives. Using the updated transcript with the morpheme tier added, the command "freq +t*CHI" was used to determine the TTR at the lemma level, and the command "freq +t*CHI +t%mor +sm;*" was used to determine TTR in morphemes.

Clausal Density. Clausal density refers to a ratio of total clauses over utterances within the participant's narrative retell. Clausal density was used as a measure of syntactic complexity because clausal density has been found to be an effective measure of syntactic complexity in the narratives of children, including bilingual children (Frizzelle et al., 2018; Paradis et al., 2022). Following these past studies, the number of clauses present in each participant's narrative were counted. Next, the number of utterances present in the child's narrative were tallied. In order to determine the number of utterances, utterance boundaries were established based on the transcription manual from the Edmonton Narrative Norms Instrument (ENNI; Schneider, Dubé, & Hayward, 2005), as transcription guidelines for the MAIN task are not provided within the manual. To find the clausal density score, the quantity of clauses were divided by the quantity of utterances. On this measure, the lowest possible score was 1.0, which would indicate that the participant produced only simple sentences in their narrative. This measure thus allowed for the investigation of the extent of multi-clause utterances in participants' narratives on the French and English MAIN story retell tasks.

Use of Inflectional Morphemes in Obligatory Contexts. This score was used to investigate how often and how accurately participants used inflectional morphemes in their

narrative retell task. This study looked at four English constructions: regular past tense, irregular past tense, the definite article *the*, and the indefinite article *a*. In French, three morphemes of interest were selected: passé composé, indefinite articles (*un* and *une*), and definite articles (*le*, *la*, and *les*). For more information about past tense marking in French, see Table 1.3 in chapter one, which provides an overview of each category of passé composé verbs that were used for this study, as well as their typical auxiliaries and past participle forms for the passé composé. Passé composé accuracy was tallied separately for each construction, resulting in seven different tallies: the three lexical verb classes (*-er*, *-ir*, and *-re*) with their corresponding auxiliary (*avoir* or *être*) and irregular forms.

The specific target morphemes that were selected for this present study were selected for two reasons. First, the present study wanted to look at morphemes that were found to be parallel across the L1 and L2 of participants (Paradis et al., 2003). Additionally, the morphemes that were selected for the current study included examples of tense (past-tense marking) and non-tense (articles) morphemes, which will allow the current study to look at morphemes that have been found to be more difficult for children with additional learning needs, and morphemes that have been found to be less difficult for children with additional learning needs (Leonard, 2014).

In order to score children's accuracy with these morphemes, the obligatory contexts for each morpheme within each participant's narrative from the MAIN task needed to be identified. To do this, each narrative was analyzed clause-by-clause for incidences where an inflectional morpheme would be required for grammatical production. For instance, in the English sentence "A cat jumped over the fence.", the morphemes *a*, past tense regular *-ed* on *jumped*, and *the* would have been counted as obligatory contexts. The total number of obligatory contexts were tallied for each morpheme. Next, for each obligatory context the child's production was noted

and scored. Each obligatory context could have one of three outcomes: correct, omission error or commission error. The first possible outcome was a correct production; that is, when the morpheme is produced correctly in its obligatory context, a point is granted for that obligatory context. For instance, if this participant produced the phrase "the cat jumped towards the tree", the participant would receive full points for each of the obligatory contexts included in their production (for this study, that would be *the* (cat), *jumped* and *the* (tree). The result of this scoring system was that each participant was given an accuracy score on each of the morphemes of interest in obligatory contexts, where a score of 0% would indicate that there were contexts for the morpheme, but that the participant never used the morpheme correctly, and a score of 100% would indicate that the morpheme was always used correctly in all obligatory contexts.

The second possible outcome would be if the morpheme was omitted from its obligatory context. No points would be granted. For instance, if a participant produced "the cat jump towards the tree", the past tense regular morpheme *-ed* was omitted from its obligatory context, so for that regular past tense item, they would receive 0/1 based on this production. In English, omission errors included the omission of the past-tense marker on regular and irregular verbs, as well as the omission of English articles *a* or *the* from obligatory context. In French, these errors included omission of the auxiliary verb from passé composé contexts, and omission of definite or indefinite articles in obligatory context.

The third possible outcome was that a different morpheme was produced (commission error). Again, no points would be granted (e.g., if the child said, "the cat jumps towards the tree" when *jumped* would have been more appropriate given the context of the story). Commission errors in English included conjugation errors (e.g., producing a tense morpheme that is incorrect in the given context, e.g., *he jump-s* in place of *he jump-ed*) for the past tense verbs, and

definiteness errors (note: for the purposes of this study, using a definite article for first introduction was not considered a definiteness error, as participant and RA were joint-attending to an image depicting events from the narrative). Note, in tallying the number of commission errors in English, over generalization errors (applying the regular past tense morpheme in the context of an irregular verb) were also counted in this category. This decision was made because it is an example of an incorrect, but still inflected, form being used, making it more similar to a commission error than an omission error. Commission errors in French included conjugation errors (i.e., production of the lexical or auxiliary verb in an incorrectly inflected or infinitival form), verb choice errors (i.e., the participant produced the incorrect auxiliary verb for the given lexical verb), gender marking errors (i.e., production of gendered article with a gender that does not match the corresponding noun), form errors (i.e., production of *le* in place of *l'*, or the inverse), and definiteness errors (i.e., utilizing definite articles in place of indefinite articles, or the inverse).

Mean Length of Utterance (MLU). As an additional measure of morphosyntactic ability, MLU by morpheme and MLU by word were measured for each participants' narrative retell in each language. To measure the MLUs for each participant, first each story was transcribed in CLAN, following transcription guidelines from the ENNI (Schneider et al., 2005). As was mentioned above, the MAIN does not provide transcription guidelines as it focuses on macrostructure and not microstructure measures. To find the MLU in morphemes and in words in English, first the English lexicon from the CLAN library was selected as the morpheme library. Next, a morpheme tier was added to each transcript. This added information to the CLAN file about the morphemes present in the participant's transcribed narrative. Notably, this approach only demonstrates what morphemes were produced and cannot determine if the

morpheme was used correctly or if any morphemes were omitted. As such, the analysis described above was necessary to understand children's use of inflectional morphology more fully. Following the generation of the morpheme tier, the next step was to use this updated CLAN file to calculate MLU. The command "mlu +t*CHI " was first used to find MLU in morphemes, then the command "mlu +t*CHI -t%mor " was used to find the MLU in words. This same procedure was repeated for each participant. To find each participant's MLU in French, a similar procedure was followed, with the French lexicon from the CLAN library used as the morpheme library for stories on the French MAIN.

CELF-5

Simple and Complex Syntax. The RS subtest of the CELF-5 was used to look at participants' overall accuracy on the repetition of simple and complex sentences. To find a simple and complex syntax score, first all participants sentences were scored according the CELF-5 guidelines. In English, CELF-5 guidelines were used, and in French, the CELF-CDN-FR guidelines were used. This required each sentence to receive a score out of three, with one point being removed from the participant's score with every deviation from the model sentence present in the participant's repetition. As such, under this scoring system, a sentence with no errors would have three points, and a sentence with three or more errors would have 0 points. Raw scores for this task are the sum of the points awarded to each individual sentence. In addition to generating this overall score for the sentence repetition tasks, I also tallied children's accuracy with simple and complex sentences separately, with all of the points that were earned on the simple sentences in the subtest making up the simple sentence score, and the points that were earned on the complex sentences in the subtest making up the complex sentence score. With these scores, it was possible to look at overall accuracy on simple and complex sentences.

Use of Morphemes of Interest in Obligatory Contexts. The final score to be calculated for this present study was an additional score for use of morphemes of interest in obligatory contexts, with this score being calculated based on responses on the RS subtest of the CELF-5. The morphemes of interest on the RS subtest were the same morphemes of interest present in the MAIN analysis. In English, past tense regular -*ed*, irregular past tense, indefinite article *a*, and definite article *the* were used. In French passé composé, the indefinite article (*un* and *une*), and the definite article (*le*, *la*, and *les*) were used. A key difference between the French passé composé analysis on the MAIN task and on the RS subtest of the CELF-5 was that on the CELF-5, the passé composé was tallied by combining the auxiliary verb and that past participle verb class. This was because there were few incidences of each type in the task for separate tallies. An overall score across the construction types was used instead. The first step of this analysis was to look at each model sentence, find morphemes of interest and compare them to what is present in the participant's production. If a participant were to produce the model sentence in the same manner as the RA, this would be considered 100% accuracy, with all morphemes being produced correctly within their obligatory context. In this way, the model sentence served as illustrating the obligatory contexts and scoring proceeded in the same manner as described for the MAIN above.

Analyses

Data Cleaning

Across each task, participation varied. On the English RS subtest of the CELF-5, 12 out of 13 participants enrolled in EFI considered AR (EFI-AR) completed the task. Additionally, 9 out of 10 participants enrolled in ELoI considered AR (ELoI-AR) completed this task. 11 out of 13 EFI-AR participants completed the English MAIN task. In French, 12 out of 13 EFI-AR

participants completed the MAIN task, and all participants completed the French RS subtest of

the CELF-5. A summary of the number of participants who completed each task in each

language is provided in Table 2.3.

Table 2.3

Summary of Sample Size by Task Completed.

	English CELF-5	English MAIN	French CELF-5	French MAIN
EFI-NotAR	$n = 15$	$n = 15$	$n = 15$	$n = 15$
EFI-AR	$n = 11$	$n = 12$	$n = 13$	$n = 12$
ELoI-AR	$n = 10$	$n = 9$	n/a	n/a

Note: CELF-5 = Recalling Sentences subtest from the Clinical Evaluation of Language

Fundamentals, 5th edition. MAIN = Multilingual Assessment Instrument of Narratives.

In addition to some participants not completing a specific measure, data cleaning was

also necessary in some instances at the item level. For the RS subtest of the CELF-5, the CELF-5

requires that each model sentence be presented once with no repetitions. In some instances (15

items, across 7 participants), participants received a repetition of one or more sentences. Because

of this, these participants were excluded from the raw score tally for the RS. These participants

were included in the tally of correct simple and complex sentences as this was a researcher

generated measure. In this case, each sentence that was repeated was excluded in the

participant's final simple or complex syntax score, and the number of possible points that the

participant could score on the task was adjusted accordingly (i.e., by removing this sentence

from the denominator as well). Also, on the RS, there were some instances (5 items across 4

participants) where the model sentence was produced incorrectly, with words changed or added

from the original model sentence. These sentences were treated in the same manner as sentences

which were repeated.

Keeping track of the number of sentences participants completed (the denominator) was also important for interpretation because the two tasks do not contain the same number of items and because participants varied in the number of items they completed for each task. For example, while a number of participants involved in the present study completed the English RS subtest of the CELF-5, none of the participants completed the CELF in French by reaching the end of the model sentences. This was anticipated given that French is the second language of these participants, and thus is likely to be their weaker language. Further, the French version of the CELF included six more model sentences than the English version of the CELF-5, making it more difficult to complete all model sentences.

For the MAIN, scores were based on the participant's retell of the narratives after listening to the same script. With the exception of one child (enrolled in ELOI), all children completed the MAIN. This participant withdrew their assent for participation during the MAIN and as a result this participant did not complete the English or French MAIN tasks.

Descriptive Analysis

To begin the analysis of participants' French and English language abilities, the first step was to calculate the descriptive statistics by group for each construct measured in the present study. To measure the descriptive statistics for participants, IBM SPSS Statistics (Version 26; IBM Corp., 2019) was used. Participant results were split by group, such that each descriptive analysis provided an overall mean for each of the three participant groups included in this study. To calculate the descriptive statistics for each participant group, the 'Descriptive Statistics' tool was used. Participant's accuracy scores for each construct were placed as the variables for the analysis, with the exception of clausal density, MLU, and TTR scores, which were analyzed in their raw form.

For the error analysis portion of the present study, a similar procedure was used to describe the rates of omission and commission on each of the morphemes of interest from the participants story retells on the MAIN task (Gagarina et al., 2019). To analyze this portion, participants' total number of correct uses of morphemes in obligatory context, omissions of morphemes in obligatory context, and commissions of morphemes in obligatory context were calculated for each morpheme of interest, such that the total number of correct responses, omissions, and commissions would add up to the total number of obligatory contexts for the given morpheme.

Wilcoxon-Signed Rank Tests

To compare language abilities across groups, the present study chose to use Wilcoxon-Signed Rank tests to identify any significant differences between participant groups on the abilities measured in the current study. Wilcoxon-Signed Rank tests are a non-parametric test, meaning that they are designed to be used on a sample that does not fall under a normal distribution, like the sample in the current study (Agresti et al.,2017). This particular non-parametric test allows for the comparison of two groups by determining whether group means differ significantly from one another. The Wilcoxon Signed-Rank test is meant to analyze the difference between two groups that follow the assumption of having two independent, random samples. This assumption is met in the case of the current study. To recruit participants for the data used in the present study, a recruitment message was sent to parents of children in the OCDSB, and they were asked to contact the researchers on the study to participate. Further, the participants in the current study were only able to be in one participant group, making the samples for the present study independent from one another. Because the goal of the present study was to see whether there were any significant differences between groups, and these

because groups had relatively low sample sizes, the Wilcoxon-Signed rank test was preferred

over a t-test. To conduct the Wilcoxon Signed-Rank tests, SPSS software was used (Version 26;

IBM Corp., 2019). Participants' groups were identified based on their program and whether they

were considered AR, which allowed two Wilcoxon Signed-Rank tests to be performed on each

of the English abilities that were measured (i.e., comparing results from EFI-AR to EFI-NotAR,

and EFI-AR to ELoI-AR), and one Wilcoxon Signed-Rank test to be performed on each of the

French language abilities that were measured in the current study (i.e., comparing results from

EFI-AR to EFI-NotAR).

  In interpreting the results of the Wilcoxon test, it is important to consider the number of

comparisons that are being made with each participant group. To take the number of

comparisons into account, a Bonferroni adjustment was conducted for each comparison group.

For the participants completing measures in French and in English (e.g., EFI-AR and EFI-NotAR

groups), a total of 35 comparisons were made. Based on a starting alpha value of .05, the

Bonferroni adjustment for these comparisons created an adjusted alpha value of .0014. For

participants in the EFI-AR and ELOI-AR groups, a total of 18 comparisons were made. Based on

the same starting alpha value of .05, the Bonferroni adjusted alpha value for these comparisons

was .0028.

Chapter Three: Results

Part 1: Group Differences

General Language Abilities

This present study focused on the syntactic and morphosyntactic abilities of participants,
however additional measures of participant's overall language abilities (in this case, story
grammar and lexical diversity [type:token ratio, TTR] as an estimate from a narrative retell task).
were also provided to offer a more well-rounded portrayal of the language abilities of
participants considered AR enrolled in EFI (EFI-AR). Table 3.1 provides an overview of the
proportional story grammar scores and TTR scores in words and morphemes for each group.

Table 3.1

Summary of Average French and English Story Grammar and TTR Scores

	EFI-NotAR	**EFI-AR**	ELoI-AR	Group Comparison (EFI-NotAR to EFI-AR)	Group Comparison (ELoI-AR to EFI-AR)
English Story Grammar	$M = 61\%$, $SD = 11\%$	$M = 64\%$, $SD = 10\%$	$M = 49\%$, $SD = 16\%$	W ($n_1 = 15$, $n_2 = 12$) = 193.5, $p = .427$	W ($n_1 = 10$ $n_2 = 12$) = 78, $p = .014$
French Story Grammar	$M = 53\%$ $SD = 12\%$	$M = 55\%$ $SD = 12\%$		W ($n_1 = 15$, $n_2 = 12$) = 202.5, $p= .719$	
English TTR Inflected Forms	$M = .51$, $SD = .05$	$M = .49$, $SD = .05$	$M = .51$, $SD = .07$	W ($n_1 = 15$, $n_2 = 12$) = 142.5, $p= .217$	W ($n_1 = 9$, $n_2 = 12$) = 122, $p = .508$
English TTR Lemmas	$M = .53$, $SD = .05$	$M = .50$, $SD = .05$	$M = .53$, $SD = .07$	W ($n_1 = 15$, $n_2 = 12$) = 133, $p= .093$	W ($n_1 = 9$, $n_2 = 12$) = 119.5, $p = .382$
French TTR Inflected Forms	$M = .47$, $SD = .09$	$M = .48$, $SD = .09$		W ($n_1 = 15$, $n_2 = 12$) = 202.5, $p= .829$	N/A

	EFI-NotAR	**EFI-AR**	ELoI-AR	Group Comparison (EFI-NotAR to EFI-AR)	Group Comparison (EFI-AR to ELoI-AR)
French TTR Lemmas	$M = .48$, $SD = .08$	$M = .49$, $SD = .07$		W ($n_1 = 15$, $n_2 = 12$) = 186.5, $p = .899$	

Note. Summary of average French and English communication abilities.

A series of Wilcoxon signed-rank tests were performed to compare story grammar abilities and both TTRs across participant groups. These cross-group comparisons found no significant difference between the average story grammar scores of EFI-AR participants as compared to EFI-NotAR participants in French or in English. Additionally, there were no significant differences found between the TTR when tallied at the lemma level or at inflected word form level when EFI-AR participants' scores were compared to those of EFI-NotAR participants. In comparing the EFI-AR and ELoI-AR groups, a significant difference was found for English story grammar scores; the EFI-AR participants had, on average, higher story grammar scores when compared to ELoI-AR participants, indicating that EFI-AR participants were more likely to include more narrative elements in their narrative retell when compared to ELoI-AR participants. However, this significant difference was not maintained once the Bonferroni correction was taken into consideration. No significant difference in the English TTR scores at the lemma level or as inflected word forms, based on the narrative retell from the MAIN task, were found between these two groups.

Complex Syntax Abilities

English Complex Syntax Abilities. To evaluate the English complex syntax abilities of participants, four measures were used. First, clausal density was used to determine the average quantity of clauses per utterance present in the participant's narrative on the MAIN task. The

next measure of syntactic complexity was participant's raw score for the RS subtest of the

CELF-5, which was tallied based on the scoring guidelines provided with this task. Finally, each

sentence in the Recalling Sentences subtest of the CELF-5 was classified as being either a simple

or complex sentence. A total of all points earned on simple sentences and of all points earned on

complex sentences was calculated, which provided the final simple and complex syntax scores.

Scores for each measure by group are provided in Table 3.2.

Table 3.2

English Complex Syntax Abilities.

	EFI-NotAR	**EFI-AR**	ELOI-AR	Group comparison (EFI-NotAR to EFI-AR)	Group comparison (EFI-AR to ELOI-AR)
English Clausal Density (MAIN)	$M = 1.98$, $SD = 0.54$	$M = 2.06$, $SD = 0.28$	$M = 1.74$, $SD = 0.34$	W ($n_1 = 15$, $n_2 = 12$) $=$ 198, $p =$ .581	W ($n_1 = 9$, $n_2 = 12$) $=$ 72, $p = .058$
English RS raw score	$M = 43.87$, $SD = 9.26$	$M = 37.73$, $SD = 10.44$	$M = 36.7$, $SD = 9.5$	W ($n_1 = 15$, $n_2 = 11$) $=$ 119.5, $p =$ .134	W ($n_1 = 10$, $n_2 = 11$) $=$ 107, $p =$ .863
English RS standard score	$M = 12.87$, $SD = 2.77$	$M = 10.36$, $SD = 3.26$	$M = 8.80$, $SD =$ 1.87	W ($n_1 = 15$, $n_2 = 11$) $=$ 110.5, $p =$ .047	W $n_1 = 10$, $n_2 = 11$) $=$ 96.5, $p =$ .349
English Simple RS	$M = 88\%$ (15.87/18), $SD = 6.96$	$M = 82\%$ (14.5/17.7), $SD = 12\%$	$M = 82\%$ (19/23.1), $SD = 12\%$	W ($n_1 = 15$, $n_2 = 11$) $=$ 130.5, $p =$ .357	W ($n_1 = 10$, $n_2 = 11$) $=$ 121, $p = 1$
English Complex RS	$M = 81\%$ (95.8/118.8), $SD = 8\%$	$M = 75\%$ (87.4/115.6), $SD = 14\%$	$M = 69\%$ (78.9/114.3), $SD = 11\%$	W ($n_1 = 15$, $n_2 = 11$) $=$ 127, $p =$ .281	W ($n_1 = 10$, $n_2 = 11$) $=$ 94, $p = .282$

* $p < .05$. **$p < .01$. ***$p < .001$.

To examine if there were group differences in any of these measures of syntactic ability,

a series of Wilcoxon signed-rank tests were performed. A significant difference between the

standard scores of the EFI-AR group and the EFI-NotAR group was found, however no

significant differences were found between these two groups on any other measure of syntactic

complexity, including the raw score (see Table 3.2). Also, the one significant difference that was

noted was not maintained once the Bonferroni correction was taken into consideration. There

were no significant differences between the EFI-AR and ELoI-AR groups on any measure of

syntactic ability. This suggests that, with the exception of the standard score for the RS subtest of

the CELF-5, children in the EFI-AR group had English syntactic abilities that parallel their AR

peers in ELOI, and that EFI-AR and EFI-NotAR participants had similar English syntax abilities.

French Complex Syntax Abilities. As with the English complex syntax abilities, four

scores were used to measure this construct. First, clausal density scores based on participant

responses on the MAIN task were used. Next, participants' raw scores on the RS subtest of the

CELF-CDN-FR were analyzed. Finally, separate scores for the total number of points earned on

simple and complex sentences on the RS subtest of the CELF-CDN-FR were tallied to create

French complex and simple sentence scores.

Table 3.3

French Complex Syntax Abilities.

	EFI-NotAR	**EFI-AR**	Group Comparison (EFI-NotAR to EFI-AR)
French Clausal Density (MAIN)	$M = 1.61, SD = 0.27$	$M = 1.58, SD = 0.26$	$W(n_1 = 15, n_2 = 12) = 166.5, p = .943$
French RS Raw Score	$M = 32, SD = 7.78$	$M = 28.92, SD = 7.04$	$W(n_1 = 15, n_2 = 13) = 167, p = .339$
French RS Standard Score	$M = 3.87, SD = 1.69$	$M = 4, SD = 1.71$	$W(n_1 = 12, n_2 = 15) = 207, p = .905$
French Simple RS	$M = 66\% (25.6/38.4), SD = 11\%$	$M = 62\% (22.3/35.8), SD = 12\%$	$(W(n_1 = 15, n_2 = 13) = 166.5, p = .316$
French Complex RS	$M = 41\% (21.5/51.4), SD = 11\%$	$M = 49\% (23.1/48), SD = 13\%$	$W(n_1 = 15, n_2 = 13) = 184.5, p = .130$

To look at group differences on measures of syntactic complexity in French, a series of

Wilcoxon signed-rank tests were conducted. No significant differences were found in the

complex syntax abilities of EFI-AR participants as compared to EFI-NotAR participants (see

Table 3.3). These findings indicate that EFI-AR participants had French complex syntax abilities

that were parallel to those of EFI-NotAR participants, illustrating that EFI-AR participants were

developing their French language abilities during their enrollment in EFI.

Morphosyntactic Abilities

English Morphosyntax. To look at the English morphosyntactic abilities of participants,

accuracy was tallied for regular and irregular past tense marking, as well as use of definite and

indefinite articles. Children received an accuracy score for each inflectional morpheme of

interest on both the RS subtest of the CELF and on the MAIN task.

Table 3.4

English Use of Morphemes in Obligatory Contexts.

	EFI-NotAR	**EFI-AR**	ELoI-AR	Group Comparison (EFI-NotAR to EFI-AR)	Group Comparison (ELoI-AR to EFI-AR)
English MLUm	$M = 13.13$, $SD = 2.74$	$M = 13.16$, $SD = 1.68$	$M = 10.92$, $SD = 2.21$	$W (n_1 = 15, n_2 = 12) = 203$, $p = .755$	$W (n_1 = 9, n_2 = 12) = 66.5$, $p = .018$
English MLUw	$M = 11.73$, $SD = 2.46$	$M = 11.80$, $SD = 1.39$	$M = 9.98$, $SD = 1.98$	$W (n_1 = 15, n_2 = 12) = 202.5$, $p = .719$,	$W (n_1 = 9, n_2 = 12) = 70$, $p = .041$
English Past Regular (MAIN)	$M = 97\%$ (5.5/5.6), $SD = 7\%$	$M = 94\%$ (4.8/5.2), $SD = 13\%$	$M = 100\%$ (3.7/3.7), $SD = 0\%$	$W (n_1 = 15, n_2 = 11) = 127.5$, $p = .281$	$W (n_1 = 10, n_2 = 11) = 95.5$, $p = .314$
English Past Regular (RS)	$M = 81\%$ (14.9/18.4), $SD = 10\%$	$M = 76\%$ (13/17), $SD = 12\%$	$M = 68\%$ (11.2/16.7), $SD = 15\%$	$W (n_1 = 15, n_2 = 11) = 127.5$, $p = .281$	$W (n_1 = 10, n_2 = 11) = 95.5$, $p = .314$

	EFI-NotAR	**EFI-AR**	ELoI-AR	Group Comparison (EFI-NotAR to EFI-AR)	Group Comparison (ELoI-AR to EFI-AR)
English Past Irregular (MAIN)	$M = 99\%$ (5.4/5.5), $SD = 4\%$	$M = 96\%$ (5.5/5.7), $SD = 9\%$	$M = 97\%$ (5.6/5.7), $SD = 5\%$	$W (n_1 = 14, n_2 = 12) = 153,$ $p = .667$	$W (n_1 = 9, n_2 = 12) = 98, p = .972$
English Past Irregular (RS)	$M = 86\%$ (7.1/8.2), $SD = 11\%$	$M = 86\%$ (6.7/7.7), $SD = 14\%$	$M = 77\%$ (6/7.7), $SD = 17\%$	$W (n_1 = 15, n_2 = 11) = 195.5, p = .721$	$W (n_1 = 10, n_2 = 11) = 88.5, p = .132$
English Definite Article (RS)	$M = 93\%$ (38.8/41), $SD = 4\%$	$M = 92\%$ (35.9/38.8), $SD = 5\%$	$M = 92\%$ (37.9/40.9), $SD = 7\%$	$W (n_1 = 15, n_2 = 11) = 135,$ $p = .507$	$W (n_1 = 10, n_2 = 11) = 116,$ $p = .756$
English Definite Article (MAIN)	$M = 100\%$ (15.3/15.3), $SD = 0$	$M = 97\%$ (13.5/13.8), $SD = 10\%$	$M = 97\%$ (12.33/12.56), $SD = 7\%$	$W (n_1 = 15, n_2 = 12) = 160.5, p = .719$	$W (n_1 = 9, n_2 = 12) = 92.5, p = .651$
English Indefinite Article (RS)	$M = 83\%$ (3.1/3.8), $SD = 15\%$	$M = 82\%$ (2.82/3.55), $SD = 20\%$	$M = 74\%$ (2.7/3.6), $SD = 28\%$	$W (n_1 = 15, n_2 = 11) = 147,$ $p = .959$	$W (n_1 = 10, n_2 = 11) = 101,$ $p = .557$
English Indefinite Article (MAIN)	$M = 100\%$ (3.7/3.7), $SD = 0$	$M = 99\%$ (4.5/4.6), $SD = 4\%$	$M = 100\%$ (4.9/4.9), $SD = 0$	$W (n_1 = 15, n_2 = 12) = 155,$ $p = .742$	$W (n_1 = 9, n_2 = 12) = 127.5, p = .754$

* $p < .05.$ **$p < .01.$ ***$p < .001.$

To examine the group differences in the use of morphemes in obligatory contexts, Wilcoxon signed-rank tests were performed on participants' average accuracy on each morpheme of interest (see Table 3.4). These analyses found no significant difference between EFI-AR and EFI-NotAR participants on use of the regular or irregular past tense, use of articles, or on MLU in morphemes or words. There were significant differences noted between the EFI-AR and ELoI-AR groups for MLU in words and MLU in morphemes ($W (n_1 = 9, n_2 = 12) = 70, p = .041,$ and $W (n_1 = 9, n_2 = 12) = 66.5, p = .018,$ respectively), but not for use of the regular or irregular past tense, or use of articles (see Table 3.4 for more details). However, the significance of these differences was not maintained once the Bonferroni correction was taken into consideration. These findings indicate that EFI-AR participants, had, on average, English

morphosyntactic abilities that paralleled those of EFI-NotAR participants. Additionally, these

findings indicate that EFI-AR participants had similar English morphosyntactic abilities to ELoI-

AR participants, but that EFI-AR participants were likely to have a higher MLU in words and in

morphemes compared to ELoI-AR participants.

French Morphosyntax. Morphosyntactic abilities in French were measured in the same

fashion as the English scores, that is by using scores from both the RS subtest of the CELF and

from the MAIN task. The first score that was calculated for morphosyntactic ability in French

was MLU in words and in morphemes, based off of the participants' French narrative retell on

the MAIN task. The remaining morphosyntax scores were based on use of morphemes of interest

in obligatory contexts on the French RS of the CELF and on the MAIN task. The French

morphemes of interest that were included in the measure of use of morphemes in obligatory

contexts were the passé composé, the definite article (*le, la, les*), and the indefinite article (*un,*

une).

Wilcoxon signed-rank tests were performed to determine whether EFI-AR participants

and EFI-NotAR participants differed in their morphosyntactic abilities. These tests found no

significant differences between the two groups on any measure of morphosyntactic ability,

indicating that the French morphosyntactic abilities of EFI-AR participants paralleled those of

EFI-NotAR participants (see Table 3.5).

Table 3.5

French Use of Morphemes in Obligatory Contexts.

	EFI-NotAR	**EFI-AR**	Group Comparison (EFI-NotAR to EFI-AR)
French MLUm	$M = 10.74, SD = 1.68$	$M = 10.20, SD = 2.11$	$W (n_1 = 15, n_2 = 12) = 150, p = .399$

	EFI-NotAR	**EFI-AR**	Group Comparison (EFI-NotAR to EFI-AR)
French MLUw	$M = 9.51$, $SD = 1.30$	$M = 9.21$, $SD = 1.90$	$W (n_1 = 15, n_2 = 12) = 151$, $p = .427$
Passé composé Avoir (MAIN)	$M = 67\%$ (3.8/5.5), $SD = 32\%$	$M = 55\%$ (2.8/4.5), $SD = 26\%$	$W (n_1 = 15, n_2 = 12) = 144$, $p = .256$
Passé composé Être (MAIN)	$M = 35\%$ (.4/1), $SD = 35\%$	$M = 28\%$ (.3/1), $SD = 30\%$	$W (n_1 = 15, n_2 = 12) = 162$, $p = .792$
Passé composé (RS)	$M = 81\%$ (5.6/7), $SD = 12\%$	$M = 83\%$ (5.7/6.8), $SD = 10\%$	$W (n_1 = 15, n_2 = 13) = 207.5$, $p = .650$
French Definite Article (RS)	$M = 77\%$ (21.5/27.9), $SD = 12\%$	$M = 76\%$ (20.8/27.2), $SD = 12\%$	$W (n_1 = 15, n_2 = 13) = 175$, $p = .555$
French Definite Article (MAIN)	$M = 80\%$ (11.5/14.6), $SD = 14\%$	$M = 80\%$ (11/13.9), $SD = 8\%$	$W (n_1 = 15, n_2 = 12) = 159.5$, $p = .683$
French Indefinite Article (RS)	$M = 60\%$ (6/8.6), $SD = 51\%$	$M = 46\%$ (4.6/7.6), $SD = 52\%$	$W (n_1 = 15, n_2 = 13) = 186$, $p = .928$
French Indefinite Article (MAIN)	$M = 74\%$ (3.9/5.5), $SD = 22\%$	$M = 73\%$ (4/5.6), $SD = 22\%$	$W (n_1 = 15, n_2 = 12) = 164$, $p = .867$

Part 2: Error Analysis

The previous results section reported no significant differences between participants considered AR enrolled in EFI and participants considered AR enrolled in EloI, or between participants considered AR in EFI and participants not considered AR enrolled in EFI. While these results provide evidence to broadly suggest that children considered AR are developing comparable language skills to their peers who are not considered AR, more information about the specific errors present in the speech of participants considered AR enrolled in EFI would be beneficial to further understand the language development of this group of children.

To look at the errors that participants made in their French and English speech, this present study looked at the same morphemes of interest from participants' narrative retellings from the MAIN task, discussed in the previous results section. These morphemes of interest included regular and irregular past tense verbs as well as the definite article *the* and indefinite article *a* in English, and passé composé, the indefinite articles (e.g., *le*, *la*, *les*) and the definite articles (e.g., *un, une*) in French. Following from the accuracy analysis above for these morphemes, the type of errors (omission or commission) that were produced by participants were tallied. This allowed for an overview of each of the groups' accuracy on each of the morphemes of interest, while providing a stronger understanding of the specific types of errors that affect participants' accuracy in producing morphemes of interest.

French and English Past-Tense Verb Marking

English Regular Past Tense Morpheme. Overall, participants' accuracy on the regular past tense marker *-ed* in English was high on the MAIN task. Participants in all three groups were unlikely to omit the past tense morpheme, suggesting that participants in each group had mastered the English past tense morpheme in obligatory contexts on the MAIN narrative retell

task (Brown, 1973). Table 3.6 contains a summary of the average omission and commission rates

for each participant group on the English regular past tense marker -*ed*.

Table 3.6

Summary of Accuracy in Use of Regular Past Tense Marker in English.

	EFI-NotAR	**EFI-AR**	ELoI-AR
Suffix % Omission	$M = 1\%, SD = 4\%$	$M = 0\%. SD = 0\%$	$M = 0\%, SD = 0\%$
Suffix % Commission	$M = 2\%, SD = 6\%$	$M = 6\%, SD = 13\%$	$M = 0\%, SD = 0\%$
Suffix % Correct	$M = 97\%, SD = 7\%$	$M = 94\%, SD = 13\%$	$M = 100\%, SD = 0\%$

Across all groups, participants exhibited high accuracy on the use of the regular past-

tense morpheme -*ed* in English. Two groups – the EFI-AR group and the ELoI-AR group – had

no incidence of omission of the regular past tense -*ed* in obligatory context, meaning that on all

verbs requiring the past-tense marker, participants in these groups always included the obligatory

past-tense marker, and never used the bare stem form of the verb. While EFI-AR participants did

not omit the past tense marker in obligatory context, they did occasionally produce commission

errors.

French Passé Composé. The French passé composé is periphrastic and includes an

auxiliary verb, "être" or "avoir", as well as the past participle form of a lexical verb. For the

purposes of this present study, the errors participants made on both elements of the passé

composé were analyzed separately for each verb class (i.e., if a participant were to produce a

passé composé form with an error on the auxiliary verb but not the past participle, the auxiliary

would be counted as inaccurate, but the past participle form would still be considered correct). A

summary of participant's error rates and accuracy on the French passé composé in provided in

Table 3.7. Overall, participants in both groups exhibited slightly lower accuracy on production of

the French past-tense form, particularly the auxiliary verb, compared to their accuracy on the

production of the English past-tense form.

Table 3.7

Frequency of Omission and Commission Errors on past participles and auxiliaries.

	EFI-AR	EFI-NotAR
Past Participle % Omission	*M* = 15%, *SD* = 21%	*M* = 20%, *SD* = 18%
Past Participle % Commission	*M* = 24%, *SD* = 28%	*M* = 12%, *SD* = 26%
Past Participle % Correct	*M* = 61%, *SD* = 25%	*M* = 68%, *SD* = 29%
Auxiliary Verb % Omission	*M* = 39%, *SD* = 30%	*M* = 26%, *SD* = 26%
Auxiliary Verb % Commission	*M* = 18%, *SD* = 31%	*M* = 19%, *SD* = 25%
Auxiliary Verb % Correct	*M* = 43%, *SD* = 30%	*M* = 55%, *SD* = 27%

EFI-AR participants appeared to be more likely to omit the auxiliary verb from their production of the passé composé, as compared to omitting the suffix from the past participle form of the lexical verb. When compared to the students in the EFI-NotAR group, EFI-AR participants made relatively fewer omission errors on the past participle within the passé composé construction. However, the EFI-AR group appeared more likely to omit the auxiliary in passé composé constructions, doing so an average of 39% of the time (compared to an average of 26% omissions in the EFI-NotAR group, see Table 3.7). Interestingly, EFI-AR participants appeared to be more likely than those in the EFI-NotAR group to produce commission errors on the lexical verb of the passé compose (see Figure 3.1).

Figure 3.1

Frequency of Morpheme Omission in Obligatory Contexts on French and English Verbs.
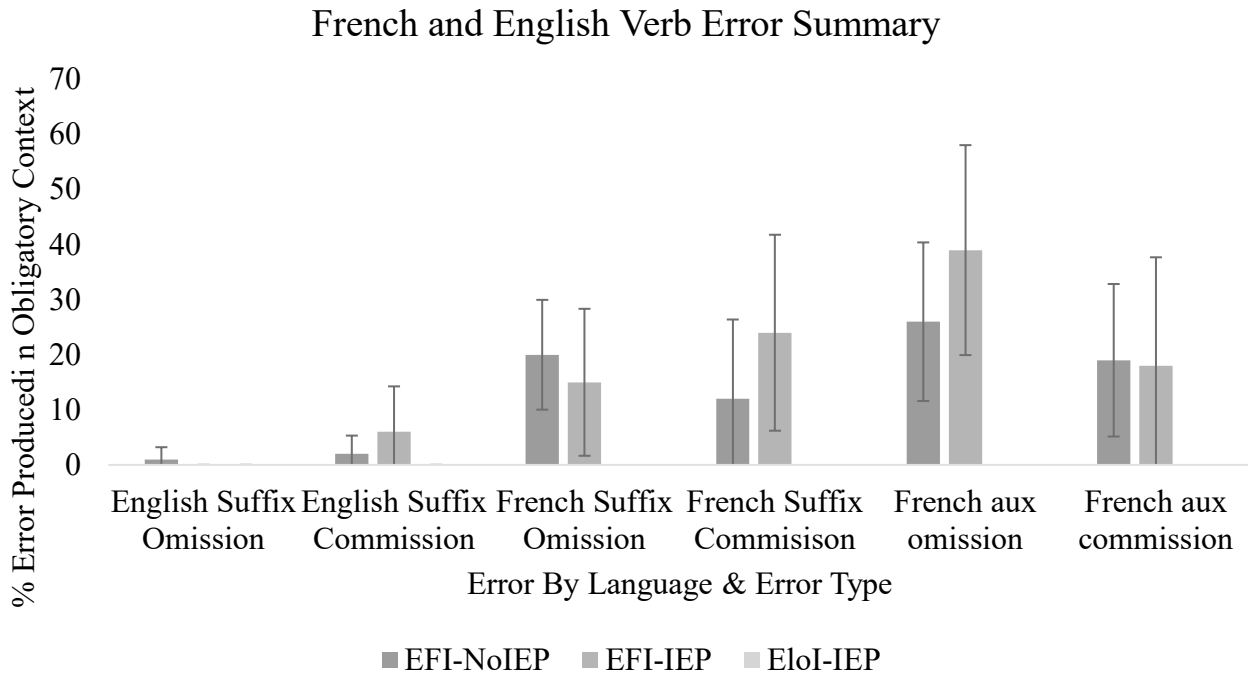
French and English Article Use

English Articles. Table 3.8 provides an overview for the omission and commission errors made by each participant group on the English articles "a" and "the" as produced on the MAIN story retell task.

Table 3.8.

Frequency of Omission and Commission Errors on English Articles "a" and "the".

	EFI-NotAR	**EFI-AR**	ELoI-AR
Indefinite Omission	$M = 0\%, SD = 0\%$	$M = 1\%, SD = 4\%$	$M = 0\%, SD = 0\%$
Indefinite Commission	$M = 0\%, SD = 0\%$	$M = 0\%, SD = 0\%$	$M = 0\%, SD = 0\%$
Indefinite % Correct	$M = 100\%, SD = 0\%$	$M = 99\%, SD = 4\%$	$M = 100\%, SD = 0\%$
Definite Omission	$M = 0\%, SD = 0\%$	$M = 1\%, SD = 3\%$	$M = 2\%, SD = 7\%$
Definite Commission	$M = 0\%, SD = 0\%$	$M = 2\%, SD = 8\%$	$M = 1\%, SD = 2\%$
Definite % Correct	$M = 100\%, SD = 0\%$	$M = 97\%, SD = 10\%$	$M = 97\%, SD = 7\%$

The findings from this analysis showed that participants in all three groups were unlikely to produce errors on the English definite or indefinite articles in their narrative retell task, which was to be anticipated given that L1 English speakers would be expected to have a high degree of accuracy on articles, especially considering that they are non-tense morphemes.

French Articles. The French articles that were looked at for the purposes of this present study included the masculine and feminine definite articles (*le* and *la*, respectively), and the masculine and feminine indefinite articles (*un* and *une*, respectively).

Table 3.9

Frequency of Omission and Commission Errors on Definite and Indefinite French Articles.

	EFI-NotAR	**EFI-AR**
Indefinite Masculine Omission	$M = 1\%, SD = 5\%$	$M = 0\%, SD = 0\%$
Indefinite Masculine Commission	$M = 12\%, SD = 22\%$	$M = 15\%, SD = 20\%$
Indefinite Masculine % Correct	$M = 87\%, SD = 22\%$	$M = 85\%, SD = 20\%$
Indefinite Feminine Omission	$M = 0\%, SD = 0\%$	$M = 0\%, SD = 0\%$
Indefinite Feminine Commission	$M = 67\%, SD = 42\%$	$M = 69\%, SD = 38\%$
Indefinite Feminine % Correct	$M = 33\%, SD = 42\%$	$M = 31\%, SD = 38\%$
Definite Masculine Omission	$M = 2\%, SD = 4\%$	$M = 2\%, SD = 5\%$
Definite Masculine Commission	$M = 11\%, SD = 16\%$	$M = 6\%, SD = 8\%$
Definite Masculine % Correct	$M = 87\%, SD = 17\%$	$M = 92\%, SD = 8\%$
Definite Feminine Omission	$M = 10\%, SD = 29\%$	$M = 0\%, SD = 0\%$
Definite Feminine Commission	$M = 51\%, SD = 36\%$	$M = 64\%, SD = 36\%$
Definite Feminine % Correct	$M = 39\%, SD = 35\%$	$M = 36\%, SD = 36\%$

Overall, participants in both groups had relatively high accuracy on most French articles, indicating that this is an element of the French language that, for the most part, participants were able to learn during their time enrolled in EFI (see Table 3.9). Both EFI-AR and EFI-NotAR

groups had high accuracy across articles for masculine gender nouns, and participants were found to be unlikely to omit articles from obligatory contexts in all cases. For both groups, the highest error rates were errors of commission on articles for feminine gender nouns, most often producing the masculine form of the article in a context that required the feminine article. Figures 3.2 and 3.3 provide an overview of French and English error rates for each indefinite and definite article, respectively.

Based on Figures 3.2 and 3.3, below, it can be observed that the proportion of commission errors were higher on the feminine definite and indefinite articles than the masculine articles; this was true for both participant groups enrolled in EFI. These commission errors involved using the masculine definite or indefinite article in place of the required feminine article. Participants did not use indefinite articles in definite contexts or vice versa. Notably, it was much less likely that a child used a feminine article in place of the masculine. Interestingly, despite overall similarity between the two groups, they are not identical in their error patterns. The EFI-AR participants made a similar number of commission errors on feminine definite and indefinite articles (on average 64% and 69%, respectively), whereas, the EFI-NotAR group appeared more likely to make commission errors in indefinite contexts compared to in definite contexts (67% and 51% respectively) (see Table 3.9). These findings show that, while accuracy on French articles of EFI-AR participants was similar to that of EFI-NotAR participants the pattern of errors may not be the same in both groups.

Figure 3.2.

Summary of Errors Made on French and English Indefinite Article in Obligatory Context.

French and English Indefinite Article Error Summary
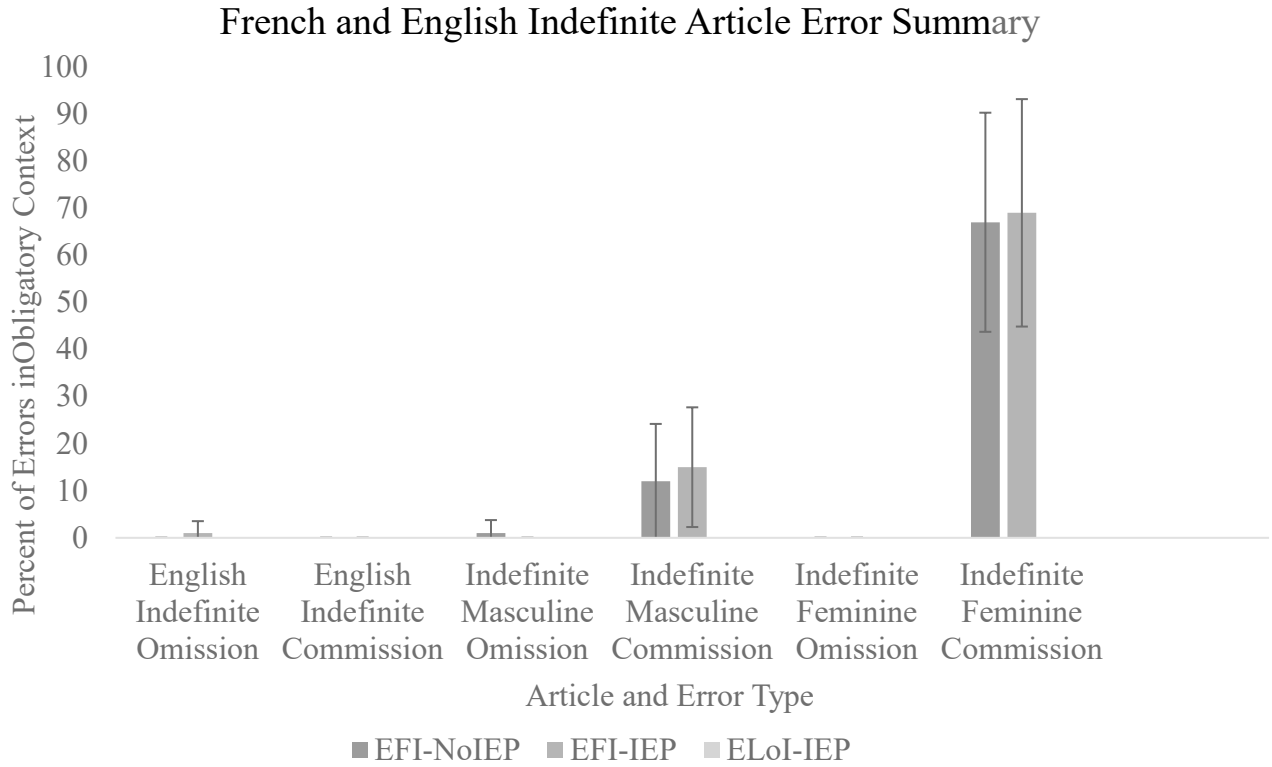
Figure 3.3.

Summary of Errors Made on French and English Definite Article in Obligatory Context.

French and English Definite Article Error Summary

[Bar chart titled "French and English Definite Article Error Summary." The y-axis is labeled "Percent of Errors in Obligatory Context" and ranges from 0 to 100 in increments of 10. The x-axis is labeled "Article and Error Type" with categories: English Definite Omission, English Definite Commission, Definite Masculine Omission, Definite Masculine Commission, Definite Feminine Omission, Definite Feminine Commission. The legend indicates three series: EFI-NoIEP, EFI-IEP, ELoI-IEP. The highest bars appear in the Definite Feminine Commission category (approximately 51 and 64 percent).]

Article and Error Type

■ EFI-NoIEP   ■ EFI-IEP   ■ ELoI-IEP

Chapter Four: Discussion

The research questions asked in this thesis were motivated by the CEH, which posits that children with additional learning needs will experience disproportionate difficulty should they become bilingual, especially when they have preexisting challenges with language (Paradis et al., 2017). One extension of the CEH is that children with additional learning needs will experience additional language learning difficulties should they be educated in a bilingual setting. As a result of this concern, children with additional learning needs are disproportionately excluded from bilingual programs (Barrett DeWiele & Edgerton, 2021; Marinova-Todd et al., 2016). Emerging evidence suggests this concern is unfounded and that children with additional learning needs can be successful in bilingual programs (Bruck, 1978; Paradis et al., 2017; Kay-Raining Bird et al., 2020). Nevertheless, the fear that bilingual education programs are inappropriate for children with additional learning needs persists.

Accordingly, the current study investigated English and French development in children considered AR who were enrolled in EFI. Specifically, the current study looked at narrative macrostructure and TTR (a measure of lexical diversity), in a story re-tell task in English and French. This thesis also considered French and English syntactic complexity and morphosyntactic abilities, as measured via a story re-tell task and a sentence repetition task. Language abilities of two comparison groups were measured. The first comparison group included children considered AR enrolled in ELoI, to investigate how the English language abilities of children considered AR enrolled in EFI compared to their peers who were enrolled in an English-only education program. The second comparison group included children not considered AR, who were enrolled in EFI. Because this group of children were not considered AR, the goal with including this comparison group was to provide a benchmark for where the

French language abilities of participants enrolled in EFI may be. It is important to note, however, that given that children considered AR often had language-based disabilities, caution should be exercised when making comparisons to children not considered AR, as by the very nature of their disability, the children considered AR may not have comparable language abilities. As such, a difference between these two groups should not be interpreted as indicating that bilingualism is problematic for children considered AR (Paradis et al., 2003).

Comparison of accuracy across groups

The first step of the analysis examined differences across group averages, to look at whether the EFI-AR group differed in their language abilities from the EFI-NotAR and the ELOI-AR groups. Using an alpha value of .05, there were three significant differences found between the children in the EFI-AR and ELOI-AR groups (story grammar scores, MLU in words and MLU in morphemes were all higher for the EFI-AR group). There was also one significant difference between the children in the EFI-AR and EFI-NotAR groups (the standard score for English RS subtest was higher for the EFI-NotAR group). However, once the Bonferroni correction was applied (see Method: Analysis), none of these differences remained significant. For all other measures, no significant difference was found. As such, it seems that the general trend within these data indicates similarity between the language scores of children who are considered at AR and who are enrolled in EFI, and the two comparison groups included in this study.

An important question then arises as to how to interpret this apparent similarity. A related and crucial question is the extent to which this study truly offers counterevidence to the CEH. An important consideration in interpreting the observed similarity between these groups is the issue of selection bias. Selection bias may exist with enrollment in dual language education

programs for children considered AR. A recent study on the policies and practices of service

delivery professionals in the educational sphere suggested that while service delivery

professionals were likely to recommend monolingual education programs for children considered

AR broadly, this recommendation appeared to be more prevalent for children with disabilities

that are considered by professionals to be more "severe" (Marinova-Todd et al., 2016). Kay-

Raining Bird et al., (2020) looked at a large sample of children with IEPs enrolled in a local

Ontario school board and found that their participants with IEPs who were enrolled in EFI were

likely to have less severe disabilities when compared to their participants who were enrolled in

ELoI. Although information about the severity of disability was not gathered as part of this

thesis, it is possible that a difference in the severity of disability could explain –at least in part –

the finding that children considered AR enrolled in EFI had similar English abilities to children

considered AR enrolled in ELOI.

 Another relevant consideration is the chance of Type I and Type II error. In this study,

Type I error would lead to the conclusion that there are group differences when the groups are

actually the same. As described above, concern for Type I error was addressed using a

Bonferroni correction. Type II error, however, is potentially a larger concern in this study given

that in all cases the null hypothesis was not rejected, meaning that the groups appear to be

similar. Given the sample size in this study, it is possible that the study is underpowered, and this

is what led to the observed null results. To illustrate this point, consider past tense accuracy on

the MAIN task for the EFI-AR and ELOI-AR groups, where the former group, on average,

produced 94% of the past tense morphemes correctly but the latter group, on average, produced

100% of the past tense morphemes correctly. If in fact, there is a significant difference between

these groups on this measure, a power analysis (with a power value of 80%) reveals that a

sample size of 39 in each group would be needed to statistically detect this difference. Thus, given the small sample sized in this study, the possibility of Type II error influencing the conclusions cannot be ruled out.

In spite of these limitations, a descriptive exploration of the means and standard deviations for each group indicates substantial group overlap (see Tables 3.1-3.5). I interpret the similarity of the scores obtained in this study to suggest that enrollment in an EFI program was not harmful to the language abilities of participants with IEPs enrolled in EFI. I further note that given the social justice issues around inclusion, this observed similarity is an important conclusion. As with past studies (Bruck, 1978; Kay-Raining Bird et al., 2020), this study offers evidence supporting inclusion and not exclusion. Future research with larger sample sizes and novel approaches are necessary to further empirically evaluate this conclusion.

Error Analysis

The group comparison analysis provides converging evidence with past studies indicating that children who are considered AR can become bilingual. However, questions persist about how these children's language development unfolds. It has previously been suggested that when teachers have a greater understanding of language development in this population, they may feel better equipped to support these students in their classes (Marinova-Todd et al, 2016). Accordingly, the error analysis in this thesis provides an opportunity to illustrate L2 learning in children who are considered AR. Being able to identify specific language-based strengths and difficulties of children considered AR enrolled in FI may help to point to areas that need more explicit instruction or support for children enrolled in FI programs, thus providing a stronger idea of how best to support the dual language education of children who are considered AR who are developing their language in a bilingual education context.

Article Use

Looking at the errors that were made across groups, it can be concluded based on this present study that participants in all three groups had achieved mastery of the English definite and indefinite articles (based on a criterion of 90% accuracy in obligatory context, as defined by Brown, 1973). As a result, there were two few errors in English to draw any additional conclusions. In terms, of French definite and indefinite articles, it is necessary to look at the masculine and feminine articles separately.

Masculine Gender Articles. Recall, studies on gender marking in French-speaking children have typically seen that French-speakers have a higher accuracy with masculine articles, so much so that it has been suggested that children acquiring French may view the masculine gender as a default, with feminine articles being used more often when the given noun and its gender has been committed to the speakers' lexicon (Krenca et al., 2020; Boloh & Ibernon, 2010). The results of the present study parallel those of previous studies, participants in both groups enrolled in EFI exhibited high accuracy on the use of masculine definite and indefinite French articles. While participants considered AR had the same average accuracy on masculine definite and indefinite articles (87% accuracy on both), participants not considered AR had slightly lower accuracy on masculine indefinite articles compared to definite articles (85% and 92%, respectively). In both groups, errors of commission were slightly more common than errors of omission, but given how few errors were made, it is difficult to draw any additional conclusions about the development of these morphemes, as children in both groups demonstrated that they were nearing mastery of these morphemes. Future research should investigate these morphemes in children at the early stages of their L2 French development.

Feminine Gender Articles. Where participants in both groups had high accuracy on masculine articles in French, overall, participants appeared to have a lower accuracy on feminine gender articles. This finding was anticipated given that feminine gender nouns appear less frequently in French and because previous studies have suggested that French-speaking children will apply the masculine gender to nouns whose genders they do not already have stored in their lexicon (Krenca et al., 2020; Boloh & Ibernon, 2010). To detail participants productions of feminine articles, it is useful to consider their production of indefinite and definite articles separately.

In the previous section discussing French articles in terms of average accuracy, masculine and feminine articles were considered together to create one score. However, this study also looked at masculine and feminine articles separately, for a better understanding of the errors that were made on French articles. For the indefinite feminine article *une*, both participant groups enrolled in EFI had high rates of commission errors, substituting the masculine *un* (69% of obligatory contexts and 67% of obligatory contexts, respectively). Thus, the children in EFI, regardless of whether they were considered AR or not, made similar errors to younger French-speaking children and overused the masculine indefinite article in their speech.

For the definite feminine article, both participant groups enrolled in EFI exhibited a similar pattern of errors, where both participant groups were more likely to produce an error of commission on the definite feminine article than an error of omission. In fact, participants considered AR did not make any omission errors on the definite feminine articles, while participants not considered AR did produce some errors of omission. Recall, in terms of overall accuracy, both groups had relatively low accuracy on the feminine gender article (36% for the AR group and 39% for the NotAR group). This finding suggests that, like on the indefinite

feminine article, participants in both groups enrolled in EFI were more likely to produce a

commission error on the definite feminine article than they were to use the article in its correct

context. Further, the majority of commission errors in both participant groups were gender

marking errors, providing more evidence to suggest that participants in both EFI groups were

likely to overuse the masculine article in their speech.

Past-Tense Marking

As participants in all three English-speaking groups exhibited over 90% accuracy on the

regular English past-tense marker *-ed,* there were too few errors on which to draw conclusions.

This is perhaps not surprising given the age of the participants. In French, when compared to

English, children in both EFI participant groups had lower accuracy on the passé composé,

producing errors with both the past participle and the auxiliary verb.

When it comes to the past participle form, there were descriptive differences in the error

pattern, despite similar accuracy rates across groups. Specifically, the rates of omission and

commission errors were different between the two groups. Participants considered AR were

more likely to produce commission errors on the past participle form (i.e., they were more likely

to use the incorrect morpheme or verb form for their given context, such as using the *-é* suffix for

a past participle form that requires the *-i* suffix). In contrast, participants who were not

considered AR were found to be more likely to produce omission errors (i.e., produce the "bare

stem" form of the lexical verb in place of the past participle form). This finding may suggest that

participants considered AR who were enrolled in EFI developed the French passé composé

slightly differently from participants not considered AR. If this is the case, then this might

indicate that students considered AR, despite having similar accuracy, might learn an L2

differently and thus might need qualitatively different supports to support their language

learning. Future research into how specifically the development of these language abilities occur in this population would be encouraged to further investigate what the best practices for bilingual education for children considered AR may be, and how best to support L1 and L2 development within dual language education programs for this group of children.

Limitations of the Current Study

This thesis adds to the growing body of literature on the language abilities of children with additional learning needs in dual language education programs. However, it is important to note that the current study had its limitations. One limitation on the current study was the limited information available about the participants involved in the current study (i.e., I did not have information about whether they had an IEP in the classroom, or the severity of their disability). Because this thesis used previously recorded audio recordings and transcripts as data, it was not possible to obtain additional information about participants for the specific purposes of this study. Having more information about the participants involved in the current study would have been beneficial to better characterize the sample included in this study and might have helped to provide additional context for understanding the language abilities across participant groups. Further, the information that was provided about the differences and disabilities of participants considered to be AR was parent-reported. While this information was helpful in determining participant groups, it was not possible for the current research team to confirm diagnoses. The small sample size also limits the conclusions which can be drawn and the generalizability of the findings.

Future Directions

Although this present study provided valuable insight into the French and English language abilities of children considered AR enrolled in EFI, there are still many questions about

how children considered AR learn language in bilingual environments, and about how best to

support that language development in bilingual children considered AR, particularly within a

dual language education context. First, looking at a broad and diverse group of participants

allowed the present study to provide an idea of the language abilities of children considered AR

that have the diversity that one might expect to see in the classroom, giving the study ecological

validity. Still, future research is needed that looks at specific learner profiles (e.g., those with

developmental language disorder or dyslexia) to determine details of how language development

unfolds in a bilingual program and to determine best practices for supporting bilinguals in their

L1 and L2 development. It may be that some language abilities develop differently for some

children considered AR and understanding this difference may be important for supporting these

children. Particularly, future research should specifically consider in greater details the language

abilities of children with DLD and children with other language-based disabilities, as this

remains the specific group of concern for the CEH (Paradis et al., 2017) and one of the groups

most likely to be excluded from bilingual education (Marinova-Todd et al., 2016).

In addition to using a more specific participant group, future studies would be encouraged

to consider the severity of participants difficulties in their analyses. Marinova-Todd et al., (2016)

found that educational professionals were more likely to recommend against enrollment in dual

language education programs when the student's reason for being considered AR is deemed to be

more "severe" by educators. As such, it would be expected that, at the point in participant's

education at which this present study was conducted, participants considered AR who remained

in EFI programs may have had less severe learning disabilities compared to participants

considered AR who were enrolled in ELoI. As noted above, because the present study did not

control for the severity of participants' disabilities, the strength of the conclusions that can be

drawn might be more limited, as it is also possible that these findings were influenced more by the learning disabilities of participants than by their enrollment in dual language education programs. As such, future research would be encouraged to control for severity of disabilities, as this could provide further insight into the English language abilities of children considered AR enrolled in EFI.

Next, although the present study suggests that participants considered AR enrolled in EFI had similar English language abilities to children considered AR enrolled in ELoI and had similar French language abilities to children not considered AR enrolled in EFI, more research is needed on how these abilities developed, and how best to support children considered AR throughout their bilingual education. It is important to note that although the broad overview of language abilities in these participant groups appear similar, the participants who were considered AR had been identified as requiring additional support in their learning and were therefore receiving support. It is possible that the parallel language abilities that were noted in the present study were significantly influenced by the additional supports received by participants within the classroom, thus leading to the parallel findings. That is to say, it is important to offer appropriate supports to students who are considered AR within dual language education programs. Future studies need to consider not only whether children considered AR learn their L1 and L2 in dual language education programs, but also to look at how this group of children learn within this educational context, in order to examine how supports received within the classroom and outside of the classroom may have an influence on the L1 and L2 language abilities of bilingual children who are considered AR.

Finally, the goal of the current study was to investigate areas of similarity between participant groups. This posed a problem because with the set alpha value of .05, there was a

very high chance that no significant differences would be found on the measures in the current study. In order to more effectively consider similarities between the L1 and L2 language abilities of children with additional learning needs enrolled in dual language education programs, children with additional learning needs enrolled in monolingual English programs, and children without additional learning needs enrolled in dual language education programs, future studies would be encouraged to take a different statistical approach to better examine where these three groups are similar, rather than different. Possible ways that this could be achieved could be through the use of Bayesian statistics, learning studies that look at how children considered AR learn specific language abilities in their L1 and L2 over time, and additionally by looking at how children within this population of interest develop their French and English language abilities over time through the use of a longitudinal study.

Conclusions

The present study found that, for the most part, participants considered AR who were enrolled in EFI had similar English language abilities not only to participants considered AR enrolled in ELoI, but also to participants who were not considered AR and were enrolled in EFI. These findings diverge from what is predicted from the CEH, as the CEH posits that participants considered AR enrolled in EFI would exhibit greater difficulty with their English language abilities compared to children considered AR who were enrolled in ELoI (Paradis, Jia, & Arppe, 2017). As such, this thesis adds to the growing body of evidence offering counter evidence to the claims of the CEH. The present study provided evidence that children considered AR enrolled in EFI also build language skills in their second language (in this case French) and that they do so to a similar degree as students not considered AR. Thus, the findings of this thesis indicate that

children considered AR can and do succeed in EFI programs, adding further evidence to support enrollment of children who are considered AR in dual language education programs.

In advocating for supporting enrollment of children considered AR in dual language programs, it is important to consider the types of supports they may need to succeed in these programs. While the error analysis in the present study found some key differences in the types of errors that participants considered AR made compared to the errors that participants who were not considered AR made, these differences do not necessarily suggest that participants considered AR had more difficulty with the French language than their peers who were not considered AR, but rather that the way in which the French language, particularly how the passé composé is produced, may develop slightly differently in children considered AR and children not considered AR. Because children considered AR are children who have been identified as having different learning needs to their peers not considered AR, the finding that certain language abilities develop differently between these two groups is unsurprising, but nevertheless an important consideration when looking at how best to support the language development of children considered AR when enrolled in EFI.

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