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**meertalige communicatie**

# **Flemish Learners' Vocabulary Knowledge in English and French: The Effect of Cognates and Out-of-School Exposure**

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## **Preface**

The process of conducting research and writing this master's dissertation, on what is without any doubt the most interesting topic there is, would not have been the same without the help and support of many people, whom I would like to thank.

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# 1 Abstract

In light of the growing body of evidence on the positive impact of cognateness and out-of-school exposure to foreign languages (FL) on FL learners' vocabulary acquisition, this master's thesis aims to examine the English and French vocabulary knowledge of Flemish pupils in grade 6 ( $n = 22$ ) and grade 10 ( $n = 30$ ), as well as the possible effect of cognates and out-of-school exposure. Two vocabulary tests were used, the PVST and the VocabLab tests, as well as a questionnaire. Furthermore, a French version of the PVST was developed for the purpose of this study. A quantitative analysis indicated that the pupils' scores on a receptive vocabulary test are significantly higher for English than for French. That was also the case for the scores on the cognates, yet not for grade 10, where the scores for the French cognate words were slightly higher. Moreover, there were significant correlations between the scores on the English and French tests, and more significant correlations were found between English and several out-of-school activities, than for French.

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In het licht van het groeiende bewijs over de positieve impact van cognaten en buitenschools taalcontact op de woordenschatverwerving van vreemdetallearders, wordt in deze masterproef de Engelse en Franse woordenschatkennis van Vlaamse leerlingen in het zesde leerjaar ( $n = 22$ ) en vierde middelbaar ( $n = 30$ ) onderzocht, net als het mogelijke effect van cognaten en buitenschools taalcontact. Daarvoor werden twee woordenschattoetsen gebruikt, de PVST en de VocabLab-toetsen, evenals een vragenlijst. Bovendien werd voor het doel van deze studie een Franse versie van de PVST ontwikkeld. Via een kwantitatieve analyse werd aangetoond dat de scores van de leerlingen op een receptieve woordenschattoets significant hoger zijn voor Engels dan voor Frans. Dat was ook het geval voor de scores op de cognaten, maar niet in het vierde middelbaar, aangezien daar de scores voor de Franse cognaatwoorden iets hoger waren. Daarnaast waren er significante correlaties tussen de scores op de Engelse en Franse toetsen, en werden er meer significante correlaties gevonden tussen Engels en verschillende vormen van buitenschools taalcontact, dan voor Frans.

## 2 Introduction

In an increasingly globalised world, one could say that it is of paramount importance to know more than one language, which highlights the growing importance of foreign language learning. In the European Union (EU), foreign language skills are considered important for EU citizens, and thus speaking two languages besides one's native language is being promoted (Renard & Milt, 2023).

Multiple studies have highlighted the benefits of several learner-related and word-related variables on FL vocabulary knowledge, as well as FL proficiency in general (e.g., Lindgren & Muñoz, 2013; Peters et al., 2019; Peters & Webb, 2018). Among the learner-related variables is out-of-school exposure to the FL, for which multiple studies have provided evidence that engaging in activities involving the FL can positively affect learners' FL proficiency (e.g., De Wilde, Brysbaert & Eyckmans, 2020a; De Wilde & Eyckmans, 2017; Kuppens, 2010). For the word-related variables, several studies have found that one variable in particular could be the most influential: cognateness (e.g., Lindgren & Muñoz, 2013; Puimège & Peters, 2019).

In contrast to multiple other countries in the EU, the first foreign language to be taught in Flanders is French, instead of English (European Commission, 2012), which raises the question whether Flemish pupils' acquired vocabulary for French could influence their English vocabulary knowledge. This study thus attempts to examine Flemish pupils' vocabulary knowledge of English and French, as well as their knowledge of cognates between English and French. Moreover, out-of-school exposure to English and French is also explored through a questionnaire, allowing to investigate through which activities Flemish pupils are exposed to English and French the most, and whether there is a relation between certain types of out-of-school exposure and vocabulary knowledge.

First of all, a literature review will provide insight into vocabulary knowledge and acquisition in an FL, as well as the influence of starting age and length of instruction, out-of-school exposure, and cognateness. Next, this thesis will elaborate on the respondent sample, the vocabulary tests and questionnaire, and the process of identifying cognates in one of the English vocabulary tests to develop a French version. Lastly, the research findings will be presented and discussed, as well as a conclusion involving this study's limitations and suggestions for further research.

### **3 Literature review**

#### **3.1 Vocabulary knowledge and acquisition in foreign languages**

Several studies regarding vocabulary acquisition in an FL have attempted to define or explain how words are learned in a foreign language. For example, vocabulary acquisition in a second language (L2) could be described as “linking a new lexical form with an existing concept already connected to the equivalent word in the first language (L1)” (Comesaña et al., 2012, p. 378). According to this definition, the L1 could thus be important or influential when learning an FL. Schepens, van der Silk and van Hout (2016) also mention the importance of the L1 when learning an L2. The researchers suggest that the linguistic distance between an L1 and L2 could influence L2 learnability (Schepens, van der Silk & van Hout, 2016). Multiple researchers have already used cognate linguistic distance as a measure for linguistic distance in general (Lindgren & Muñoz, 2013; Van der Slik, 2010), which implies the importance of cognates for vocabulary acquisition as well.

In the context of learning a third language (L3), proficiency in previously acquired languages could also be important to consider (Hammarberg, 2018; Schepens, van der Slik & van Hout, 2016). The term ‘L3’ not only refers to the third language a person is acquiring, but it also refers to any additional language that is being learned after the L2 (Jessner, Megens & Graus, 2018). In such situations, crosslinguistic influence (eg. through cognates) could become more complex, as both the L1 and the L2 could positively affect the acquisition process (Hammarberg, 2018; Jessner, Megens & Graus, 2018). For example, should the L2 and the L3 be typologically closer to each other than the L1 and L3, crosslinguistic influence from the L2 would have a greater influence (Hammarberg, 2018).

According to Bisson et al. (2014), vocabulary acquisition in a foreign language (FL) can be quite challenging for FL learners. In order to get a 95% coverage of words, between 3,000 and 4,000 word families would be needed, whereas a 98% lexical coverage would require between 6,000 and 9,000 word families (Nation, 2022). Although reaching a 95% coverage requires approximately half of the word families needed to reach a 98% coverage, multiple studies have shown that a 98% lexical coverage would be favoured (Laufer, 1989; Nation, 2022; Schmitt, Jiang & Grabe, 2011) as it would leave a “manageable amount of unknown vocabulary” (Nation, 2022, p. 16). For example, to understand 98% of the words used in a children’s movie in an L2, learners would have to have learned approximately 6,000 word families. For understanding 98% of a novel written in the L2, on the other hand, a knowledge of about 9,000 word families would be required (Nation, 2022).

The number of word families needed to reach a 98% coverage of words in an L2 is, however, too high for every word to be taught during formal instruction (Horst, 2005). Thus, incidental vocabulary acquisition could play an important role in acquiring a sufficient number of word families in order to reach the 98% coverage of words (Bisson et al., 2014). Consequently, one could say that, aside from intentional language learning, incidental acquisition of a foreign language could also positively affect FL



learners' language proficiency (De Wilde, Brysbaert & Eyckmans, 2020a; De Wilde, Brysbaert & Eyckmans, 2022; Kuppens, 2010; Peters et al., 2019).

It thus appears that out-of-school exposure to the L2 can be a valuable addition to formal instruction in the L2, as well as a mechanism which can positively affect young learners' vocabulary acquisition, prior to formal instruction. Out-of-school exposure could be considered part of the individual or learner-related factors which have the potential to influence a person's vocabulary acquisition in an L2 (De Wilde & Eyckmans, 2017; De Wilde, Brysbaert & Eyckmans, 2022). Other elements which could also have such influence include gender, learners' L1, length of instruction, starting age, and prior vocabulary knowledge in the L2 (De Wilde, Brysbaert & Eyckmans, 2022; Peters & Webb, 2018).

Aside from individual factors, word-related factors can also play a role in learners' vocabulary acquisition. Across multiple studies, cognateness has been found to be the most influential word-related variable (De Wilde, Brysbaert & Eyckmans, 2022; Puimège & Peters, 2019). Other variables could be the frequency by which the words occur, the language which learners are attempting to master, which word class the words belong to, concreteness of the words, and the age at which the words in the L2 were acquired (De Wilde, Brysbaert & Eyckmans, 2020a; De Wilde, Brysbaert & Eyckmans, 2022; Puimège & Peters, 2019). The word- and learner-related variables which are relevant for this study, will be discussed more elaborately in sections 3.2, 3.3 and 3.4 of this literature review.

### **3.2 Starting age and length of instruction**

In the context of FLL, both starting age and length of instruction could be considered part of the individual or learner-related variables which might influence FL learner's vocabulary knowledge or proficiency level in general. As one could say both factors are somewhat related, they will be discussed together.

A study conducted by McKay (2006) provided insight in which characteristics could distinguish young language learners from older ones. He divided those characteristics into three separate categories: growth, literacy, and vulnerability. Through the ages of five years old until twelve years old, children would undergo "constant cognitive, social, emotional and physical growth" (McKay, 2006, p. 6), and that state of constant growth might also apply to their literacy skills.

Moreover, according to Puckett and Black (2000), as cited in McKay (2006), an important difference to consider is that young learners are still developing literacy skills whilst learning the FL, which is not the case anymore for older language learners. Those older learners can rely on their literacy skills in the L1 when attempting to obtain a high level of reading comprehension in the L2 (Bialystok, 2001). Furthermore, young children could also be more vulnerable during their language learning process, as their self-esteem can be heavily influenced by external praise or criticism (McKay, 2006). The research findings by McKay could thus be an indication that young language learners should possibly be treated with care, as they are still in a phase of constant growth. Moreover, the findings by McKay (2006), Puckett and Black, as cited in McKay (2005), and Bialystok (2001) might also suggest that an early starting age does not necessarily imply a higher language proficiency on the longer term.

Research conducted by Baumert et al. (2020) appears to confirm that the positive effects of an early starting age are not lasting when the learners grow older. The researchers focused on the long-term effects of an early starting age on German pupils' English receptive language proficiency, comparing the reading and listening comprehension of 15- to 16-year-old pupils who started learning English at either age 6-7, age 8-9, or age 10. In doing so, they found that the advantage of pupils who started learning English at an early age, had faded away by the time they were 15 to 16 years old, when controlling for other variables such as German proficiency, school type, and federal state (Baumert et al., 2020).

The findings of Baumert et al. (2020) coincide with those of Pfenninger and Singleton (2017), who conducted a similar longitudinal study for English proficiency amongst pupils in the German-speaking part of Switzerland. The Beyond Age Effects (BAE) study was conducted when the starting age of formal instruction for English switched from 13 years to 8 years. That situation allowed the researchers to compare the English proficiency of German-speaking pupils who started formal instruction at age 8 and 13, within the same secondary school and cohort, at two points of measurement (Pfenninger & Singleton, 2017). At the first point of measurement, the early starts had received 440 hours of formal instruction, whereas the late starters received 50 hours. At that point, the researchers found that the early starters performed slightly better in the linguistic dimensions, yet the late starters outperformed the early starters in terms of linguistic accuracy. At the second point of measurement, there was no longer a difference between the English language proficiency of both groups. The late starters thus managed to assimilate as much in 6 years, as the early starters did in 11 years of formal instruction (Pfenninger & Singleton, 2017).

Another study conducted by Jaekel et al. (2017) investigated the proficiency of German pupils who started formal instruction in English at the age 8-9 (at the beginning of grade 3) and age 6-7 (at the second half of grade 1). They compared the respondents' receptive language proficiency through their scores on a reading and a listening test, at two points of measurement: the beginning of grade 5, which corresponds with 140 hours of formal instruction for the late starters and 245 for the early starters, and grade 7, which corresponds with 444 hours for the late starters and 549 hours for the early starters. The findings indicated that the positive short-term effect for both reading and listening comprehension which was observed for the early starters in grade 5, had decreased in grade 7. The pupils who had started formal instruction later, surpassed their peers who had started earlier, which could imply that older learners have advantages on the longer term (Jaekel et al., 2017), as was also suggested in the previously discussed studies.

Cenoz (2018) provides a possible explanation for the positive long-term effect for older FL learners. She investigated the influence of age on cross-linguistic influence in English as an L3 amongst elementary and secondary school students in grade 2, 6 and 9 who had Basque and/or Spanish as their L1. The participants all attended the same school in the Basque Country and had been receiving formal instruction in English for 4 years, yet they had different starting ages of learning English. Hence, the pupils in grade 6 and 9 had received 80 hours more of formal instruction in English (Cenoz, 2018). The

participants were asked to tell a wordless picture story in English and received a questionnaire regarding the knowledge and use of Basque, which allowed for every case of cross-linguistic influence at the lexical level between Basque and English to be identified. The research findings showed that older learners present more cross-linguistic influence than younger learners (Cenoz, 2018), which might be an explanation for learners who started formal instruction later, outperforming early starters on the long term.

Based on the studies regarding the influence of starting age which are discussed above, one could suggest that the positive effects of an early starting age are not lasting on the longer term (Baumert et al., 2020; Cenoz, 2018; Jaekel et al., 2017; Pfenninger & Singleton, 2017). According to those studies, advantages of an early starting age tend to decrease over time, which could be explained by the literacy skills of the younger learners, which are still developing (Bialystok, 2001; Puckett & Black, as cited in McKay, 2005), and in line with that, older learners presenting more cross-linguistic influence, which might benefit their proficiency (Cenoz, 2018).

Muñoz (2014) focused on the influence of both starting age and input on Spanish students' oral performance for English. All participants had been receiving formal instruction in English for at least 10 years and had reached an intermediate to advanced level for English. By means of a questionnaire regarding the participants' English learning history, and a variety of tests, including a task which consisted of retelling a story orally, the students' oral performance was measured (Muñoz, 2014). The research findings indicated that, in the long term, starting age did not correlate significantly with the students' English oral performance, and starting age might thus not be a determining factor of the students' long-term oral performance. Regarding input characteristics, both current informal contact with English and the hours of immersion abroad appeared to be better predictors of the students' oral performance than length of instruction (Muñoz, 2014). Those findings underline "the importance of contact with native speakers and exposure to input that is linguistically rich" (Muñoz, 2014, p. 476), as well as the influence of the participants' engagement with English (Muñoz, 2014). Moreover, the study also indicates that there might be a stronger link between input and FL proficiency, than between starting age and FL proficiency.

### **3.3 Out-of-school exposure to foreign languages**

As Muñoz (2014) suggests, engagement with the FL could be an influential factor in FL learners' language learning process. FL learners can be exposed to an L2 outside the classroom, through the use of different media where the target languages are represented. That concept could be referred to as out-of-school exposure, which implies that an FL is being learned incidentally. According to Bisson et al. (2014), incidental learning of vocabulary can be important, as formal instruction in the FL will likely not suffice to reach enough knowledge to understand written texts in the FL.

Several studies have provided ample evidence for the benefits of out-of-school exposure to foreign languages during the language learning process, and how it can be supplementary to formal instruction in the FL, or even beneficial prior to instruction (De Wilde, Brysbaert & Eyckmans, 2020a; De Wilde,

Brysbaert & Eyckmans, 2021; De Wilde & Eyckmans, 2017; Kuppens, 2010; Peters & Webb, 2018). Moreover, researchers have also provided insight in the number of out-of-school activities involving foreign languages young learners tend to engage in, and have suggested that media input in the FL can allow young learners to reach a certain level of proficiency while having received little to no formal instruction in the FL (De Wilde, Brysbaert & Eyckmans, 2021; De Wilde & Eyckmans, 2017; Hannibal Jensen, 2017; Kuppens, 2010). Similar to starting age and length of instruction, out-of-school exposure to the FL could also be categorised as an individual variable affecting learners' vocabulary acquisition.

### **3.3.1 Out-of-school exposure before the onset of instruction**

Some studies have investigated out-of-school exposure or incidental language learning, and its influence on young learners' proficiency prior to formal instruction. De Wilde and Eyckmans (2017), for example, investigated the incidental language acquisition of 11-year-old Flemish pupils who had not yet received formal instruction in English. By means of a receptive vocabulary test and a proficiency test measuring listening, speaking, reading, and writing skills, as well as a questionnaire regarding learner characteristics, the researchers attempted to gain insight in the young learners' English proficiency (De Wilde & Eyckmans, 2017). The findings showed that the pupils' receptive skills were further developed than their productive skills, which could be explained by the lack of formal instruction. Furthermore, the participants could be divided into two groups: those who received high scores on the tests and were already able to communicate at the A2 level of the CEFR, and those who received low scores. That division could be explained by the exposure to English language media, especially the amount of gaming and computer use (De Wilde & Eyckmans, 2017). Watching television or listening to music, on the other hand, could not be linked to the pupils' scores on the different tests (De Wilde & Eyckmans, 2017).

The findings of De Wilde and Eyckmans (2017) are supported in a study conducted by De Wilde, Brysbaert & Eyckmans (2022), where they examined the English and French vocabulary knowledge of Dutch-speaking children of 10-12 years old. At that age, the participants had already received 100 hours of formal instruction in French, compared to no formal instruction in English. By means of a meaning recognition test and a questionnaire regarding out-of-school exposure to English and French, the researchers could determine that the pupils had a larger vocabulary knowledge for English than for French, which might be an indication of "the power of contextual language learning" (De Wilde, Brysbaert & Eyckmans, 2022, p. 87). The participants reported watching television, listening to music, gaming, and using social media more frequently in English, only reading and speaking were more frequent in French. This study thus points out the importance of engagement in out-of-school activities in the FL for acquiring new vocabulary. Hence, it could also be an important addition to formal instruction inside the classroom (De Wilde, Brysbaert & Eyckmans, 2022).

Another study, conducted by Kuppens (2010), focused on the possible influence of watching television, gaming, and listening to music as types of out-of-school exposure on Flemish pupils' English proficiency. The participants were Flemish pupils in grade 6 and had never received formal instruction in English before. By means of an oral translation test from Dutch to English and vice versa, their English proficiency was measured, and a questionnaire was used to gain insight in their use of different English-

language media (Kuppens, 2010). The research findings indicated that listening to music was the most popular out-of-school activity, followed by watching subtitled television or movies, and playing computer games. In contrast to the study by De Wilde and Eyckmans (2017), watching television or movies with subtitles significantly influenced the participants' performance on the Dutch-to-English and English-Dutch translation tasks. Moreover, gaming also appeared to positively affect the English-to-Dutch translation skills (Kuppens, 2010), which is in line with the findings of De Wilde and Eyckmans (2017) on the influence of gaming. Those effects, however, remained rather limited, which could be explained by the fact that the questionnaire did not distinguish between different types of games (Kuppens, 2010).

Sundqvist and Wikström (2015) specifically looked at the relation between gaming and English FL proficiency of Swedish learners, aged between 15 and 16 years old. Through the analysis of a questionnaire, language diaries, vocabulary tests and grades, they found that the learners who gamed more than 5 hours per week, outperformed pupils who gamed less, or did not game at all.

Hannibal Jensen (2017), on the other hand, did distinguish between several types of games. She focused on the effects of gaming amongst Danish learners of English, aged 8 and 10 years old, who had received two hours of English instruction on a weekly basis, for a year. Using a one-week diary, participants were asked to write down the amount of time they spent on seven out-of-school activities: gaming, listening to music, reading, talking, watching television, writing, and any possible other activities involving English. Moreover, the pupils filled out a vocabulary test which allowed for their vocabulary proficiency to be calculated. Hannibal Jensen (2017) found that most time was spent on gaming, listening to music, and watching television, which partly coincides with the findings of De Wilde and Eyckmans (2017). Regarding gaming, the research findings of Hannibal Jensen (2017) indicate that both gaming with oral and written English input, as well as gaming with solely written English input, were significantly related to the pupils' vocabulary scores, especially those of male pupils. That might suggest that the type of game which learners play might also be related to the effect of gaming on learners' English vocabulary proficiency.

### **3.3.2 Out-of-school exposure after the onset of instruction**

Aside from studies focusing on the influence of out-of-school exposure on learners' FL proficiency prior to instruction, there are other studies which have provided more insight in the benefits of engagement with FL media outside the classroom after the onset of instruction. De Wilde, Brysbaert and Eyckmans (2021) studied the English receptive vocabulary knowledge of 13- and 14-year-old Flemish learners, after the onset of English instruction. The test instruments consisted of a receptive vocabulary test, as well as a proficiency test which measured the participants' speaking skills. On top of that, a questionnaire was used to ask about the participants' out-of-school exposure to English.

As the participants had already participated in a similar study by De Wilde, Brysbaert and Eyckmans (2020b) before the onset of instruction, their results could be compared. That comparison indicated that the speaking skills of the pupils had improved, which could be partially explained by the formal education which they had received since the data collection in the earlier study (De Wilde, Brysbaert & Eyckmans,

2021). The years of formal instruction, however, did appear to have a greater impact on the participants' speaking skills than on their receptive vocabulary knowledge, and the correlation between years of instruction and English proficiency remained relatively low (De Wilde, Brysbaert & Eyckmans, 2021). Moreover, the amount of out-of-school exposure had increased, compared to the previous study of De Wilde, Brysbaert & Eyckmans (2020b), which could partially explain the increased results as well. Their vocabulary knowledge and speaking skills could namely be predicted by their use of social media, gaming, and speaking English (De Wilde, Brysbaert & Eyckmans, 2021). Other variables were also found to be predictive, yet they were not types of out-of-school exposure, and thus they will not be further discussed.

Similar to the study by De Wilde, Brysbaert and Eyckmans (2021), which suggests that out-of-school exposure to the FL can be a valuable addition to formal instruction in the FL, Peters et al. (2019) investigated the impact of length of instruction, out-of-school exposure, and gender on Flemish FL learners' vocabulary knowledge in English and French. The study involved Flemish students who were either from the second year of secondary education, with 33 hours of instruction for English and 343-481 for French, or fourth year, with 167-200 hours of instruction for English and 560-747 for French, or the first year of university, with 335-462 hours of instruction for English and 790-1,060 for French (Peters et al., 2019). They were required to fill out a frequency-based vocabulary test for both English and French, the VocabLab tests, as well as a questionnaire regarding out-of-school exposure to English and French (Peters et al., 2019).

The research findings showed that length of instruction correlated positively with vocabulary knowledge, yet the effect was rather small when out-of-school exposure to the FL was limited (Peters et al., 2019). Thus, although the respondents had received an additional 3 years of French instruction, their performance on the English tests was better than on the French tests. That difference could be explained by the greater amount of out-of-school exposure to English, with the main out-of-school activities being listening to music, watching television and movies, playing computer games, and visiting websites (Peters et al., 2019). Reading, on the other hand, appeared not to be an activity the participants had frequently engaged in, which could be explained by the amount of vocabulary which is needed to understand a novel (Nation, 2022; Peters et al., 2019).

A study conducted by Saito and Hanzawa (2016) supports those findings. They focused on the role of length and focus of instruction on Japanese learners' oral ability in English, as well as the influence of individual differences. Through a timed picture description task, the participants' spontaneous speech was analysed, and the research findings indicated that their oral ability levels were related to elaborate formal instruction in English, yet that participants who had engaged in additional FL activities tended to have a better pronunciation (Saito & Hanzawa, 2016). Hence, it could be assumed that the additional contact FL learners have with the FL outside of formal instruction in the classroom, can further increase the potential of that formal instruction.

Based on the studies regarding the influence of out-of-school exposure to foreign languages on learners' proficiency in those languages, one could conclude that it is important to consider other variables, apart

from length of instruction or starting age, which could influence FL proficiency. Moreover, it also appears that engagement with out-of-school activities can positively affect FL learners' receptive vocabulary knowledge, both before and after the onset of instruction. That is particularly relevant for this study, because it also measures FL learners' receptive vocabulary knowledge.

### 3.4 Cognateness

Apart from out-of-school exposure and starting age as learner-related variables, there is also a word-related variable which is particularly relevant for this study: cognateness. Cognates could be described as words which are orthographically and/or phonologically similar to their translation equivalent, and also have a similar meaning (Antón & Duñabeitia, 2020; Comesaña et al., 2012; De Wilde, Brysbaert & Eyckmans, 2020a; Muñoz, Cadierno & Casas, 2018). Regarding their form, cognates can be either identical (e.g., *table* in English and *table* in French) or similar (e.g., *alert* in English and *alerte* in French) (De Wilde, Brysbaert & Eyckmans; 2020a).

Cognates might be important to consider when conducting research on vocabulary acquisition in an FL. Research by Antón and Duñabeitia (2020) has provided insight in the effects of cognate synonyms on vocabulary acquisition in an L2. Participants, between 9 and 17 years old, were asked to learn a set of words from a fictional language, of which half had two possible translations, one cognate and one non-cognate in the participants' L1, and the other half only had a non-cognate word as a translation, and then to complete a picture-word matching task. The results indicate that the participants were able to remember the cognate translations better than the other translations, which could imply that cognates are easier to learn (Antón & Duñabeitia, 2020).

Another study, conducted by Lindgren & Muñoz (2013), also highlights the influence of cognates on foreign language learning. They focused on the impact of different variables on 10- and 11-year-old FL learners' reading and listening skills after 4 years of formal instruction. More specifically, they investigated the impact of exposure, parents' educational level, parents' use of the FL in a professional context, interaction, and cognate linguistic distance. Their research was conducted in seven different countries, Croatia, England, Italy, the Netherlands, Poland, Spain, and Sweden, and in each country, the FL was English, except for England, where the French and Spanish were the FL. A questionnaire and specifically designed tests for reading and listening skills indicated that, although out-of-school exposure could partially predict the pupils' scores on the listening test, cognate linguistic distance appeared to be the strongest predictor. For the reading test, on the other hand, out-of-school exposure and cognate linguistic distance could equally predict the pupils' scores (Lindgren & Muñoz, 2013).

That aligns with research conducted by Peters and Webb (2018), who investigated incidental vocabulary learning of Flemish students in the first or second year of university through viewing a one-hour English-language documentary, by means of a meaning recognition and meaning recall test. They found that cognateness had the largest effect on the participants' scores, which could be explained by the fact that Dutch and English are both Germanic languages, and thus share a high number of cognates (Peters & Webb, 2018).

Puimège and Peters (2019) found similar results for the influence of cognates, prior to instruction. They focused on the impact of several learner-related and word-related variables on 10- and 12-year-old Flemish learners' English vocabulary knowledge, prior to formal instruction. By means of a questionnaire regarding extramural English, an English vocabulary test, and a Dutch vocabulary test, they found that cognateness was the most powerful predictor for the participants' vocabulary knowledge at the level of meaning recognition and meaning recall (Puimège & Peters, 2019).

Research conducted by De Wilde, Brysbaert and Eyckmans (2020a) confirms the findings of Puimège and Peters (2019) that young FL learners can also benefit from an overlap between the L1 and the L2, as their "vocabulary development is kickstarted by similarities between L1 and L2" (De Wilde, Brysbaert & Eyckmans, 2020a, p. 374). The study focused on Flemish children's receptive vocabulary knowledge of English, solely through out-of-school exposure with the FL, and which word-related variables can contribute to the contextual word learning (De Wilde, Brysbaert & Eyckmans, 2020a). The analysis of the participants' results on a receptive vocabulary test indicated that less proficient learners tend to guess the meaning of words based on their L1, suggesting that cognates can indeed help children to independently learn an L2 outside of school (De Wilde, Brysbaert & Eyckmans, 2020a).

Tonzar, Lotto and Job (2009) also found that cognates can facilitate L2 vocabulary acquisition, while studying the effects of picture- and word-based learning, as well as cognates, on the English and German vocabulary acquisition of Italian pupils in grade 4 and grade 8. They found that the cognates were easier to learn for both the pupils from grade 4 and from grade 8. However, that effect was greater when the language was less familiar, and thus it decreased with exposure to the L2, which was the case for English (Tonzar, Lotto & Job, 2009).

Based on the studies discussed above, one could conclude that cognates as a word-related variable can facilitate vocabulary acquisition (Lindgren & Muñoz, 2013; Peters & Webb, 2018), because they are easier to learn (Antón & Duñabeitia, 2020). The overlap between the L1 and L2 could determine to what extent that facilitation occurs, because the learning of cognate words relies on learners' knowledge of their L1 (Nation, 2022). Moreover, cognateness also appears to be influential prior to formal instruction in the L2 (Puimège & Peters, 2019; De Wilde, Brysbaert & Eyckmans, 2020a), yet that effect could diminish as the learners become more proficient in the L2, either through out-of-school exposure, formal instruction, or a combination of both (Tonzar, Lotto & Job, 2009).

## **4 Methodology**

### **4.1 Research questions**

In Flanders, pupils tend to start French education earlier than English education, which raises the question whether their French vocabulary knowledge could affect their English vocabulary knowledge. French is the only foreign language which is compulsory in elementary education in Flanders from grade 5 onwards, whereas English education tends to start in the first or second year of secondary education. However, it appears that Flemish pupils in grade 6 are relatively proficient in English, up to the level of



A2 on the Common European Framework of Reference for Languages, or CEFR (Council of Europe, n.d.; De Wilde & Eyckmans, 2017). Furthermore, multiple studies have indicated that out-of-school exposure to an L2, as well as similarities between the L1 and L2, could be affect FL proficiency, while having received little to no L2 formal education (De Wilde et al., 2020; Hannibal Jensen, 2017; Kuppens, 2010).

Given the fact that French education starts earlier than English education in Flanders, yet Flemish pupils tend to be exposed more frequently to English than French language media out of school, the following research questions were formulated:

1. How do Flemish FL learners in grade 6 (age 11-12) and grade 10 (age 15-16) perform on an English and a French vocabulary test?
  - a. To what extent does the vocabulary knowledge in English and French differ amongst Flemish FL learners in grade 6 and grade 10?
  - b. To what extent are Flemish FL learners' vocabulary knowledge in English and French correlated?
2. To what extent are Flemish FL learners in grade 6 and grade 10 engaged with different out-of-school activities in English and French?
3. To what extent is engagement with different out-of-school activities in English and French related to Flemish FL learners' performance on an English/French vocabulary test?
4. To what extent does learners' knowledge of French words affect their knowledge of English words?

## 4.2 Respondents

A total of 52 pupils participated in this study, of which 22 pupils were in grade 6 (ages 11-12), and 30 pupils were in grade 10 (ages 15-16). As can be seen in Table 1, the number of pupils who identified as male and female is fairly equal, yet the majority of the pupils identified as male. Although a non-binary gender option was included, nobody identified as such. When looking at the number of male and female pupils in grade 6 and grade 10 separately, the majority of the respondents in grade 6 identified as male, and in grade 10, the number of male and female respondents was equal.

**Table 1**

*Respondents' gender*

| Gender | Grade 6 ( <i>n</i> = 22) | Grade 10 ( <i>n</i> = 30) | Total ( <i>n</i> = 52) |
|--------|--------------------------|---------------------------|------------------------|
| Female | 8 (36.4%)                | 15 (50.0%)                | 23 (44.2%)             |
| Male   | 14 (63.6%)               | 15 (50.0%)                | 29 (55.8%)             |

For this study, a convenience sampling was used, as one particular school (located in the province of Antwerp) agreed on its pupils' participation, both from grade 6 and grade 10. As various tests and

questionnaires were used, of which one was developed as part of this research, the number of participants remained relatively limited. The data collection took place in March 2023, meaning that, generally speaking, the pupils in grade 6 had already had at least 6 months of French education, and no formal instruction in English. Pupils from grade 10, on the other hand, had had formal instruction for both French and English.

#### **4.2.1 Respondent background**

As part of the questionnaires for English and French, respondents were asked to indicate which languages they speak at home. Two pupils did not answer this question, which resulted in 50 respondents who provided insight into which languages they regularly speak at home. Languages of which pupils indicated that they only used them for fun or when telling jokes, were omitted from the analysis. Dutch was expected to be spoken by most pupils, as it is one of the three official languages in Belgium, along with French and German. That was also the case for this sample, as only one pupil in grade 6 and one in grade 10 did not speak Dutch at home. However, they were not omitted from the sample size, as they do receive education in Dutch.

In addition to that, nine other languages appeared to be used at home on a regular basis. For the pupils of grade 6, the other languages they spoke were English ( $n = 2$ ), Ghanaian ( $n = 1$ ), Surinamese ( $n = 1$ ), Turkish ( $n = 1$ ), Romanian ( $n = 1$ ) and Portuguese ( $n = 1$ ). Amongst the pupils of grade 10, on the other hand, Arabic ( $n = 1$ ), French ( $n = 1$ ), English ( $n = 1$ ) and Kurdish ( $n = 1$ ) were also spoken. One should however consider the fact that those questions were answered by self-report. Although the respondents indicate that they speak those languages at home, and the answers which suggested a non-frequent use of the language were omitted, the respondents' answers were not verified.

#### **4.2.2 Foreign language education**

As was mentioned before, the pupils in grade 10 ( $n = 30$ ) had already received formal instruction in both English and French. For English, 27 pupils received formal instruction for the first time in secondary school, which was expected, as English education in Flanders starts in grade 7 or grade 8. The questionnaire did not distinguish between starting in grade 7 or grade 8, yet the curriculum of the respondents' school indicates that they have been receiving formal instruction in English from grade 7 onwards.

However, it is important to note that some pupils might have completed grade 7 at another school where English education had not yet started. The three remaining pupils reported attending English classes in elementary school. As the questionnaire was not contain additional questions regarding the start of formal instruction, this study cannot provide more insight in the type or frequency of instruction those three pupils received for English. In the case of French, 25 pupils started formal instruction in elementary school, whereas three pupils started learning French in kindergarten and two pupils in secondary school.

The pupils in grade 6 ( $n = 22$ ), on the other hand, have received little to no formal instruction in English, as 15 pupils had never attended an English class. 7 pupils did mention that they had attended an English class, yet that could be explained by the fact that they had recently visited the secondary school as part of the school's 'Doe-Dag' or 'Do-Day'. There, they could get a first impression of the environment and school subjects, including an English class. One could thus conclude that those pupils have not had any form of formal instruction for English on a regular basis. For French, however, all pupils reported that they had already received formal instruction at school.

### **4.3 Vocabulary tests**

To answer the first and second research question, two independent vocabulary tests were used: the Picture Vocabulary Size Test (Anthony & Nation, 2019) and the VocabLab tests (Peters, Velghe & Van Rompaey, 2019). The PVST was chosen because its design is suitable for younger learners of English (Anthony & Nation, 2019), and because it does not control for cognates, which makes it suitable to answer the last research question regarding the influence of English-French cognates. The VocabLab tests, on the other hand, were designed to minimize the number of cognates, which reduces the risk of overestimating FL learners' receptive vocabulary knowledge. Moreover, it also allows to measure FL learners' knowledge of particular frequency bands (Peters, Velghe & Van Rompaey, 2019).

#### **4.3.1 Picture Vocabulary Size Test (PVST)**

As this study aims to gain insight in the possible influence of cognates between French and English on Flemish FL learners' vocabulary knowledge, the English PVST by Anthony and Nation (2019) was used, and a French version of the PVST was developed during this research. The answer sheets which were used during the data collection for both the English and French PVST, can be found in Appendix A and Appendix B.

##### **4.3.1.1 English PVST**

The PVST is a receptive vocabulary size test, designed for both young native and non-native speakers of English, and is based on the most frequent 6000-word families (Anthony & Nation, 2019). Although the test is available as a software package, the design of this research required a version which allowed pupils to fill out the test simultaneously, and in such way that their answers could easily be coded and statistically analysed afterwards.

Hence, a PowerPoint-version of the PVST was used, along with an answer sheet where pupils could indicate their answer by encircling either the number corresponding with one of the pictures shown on the PowerPoint, or the question mark, referring to the 'I don't know' option. The guide which goes with version 1.2.0 of the online PVST (Anthony & Nation, 2019) does mention that the test was primarily designed for young pre-literate children, from the age of five onwards, yet the researchers claim that the PVST is also suitable for older ESL or EFL learners. Those results should however be interpreted with care (Anthony & Nation, 2019).

When participating in the PVST using the computer software, respondents can take as much time as they want to complete the test, resulting in an average time of 15 minutes. The in-class PowerPoint-version that is used in this study, however, provides a set time frame of 15 seconds for pupils to consider all answer options, and select the correct answer, without having the opportunity to re-listen to example sentences. Although it differs from the approach used by Anthony and Nation (2019), it could ensure that all respondents' test results are comparable, as everybody had the exact same amount of time to consider their answers.

It is important to note that the PVST also contains a few potential weaknesses (Anthony & Nation, 2019), of which some might be particularly relevant to briefly discuss in this study. First of all, the example sentences in the PVST could potentially influence respondents' answers, as some contain additional content words of which respondents are expected to know the meaning. In order to reduce that potential weakness, the context words were all retrieved from the first 500 words of the children's list which was created by Anthony & Nation (2019) for the PVST. Furthermore, as the test is primarily designed for young native speakers of English, Anthony & Nation (2019) argue that adults might question or criticise the choices of pictures for particular words. However, the participants in this study did not ask any questions throughout the data collection about the pictures representing the answering options, which could suggest that the pictures were clear to them.

#### **4.3.1.2 French PVST**

##### **Identifying cognates**

A French version of the PVST was developed during this research, containing the items which were particularly relevant for this study. As one of the research questions targets the possible influence of cognates between English and French, the first step was to identify the cognates in the original PVST. Those cognates, 43 in total, along with 10 additional words taken from the English test as distractors, would form the French test. The French PVST developed and used in this study, is thus not a complete version containing all vocabulary from the English version, yet it does allow to verify whether the words identified as cognates are known in French and English.

To identify the cognates in the English PVST, the Compleat Web VP program by Cobb (n.d.) was used, which utilises the BNC/COCA word frequency lists, a combination of the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA) (Nation, 2016). The program marked 37 words in the English PVST as cognates, out of a total of 96 words. It is however important to note that the program's identification of cognates merely extends up to the 11<sup>th</sup> 1000-word family list, which resulted in a 95% coverage of the words in the English PVST.

Moreover, a few word pairs which were expected to be cognates, were not identified as such by the tool (e.g., *table* – *table*, *video* – *vidéo*). Hence, in addition to the output by the Compleat Web VP program, the Levenshtein distance formula, as adapted by Schepens, Dijkstra and Grootjen (2012), was used as an objective measuring tool to examine whether the word pairs can orthographically be considered

cognates. The original formula “counts the minimal number of substitutions, insertions and deletions” (Schepens, Dijkstra & Grootjen, 2012, p. 159) that is needed to alter one word in such way that it becomes its translation. For example, the cognate pair *lake* – *lac* would get a score of 2 on the Levenshtein distance, as the [e] is deleted, and the [k] is substituted for [c]. One should however note that the original formula produces high values for long words and low values for short words, which is why Schepens, Dijkstra and Grootjen (2012) altered the Levenshtein distance, resulting in the normalised Levenshtein distance (NLD). The NLD is calculated by dividing the Levenshtein distance by the maximum length of both words and subtracting 1 by that result, which can be written as the following equation (Schepens, Dijkstra & Grootjen, 2012).

$$score = 1 - \frac{distance}{length}$$

Identical words will result in a score of 1, and words without any overlap will be indicated with a score of 0. Every orthographic overlap or similarity in between those two extremes will have a score between 0 and 1, and a score of 0.5 or higher indicates that the word pair could be identified as a cognate (Schepens, Dijkstra & Grootjen, 2012). Table 2 provides an overview of the NLD for the English PVST words up to the 11<sup>th</sup> 1000-word level, with a similar form in French, which were not identified as English-French cognates by the Compleat Web VP program. As one can see, all word pairs received a score of 0.5 or above, meaning that they can orthographically be considered cognates, and thus can be incorporated in the French PVST. The word ‘rotate’ in the English PVST was also identified as a cognate by the Compleat Web VP program yet appears to not have an equivalent in French of the same word type, which is why it was not incorporated in the French PVST.

**Table 2**

*Normalised Levenshtein Distance*

| English PVST words | French equivalents | NLD |
|--------------------|--------------------|-----|
| table              | table              | 1   |
| lake               | lac                | 0.5 |
| video              | vidéo              | 0.8 |
| alert              | alerte             | 0.8 |
| cushion            | coussin            | 0.6 |
| spa                | spa                | 1   |
| sardine            | sardine            | 1   |

## Developing the French PVST

As was mentioned above, the French version of the PVST that was developed for the purpose of this study, consists of the words that were identified as cognates by the Compleat Web VP Program (Cobb, n.d.) and the words from Table 2. In addition to that, 10 other words from the English PVST were added as distractors: behind (*derrière*), thirteen (*treize*), house (*maison*), believe (*croire*), beneath (*sous*), frame (*cadre*), grasshopper (*sauterelle*), thistle (*chardon*), enhance (*améliorer*), goalie (*gardien de but*). For the example sentences in the PVST, translations from the English version were made, which were slightly adapted in some cases (e.g., *c'est* instead of *ceci est* as a translation of *this is*).

Furthermore, the pictures which form the answering options, remained unchanged, with two exceptions: the picture depicting the correct answer for the word *mail* in the French PVST was altered, as it typically refers to e-mails, whereas the English variant is more often used to refer to physical mail. That was also the case for *chanter* in the French PVST, as the French verb is typically used to describe ordinary singing, whereas the English verb *to chant* usually describes either repeating a word or phrase or singing a religious prayer in a monotonous tone (Longman, 2019).

Another alteration was made for the practising rounds. Before the start of the actual PVST, two examples are given so that the respondents can practise answering the test. In the first example, the word *shell* was replaced, as it is quite common in English and thus suitable for practicing before taking a test, yet that does not apply for French. Therefore, *shell* was replaced with the French word *mer*, as that could be considered a more commonly known word. Similar to the answering options for the word *mail*, all pictures remained unchanged, except for the correct answer. As a result, the final French PVST consists of 53 words, of which 43 words are cognates and 10 words are distractors.

It is, however, important to note that the final version might contain a weakness of which Anthony and Nation (2019) attempted to reduce it in their original online English PVST. The example sentences for each word in the PVST were namely translated from English to French, without considering whether the French content words used in those translations, have a similar frequency of occurrence to those in the English version. Hence, it might be possible that the French content words are easier or harder to understand.

### 4.3.1.3 Interpreting the PVST

According to the guide of version 1.2.0 of the original PVST (Anthony & Nation, 2019), the test can be used to calculate the vocabulary size of young native-speaking children up to eight years old, as well as of young non-native speakers. In order to calculate the respondents' receptive vocabulary size, the test scores should be multiplied by 62.5, according to Anthony and Nation (2019). The researchers however point out that the test calculates receptive vocabulary knowledge, and thus words that respondents might get correct on the PVST, are not necessarily part of their productive vocabulary.

As the PVST was conducted in a PowerPoint-version for this study, the coding of the pupils' answers happened manually. Similar to the coding of the PVST's original software package, every wrong or empty answer was coded as 0, as well as the 'I don't know' option, and every right answer as 1. Hence, no distinction was made between wrong answers, and the 'I don't know' option.

### **4.3.2 VocabLab tests**

Peters, Velghe and Van Rompaey (2019) developed both an English and French version of the VocabLab tests, which makes those tests suitable for a comparison between the respondents' results for English and French, and thus for this study. The tests were designed to measure English and French FL learners' vocabulary knowledge up to the 5,000-level, with each level or frequency band being represented by 30 words. The most frequent 2,000 words are, however, combined into one frequency band and are measured by one set of 30 words, as the tests are actually targeted towards intermediate learners. Consequently, for this study, only respondents from grade 10 were asked to fill out the VocabLab tests. The VocabLab tests can also be found in Appendix C and Appendix D.

The tests were considered particularly useful for this study, as they consist of words derived from more recent frequency lists (Peters, Velghe & Van Rompaey, 2019). Moreover, the number of cognates with Dutch in the test was minimised, in an attempt to reduce the possibility of overestimating respondents' vocabulary knowledge, and an "I don't know"-option was included to encourage respondents not to guess. As the tests also consider the respondents' L1, being Dutch, the VocabLab tests were considered to be useful for this study's purposes.

#### **4.3.2.1 Interpreting the VocabLab tests**

As was mentioned previously, the frequency bands which can be tested with the VocabLab tests, are each represented by a section of 30 words, with the exception of the 1,000-level and 2,000-level. In order to calculate respondents' knowledge of such a frequency band, Peters, Velghe and Van Rompaey (2019) suggested a score of 27 out of 30, or higher, to consider the words in a frequency band to be acquired. Because of the number of loanwords and cognates being minimised in the VocabLab tests, it is unlikely that those results would be an overestimation of the respondents' vocabulary knowledge. It could however be important to note that the score of 27 out of 30 (or 90%) for mastery of a frequency band, does not correspond with the 98% lexical coverage, as was suggested by Laufer (1989), Nation (2021), and Schmitt, Jiang and Grabe (2011).

## **4.4 Questionnaire**

The questionnaires targeting out-of-school exposure to English and French were almost entirely adopted from the questionnaire used in the STAGE-project. That questionnaire was designed to gain insight in respondents' contact with English outside of school and was aimed at pupils from grade 6. Hence, the questionnaire was slightly adapted for the pupils from grade 10, and a similar version was made for extramural French. The questionnaires are similar for both foreign languages and contain three

sections. As the questionnaires are the same for English and French, yet slightly different for grade 6 and grade 10, the English questionnaires for both grades can be found in Appendix E and Appendix F.

The first section contains questions regarding languages spoken at home, other languages which respondents might have learned, and formal instruction in either English or French, depending on the questionnaire. Those questions were all designed as open-ended questions, except for the question regarding formal instruction. That question was a yes-or-no question for grade 6, asking whether the pupils had already attended an English or French class, whereas a multiple-choice question in grade 10 asked when the pupils started English or French education. Moreover, the questionnaire for grade 10 contained an additional question regarding how many hours of instruction the pupils receive on a weekly basis.

The second section targets the out-of-school exposure to English and French, containing four-point Likert-scale questions for each activity or type of exposure, and in some cases additional open-ended questions, for example on which English or French television show respondents watch the most. The types of out-of-school exposure which are incorporated in the questionnaires are the following: watching television/movies, watching YouTube-videos, hearing/reading the FL on social media, playing videogames, listening to music, speaking/writing the FL, and reading. In this section, one question was slightly adapted in the questionnaire for grade 10, to make it more suitable for those pupils. Hence, *Hoe vaak luister je naar Engelstalige liedjes?* (*How frequently do you listen to English songs?*) in the questionnaire for grade 6 became *Hoe vaak luister je naar Engelstalige muziek?* (*How frequently do you listen to English music?*) in the questionnaire for grade 10. The same alteration was made in the French questionnaire.

Lastly, the third section consists of another set of four-point Likert-scale questions regarding the behaviour of pupils when they encounter an English or French word which they do not understand. Furthermore, the last section contains an additional yes-or-no question which allows respondents to further elaborate on other strategies they might use when encountering an unknown word.

## **4.5 Procedure**

Because of the number of tests and questionnaires which are used in this research, the number of participants remained relatively limited. Convenience sampling was used, as one school, located in the province of Antwerp, was contacted, and agreed on the participation of its pupils in grade 6 and grade 10. As the participants in this study were all expected to be minors at the time of the data collection, informed consent forms were required to be filled out by both the respondents and one of their parents or guardians. After the parents or guardians received the informed consent forms and gave their consent for their child's participation in this study, a total of 52 pupils agreed to participate.

The data were collected during school time, in a controlled setting, with supervision of the researcher and teachers whose teaching time was used for the data collection. Every respondent, both in grade 6 and grade 10, completed all the tests and questionnaires, for which they needed about 100 to 150



minutes. The pupils from grade 6, however, only received two vocabulary tests, the PVST for English and the PVST for French. In grade 10, on the other hand, the pupils were expected to complete four vocabulary tests, the PVST for both foreign languages, as well as the VocabLab tests.

During the data collection, the vocabulary tests and questionnaires were divided into an English part and a French part, and the order in which those languages appeared, was reversed when the tests were filled out by another group of respondents, to reduce possible order effects. As the data collection took place on two occasions, once in grade 6 and once in grade 10, the pupils took the tests in the following order: French-English for grade 6 and English-French for grade 10. Moreover, only paper-and-pencil tests were used. As the VocabLab tests were already designed to be filled out on paper, no alterations were made. However, as was mentioned before, the original PVST by Anthony and Nation (2019) was a software package, and thus a PowerPoint-version and answer sheets were used.

#### 4.6 Data analysis

The respondents' answers were manually coded in Excel, and total scores were calculated. Afterwards, the data were further analysed in the IBM SPSS Statistics software, version 28, and partly in Excel. Table 3 shows Cronbach's Alpha for both the PVST and the VocabLab tests in English and French, as well as the questionnaires. As can be seen, Cronbach's Alpha for both questionnaires is fairly low. After the initial calculation of Cronbach's Alpha, one question was omitted from both questionnaires, as that would positively affect the Cronbach's Alpha, which results in the values in Table 3. Possible explanations for those lower values could be the number of questions regarding out-of-school exposure, which is 10 for both questionnaires. The Cronbach's Alphas for the vocabulary tests, on the other hand, are all above .90, which is an indication of good internal consistency.

**Table 3**

*Cronbach's Alpha*

| Vocabulary Tests and Questionnaires | Cronbach's Alpha |
|-------------------------------------|------------------|
| PVST English                        | .91              |
| PVST French                         | .92              |
| VocabLab English                    | .97              |
| VocabLab French                     | .91              |
| Questionnaire English               | .43              |
| Questionnaire French                | .41              |

Because the analysis would be carried out separately for grade 6 and grade 10, and thus the sample sizes would be 22 and 30, the Shapiro-Wilk test was used to verify whether the data are normally distributed. It indicated that the results are normally distributed, except for those on the English PVST

in grade 6 ( $W(22) = .83, p = .002$ ). Hence, non-parametric tests were used during the analysis. An explanation could be that the pupils in grade 6 have not yet received English instruction in grade 6, and thus their out-of-school exposure to the language is likely the only form of input they have received so far. Some pupils might be more frequently exposed to English than others, which could explain any outliers. Another possible explanation, however, would be the number of participants ( $n = 22$ ).

Correlations between the total scores for English and French on the vocabulary tests were calculated with Spearman's rho, which was also used to identify correlations between items from the questionnaires on extramural English and French. Furthermore, the Wilcoxon Signed-Rank Test was used to compare the English and French mean scores PVST in general, and the mean scores on the cognates in the PVST. In order to analyse whether French vocabulary knowledge affects English vocabulary knowledge or vice versa, a comparison was made of which words the participants know in English, in French, or in both languages, in addition to the comparison of the mean scores on the cognates in the PVST.

## 5 Results

### 5.1 Descriptive statistics

#### 5.1.1 Vocabulary tests

Table 4 provides an overview of the total scores of the pupils in grade 6 on the English and French PVST. As the PVST for English contains all the items which are also present in the original PVST by Anthony and Nation (2019), the receptive vocabulary size of the participants can be calculated by multiplying their results with 62.5. One correct answer represents a vocabulary size of 62.5 words, and thus the respondents' receptive vocabulary size for French could also be calculated, even though it contains less items. There could, however, be a ceiling effect compared to the English PVST, as it contains more items. The results for the pupils from grade 10, on the other hand, are presented in Table 5, which also provides an overview of the scores on the PVSTs, as well as the general scores and the scores on each section for the VocabLab tests. Percentages are also provided, because the original English PVST and the French version developed for this study do not contain the same number of items.

As can be seen in Table 4, the pupils' mean score on the English PVST ( $M = 68.27; SD = 12.51$ ) is higher than the mean score on the French PVST ( $M = 31.27; SD = 5.54$ ). As the receptive vocabulary size is a multiplication of the scores on the PVST, one can observe that the pupils' mean receptive vocabulary size for English is also higher than for French. When looking at the percentages in Table 5, containing the scores for grade 10, the mean score for the English PVST ( $M = 72.23; SD = 10.18$ ), however, appears to be lower than the mean score for the French PVST ( $M = 45.47; SD = 3.79$ ). Consequently, the mean receptive vocabulary size for French is also higher than for English. That could be explained by the fact that the French PVST consists of fewer items, and most of them are cognates. Hence, the participant's knowledge of cognates could have a greater effect on the total scores for the French PVST.

**Table 4***PVST Scores for Grade 6*

| Vocabulary Tests        | Min.              | Max.              | <i>M</i>          | <i>SD</i> | 95% Confidence Interval |
|-------------------------|-------------------|-------------------|-------------------|-----------|-------------------------|
| PVST EN                 | 30.00<br>(31.25%) | 83.00<br>(86.46%) | 68.27<br>(71.11%) | 12.51     | [62.73, 73.82]          |
| PVST FR                 | 15.00<br>(28.30%) | 42.00<br>(79.25%) | 31.27<br>(59.00%) | 5.54      | [28.37, 34.17]          |
| Receptive Vocabulary EN | 1875.00           | 5185.00           | 4267.05           | 781.62    | [3920.49, 4613.60]      |
| Receptive Vocabulary FR | 937.50            | 2625.00           | 1954.55           | 408.79    | [1773.30, 2135.79]      |

**Table 5***PVST Scores for Grade 10*

| Vocabulary Tests        | Min.              | Max.              | <i>M</i>          | <i>SD</i> | 95% Confidence Interval |
|-------------------------|-------------------|-------------------|-------------------|-----------|-------------------------|
| PVST EN                 | 51.00<br>(53.13%) | 92.00<br>(95.83%) | 72.23<br>(75.24%) | 10.18     | [68.43, 76.04]          |
| PVST FR                 | 35.00<br>(66.04%) | 52.00<br>(98.11%) | 45.47<br>(85.79%) | 3.79      | [44.03, 46.84]          |
| Receptive Vocabulary EN | 3187.50           | 5750.00           | 4514.58           | 636.46    | [4276.92, 4752.24]      |
| Receptive Vocabulary FR | 2187.50           | 3250.00           | 2839.58           | 235.39    | [2751.69, 2927.48]      |

Table 6 and Table 7 picture the scores of the pupils in grade 10 on the VocabLab tests. For every section, the scores out of 30 were also calculated. For English, it appears that the mean score for neither section 1 ( $M = 25.97$ ;  $SD = 4.41$ ), section 2 ( $M = 23.73$ ;  $SD = 4.53$ ), section 3 ( $M = 20.10$ ;  $SD = 5.69$ ), or section 4 ( $M = 17.93$ ;  $SD = 6.89$ ) reaches 27 out of 30, which indicates the knowledge of a frequency band. That is also the case for section 1 ( $M = 17.27$ ;  $SD = 5.10$ ), section 2 ( $M = 7.87$ ;  $SD = 3.55$ ), section 3 ( $M = 7.23$ ;  $SD = 4.35$ ), and section 4 ( $M = 6.53$ ;  $SD = 3.31$ ) of the French VocabLab test, yet the mean scores appear to be much lower than those for English. The total scores on the VocabLab tests are, in contrast to the total scores on the PVST for grade 10, however, much higher for English ( $M = 87.73$ ;  $SD = 20.39$ ) than for French ( $M = 38.90$ ;  $SD = 14.33$ ). Those scores are likely to be a better indication of the pupils' receptive vocabulary size for both languages, as the two tests contain the same number of items, and they were designed to compare the scores for English and French.

**Table 6***English VocabLab Scores for Grade 10*

| Vocabulary Tests | Min.  | Max.   | <i>M</i> | <i>SD</i> | 95% Confidence Interval |
|------------------|-------|--------|----------|-----------|-------------------------|
| VL EN 1          | 11.00 | 30.00  | 25.97    | 4.41      | [24.32, 27.61]          |
| VL EN 2          | 6.00  | 29.00  | 23.73    | 4.53      | [22.04, 25.43]          |
| VL EN 3          | 8.00  | 29.00  | 20.10    | 5.69      | [17.98, 22.22]          |
| VL EN 4          | .00   | 30.00  | 17.93    | 6.89      | [15.36, 20.51]          |
| VL EN            | 25.00 | 118.00 | 87.73    | 20.39     | [80.12, 95.35]          |

**Table 7***French VocabLab Scores for Grade 10*

| Vocabulary Tests | Min.  | Max.  | <i>M</i> | <i>SD</i> | 95% Confidence Interval |
|------------------|-------|-------|----------|-----------|-------------------------|
| VL FR 1          | 5.00  | 24.00 | 17.27    | 5.10      | [15.36, 19.17]          |
| VL FR 2          | 3.00  | 16.00 | 7.87     | 3.55      | [6.54, 9.19]            |
| VL FR 3          | .00   | 14.00 | 7.23     | 4.35      | [5.61, 8.86]            |
| VL FR 4          | 1.00  | 13.00 | 6.53     | 3.31      | [5.30, 7.77]            |
| VL FR            | 12.00 | 64.00 | 38.90    | 14.33     | [33.55, 44.25]          |

Apart from the total scores based on every item in the English and French PVST, the total scores on solely the cognates in the PVSTs were also calculated, which can be found in Table 9 and Table 9. As those results indicate, the mean scores for grade 10 are higher than for grade 6, both for the English and the French PVST. In grade 6, however, the mean scores for English ( $M = 33.32$ ;  $SD = 5.03$ ) are higher than for French ( $M = 27.41$ ;  $SD = 5.49$ ), whereas in grade 10, the mean scores for French ( $M = 37.47$ ;  $SD = 2.93$ ) are slightly higher than for English ( $M = 35.73$ ;  $SD = 3.71$ ).

**Table 8***Scores on Cognates in PVST for Grade 6*

| Vocabulary Tests | Min.  | Max.  | <i>M</i> | <i>SD</i> | 95% Confidence Interval |
|------------------|-------|-------|----------|-----------|-------------------------|
| PVST EN          | 17.00 | 40.00 | 33.32    | 5.03      | [31.09, 35.55]          |
| PVST FR          | 12.00 | 34.00 | 27.41    | 5.49      | [24.97, 29.84]          |

**Table 9***Scores on Cognates in PVST for Grade 10*

| Vocabulary Tests | Min.  | Max.  | <i>M</i> | <i>SD</i> | 95% Confidence Interval |
|------------------|-------|-------|----------|-----------|-------------------------|
| PVST EN          | 27.00 | 42.00 | 35.73    | 3.71      | [34.35, 37.12]          |
| PVST FR          | 28.00 | 42.00 | 37.47    | 2.93      | [36.37, 38.56]          |

Additionally, Table 10 and Table 11 show the number of cognates a respondent knows in either both foreign languages, one of the two, or none. Both in grade 6 ( $M = 25.68$ ;  $SD = 3.88$ ) and grade 10 ( $M = 34.87$ ;  $SD = 3.88$ ), participants tend to know both the English word and the French word of a cognate pair the most, yet that number is higher for grade 10 than for grade 6. Furthermore, in grade 6 ( $M = 7.95$ ;  $SD = 5.27$ ), as well as in grade 10 ( $M = 4.67$ ;  $SD = 2.83$ ), that combination is followed by neither knowing the English word, nor the French word. When a cognate is only known in one of the two foreign languages, it appears that the pupils in grade 6 would have more English words correct ( $M = 7.64$ ;  $SD = 3.55$ ), while the pupils in grade 10 would have more French words correct ( $M = 2.60$ ;  $SD = 2.03$ ).

**Table 10***Knowledge of Cognates in PVST per FL Combination for Grade 6*

| Cognates                   | Min.  | Max.  | <i>M</i> | <i>SD</i> | 95% Confidence Interval |
|----------------------------|-------|-------|----------|-----------|-------------------------|
| EN correct +<br>FR correct | 12.00 | 33.00 | 25.68    | 3.88      | [23.32, 28.04]          |
| EN correct +<br>FR wrong   | 3.00  | 15.00 | 7.64     | 3.55      | [6.06, 9.21]            |
| EN wrong +<br>FR correct   | .00   | 4.00  | 1.73     | 1.28      | [1.16, 2.29]            |
| EN wrong +<br>FR wrong     | 1.00  | 26.00 | 7.95     | 5.27      | [5.62, 10.29]           |

**Table 11***Knowledge of Cognates in PVST per FL Combination for Grade 10*

| Cognates                   | Min.  | Max.  | <i>M</i> | <i>SD</i> | 95% Confidence Interval |
|----------------------------|-------|-------|----------|-----------|-------------------------|
| EN correct x<br>FR correct | 27.00 | 42.00 | 34.87    | 3.88      | [33.42, 36.32]          |
| EN correct x<br>FR wrong   | .00   | 3.00  | .87      | 1.01      | [.49, 1.24]             |
| EN wrong x<br>FR correct   | .00   | 9.00  | 2.60     | 2.03      | [1.84, 3.36]            |
| EN wrong x<br>FR wrong     | 1.00  | 15.00 | 4.67     | 2.83      | [3.61, 5.72]            |

Based on this part of the analysis, one could say that pupils tend to know more English words than French words, as they perform better on the English vocabulary tests. In grade 10, the scores on the PVSTs might indicate otherwise, yet the VocabLab tests do suggest that their English receptive vocabulary knowledge is greater than their French receptive vocabulary knowledge. However, when solely considering the scores on the cognates, it appears that the pupils in grade 10 score slightly better on the French words, whereas the pupils in grade 6 still have a higher score on the English words. Moreover, the comparison of the languages in which cognates are known, indicates that both the pupils in grade 6 and grade 10 know the majority of the cognates in both foreign languages.

### 5.1.2 Questionnaire

To provide an overview of the several types of out-of-school activities the respondents engage in, frequency tables are provided, giving an overview of the answering options. In grade 10, one person did not fill out all the Likert-scale questions for French, which results in a sample size of 29 for grade 10 in Table 12, Table 13, and Table 14. In grade 6, on the other hand, one answer was missing as well, resulting in a sample size of 21 in Table 20.

As Table 12 indicates, most pupils in grade 6 and grade 10 never watch French-language television or movies without any subtitles. For English, the majority of the pupils in grade 6 and grade 10 reported not doing that very often, yet about a quarter of the respondents in both grades appears to watch English-language television or movies without subtitles often. Table 13 portrays the frequency by which the respondents watch television or movies with subtitles in the FL, which is never the case for French for most pupils in both grades. For English, on the other hand, the responses are more equally divided. For watching television or movies with subtitles in a language other than English, French, or Dutch, Table 14 indicates that most respondents never do so, neither for English, nor for French. That number is, however, higher in grade 6 compared to grade 10.

**Table 12***Watching Television or Movies in the FL without Subtitles*

| FL      |          | Never ( <i>Nooit</i> ) | Not often ( <i>Weinig</i> ) | Often ( <i>Vaak</i> ) | Always ( <i>Altijd</i> ) |
|---------|----------|------------------------|-----------------------------|-----------------------|--------------------------|
| English | Grade 6  | 3 (13.60%)             | 10 (45.50%)                 | 6 (27.30%)            | 3 (13.60%)               |
|         | Grade 10 | 2 (6.70%)              | 17 (56.70%)                 | 8 (26.70%)            | 3 (10.00%)               |
| French  | Grade 6  | 17 (73.30%)            | 2 (9.10%)                   | 2 (9.10%)             | 1 (4.50%)                |
|         | Grade 10 | 22 (75.90%)            | 5 (17.20%)                  | 1 (3.40%)             | 1 (3.40%)                |

**Table 13***Watching Television or Movies in the FL with English/French Subtitles*

| FL      |          | Never ( <i>Nooit</i> ) | Not often ( <i>Weinig</i> ) | Often ( <i>Vaak</i> ) | Always ( <i>Altijd</i> ) |
|---------|----------|------------------------|-----------------------------|-----------------------|--------------------------|
| English | Grade 6  | 8 (36.40%)             | 8 (36.40%)                  | 6 (27.30%)            | 0 (.00%)                 |
|         | Grade 10 | 6 (20.00%)             | 13 (43.30%)                 | 7 (23.30%)            | 4 (13.30%)               |
| French  | Grade 6  | 20 (90.90%)            | 1 (4.50%)                   | 1 (4.50%)             | 0 (.00%)                 |
|         | Grade 10 | 21 (72.40%)            | 5 (17.20%)                  | 2 (10.30%)            | 0 (.00%)                 |

**Table 14***Watching Television or Movies in the FL with Subtitles in Another Language*

| FL      |          | Never ( <i>Nooit</i> ) | Not often ( <i>Weinig</i> ) | Often ( <i>Vaak</i> ) | Always ( <i>Altijd</i> ) |
|---------|----------|------------------------|-----------------------------|-----------------------|--------------------------|
| English | Grade 6  | 18 (81.80%)            | 1 (4.50%)                   | 2 (9.10%)             | 1 (4.50%)                |
|         | Grade 10 | 22 (73.30%)            | 5 (16.70%)                  | 2 (6.70%)             | 1 (3.30%)                |
| French  | Grade 6  | 12 (54.50%)            | 3 (13.60%)                  | 4 (18.20%)            | 3 (13.60%)               |
|         | Grade 10 | 17 (58.60%)            | 9 (31.00%)                  | 2 (6.90%)             | 1 (3.40%)                |

Table 15 provides an overview of the exposure to English and French through YouTube. The respondents in both grades hardly ever engage with French through watching videos on YouTube. For English, most of the pupils in grade 6 and grade 10 either watch English-language videos on YouTube often, or always. Regarding the engagement with English and French through reading or hearing it on other social media, Table 16 shows that respondents in both grades engage slightly more with French through social media, compared to the engagement through YouTube. Moreover, the exposure to English is also slightly higher.

**Table 15***Watching FL YouTube Videos*

| FL      |          | Never ( <i>Nooit</i> ) | Not often ( <i>Weinig</i> ) | Often ( <i>Vaak</i> ) | Always ( <i>Altijd</i> ) |
|---------|----------|------------------------|-----------------------------|-----------------------|--------------------------|
| English | Grade 6  | 2 (9.10%)              | 3 (13.60%)                  | 12 (54.50%)           | 5 (22.70%)               |
|         | Grade 10 | 3 (10.00%)             | 6 (20.00%)                  | 11 (36.70%)           | 10 (33.30%)              |
| French  | Grade 6  | 20 (90.90%)            | 2 (9.10%)                   | 0 (.00%)              | 0 (.00%)                 |
|         | Grade 10 | 29 (96.7%)             | 1 (3.30%)                   | 0 (.00%)              | 0 (.00%)                 |

**Table 16***Engaging with the FL on Social Media*

| FL      |          | Never ( <i>Nooit</i> ) | Not often ( <i>Weinig</i> ) | Often ( <i>Vaak</i> ) | Always ( <i>Altijd</i> ) |
|---------|----------|------------------------|-----------------------------|-----------------------|--------------------------|
| English | Grade 6  | 3 (13.60%)             | 0 (.00%)                    | 12 (54.50%)           | 7 (31.80%)               |
|         | Grade 10 | 0 (.00%)               | 1 (3.30%)                   | 22 (73.30%)           | 7 (23.30%)               |
| French  | Grade 6  | 6 (27.30%)             | 11 (50.00%)                 | 5 (22.70%)            | 0 (.00%)                 |
|         | Grade 10 | 9 (30.00%)             | 18 (60.00%)                 | 3 (10.00%)            | 0 (.00%)                 |

As can be seen in Table 17, none of the participants in grade 6, and almost none of the participants in grade 10 reported gaming in French. More participants, however, do seem to frequently play videogames in English. Most of the pupils in grade 6 seem to always game in English, and a similar number of pupils in grade 10 reports often or always playing English-language videogames as well. There is, however, also a relatively high number of people in grade 10, compared to grade 6, who never game, or do not game very often.

**Table 17***Gaming in the FL*

| FL      |          | Never ( <i>Nooit</i> ) | Not often ( <i>Weinig</i> ) | Often ( <i>Vaak</i> ) | Always ( <i>Altijd</i> ) |
|---------|----------|------------------------|-----------------------------|-----------------------|--------------------------|
| English | Grade 6  | 0 (.00%)               | 3 (13.60%)                  | 5 (22.70%)            | 14 (63.60%)              |
|         | Grade 10 | 8 (26.70%)             | 4 (13.30%)                  | 9 (30.00%)            | 9 (30.00%)               |
| French  | Grade 6  | 22 (100.00%)           | 0 (.00%)                    | 0 (.00%)              | 0 (.00%)                 |
|         | Grade 10 | 27 (90.00%)            | 3 (10.00%)                  | 0 (.00%)              | 0 (.00%)                 |



Listening to music in English also appears to occur frequently in grade 6 and grade 10, as is shown in Table 18. For French, on the other hand, the respondents in grade 6 tend not to listen to French-language music very often, which is slightly different from the listening habits of the pupils in grade 10. Although most of the pupils also do not listen to music in French very often, there is, compared to grade 6, a larger group of people who reported often listening to it.

**Table 18**

*Listening to Music in the FL*

| FL      |          | Never ( <i>Nooit</i> ) | Not often ( <i>Weinig</i> ) | Often ( <i>Vaak</i> ) | Always ( <i>Altijd</i> ) |
|---------|----------|------------------------|-----------------------------|-----------------------|--------------------------|
| English | Grade 6  | 1 (4.50%)              | 1 (4.50%)                   | 7 (31.80%)            | 13 (59.10%)              |
|         | Grade 10 | 0 (.00%)               | 0 (.00%)                    | 16 (53.30%)           | 14 (46.70%)              |
| French  | Grade 6  | 5 (22.70%)             | 16 (72.70%)                 | 1 (4.50%)             | 0 (.00%)                 |
|         | Grade 10 | 1 (3.30%)              | 20 (66.70%)                 | 8 (26.70%)            | 1 (3.30%)                |

Table 19 shows that pupils speak and write less in French than in English, in grade 6 and in grade 10. For French, the results are relatively similar in both grades, whereas for English, the respondents from grade 10 speak or write more frequently than the respondents from grade 6. Furthermore, one pupil in grade 6 reported always speaking French, which could suggest that that pupil's home language is French. None of the pupils in grade 6, however, reported speaking French at home in the first section of the questionnaire, yet two pupils did not fill out that question, which could explain why the findings of this question do not entirely coincide with the responses in the first section of the questionnaire.

**Table 19**

*Speaking or Writing in the FL*

| FL      |          | Never ( <i>Nooit</i> ) | Not often ( <i>Weinig</i> ) | Often ( <i>Vaak</i> ) | Always ( <i>Altijd</i> ) |
|---------|----------|------------------------|-----------------------------|-----------------------|--------------------------|
| English | Grade 6  | 5 (22.70%)             | 14 (63.60%)                 | 3 (13.60%)            | 0 (.00%)                 |
|         | Grade 10 | 0 (.00%)               | 18 (60.00%)                 | 12 (40.00%)           | 0 (.00%)                 |
| French  | Grade 6  | 12 (54.50%)            | 8 (36.40%)                  | 1 (4.50%)             | 1 (4.50%)                |
|         | Grade 10 | 15 (50.00%)            | 14 (46.70%)                 | 1 (3.30%)             | 0 (0.00%)                |

Table 20 presents the findings for the reading habits of the respondents. For English, the pupils from grade 10 read more often than the pupils from grade 6, which could be explained by the fact that the pupils in grade 6 have not yet received formal instruction in English, and thus their vocabulary knowledge might not be sufficient. For French, however, it appears that a smaller number of pupils in grade 6 never reads, compared to grade 10. When comparing the reading habits for both languages, there is not a great difference for grade 6, yet in grade 10, pupils read more often in English than in French.

**Table 20***Reading in the FL*

| FL      |          | Never ( <i>Nooit</i> ) | Not often ( <i>Weinig</i> ) | Often ( <i>Vaak</i> ) | Always ( <i>Altijd</i> ) |
|---------|----------|------------------------|-----------------------------|-----------------------|--------------------------|
| English | Grade 6  | 9 (40.90%)             | 9 (40.90%)                  | 4 (18.3%)             | 0 (.00%)                 |
|         | Grade 10 | 4 (13.30%)             | 10 (33.30%)                 | 14 (46.70%)           | 2 (6.70%)                |
| French  | Grade 6  | 8 (38.10%)             | 8 (38.10%)                  | 4 (19.00%)            | 1 (4.80%)                |
|         | Grade 10 | 17 (56.70%)            | 12 (40.0%)                  | 1 (3.30%)             | 0 (.00%)                 |

In addition to the frequency tables for each type of out-of-school exposure to English and French, Table 21 and Table 22 provide the mean scores for every activity involving respectively English or French. For English, Table 20 shows that the activities pupils engage in most frequently are gaming ( $M = 2.50$ ,  $SD = .74$ ), listening to music ( $M = 2.45$ ;  $SD = .80$ , and social media ( $M = 2.05$ ;  $SD = .95$ ) in grade 6. In grade 10, on the other hand, pupils are most frequently exposed to English through listening to music ( $M = 2.47$ ;  $SD = .51$ ), social media ( $M = 2.20$ ;  $SD = .48$ ) and watching YouTube videos ( $M = 1.93$ ;  $SD = .98$ ).

**Table 21***Out-of-School Exposure to English*

| Activities                    | Grade 6  |           |                         | Grade 10 |           |                         |
|-------------------------------|----------|-----------|-------------------------|----------|-----------|-------------------------|
|                               | <i>M</i> | <i>SD</i> | 95% Confidence Interval | <i>M</i> | <i>SD</i> | 95% Confidence Interval |
| Watching without subtitles    | 1.41     | .91       | [1.01, 1.81]            | 1.40     | .77       | [1.11, 1.69]            |
| Watching with EN subtitles    | .91      | .81       | [-.55, 1.27]            | 1.30     | .95       | [-.94, 1.66]            |
| Watching with other subtitles | .36      | .85       | [-.01, .74]             | .40      | .77       | [-.11, .69]             |
| Watching YouTube              | 1.91     | .87       | [1.52, 2.29]            | 1.93     | .98       | [1.57, 2.30]            |
| Social media                  | 2.05     | .95       | [1.62, 2.47]            | 2.20     | .48       | [2.02, 2.38]            |
| Gaming                        | 2.50     | .74       | [2.17, 2.83]            | 1.63     | 1.19      | [1.19, 2.08]            |
| Listening to music            | 2.45     | .80       | [2.10, 2.81]            | 2.47     | .51       | [2.28, 2.66]            |
| Speaking/writing              | .91      | .61       | [-.64, 1.18]            | 1.40     | .50       | [1.21, 1.59]            |
| Reading                       | .77      | .75       | [-.44, 1.11]            | 1.47     | .82       | [1.16, 1.77]            |

When looking at Table 22, what stands out are the lower mean values for each activity, compared to English, indicating that the participants are less frequently exposed to French in general. The French-language activities to which pupils in grade 6 are exposed the most, are social media ( $M = .95$ ;  $SD = .72$ ), watching television or movies with subtitles in a language other than French or Dutch ( $M = .91$ ;  $SD = 1.15$ ), and reading ( $M = .90$ ;  $SD = .89$ ). In grade 10, those activities are listening to music ( $M = 1.30$ ;  $SD = .60$ ), social media ( $M = .80$ ;  $SD = .61$ ) and watching television or movies with subtitles in another language ( $M = .55$ ;  $SD = .78$ ). Those findings should however be interpreted with care, as the general out-of-school exposure to French is very low, which is also represented in the frequency tables.

**Table 22**

*Out-of-School Exposure to French*

| Activities                    | Grade 6  |           |                         | Grade 10 |           |                         |
|-------------------------------|----------|-----------|-------------------------|----------|-----------|-------------------------|
|                               | <i>M</i> | <i>SD</i> | 95% Confidence Interval | <i>M</i> | <i>SD</i> | 95% Confidence Interval |
| Watching without subtitles    | .41      | .85       | [.03, .79]              | .34      | .72       | [.07, .62]              |
| Watching with FR subtitles    | .14      | .47       | [-.07, .34]             | .38      | .68       | [.12, .64]              |
| Watching with other subtitles | .91      | 1.15      | [.40, 1.42]             | .55      | .78       | [.25, .85]              |
| Watching YouTube              | .09      | .29       | [-.04, .22]             | .03      | .18       | [-.03, .10]             |
| Social media                  | .95      | .72       | [.63, 1.27]             | .80      | .61       | [.57, 1.03]             |
| Gaming                        | .00      | .00       | .                       | .10      | .31       | [1.08, 1.52]            |
| Listening to music            | .82      | .50       | [.60, 1.04]             | 1.30     | .60       | [.32, .75]              |
| Speaking/writing              | .59      | .80       | [.24, .94]              | .53      | .57       | [.25, .68]              |
| Reading                       | .90      | .89       | [.50, 1.31]             | .47      | .57       | [-.01, .21]             |

Regarding out-of-school exposure, the descriptive statistics indicate that the respondents are less frequently exposed to French than to English, regardless of the grade they are in. Moreover, listening to music and social media often return as one of the activities through which respondents engage the most with English or French. For French, watching television or movies with subtitles in a language other than French or Dutch also appeared to be one of the most frequent ways through which the respondents in both grade 6 and grade 10 are exposed to the language, albeit with a generally low frequency of exposure to French.

## 5.2 Correlations

Spearman's rho was calculated between the vocabulary tests, as well as the vocabulary tests and the out-of-school activities. For the vocabulary tests, the coefficient indicated that there is a fairly strong positive correlation between the total scores on the English and French PVST in grade 10 ( $r_s = .682$ ;  $p = <.001$ ;  $n = 30$ ), and a slightly less strong positive correlation in grade 6 ( $r_s = .530$ ;  $p = .006$ ;  $n = 22$ ). For the English and French VocabLab test in grade 10, the correlation is also slightly less strong compared to those of the PVST, yet also positive ( $r_s = .507$ ;  $p = .002$ ;  $n = 30$ ). Moreover, significant correlations were also found for the scores on the cognates in the PVST, which were relatively strong in both grade 6 ( $r_s = .673$ ,  $p = <.001$ ,  $n = 22$ ) and grade 10 ( $r_s = .790$ ,  $p = <.001$ ,  $n = 30$ ).

### 5.2.1 PVST and out-of-school exposure

As Table 23 shows, several significant correlations were found between the English and French PVST, and the frequency by which participants engaged with different out-of-school activities. Both for watching television or movies without subtitles, and with subtitles in a language other than Dutch or English, a significant correlation was found in grade 6. For watching without subtitles, that correlation was positive ( $r_s = .439$ ;  $p = .020$ ;  $n = 22$ ), whereas for watching with subtitles in another language, the correlation was negative ( $r_s = -.405$ ;  $p = .031$ ;  $n = 22$ ). In grade 10, there was only a significant correlation for watching without subtitles, which was also positive ( $r_s = .472$ ;  $p = .004$ ;  $n = 30$ ). For watching television or movies with English subtitles, on the other hand, no significant correlation was observed.

**Table 23**

*Summary of Correlations (Spearman's rho) Between Out-of-School Exposure and the PVST with \* $p < .05$ , \*\* $p < .01$  and \*\*\* $p < .001$*

| Variables                     | PVST English |          | PVST French |          |
|-------------------------------|--------------|----------|-------------|----------|
|                               | Grade 6      | Grade 10 | Grade 6     | Grade 10 |
| Watching without subtitles    | .439*        | .472**   | -.502*      | -.259    |
| Watching with EN/FR subtitles | .082         | -.067    | .188        | .286     |
| Watching with other subtitles | -.405*       | .007     | .297        | .111     |
| Watching YouTube              | .537**       | .649**   | -.225       | -.291    |
| Social media                  | .056         | .210     | .094        | -.051    |
| Gaming                        | .427*        | .317*    | .           | -.058    |
| Listening to music            | .398*        | -.039    | -.021       | -.101    |
| Speaking/writing              | .029         | .445*    | .139        | -.337*   |
| Reading                       | .226         | .360*    | .402*       | .143     |

A significant positive correlation was also found for watching YouTube-videos in English in grade 6 ( $r_s = .537$ ;  $p = .005$ ;  $n = 22$ ), and a slightly higher coefficient was found in grade 10 ( $r_s = .649$ ;  $p = <.001$ ;  $n = 30$ ). Moreover, gaming in English also correlated positively with the pupils' scores on the English PVST. That correlation was slightly stronger in grade 6 ( $r_s = .437$ ;  $p = .024$ ;  $n = 22$ ) than in grade 10 ( $r_s = .317$ ;  $p = .044$ ;  $n = 30$ ), yet both correlations are not quite strong. Listening to English songs also appeared to be significantly correlated with scores on the English PVST, yet that was only the case for grade 6, and the correlation seemed quite weak ( $r_s = .398$ ;  $p = .033$ ;  $n = 22$ ). For speaking or writing in English, the findings indicated a significant positive correlation in grade 10 ( $r_s = .445$ ;  $p = .007$ ;  $n = 30$ ), whereas no significant correlation was found in grade 6. That was also the case for reading in English, with only a relatively weak positive correlation in grade 10 ( $r_s = .360$ ;  $p = .025$ ;  $n = 30$ ).

For French, fewer significant correlations were found, in comparison to English. Watching French-language television or movies without subtitles was negatively correlated to the pupils' test scores on the PVST in grade 6 ( $r_s = -.502$ ;  $p = .009$ ;  $n = 22$ ), which contrasts with the correlation for watching English-language television or movies without subtitles, and no significant correlation was found for grade 10. Another negative correlation was found in grade 10 for speaking or writing in French ( $r_s = -.337$ ;  $p = .034$ ;  $n = 30$ ), which also differs from the findings for English. Moreover, reading in French correlated positively with the total scores on the French PVST in grade 6 ( $r_s = .402$ ;  $p = .036$ ;  $n = 22$ ). That is also in contrast to the findings for English, where a significant correlation for reading was only found in grade 10. For watching French-language videos on YouTube, engaging with French on social media, gaming, or listening to music in French, no significant correlations could be observed.

## 5.2.2 VocabLab tests and out-of-school exposure

Spearman's rho was also calculated for the scores on the VocabLab tests, providing additional insight in the correlations between pupils' scores on the vocabulary tests and their out-of-school exposure in grade 10, which can be found in Table 24. For English, a significant positive correlation was found for watching television or movies without subtitles ( $r_s = .418$ ;  $p = .011$ ;  $n = 30$ ), yet not for watching with subtitles in English or a language other than Dutch or English, which is similar to the correlation found for the English PVST.

Moreover, significant correlations were also observed for watching videos on YouTube ( $r_s = .580$ ;  $p = <.001$ ;  $n = 30$ ), speaking or writing in English ( $r_s = .460$ ;  $p = .005$ ;  $n = 30$ ), and reading in English ( $r_s = .426$ ;  $p = .009$ ;  $n = 30$ ), which are also similar to the findings for the English PVST. On the other hand, no significant correlations were found for engaging with English on social media, gaming, and listening to music. For gaming, the findings are different from those for the English PVST, where a significant correlation was observed.

**Table 24**

*Summary of Correlations (Spearman's rho) Between Out-of-School Exposure and the VocabLab tests with \* $p < .05$  and \*\* $p < .01$*

| Variables                     | VocabLab English | VocabLab French |
|-------------------------------|------------------|-----------------|
| Watching without subtitles    | .418*            | .103            |
| Watching with EN/FR subtitles | .050             | .166            |
| Watching with other subtitles | -.031            | .236            |
| Watching YouTube              | .580**           | -.054           |
| Social media                  | .145             | -.172           |
| Gaming                        | .169             | .071            |
| Listening to music            | .135             | -.405*          |
| Speaking/writing              | .460**           | .040            |
| Reading                       | .426**           | .120            |

In the case of French, a significant correlation was only found for listening to French music, and that correlation appeared to be negative ( $r_s = -.405$ ;  $p = .013$ ;  $n = 30$ ). That differs from the findings for the French PVST, as there was no significant correlation for listening to music. However, for every other type of out-of-school exposure to French, no significant correlation could be found.

### 5.3 Wilcoxon Signed-Rank Test

The Wilcoxon Signed-Rank Test was used to compare the scores on the PVST for English and French, as well as the VocabLab tests for English and French. For grade 6, the scores on the English PVST ( $Mdn = 74.00$ ) were significantly higher than the scores on the French PVST ( $Mdn = 32.00$ ) ( $z = -4.11$ ,  $p = <.001$ ). That was also the case in grade 10, where the English scores ( $Mdn = 70.70$ ) also appeared to be significantly higher than the French scores ( $Mdn = 46.00$ ) ( $z = -4.78$ ,  $p = <.001$ ). Moreover, the scores on the English VocabLab test ( $Mdn = 90.00$ ) were also significantly higher than the French scores ( $Mdn = 36.00$ ) ( $z = -4.48$ ,  $p = <.001$ ).

Additionally, the scores on the cognates in the PVST were also compared. For grade 6, the Wilcoxon Signed-Rank Test indicated that the mean scores for English ( $Mdn = 35.00$ ) were significantly higher than those for French ( $Mdn = 28.50$ ) ( $z = -4.11$ ,  $p = <.001$ ). In grade 10, however, the opposite appeared to be true, as the mean scores for English ( $Mdn = 35.00$ ) were significantly lower than for French ( $Mdn = 38.00$ ) ( $z = -3.81$ ,  $p = <.001$ ).

## 6 Discussion

This study aimed to provide insight in the English and French vocabulary knowledge of Flemish pupils in grade 6 and grade 10, and the effect of out-of-school exposure and cognateness. More specifically, it investigated through which out-of-school activities Flemish pupils are exposed to English and French, and whether there is a relation between out-of-school exposure and performance on the vocabulary tests. Regarding cognateness, it looked into the pupils' knowledge of cognates between English and French, and how frequently they know those cognates in both languages, one of the two, and none.

The first research question and its sub-questions sought to find out to what extent the pupils' scores on an English and French vocabulary test would differ, and whether they are correlated. The analysis indicated that the receptive vocabulary size of the pupils is greater for English, regardless of which grade they are in. The scores on the PVST in grade 10 might indicate otherwise, yet the comparison of the results from the English and French PVST might not be as reliable. Hence, further research could involve the development of a full version of the French PVST, allowing for a better comparison of the test scores for English and French. Moreover, correlations were found between the scores on the English and French PVST, as well as between the English and French VocabLab tests.

For the VocabLab tests in grade 10, however, none of the mean scores on the separate sections reached the minimum of 27 out of 30, which is the indication for mastery of a frequency band (Peters, Velghe & Van Rompaey, 2018). A possible explanation could be that the tests were designed for intermediate learners, and not all pupils in grade 10 have likely reached that level. Nevertheless, the findings regarding the total scores on the vocabulary tests are in line with those of previous studies (e.g., Peters et al., 2019).

The second and third research question targeted the out-of-school exposure to English and French. Respondents appeared to be far less frequently exposed to French, compared to English, which is in line with the findings of Peters et al. (2019). For French, the out-of-school exposure of the respondents in both grades is almost negligible, with a limited number of respondents occasionally indicating that they do engage with French through an out-of-school activity on a regular basis. The amount of exposure through speaking or writing, as well as reading, appeared to be higher in grade 10. For writing, that could be explained by the fact that productive skills might require a higher proficiency level, and for reading, a possible explanation could be that learners' vocabulary size needs to be sufficiently large (Nation, 2022).

Furthermore, watching television without subtitles, watching YouTube videos, and gaming correlated positively with the learners' receptive vocabulary knowledge in grade 6 and grade 10. Listening to music also correlated positively with the total scores on the PVST in grade 6, whereas speaking or writing in English, as well as reading, correlated positively with the total scores in grade 10. Correlations between the scores on the VocabLab tests and types out-of-school exposure were in line with the correlations for the PVST in grade 10. A difference was only found for gaming, which was not positively correlated to the scores on the English VocabLab test. Other studies have, however, also found a positive relation

between gaming and FL vocabulary proficiency (e.g., Hannibal Jensen, 2017), which supports the correlation found for gaming and the scores on the English PVST.

For French, a positive correlation was found for reading in grade 6, and negative correlations were found for watching television or movies without subtitles in grade 6, and for speaking or writing in French in grade 10. As the general amount of out-of-school exposure to French appeared to be very low, those findings could be an indication that the few pupils who reported engaging in those activities, scored lower on the PVST, yet that does not imply that no incidental vocabulary learning can occur during those activities. For the French VocabLab test in grade 10, a significant correlation was only found for listening to music, which appeared to be negative. That has also been found in previous studies (De Wilde, Brysbaert & Eyckmans, 2020b; De Wilde, Brysbaert & Eyckmans, 2021), and could be explained by the fact that listening to music does not necessarily require language comprehension (De Wilde, Brysbaert & Eyckmans, 2021).

It could, however, be important to consider another variable which might be related to the pupils' scores on the vocabulary tests. Previous research has indicated that linguistic distance can affect the learnability of an FL (Schepens, van der Silk & Van Hout, 2016). As English and Dutch are both Germanic languages, and French is a Romanic language, English and Dutch will have a smaller linguistic distance, which could positively affect the learnability of English for Flemish pupils.

The last research question concerned the effect of French vocabulary knowledge on English vocabulary knowledge. The scores on the cognates in the PVST once again appeared to be higher for English in grade 6, yet in grade 10, scores were slightly higher for French. Both differences were also found to be significant. However, that difference was relatively small, and the general scores on the vocabulary tests indicate that the pupils' receptive vocabulary knowledge is greater for English than for French. Hence, a possible explanation for the higher score for French in grade 10 is the order effect, as the pupils in grade 10 first received the English vocabulary tests and questionnaire, before receiving the French ones. Another possibility might be that the pupils knew more cognate words in French because they have received more formal instruction in French, yet that possibility is not supported by the total scores on the vocabulary tests.

Further analysis of the cognates indicated that most cognate words are known in both English and French, or unknown in both foreign languages. That suggested a correlation between the knowledge of a cognate word in one FL, and the knowledge of that same cognate word in the other FL, which was also found for both grade 6 and grade 10. Based on the findings that most cognates are either known or unknown in both foreign languages, and the generally higher scores for English on the vocabulary tests, it could be suggested that the participants' knowledge of English words affects their knowledge of French words, rather than the opposite way. This study, however, cannot confirm that that could be the case, and thus, it should be verified by further research.



## 7 Conclusion

Previous studies have suggested that out-of-school exposure to foreign languages and cognateness can positively affect FL learners' vocabulary knowledge (e.g., De Wilde, Brysbaert & Eyckmans, 2020a; Lindgren & Muñoz, 2013). This master's thesis attempted to investigate the influence of those variables on the receptive vocabulary knowledge of English and French of Flemish FL learners in grade 6 and grade 10, and in doing so, comparing their English and French vocabulary knowledge.

The test instruments consisted of the PVST, of which a French version was developed for the purpose of this study, the VocabLab tests and a questionnaire regarding out-of-school exposure. Pupils appeared to score higher on most of the English tests, and several correlations were found between the test scores and out-of-school activities involving English, more so than involving French. One should however consider that the questionnaire involved self-report questions, and the answering options on the Likert-scale questions could be considered subjective or vague. In further research, one could replace the answering options for the Likert-scale questions in the questionnaire by actual time indications (e.g., 1-2 hours, 2-3 hours...), to make them more straightforward.

Furthermore, the pupils' scores on the cognates in the English PVST correlated positively with the scores on the cognates in the French PVST, suggesting that the vocabulary knowledge of one language might influence the vocabulary knowledge of the other language. In combination with the total scores on the vocabulary tests, it could be assumed that the knowledge of English words affects the knowledge of French words, yet that is not verified in this study and thus should be further investigated. Future research in the Flemish context could involve a larger sample size and could take into consideration the presence of cognates between English and Dutch, as well as French and Dutch, as they might also facilitate FL vocabulary acquisition.

To conclude, further research is needed to verify whether Flemish pupils' English vocabulary knowledge affects their French vocabulary knowledge. Moreover, the higher scores for English suggest that out-of-school exposure can facilitate vocabulary acquisition, even prior to formal instruction. Those findings suggest that continued efforts are needed to encourage pupils to engage more frequently with French outside of school, both before and after the onset of instruction, as it could increase their vocabulary knowledge and overall proficiency for French as well.

## 8 Bibliography

Anthony, L., & Nation, I.S.P. (2019). Picture Vocabulary Size Test (Version 1.2.0) [Computer Software]. Tokyo, Japan: Waseda University. <http://www.laurenceanthony.net/software/pvst>

Antón, E., & Duñabeitia, J. A. (2020). Better to Be Alone than in Bad Company: Cognate Synonyms Impair Word Learning. *Behavioral Sciences*, 10(8), 123. <https://doi.org/10.3390/BS10080123>

Baumert, J., Fleckenstein, J., Leucht, M., Köller, O., & Möller, J. (2020). The Long-Term Proficiency of Early, Middle, and Late Starters Learning English as a Foreign Language at School: A Narrative Review and Empirical Study. *Language Learning*, 70(4), 1091-1135. <https://doi.org/10.1111/lang.12414>

Bialystok, E. (2001). *Bilingualism in development: language, literacy, and cognition*. Cambridge University Press.

Bisson, M.-J., van Heuven, W. J. R., Conklin, K., & Tunney, R. J. (2014). The Role of Repeated Exposure to Multimodal Input in Incidental Acquisition of Foreign Language Vocabulary. *Language Learning*, 64(4), 855-877. <https://doi.org/10.1111/lang.12085>

Cenoz, J. (2018). The Effect of Linguistic Distance, L2 Status and Age on Cross-Linguistic Influence in Third language Acquisition. In Cenoz, J., Hufeisen, B., & Jessner, U. (Eds.), *Cross-Linguistic Influence in Third Language Acquisition* (pp. 8-20). Multilingual Matters. <https://doi.org/10.21832/9781853595509-002>

Cobb, T. (n.d.). *Compleat Web VP v.2.6* [Computer program]. Accessed December 1, 2022 at <https://www.lex tutor.ca/vp/comp/>

Comesaña, M., Soares, A. P., Sánchez-Casas, R., & Lima, C. (2012). Lexical and semantic representations in the acquisition of L2 cognate and non-cognate words: Evidence from two learning methods in children. *The British Journal of Psychology*, 103(3), 378-392. <https://doi.org/10.1111/j.2044-8295.2011.02080.x>

Council of Europe. (n.d.). *The CEFR Levels*. Retrieved January 30, 2023, from <https://www.coe.int/en/web/common-european-framework-reference%20languages/level-descriptions>

De Wilde, V., Brysbaert, M., & Eyckmans, J. (2020a). Learning English Through Out-of-School Exposure: How Do Word-Related Variables and Proficiency Influence Receptive Vocabulary Learning? *Language Learning*, 70(2), 349-381. <https://doi.org/10.1111/lang.12380>

De Wilde, V., Brysbaert, M., & Eyckmans, J. (2020b). Learning English through out-of-school exposure. Which levels of language proficiency are attained and which types of input are important? *Bilingualism: Language and Cognition*, 23, 171-185. <https://doi.org/10.1017/S1366728918001062>

- De Wilde, V., Brysbaert, M., & Eyckmans, J. (2021). Young learners' L2 English after the onset of instruction: longitudinal development of L2 proficiency and the role of individual differences. *Bilingualism: Language and Cognition* 24(3), 439-453. <https://doi.org/10.1017/S1366728920000747>
- De Wilde, V., Brysbaert, M., & Eyckmans, J. (2022). Formal Versus Informal L2 Learning. *Studies in Second Language Acquisition*, 44(1), 87-111. <https://doi.org/10.1017/S0272263121000097>
- De Wilde, V. & Eyckmans, J. (2017). Game on! Young learners' incidental language learning of English prior to instruction. *Studies in Second Language Learning and Teaching*, 7(4), 673-694. <https://doi.org/10.14746/ssl.t.2017.7.4.6>
- European Commission. (2012). *First European Survey on Language Competences: Executive Summary* [White paper]. [https://ec.europa.eu/assets/eac/languages/library/studies/executive-summary-eslc\\_en.pdf](https://ec.europa.eu/assets/eac/languages/library/studies/executive-summary-eslc_en.pdf)
- Hammarberg, B. (2018). Roles of L1 and L2 in L3 Production and Acquisition. . In Cenoz, J., Hufeisen, B., & Jessner, U. (Eds.), *Cross-Linguistic Influence in Third Language Acquisition* (pp. 21-41). Multilingual Matters. <https://doi.org/10.21832/9781853595509-003>
- Hannibal Jensen, S. (2017). Gaming as an English Language Learning Resource among Young Children in Denmark. *CALICO Journal*, 34(1), 1-19. <https://doi.org/10.1558/cj.29519>
- Hooft, H., Gobyn, S., & Van den Branden, K. (2019). Steunpunt onderzoek, Gent.
- Horst, M. (2005). Learning L2 Vocabulary through Extensive Reading: A Measurement Study. *Canadian Modern Language Review*, 61(3), 355-382. <https://doi.org/10.1353/cml.2005.0018>
- Jaekel, N., Schurig, M., Florian, M., & Ritter, M. (2017). From Early Starters to Late Finishers? A Longitudinal Study of Early Foreign Language Learning in School. *Language Learning*, 67(3), 631-664. <https://doi.org/10.1111/lang.12242>
- Jessner, U., Megens, M., & Graus, S. (2018). Crosslinguistic Influence in Third Language Acquisition. In Alonso Alonso, R. (Ed.), *Crosslinguistic Influence in Second Language Acquisition* (pp. 193-214). Multilingual Matters. <https://doi.org/10.21832/9781783094837-012>
- Kuppens, A. H. (2010). Incidental foreign language acquisition from media exposure. *Learning, Media and Technology*, 35(1), 65-85. <https://doi.org/10.1080/17439880903561876>
- Laufer, B. (1989). What percentage of text-lexis is essential for comprehension? In C. Laurén & M. Nordman (Eds.), *Special language: From humans thinking to thinking machines* (pp. 316-323). Multilingual Matters.

- Lindgren, E., & Muñoz, C. (2013). The influence of exposure, parents, and linguistic distance on young European learners' foreign language comprehension. *International Journal of Multilingualism*, 10(1), 105-129. <https://doi.org/10.1080/14790718.2012.679275>
- Longman. (2019). Chant. In C. Fox & R. Combley (Eds.), *Longman Dictionary of Contemporary English* (p. 282).
- McKay, P. (2006). *Assessing young language learners*. Cambridge University Press.
- Muñoz, C. (2014). Contrasting effects of starting age and input on the oral performance of foreign language learners. *Applied Linguistics*, 35(4), 463-482. <https://doi.org/10.1093/applin/amu024>
- Muñoz, C., Cadierno, T., & Casas, I. (2018). Different Starting Points for English Language Learning: A Comparative Study of Danish and Spanish Young Learners. *Language Learning*, 68(4), 1076-1109. <https://doi.org/10.1111/lang.12309>
- Nation, I. S. P. (2016). *Making and using word lists for language learning and testing*. John Benjamins Publishing Company.
- Nation, I. S. P. (2022). *Learning Vocabulary in Another Language* (3rd ed.). Cambridge University Press.
- Peters, E., Noreillie, A.-S., Heylen, K., Bulté, B., & Desmet, P. (2019). The Impact of Instruction and Out-of-School Exposure to Foreign Language Input on Learners' Vocabulary Knowledge in Two Languages. *Language Learning*, 69(3), 747-782. 10.1111/lang.12351
- Peters, E., Velghe, T., & Van Rompaey, T. (2019). The VocabLab tests: The development of an English and French vocabulary test. *ITL. Institute for Applied Linguistics*, 170(1), 53-78. <https://doi.org/10.1075/itl.17029.pet>
- Peters, E., & Webb, S. (2018). Incidental vocabulary acquisition through viewing L2 television and factors that affect learning. *Studies in Second Language Acquisition*, 40(3), 551-577. <https://doi.org/10.1017/S0272263117000407>
- Pfenninger, S. E., & Singleton, D. (2017). *Beyond Age Effects in Instructional L2 Learning: Revisiting the Age Factor*. Multilingual Matters. <https://doi.org/10.21832/9781783097630>
- Puimège, E., & Peters, E. (2019). Learners' English Vocabulary Knowledge Prior to Formal Instruction: The Role of Learner-Related and Word-Related Variables. *Language Learning*, 69(4), 943-977. 10.1111/lang.12364
- Renard, O. Y. A., & Milt, K. (2023, March). Language policy. *Fact Sheets on the European Union*. <https://www.europarl.europa.eu/factsheets/en/sheet/142/language-policy>

- Saito, K., & Hanzawa, K. (2016). Developing second language oral ability in foreign language classrooms: The role of the length and focus of instruction and individual differences. *Applied Psycholinguistics*, 37(4), 813-840. <https://doi.org/10.1017/S0142716415000259>
- Schepens, J. J., Dijkstra, T., & Grootjen, F. (2012). Distributions of cognates in Europe as based on Levenshtein distance. *Bilingualism: Language and Cognition*, 15(1), 157-166. <https://doi.org/10.1017/S1366728910000623>
- Schepens, J. J., van der Slik, F., & van Hout, R. (2016). L1 and L2 Distance Effects in Learning L3 Dutch. *Language Learning*, 66(1), 224-256. <https://doi.org/10.1111/lang.12150>
- Schmitt, N., Jiang, X., & Grabe, W. (2011). The Percentage of Words Known in a Text and Reading Comprehension. *The Modern Language Journal*, 95(1), 26-43. <https://doi.org/10.1111/j.1540-4781.2011.01146.x>
- Sundqvist, P., & Wikström, P. (2015). Out-of-school digital gameplay and in-school L2 English vocabulary outcomes. *System*, 51, 65-76. <https://doi.org/10.1016/j.system.2015.04.001>
- Tonzar, C., Lotto, L., & Job, R. (2009). L2 Vocabulary Acquisition in Children: Effects of Learning Method and Cognate Status. *Language Learning*, 59(3), 623-646. <https://doi.org/10.1111/j.1467-9922.2009.00519.x>
- Van der Slik, F. W. P. (2010). Acquisition of Dutch as a Second Language: The Explanative Power of Cognate and Genetic Linguistic Distance Measures for 11 West European First Languages. *Studies in Second Language Acquisition*, 32(3), 401-432. <https://doi.org/10.1017/S0272263110000021>

## **9 Appendices**

Appendix A: PVST English

Appendix B: PVST French

Appendix C: VocabLab English

Appendix D: VocabLab French

Appendix E: Questionnaire English Grade 6

Appendix F: Questionnaire English Grade 10