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Exploring the effects of word features on French immersion children’s ability to deconstruct morphologically complex words

Kathleen Hipfner-Boucher¹, Katie Lam¹, Xi Chen¹, and S. Hélène Deacon²

¹Ontario Institute for Studies in Education, University of Toronto, Toronto, ON, Canada
²Department of Psychology, Dalhousie University, Halifax, NS, Canada

The present study investigated factors influencing the ability to decompose multimorphemic words in French in non-francophone children educated in French. In particular, we focused on the effects of two word features: English-French cognate status and base frequency. We also examined the effect of child language background (English first language (EL1) versus English second language (ELL)) on performance. In two related studies, children in grades 1 to 3 completed a translation task requiring them to match morphologically complex words in French and English. Target words were manipulated with respect to cognate status and base frequency. Overall, performance was found to improve over time and to be influenced by cognate status and word frequency. Across all grades, EL1 and ELL children were comparable on task performance. Taken together, these results suggest that French immersion students’ ability to deconstruct words and extract morphemes in French is influenced by the presence of cognates, as well as base frequency.

Keywords: Morphological awareness; Cognate; Word frequency.

The present study examined word features that influence the development of children’s ability to deconstruct morphologically complex words among non-francophone children educated in French in a French immersion programme in Canada. Morphemes are the smallest unit of language that convey meaning in language and are considered the fundamental semantic building blocks of words. Morphological awareness refers to the ability to reflect on and manipulate morphemes, and to use word formation rules to produce and understand multimorphemic words (Kuo & Anderson, 2006). An estimated 60% of novel words children encounter in English academic texts are multimorphemic (Nagy & Anderson, 1984). Accordingly, it makes sense that in the research literature involving monolingual English-speaking children, morphological awareness has been

Correspondence should be addressed to Kathleen Hipfner-Boucher, Ontario Institute for Studies in Education, University of Toronto, Toronto, ON, Canada. E-mail: k.hipfner.boucher@utoronto.ca

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shown to relate to performance in reading of morphologically complex words (e.g., Carlisle, 2000), to decoding skill more generally (e.g., Mahony, Singson, & Mann, 2000) and to reading comprehension (e.g., Deacon & Kirby, 2004; Kirby et al., 2012) in the middle and upper elementary grades. In particular, the morphologically aware child is able to apply knowledge of morphemic relations to deduce the meaning of morphologically complex words (Carlisle, 2000). For example, the meaning of the word *reptilian* can be deduced by extracting the base word *reptile* and the suffix *-ian* by way of analogy to the more common word *librarian*. The ability to make use of morphemic constituents to facilitate fast, accurate word identification supports reading comprehension and has been shown to distinguish successful and less successful readers (Berninger et al., 2003).

Research evidence is also mounting that attests to the important contribution morphological awareness in one language makes in accounting for variation in reading in a second language (e.g., Deacon, Wade-Woolley, & Kirby, 2007; Pasquarella, Chen, Lam, Luo, & Ramírez, 2011; Saiegh-Hadadd & Geva, 2008; Wang, Yang, & Cheng, 2009). For example, in Deacon et al.’s (2007) study conducted with Canadian French immersion students (i.e., non-francophone children schooled in French) in the first three years of elementary school, grade 1 first-language (L1) English morphological awareness predicted second-language (L2) French word reading in grades 1, 2 and 3, while grade 2 French morphological awareness predicted English word reading in grades 2 and 3. Taken together, these studies suggest that morphological awareness transfers to reading across languages.

Despite this evidence of transfer, we know little about how morphological awareness develops in young bilingual children. We focused on the development of one aspect of morphological awareness (i.e., derivational awareness) in non-francophone children in the early stages of learning to speak and read French in a French immersion programme offered in a predominantly English-speaking region in Canada. Derivations are one of the main mechanisms by which words are formed in both English and French (Nagy & Anderson, 1984; Roy & Labelle, 2007). Addition of a derivational suffix typically changes the meaning and grammatical class of a base word. For example, addition of the agentive suffix *-er* in English or *-eur* in French to the verb *sing/chanter* results in the formation of the noun *singer/chanteur*. There is a systematic correspondence between a number of derivational suffixes in the two languages, such as the adverbial *-ly/-ment*, adjectival *-ous/-eux*, agentive *-or/-eur* and nominal *-ity/-ité*. In the present study, we evaluated the impact of two factors that contribute to the development of morphological awareness (cognate knowledge and word frequency) on children’s ability to deconstruct multimorphemic words and to apply their knowledge of systematic relationships between English and French derivational suffixes. Because French immersion programmes are attracting increasingly large numbers of children who do not speak English as their first language, we also considered the role of child language background (i.e., English first language (EL1) versus English second language (ELL)) on children’s performance.

Previous research has shown that cognate knowledge strengthens the effect of first-language morphological awareness on second-language vocabulary development (Chen, Ramírez, Luo, Geva, & Ku, 2012; Dressler, Carlo, Snow, August, & White, 2011; Hancin-Bhatt & Nagy, 1993; Kelley & Kohnert, 2012; Ramírez, Chen, & Pasquarella, 2013). Whitley (2002, cited in Malabonga, Kenyon, Carlo, August, & Louguit, 2008) defined cognates as words that have similar meaning, spelling and form, and that have been inherited from a common ancestor language. For example, the French word *parc* and English word *park* are cognates that can be traced to the shared Latin origins of the two languages. Children’s ability to recognise cognates has been shown to grow over the middle to late elementary grades (e.g., Hancin-Bhatt & Nagy, 1993; Kelley & Kohnert, 2012; Malabonga et al., 2008). Recently, Ramírez and colleagues (2013) demonstrated the effect of cognate knowledge on morphological processing and...
vocabulary development. They found a relationship between performance on measures of Spanish derivational awareness and English words with Spanish cognates but not English words without Spanish cognates, among Spanish-English bilinguals in grades 4 and 7. The authors interpret these findings as evidence that Spanish-speaking ELLs are better able to extract the meaning of English derived words through morphological analysis when root words are cognates.

A study by Hancin-Bhatt and Nagy (1993) further suggests that morphological awareness in bilinguals is conditioned not only by the presence of a cognate base, but by knowledge of the systematic relationships that exist between derivational suffixes in different languages, such as the regular correspondences between the English -ity, -ing, and -ly, Spanish -idad, -a/-endo, and -mente, respectively. In their study, Hispanic students in grades 4, 6 and 8 were asked to provide the Spanish equivalent for English words. They found that the students’ translations of derived words with cognate bases (e.g., amicably) were more accurate than those with noncognate stems (e.g., shortly). The students were also asked to perform a matching task in which they were presented with a low-frequency English cognate along with a list of four derivationally-related Spanish words. Their task was to match the correct Spanish translation to the English target. The results revealed a significant grade effect favouring the older children. Taken together, these findings suggest that bilingual children’s knowledge of morphologically complex words in their second language may be driven by acquired knowledge of both roots and affixes shared with their first language, and that this knowledge increases over time.

A second factor shown empirically to contribute to the development of morphological awareness is word frequency (Carlisle, 2000; Deacon, Whalen, & Kirby, 2011; Carlisle & Katz, 2006; Carlisle & Stone, 2005; Mann & Singson, 2003). Word frequency, a by-product of exposure, is a mechanism by which lexical representations become increasingly specified in long-term memory at the levels of phonology, semantics and orthography (Reichle & Perfetti, 2003). With increased specificity, the constituent elements of words (i.e., base words and affixes) are more readily accessed, facilitating their identification (Carlisle & Katz, 2006). For example, previous studies have demonstrated the facilitative effect of base frequency in reading derived words (Carlisle & Stone, 2005; Deacon et al., 2011; Mann & Singson, 2003). Mann and Singson (2003) found that children in grades 3 to 6 were more accurate in reading words with high- than low-base frequencies, despite their equivalent surface frequencies. In the same vein, Deacon et al. (2011) reported that children in grades 4, 6 and 8 read derived words with high-base frequencies faster than those with low-base frequencies when the words were of low-surface frequency. Taken together, these studies indicate that frequency has an impact on monolingual children’s ability to access the morphological structure of derived words they encounter in print. To our knowledge, no comparable studies have examined the impact of word frequency on the development of morphological awareness in bilingual children.

The primary purpose of the current study was to investigate the effects of cognate status and word frequency on emerging bilingual children’s ability to deconstruct multimorphemic words. The study built on the matching task described in Hancin-Bhatt and Nagy (1993), extending it in several ways. First, we varied word frequency by including derived words of high and low frequency in French (Study 1), as well as pseudo-cognate words (Study 2). Manipulating word frequency allowed us to consider its effect on children’s ability to extract the morphemic constituents of a morphologically complex word. The inclusion of a pseudo-cognate task provided a clean test of morphological awareness, free of the influence of prior vocabulary knowledge. It also allowed us to assess the independent contribution of cognate awareness, without the confounding effect of word frequency. Second, we examined the development of children’s ability to perform the matching task beginning at an earlier age (grade 1), and over the early primary school years (from second to third grade). Third, we
focused on English-French bilinguals. The bulk of the literature investigating the role of
cognate knowledge in the development of morphological awareness involved Spanish-English
bilinguals in the middle to late elementary grades. As a result, it is unclear if previous findings
generalise to children learning other language pairs and to a younger sample of children.

A secondary purpose of the current study was to examine the effect of language
background on children’s performance. Our sample was comprised of groups of EL1 and
ELL children that were distinguishable on the basis of English vocabulary. A comparison
of the two language groups allowed us to determine whether limited English vocabulary
constrained children’s sensitivity to the systematic correspondences between English and
French suffixes.

The children who participated in this study were students in a Canadian French
immersion programme. French immersion programmes are intended for non-native
speakers of French. While French was the sole language of instruction in school, English
was the dominant language of the broader community and the language children chose to
use when speaking to one another in the playground. There has been a steady increase in
the number of ELL students in French immersion programmes in recent years (Sinay,
2010). Given the considerable number of Canadian children—both EL1s and ELLs—
participating in French immersion programmes, it is important to clarify if and how their
French and English skills interact to support language and literacy development.

STUDY 1

Method

Participants

A total of 76 children participated in the present study, including 29 EL1s (52% males,
mean age 6.79 years) and 47 ELLs (49% males, mean age 6.89 years). EL1 children in
our sample were defined as those who spoke English more than 75% of the time, and had
parents who spoke English as their first or primary language. ELL children were defined as
those who spoke a language other than English more than 25% of the time, and whose
parents spoke a language other than English as their primary language. All children were
enrolled in a French Immersion school located in a large metropolitan area in Canada.
They were assessed in the spring term of grade 1 as part of a large-scale study. These
children were in their first year of receiving formal instruction entirely in French at school.
None of them were native speakers of French.

Demographic information was collected through a family questionnaire. All but one
child in the EL1 group were born in Canada. The child who was born outside of Canada
was born in England, and immigrated to Canada at the age of one year three months. Five
children in the ELL group were born outside of Canada; their average age of immigration
was two years and two months. Among the ELL group, the languages spoken by the
families were diverse, including Russian, Korean, Spanish, Mandarin Chinese, Farsi and
Hebrew. However, all of the children had attended English-speaking kindergarten
programmes and therefore had had exposure to English. The average level of maternal
education for both groups was a university degree.

As part of the larger project in which the children were involved, they completed the Peabody Picture
Vocabulary Test, Fourth Edition, Form A (PPVT-IV A) (Dunn & Dunn, 2007) as a measure of their English
vocabulary. Independent sample t-tests (equal variances not assumed) revealed a significant difference between the
EL1 and the ELL group, t(71.35) = 2.11, p = .038.
**Measures and procedure**

**Morphologically complex cognate task (MCCT).** This task was designed by the researchers following the format of the Matching Task developed by Hancin-Bhatt and Nagy (1993). Children were first given a French word with a derivational suffix and were then asked to choose its translation among three derivationally-related English words by circling their choice on a response sheet. The only difference among the choices in English was in their derivational suffixes. For example, the children were presented with the French word *activité* and were asked to choose its correct translation from among the following three choices: *activity, active, actively.*

Using the database MANULEX (Lété, Sprenger-Charolles, & Colé, 2004), we identified 12 French derived words for the task: four of the words were high-frequency cognates (e.g., *activité/activity*; mean base frequency\(^2 = 111*), four were low-frequency cognates (e.g., *poreux/porous*; mean base frequency = 8.25), and four were low-frequency non-cognates (e.g., *vainqueur/victor*; mean base frequency = 15.5). Across all three word types, the same four suffixes (-*ité/-ity, -eur/or, -ment/ly, -eux/ous) were tested to ensure that performance was not confounded by differences in the suffixes used. The task was presented to the children in print as well as orally so that reading skills would not confound children’s performance. Children were administered the task as a group in their respective classrooms during school time. The task was administered by trained undergraduate and graduate research assistants fluent in English and French.

**Results and discussion**

The means and standard deviations of the MCCT for the two groups are displayed in Table 1. For the task, the descriptive statistics of each category of stimulus words (i.e., high-frequency cognates, low-frequency cognates, low-frequency non-cognates) are presented separately. As shown in the table, in general, both groups of children performed the best on the high-frequency cognate items. One-sample \(t\)-tests conducted to test performance relative to chance using Bonferroni adjusted alpha levels of .0125 (.05/4) per test indicated that children’s accuracy rate on the high-frequency cognate items was significantly above chance for the EL1 children, \(t(28) = 7.74, p < .001,\) and ELL children, \(t(47) = 6.59, p < .001,\) and ELL children,

| TABLE 1 |
|---|---|---|---|---|---|---|---|---|
| | EL1s | | | | ELLs | | | |
| | Mean | SD | Min | Max | Mean | SD | Min | Max |
| Age in years | 6.79 | 0.290 | 6.33 | 7.33 | 6.89 | 0.289 | 6.33 | 7.33 |
| Stimulus Condition | | | | | |
| High-frequency cognates | 3.10 | 1.235 | 0 | 4 | 3.45 | 1.059 | 0 | 4 |
| Low frequency cognates | 1.59 | 1.150 | 0 | 4 | 1.70 | 1.020 | 0 | 4 |
| Non-cognates | 1.34 | 0.769 | 0 | 3 | 1.38 | 0.874 | 0 | 3 |

\(^2\)The mean base-word frequency is the overall word frequency (i.e., \(F\)) of the base word for grades 1 to 5 computed from 1.9 million words taken from 54 French elementary school readers (Lété, Sprenger-Charolles, & Colé, 2004).
$t(46) = 13.70, p < .001$. With respect to the low-frequency cognate and non-cognates items, one-sample $t$-tests indicated chance level performance on these items for the EL1, $t$s(28) = 0.10–1.20, $p = .240–.918$, and ELL children, $t$s(46) = 0.42–2.50, $p = .016–.680$. Overall, performance on all three categories of stimulus words appeared to be quite similar across the two groups (see Figure 1).

A 3 Stimulus Types (high-frequency cognate, low-frequency cognate, non-cognate) × 2 Language Groups (EL1, ELL) repeated measures analysis of variance (ANOVA) was carried out to analyse the data. Stimulus type was a within-subject factor, whereas language group was a between-subject factor. There was a very strong effect of stimulus type, $F(2, 148) = 70.71, p < .001, \eta^2 = .489$. Performance on the high-frequency cognate items was significantly better than on the low-frequency cognate and non-cognate items (both $ps < .001$), whereas the difference between the latter two conditions was not significant, $p = .077$. By contrast, there was no significant effect of language group, $F(1, 74) = 1.54, p = .218$. The interaction between language group and stimulus type was not significant, $F(2, 148) = .42, p = .659$. Taken together, the latter two results suggest that there was no difference between the EL1 children and their ELL counterparts with respect to their performance levels on each category of words.

The results of Study 1 indicated that for this sample of children in the early stages of learning to speak and read French, base-word frequency appeared to play a significant role in facilitating access to the morphemic constituents of derived words. This was the case regardless of language background. Overall, the children demonstrated superior performance in identifying the correct English translation of French cognate target words of high rather than low base frequency. However, failure to find significant differences in performance on the low-frequency cognate condition in comparison to the non-cognate condition suggested that overall, the children in this study did not benefit from a cognate base to support the processing of morphologically complex words. Again, this was true regardless of language background.

### STUDY 2

Study 2 was conducted with the same translation task in a sample of French immersion children followed from grade 2 to grade 3. Since no cognate effect was detected in Study 1, we focused on slightly older children in this study. The addition of a pseudo-cognate condition allowed us to investigate the effect of cognate status independently of word
frequency. The longitudinal design of the study allowed us to examine possible developmental trends in the data.

Method

Participants

Participants of the present study were 27 (EL1) children (52% males) and 33 ELLs (46% males) enrolled in the same French Immersion school as the children described in Study 1. None of the Study 2 participants had participated in Study 1. They were assessed in the spring term of each of grades 2 and 3. At the time of the first testing point (i.e., grade 2), the average age was 7.56 years for the EL1s, 7.62 years for ELLs. All children started receiving formal instruction entirely in French at school in grade 1. None of them were native speakers of French. The average level of maternal education for both groups was a university degree.

Demographic information was collected through a family questionnaire designed by the researchers. All but one child in the monolingual group were born in Canada. The child who was born outside of Canada was born in the United States, and immigrated to Canada at the age of six years. Four children in the ELL group were born outside of Canada; their average age of immigration was one year and three months. Among the ELL group, the languages spoken at home were diverse, including Russian, Korean, Spanish, Mandarin Chinese, Farsi, Punjabi, etc. However, all of the ELL children had attended English-speaking kindergarten programmes and therefore had had exposure to English.

Measures and procedure

Morphologically complex cognate task (MCCT). This expanded version contained the task described in Study 1 and four additional items. Each new stimulus comprised a pseudo root word in combination with a real French suffix, e.g., *préloteur*. For example, the children were presented with the French pseudo-cognate and were asked to identify its most likely translation from among the English pseudowords *prelotory*, *prelotor*, *prelotous*. The suffixes assessed in the pseudo-cognate items were the same as the ones presented in Study 1. As in Study 1, this task was presented to the children orally as well as in print.

Results and discussion

The means and standard deviations of the tasks for the two groups are displayed in Table 2. For the MCCT task, the descriptive statistics of each category of stimulus words (i.e., high-frequency cognates, low-frequency cognates, low-frequency non-cognates and pseudo-cognates) are presented separately. As shown in the table, in general, both the EL1 and ELL children appeared to improve on each word category over time. As with Study 1, children in the two groups appeared to score similarly on most of the word categories.

Consistent with the results found in Study 1, children performed best on the high-frequency cognate items and poorest on the low-frequency non-cognate items. One-sample $t$-tests conducted to test performance relative to chance using Bonferroni adjusted alpha levels of

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3 As part of the larger project in which the children were involved, they completed the PPVT-IV A (Dunn & Dunn, 2007) as a measure of their English vocabulary. Independent sample $t$-tests revealed significant differences between the EL1 and the ELL group in their vocabulary knowledge at grade 2, $t(58) = 2.73, p = .008$; at grade 3, the group difference approached significance, $t(58) = 1.89, p = .064$. 

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.0125 (.05/4) per test indicated that in grade 2, children’s accuracy rate on the high-frequency cognate items was significantly above chance for the EL1s, \( t(26) = 14.19, p < .001 \), and the ELLs, \( t(32) = 12.27, p < .001 \). Both groups also performed above chance on the pseudo-cognate items, \( t(26) = 3.79, p = .001 \) for the EL1 children, and \( t(32) = 2.88, p = .007 \) for the ELL children. The ELL children also performed above chance on the low-frequency cognate items, \( t(32) = 5.21, p < .001 \); in contrast, the EL1 children demonstrated chance level performance on these items, \( t(26) = 2.45, p = .021 \). With respect to the non-cognate items, one-sample \( t \)-tests revealed chance performance for the EL1s, \( t(26) = 0.88, p = .386 \), and the ELLs, \( t(32) = 0.76, p = .450 \). In grade 3, the ELL children performed above chance on all categories of stimulus words, \( t(32) = 3.31–27.09, p_s < .005 \). For the EL1 children, their performance exceeded chance level on all categories of stimulus words (\( t(26) = 5.01–71.10, p_s < .001 \)) except for the low frequency cognates, \( t(26) = 0.61, p = .547 \).

A 4 Stimulus Type (high-frequency cognate, low-frequency cognate, pseudo-cognate, non-cognate) × 2 Time (grade 2, grade 3) × 2 Language Group (ELL, EL1) repeated measures analysis of variance (ANOVA) was carried out to analyse the data. Stimulus type and time were within-subject factors, whereas language group was a between-subject factor. There was a significant main effect of grade, \( F(1, 58) = 41.37, p < .001, \eta^2 = .416 \). Pairwise comparisons revealed that overall, the children’s performance improved significantly from grade 2 to grade 3, \( p < .001 \). There was also a significant main effect of stimulus type, \( F(3, 174) = 108.79, p < .001, \eta^2 = .652 \). Children performed best on the high-frequency cognates, followed by low-frequency cognates, pseudo-cognates, and finally low-frequency non-cognates. The differences between the word categories were all significant, \( p_s < .05 \). The main effects of language group was not significant, \( F(1, 58) = 0.002, p = .963 \), suggesting that the EL1 and ELL children were performing similarly across the stimulus types.

The interactions between grade and language group, stimulus type and language group, as well as grade and stimulus type were all not significant. On the other hand, the three-way interaction among grade, stimulus type and language group was significant, \( F(3, 174) = 3.03, p = .031, \eta^2 = .050 \) (see Figure 2). However, post-hoc pairwise comparisons revealed that, in
both grades 2 and 3, there was no significant group difference in performance on any stimulus type.\(^4\) Accordingly, we only interpret the main effects.

The results of Study 2 indicated a developmental progression in children’s ability to perform the translation task. Overall, scores in grade 3 were significantly higher than those in grade 2 across all stimulus conditions, demonstrating growth in children’s knowledge of the systematic relationship between French and English derivational suffixes. The developmental trend was evident in both the ELL and EL1 groups. The finding that children performed better on pseudo-cognates than non-cognates was evidence of the independent effect of cognate status on children’s ability to process morphologically complex words.

**GENERAL DISCUSSION**

The primary goal of the present study was to evaluate the impact of two factors that contribute to the development of morphological awareness (cognate knowledge and word frequency) on French immersion children’s ability to deconstruct multimorphemic words. We also considered the role of child language background on children’s performance. The results of two separate studies indicated that word frequency makes a significant contribution to performance in grade 1, and to performance over time from grade 2 to 3. The effect of cognate status, on the other hand, was clearly evident in grades 2 and 3 only. Overall, the results indicated growth in children’s knowledge of the systematic relationships between English and French derivational suffixes over time. We found no differences in performance between the EL1 and ELL groups in either study. The more restricted English vocabulary of the ELL group relative to the EL1 group did not appear to act as a limiting factor on their performance. Taken together, our results suggest that French immersion students in the primary grades are able to exploit lexical and morphological similarities between French and English, and that this ability increases over time.

With respect to cognate status, the failure to find significant differences between the low-frequency cognate and non-cognate conditions in grade 1 suggests that cognate knowledge may not have been operational in these very young children. However, we cannot exclude the possibility that performance was influenced by the children’s lack of familiarity with the low-frequency base items rather than a lack of cognate awareness, and

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\(^4\)Levene’s test of equality of error variances revealed that for the high-frequency cognate items in grade 3, the EL1 and ELL groups differed significantly in their error variances. Mann-Whitney \(U\) test was therefore used in the post-hoc group comparison for these items. Results were consistent with the parametric test in indicating that there was no significant group difference.
that our results may underestimate children’s ability to make use of cognate relationships. On the contrary, significant differences between the low-frequency cognate and non-cognate conditions were observed in both grades 2 and 3. Furthermore, children performed significantly better on pseudo-cognates than on non-cognate words in both grades. The inclusion of a pseudo-cognate condition in Study 2 offered a means to assess the independent contribution of cognate status to the development of derivational awareness, eliminating the potential confound of previous vocabulary knowledge. This overall pattern of results indicates that cognate knowledge supported the children’s processing of multimorphemic words, and that its contribution was clearly in evidence in the second and third years of schooling. Our results replicate those of Hancin-Bhatt and Nagy (1993) and extend them by demonstrating the facilitative effect of cognate status on morphological processing at a much earlier age. Previous research attests to the impact of L2 language proficiency on the transfer of metalinguistic awareness (e.g., Durgunoglu, 2002). We propose that the children’s increased exposure to, and proficiency in French drove the observed increase in cognate awareness over time.

With respect to base-word frequency, previous studies (e.g., Deacon et al., 2011) found frequency effects on monolingual children’s ability to access the morphological structure of derived words. Our results extend previous findings by demonstrating frequency effects in a younger sample of non-francophone children educated in French. The results of Study 1, in which French immersion children were most successful at matching French words to their English translations in cases where the base frequency was relatively high, are open to interpretation. While these results may very well reflect the facilitative effect of base frequency on morphological awareness, we cannot exclude the possibility that the superior performance on the high-frequency cognate condition relative to the low-frequency cognate and non-cognate conditions also reflected general vocabulary knowledge. The results of the older children, however, demonstrate clear frequency effects as evidenced in the children’s superior performance on the low-frequency cognate condition relative to the pseudo-cognate condition.

Given previous research findings demonstrating developmental trends in derivational awareness (e.g., Malabonga et al., 2008), it is not surprising to find superior overall performance in grade 3 relative to grade 2. We interpret the overall superior performance of the older children as evidence of increasing knowledge of the semantic relationship between suffixes across two languages. However, in order to exclude the possibility that children were basing their responses on orthographic or phonological properties rather than semantics, we compared their performance on the four suffixes across grades and conditions. Since children did not perform better on pairs that exhibit orthographic and phonological overlap (e.g., -eur/-or) compared to those that do not (e.g., -ment/-ly), we can exclude the possibility that performance on the translation task was conditioned by orthographic or phonological similarities in the suffixes alone.

The lack of statistically significant differences in performance across stimulus conditions between the EL1 and ELL language groups suggest that ELL children’s more limited English vocabulary did not constrain knowledge of systematic correspondences between English (L2) and French (L3) affixation. The lack of a grade by language group interaction reported in Study 2 further suggests that the developmental trends related to both frequency and cognate effects were parallel in the EL1 and ELL groups. The strong performance of the ELLs may be attributable to general cognitive and linguistic development. Previous research has suggested that bilingualism may have a facilitating effect on children’s metalinguistic development (e.g., Bialystok, 1986, 1988). It is possible that the heightened metalinguistic awareness associated with the putative bilingual advantage with which the ELL children enter French immersion, compensated for their lower English lexical knowledge relative to their EL1 peers.
Limitations and implications

A limitation of the study with respect to word frequency was the lack of a high-frequency non-cognate condition without which we were unable to assess the independent contribution of base frequency. A search of numerous word sources revealed that derived words ending in the four suffixes we chose are generally French-English cognate words with shared Latin origins. As a result, we failed to find high-frequency French words ending in -eux, -eur, -ité and -ment with English translations ending in the corresponding suffixes. A further limitation of the study relates to its relatively small sample size. Further research is needed to test performance on the translation task in a larger sample. Finally, the small number of test items per stimulus condition somewhat limits the strength of our findings. The restricted number of items was largely due to difficulty in finding suitable French-English non-cognate words ending in each of the four derivational suffixes we examined.

Despite these limitations, the current study has theoretical and practical implications. From a theoretical perspective, the current study reports preliminary evidence suggesting that by grade 3, cognate knowledge and word frequency emerge as factors that support the development of derivational awareness in non-francophone children learning French in the context of a Canadian French immersion programme. This lower limit is considerably younger than has been previously demonstrated in the research literature. Furthermore, we reported data attesting to French immersion children’s knowledge of the semantic relationship between corresponding French-English derivational suffixes beginning in the primary grades. From a practical perspective, our findings suggest there might be some value in explicitly teaching children to use cognate word knowledge and derivational suffixes to support vocabulary development in an additional language. Given the fact that a number of high-frequency French words are low-frequency academic or literate words in English (e.g., descendre/descend, fatigué/fatigued, amitié/amity), direct instruction in cognate vocabulary could have immediate beneficial effects on French word knowledge, as well as longer term benefits on English vocabulary. The results suggest it may be preferable to begin teaching children to recognise the correspondence between derivational suffixes using high-frequency cognate words. However, further research is needed to investigate the potential benefits of cognate instruction in French immersion programming in the early primary years.

REFERENCES


