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Papastergiou, Athanasia; Sanoudaki, Eirini

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Language skills in Greek-English bilingual children attending Greek supplementary schools in England

Athanasia Papastergiou* and Eirini Sanoudaki

School of Languages, Literatures, Linguistics and Media, Bangor University, Bangor, UK

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Author Note

Athanasia Papastergiou https://orcid.org/0000-0001-8301-3330

Eirini Sanoudaki https://orcid.org/0000-0003-1611-8882

* Corresponding author (a.papastergiou@bangor.ac.uk)

Abstract

Many parents in the U.K. enrol their children in Greek supplementary schools so the children can learn and maintain the Greek language and culture in parallel with English mainstream education. Despite fears about the effects of this heritage language (Greek) use on children's skills in the majority language (English), research on these somewhat hidden schools to date is limited and qualitative in nature. The current study is the first quantitative study which examines the effect of attending a Greek supplementary school on the vocabulary and grammar scores of Greek-English bilingual children. We administered a battery of language tests in both languages to 31 Greek-English bilingual children, aged 5-13 years, and closely looked at the participants' language history using parental questionnaires. Using multiple regression analyses we examine the relationship between relevant variables, such as language use and years in supplementary school and we find that the higher the use of Greek, the higher the scores in the Greek language tasks, although no significant relationship was detected between years in supplementary school and the development of language skills. Crucially, use of Greek does not negatively predict scores in the English language tasks. Implications of our results and future directions are discussed.

Keywords: heritage language, supplementary school, Greek, bilingualism, language skills, language use

1. Introduction

From July 2018 to June 2019, the estimated number of Greek nationals who were residents in the U.K., was 74,000 (Office for National Statistics, 2019), 43,000 more compared to 2009, a rise which was primarily a result of the 2010 government-debt crisis in Greece (Karatsareas, 2020; 2021a). By the end of 2020, 102,330 applications from Greek citizens residing in the U.K. were approved for the EU Settlement Scheme in order to obtain settled and pre-settled status (Pratsinakis et al., 2021). More than a quarter of this population have children, 47,9% of whom were born in the U.K. (Pratsinakis et al., 2021). Many of these parents wish to provide their children the opportunity to attend Greek supplementary schools in the U.K. in order to learn and maintain their heritage language in parallel with their English mainstream education.

The amount and nature of language exposure seems to be vital in the development of language skills (e.g., Hoff et al., 2012). Though vocabulary and grammar skills have been assessed in several bilingual populations speaking a majority and minority language (e.g., Hoff, 2018) in relation to a number of associated variables such as age, language exposure and socioeconomic status (SES), and despite this rise in Greek nationals and their children in the U.K. (Karatsareas, 2021a, 2021b), to the best of our knowledge no other study has explored the role of the exposure to a supplementary educational setting on the Greek and English language skills of Greek-English bilingual children.

In this study we address the role of supplementary educational setting on the Greek and English language skills of Greek-English bilingual children. We aim to investigate Greek and English receptive and expressive vocabulary skills as well as the receptive grammar skills in relation to a number of related variables such as age, language use and SES, of an understudied group of Greek-English bilingual children living in England and attending both English mainstream and Greek supplementary schools.

1.1 Supplementary schools

Supplementary schools, also known as complementary, heritage, or Saturday schools, support and maintain the language and culture of many immigrant communities in countries such as the U.S.A., the U.K., Canada, South Africa and Australia. These schools have been called 'hidden' schools by Aravossitas (2016) since the language of immigrant communities in such countries is categorised as non-official and is often not supported or is ignored by the authorities.

More specifically in the U.K., the educational system for over half a century has recognised the existence of children whose parents speak another language, such as Turkish, Chinese or Greek, namely heritage language speakers, and has provided a range of languages at GCSE and A level (Wei, 2006). This preparation of pupils to sit examinations in the various community languages in which these or other, foreign language qualifications are offered, is the key aspect of supplementary schools. These qualifications are viewed as formal recognition and legitimisation of their languages (Matras & Karatsareas, 2020). There are an estimated 3000-5000 such schools in England (NRCSE, 2020).

The main reason for the existence of these schools in the U.K. was the wish to maintain the language and customs of the country of origin by minority ethnic community members as well as maintain their cultural identity and traditions, linked in many cases to religion (Creese et al., 2006). As a result, isolation is reduced amongst minority ethnic groups, an aim which is particularly evident in Greek (Pillas, 1992), Turkish (e.g., Lytra, 2011), Chinese (Creese et al., 2007) and newly arrived refugee family (Rutter, 1998, 2003) supplementary schools. The first group of supplementary schools emerged in the late 1960s for children of Afro-Caribbean families, because of their dissatisfaction with mainstream education and how it failed to reflect the culture of the Afro-Caribbean community as well as due to the limited representation of the

Afro-Caribbean community in education and positions of authority (Chevannes & Reeves, 1987).

A second wave of supplementary schools occurred in the late 1970s and early 1980s by Muslim communities originating from South Asia and Africa. These schools were established for religious reasons closely intertwined with language, in line with Anglican, Catholic or Jewish communities, who were able to have their own schools. During the 1990s, and after controversy regarding the education of Muslim children, the education of their teachers and the official recognition and support of the two first Muslim schools, a number of other immigrant communities began to establish their own supplementary schools in order to maintain their language and culture. For example, the Chinese, the Turkish, and the Greek communities founded a noteworthy number of schools in England and Scotland for their British-born generations (Wei, 2006). These schools included weekend or afternoon classes outside of normal school hours and they were truly complementary since their founders did not ask for separate mainstream education in their languages. In the current study we will be focusing on a Greek supplementary school in the U.K.

1.2 The Greek community and Greek educational provision in the U.K.

Due to historical and political circumstances in the past, many Greek speaking individuals from Greece and Cyprus moved to the U.K. The majority of these Greek-speaking communities in the U.K. used to consist mostly of people of Greek Cypriot origin (Paraskevopoulos, 2012), who use both standardised and non-standardised varieties of Greek and English in contrast to individuals from the Greek mainland who mostly use the Standard Greek variety (Karatsareas, 2021b). Immigrants from the Greek mainland created churches and Greek supplementary schools, which were later used by Greek Cypriot migrants to maintain a cultural identity (Metis, 1993). The motivation underlying the establishment of these communities and as an extension

of these schools is that of ethnicity, as per Raveau's (1987) definition of ethnicity: '…the awareness - felt or recognized - of belonging to a group related to a historical or mythical past that can be projected into a possible or utopian common destiny. It is expressed in terms of seven indicators of participation or recognition: biogenetic, territorial, linguistic, economic, religious, cultural and political' (Raveau, Galap, Lirus, & Lecoutre, 1977, as cited in Raveau, 1987, p. 105). In this case, the aim of the Greek supplementary schools is to preserve, shape and communicate the Greek identity, language and culture (Cyprus Ministry of Education, Culture, Sport and Youth, 2019) in the Greek-speaking community in the U.K.

Until the beginning of the 21st century, the Greek population in the U.K. consisted of prosperous people involved with shipping and banking, an increasing population of Greek professionals, such as academics, lawyers and doctors, and a big number of university students (Pratsinakis et al. 2020). There were there 10-12,000 bankers and shippers by 2006, who were mostly concentrated in London (Harlaftis, 2006). The Greek student population was 22,485 in 2002/2003 with two thirds pursuing undergraduate studies (Koniordos, 2017). However, due to changes in the entry criteria for Greek universities, the rise of undergraduate tuition fees for EU students and the consequences of the crisis on Greek salaries (Karatsareas, 2021b) this number decreased to 9,920 in 2018/2019 (Higher Education Statistics Agency, 2020). In 2015/2016, around three quarters of Greek students were postgraduate students (Koniordos, 2017). It is estimated that between the period of 1998 to 2007, a total of 550,000 Greek citizens (7.3% of the active population) migrated abroad in order to engage in high skilled professional jobs (Rompolis, 2007). In 2001 35,000 Greek born people were residing in the U.K. and 36,769 in 2011 (Pratsinakis et al., 2021).

From July 2018 to June 2019, the estimated number of Greek nationals who were residents in the U.K., excluding students living in halls, was 74,000 (Office for National Statistics, 2019), 43,000 more compared to 2009. This is a massive rise compared to an estimate

of 26,000 in 2008, 33,000 in 2012, 42,000 in 2013, 54,000 in 2014, and 62,000 in 2016. Between 28 August 2018 to 30 June 2020, 76,590 Greek nationals had a successful EU Settlement Scheme application for pre-settled (47,590 Greek nationals had less than 3 years in the UK) and settled status (29,000 Greek nationals had over 5 years in the UK without any absence over 6 months in a 12-month period; GOV.UK, 2020). In December 2020, 102,330 applications were made from Greek nationals to get pre-settled or settled status (Pratsinakis et al., 2021). This rise can be explained by the unemployment rate in Greece, which grew from 7.7% in September 2008 to a record high, 27.8% in September 2013, with the youth unemployment rate of 59.5 % at its peak in the first quarter of 2013 (European Parliament, 2015). Greek scientists living abroad stated that Greece cannot guarantee their future as a scientist, and they could not progress in the career in Greece. Due to the economic crisis, they had no choice but to leave their country for a better future (Theodoropoulos et al., 2014), a better work environment, a job that would fit their skills and ambitions or offer them opportunities for professional development, higher salaries, financial independence and a lack of meritocracy in Greece, a better future for their children or reuniting with partners (Pratsinakis et al., 2021, p. 14). This is the so-called “new” Greek migration, that is, the rise in the migration of first-generation Greek nationals and their children to the U.K. due to the 2010 government-debt crisis. The U.K. was the second most popular destination, after Germany, as a result of this crisis (Pratsinakis et al., 2021).

It is evident from these numbers that some of these people may have brought their children to the U.K. or may have created families in the U.K. Indeed, based on Pratsinakis (2019; as cited in Karatsareas 2021a) 57% who were parents migrated with their whole family, 31% formed their families in the U.K., and 73% of the migrants left Greece with their families. More than a quarter of the Greek migrants in the U.K. have children, of which 47,9% where born in the U.K. Some of them might create families in the future since more than 44,6% of

this adult population is aged under 35. At the moment, especially outside London, there is a rise in first generation Greek nationals and their children compared to Greek Cypriot second and third generation residents in the U.K. attending Greek supplementary schools. The dynamic has changed recently, namely children born in Greece that possibly have attended Greek mainstream schools for some years, have relocated to the U.K. with their parents, due to the 2010 government-debt crisis (also see Karatsareas, 2020), or have been born in the U.K. and are acquiring Greek as a first language from first generation Greek speaking parents. Also, parents who had migrated to Greece from other countries, such as Albania, Georgia, Ukraine, Bulgaria, during the previous two decades and have moved to the U.K. due to the 2010 government-debt crisis are choosing to use their second language, Greek in the home. The above children together with children of Greek Cypriot origin residing in the U.K. (Karatsareas, 2021b) attend supplementary schools creating classrooms of diverse skills and needs (Lytra, 2019). This new wave of Greek speakers has distinct characteristics compared to the Greek-speaking populations that arrived in the U.K. in previous decades and reside until now. 75% of these new migrants has an undergraduate degree and the majority has pursued postgraduate and doctoral studies (Pratsinakis et al., 2021). Another particularly crucial factor is that these new Greek migrants intend to stay, since 48% of those who migrated with their families to the U.K. after 2010 do not intend to return to Greece or intend to return after they retire (Pratsinakis et al., 2021). This percentage rises to 71% for those residing in London (Pratsinakis, 2019) and decreases to 25% for those without children. These numbers underline the importance of supplementary school in the maintenance of the Greek language and culture for these families.

The official Greek state is responsible for the provision of Greek Education to children of Greek origin who live outside of Greece all over the world (Ministry of Education and Religious Affairs, 2019). In the U.K., the Ministry of Education, Culture, Sport and Youth of Cyprus and the Greek Ministry of Education and Religious Affairs together with the Greek

communities and the Greek Orthodox Church of Great Britain are responsible of this provision (Paraskevopoulos, 2012), although there is variability in the sharing of these responsibilities. This provision includes preparing and providing teaching material and assigning staff on secondment to schools worldwide. The teachers and managers of these schools are members of the community themselves. In some schools, there might be teachers who are sent by the communities' countries of origins for a specific period (e.g., 5 years) to serve in the supplementary schools. The operation of supplementary schools is linked to the language policies and practices in the home countries (Matras & Karatsareas, 2020). There are positive outcomes of attending these schools, such as achieving good results in A Level examinations in the U.K., something evident within the Greek community (Karadjia-Stavlioti, 1997).

There are several Greek bilingual education establishments in the U.K with the aim of maintaining the Greek identity. Most specifically, Greek communities run their own part time supplementary schools in churches and community centres or in classrooms rented out from mainstream schools during the weekend or in the afternoon. Classes usually take place on Saturday or Sunday mornings and/or weekday evenings (Matras & Karatsareas, 2020; Pantazi, 2008). The schools are run by the Greek Embassy in London, the Unified Forum for the Greek Education in the United Kingdom, the Greek Independent Schools of London, Private Greek schools (Nostos, n.d.) and Cyprus Educational Mission, a London-based unit of the Ministry of Education and Culture of the Republic of Cyprus (Matras & Karatsareas, 2020; Pantazi, 2008). These authorities act as a link between the home country and diaspora. There are also mainstream schools, namely the Greek Nursery, Primary School and High School of London, where pupils are taught via the Greek medium, based on the Greek curriculum with daily classes in the English language. There are also two independent Greek-English Orthodox bilingual schools, one primary and one high school in North London (Hellenic Education Office, 2016). The total number of these establishments is 108 (Nostos, n.d.). Based on a 1997

report, 10,230 children of Greek heritage were attending 70 supplementary schools. Most of these schools were in north London, where the majority of the Greek community is concentrated (Karadjia-Stavlioti, 1997). However, information is spread across various outdated websites, with no dates and no central information point for Greek-speaking U.K. residents.

Since 2013/2014 there has been an increase in enrolments due to this post-2010 wave of Greek migrants. There were 5300 enrolments in 2012/2013 and 6071 in 2018/2019 (Republic of Cyprus, Ministry of Education and Culture as cited in Karatsareas 2021a). Based on the Cyprus Education Mission (2019), during 2019/2020, 64 Greek supplementary schools operated in the U.K. 5972 students attended Greek supplementary schools in a total of 25 schools in London and 39 schools in other parts of the U.K. (CEM, 2020, as cited in Voskou, 2021).

1.3 Previous studies

In other bilingual education settings, such as Immersion education classrooms, there has been a strand of literature exploring the effect of the educational context on language skills (e.g., Bialystok & Barac, 2012; Goriot et al., 2018; Rhys & Thomas, 2013; Simonis et al., 2020), whereas no research to our knowledge has quantitatively explored the effects of exposure to a supplementary education context on both language skills of bilingual children.

Bialystok (2008) mentions the importance of the context where bilingualism or L2 acquisition occurs, such as the educational context; however, studies often neglect this factor. Children attend different types of educational programs throughout their everyday lives and acquire information in different acquisition contexts. Due to immigration, many children for whom English is not their first language attend state schools in the U.K. In addition to state schools, they might attend heritage language programs or supplementary schools after

mainstream school, usually twice a week, to maintain their home language and culture (see Paraskevopoulos, 2012). However, the supplementary school educational setting that bilinguals attend and its relation to language skills, such as vocabulary and grammar, is an aspect that has not been researched thoroughly to the best of our knowledge.

A small number of quantitative studies have investigated the role of the educational setting in bilingual language development. Bialystok et al. (2010) investigated English receptive vocabulary and observed that bilingual children in English medium schools with a non-English language at home were comparable to monolingual counterparts in their responses regarding words associated with schooling while comprehension of words primarily associated with home was better in monolinguals. However, research rarely controls for which language is used in school, even though vocabulary size is a predictor of children's performance on tests of academic achievement such as spelling, reading and arithmetic (Smith, Smith, & Dobbs, 1991).

A few studies to date have compared bilinguals who are instructed in different languages to assess the effects on language (e.g., Barac & Bialystok, 2012). More specifically, Barac and Bialystok (2012) investigated the role of cultural background, language similarity and language of education on the language and cognitive effects of bilingualism. They compared 78 bilingual, six-year-old children, whose two languages were English plus Chinese, French, or Spanish, to a group of 26 English monolingual children. Their findings suggest that cognitive benefits of bilingualism are not affected by language of schooling, cultural backgrounds and language similarity. In contrast, the scores in the grammar, vocabulary and metalinguistic awareness tasks were affected by language similarity and language of schooling. The groups did not differ in the amount of language exposure and production in the home. All children lived in an English-speaking community; however the Spanish and Chinese bilingual groups were educated in English and the French bilingual group in French. The Spanish

bilingual group outperformed the French bilingual group on all three tasks and the Chinese bilingual group on the vocabulary and metalinguistics awareness task. Only the Spanish-English bilingual children performed comparably to English monolinguals in the English receptive vocabulary and grammar task while the performance of all other bilingual groups was lower than the monolingual group, indicating that both language similarity and language of schooling play a role in linguistic tasks.

The amount and nature of language exposure have been shown to play a crucial role in the development of language skills (e.g., De Houwer, 2009; Gathercole & Thomas, 2009; Hoff et al., 2012). Children acquiring two languages, who have less exposure to each of the two languages, compared to monolingual control groups, have often been shown to acquire each language at a slower rate (e.g., Hoff et al., 2012). However, language dominance might shift towards the majority language after the children enter school and vocabulary and grammar skills might be affected in different ways. Thordardottir (2011) investigated vocabulary acquisition and its relation to the amount of bilingual exposure in five-year old simultaneous French-English bilingual children in Canada, finding a strong relationship. Duursma et al. (2007) found similar results in Year 5 children's minority language, Spanish, in the U.S.A. In order to support Spanish vocabulary skills, both Spanish support in the home as well as in the classroom was necessary (Duursma et al., 2007). Similarly, Chondrogianni and Marinis (2011) found that L2 receptive vocabulary and complex syntax skills of 6-to-9 year old sequential Turkish-English bilingual children attending mainstream schools in the U.K. were predicted by use of English in the home and maternal English proficiency. Length of exposure to the L2 and maternal English proficiency predicted general grammatical abilities.

During the last few years, there have been qualitative studies including various Arabic, Chinese, Bengali, Bulgarian, Urdu, Polish, Ukrainian, Greek supplementary schools or establishments in the U.K. and around the world, focusing on classroom practices such as

translanguaging, (e.g., Creese & Blackledge, 2010; Faltzi, 2011; García & Wei, 2015, Hua et al., 2020; Liu, 2020), on teacher, parent and pupil identities and perspectives towards supplementary education (e.g., Androulakis et al., 2016; Archer et al., 2009; Creese et al., 2006; Gkaintartzi et al., 2015; Karatsareas, 2018; Kirsch, 2019; Liao & Larke, 2008; Panagiotopoulou et al., 2019; Sook Lee & Oxelson, 2006; Strand, 2007), on language provisions and pedagogy (e.g., Alexandrova-Kirova, 2017; Cummins, 2006; Gaiser & Hughes, 2015; Pantazi, 2006, 2008; Reed et al., 2020; Walters, 2011) and on social change and history pedagogy (Voskou, 2018; 2019; 2021). However, no quantitative study to date has investigated the effect of amount of exposure to a supplementary school setting on language skills.

Regarding the Greek heritage school situation, and after this mass movement from mainland Greece to the U.K., there has been only one study assessing how language use might affect receptive and expressive vocabulary and grammar skills in Greek-English bilingual pupils in the London, Reading and Oxford area (Papastefanou et al., 2019). However, this study does not test if length of exposure to the Greek supplementary school setting has a relationship to the performance in these language tasks. More specifically, Papastefanou et al. (2019) tested 40 Greek-English bilingual children in Year 1 and Year 3 on vocabulary, phonological awareness, morphological awareness, morphosyntax, and decoding in both languages. The results showed that as a group, the children were Greek dominant before the age of 4 but English dominant now and confirm that language dominance could change even before children enter school and affects language and literacy skills equally. Language use and test scores were strongly correlated in the heritage language, Greek, which highlights the importance of parental language use in the heritage language. The Greek language had no negative effect on children's language and reading performance in English.

1.4 The Present Study

In this study we will be addressing the role of supplementary educational setting on the Greek and English language skills of Greek-English bilingual children. To the best of our knowledge no other study has explored this. We aim to investigate Greek and English receptive and expressive vocabulary skills as well as the receptive grammar skills of Greek-English bilingual children living in England and attending both English mainstream and Greek supplementary schools in the North of England, which has not been previously studied. Studying this population is of increasing importance, since there is a rise in first generation Greek nationals and their children who have moved to the U.K. with their parents due to the 2010 government-debt crisis (also see Karatsareas, 2020). We aim to examine the relationship between variables linked to bilingualism, such as general lifetime language use, and vocabulary and grammar skills both in the majority (English) and heritage language (Greek). To address these aims we administered a battery of tests in both languages and closely looked at the participants' language backgrounds.

The research questions were:

1. What variables predict performance in Greek and English language tasks?

2. Does the length of attending a supplementary school affect the performance in language tasks in the majority (English) and heritage (Greek) language?

2. Method

2.1. Participants

The performance of 31 Greek-English bilingual children, 63-153 months old (*M* = 105.39, *SD* = 27.03*)*, was tested. All children attended a Greek supplementary school and mainstream English school. Details of the group are presented in Table 1. Mean age of acquisition (AoA) for Greek was 8 months (*SD* = 1.22) and for English 1 year and 4 months (*SD* = 1.76). 10

children were simultaneous bilinguals and 21 were early sequential bilinguals. The children lived in England and were recruited if at least one of their parents spoke the Greek language with them. Eight children had one English speaking and one Greek speaking parent and 23 children had only Greek speaking parents. Three additional children were exposed to a third language, in addition to Greek and English and were excluded from the analysis. Children that were included in the analysis had to have similar educational experiences (mainstream English education and Greek supplementary school). As a result, five additional children were excluded because they had attended Greek mainstream school in Greece prior to arriving to the UK, namely three children for three years, one child for two years and one child for one year. Also, children's scores were included in the analysis if their nonverbal intelligence score was within normal range (over 80; K-BIT-2, Kaufman & Kaufman, 2004). In this case, all children had standardised scores over 80 (M = 104.84, SD = 10.65, Range = 85 - 124). Children's language proficiency was reported by the parents for English (M = 95.81, SD = 8.07) and for Greek (M = 74.52, SD = 21.58). The SES was average and above average. Based on parental and teacher reports the children did not have any hearing, behavioural, emotional, or mental impairment which were exclusion criteria.

Bilingual Greek-English children were recruited from a Greek supplementary school in the north-west of England. The school offered a Greek-speaking supplementary program for 2.5 to 3.5 hours a week to enhance the reading, listening, speaking, and writing skills in the Greek language and to offer knowledge around the Greek culture. This program is supplementary to the mainstream English education that these children attended.

Ethical approval was granted by the University's Research Ethics Committee. Information sheets were sent to the manager and head teacher at the supplementary school and to parents before the study and informed consent was sought. Teachers, parents, and children were provided enough time to express any questions about the nature of the study. Parents and

children were informed that they could withdraw at any time and they were debriefed after the study.

(Table 1 here)

2.2. Materials

Parental Questionnaire

The children's language experience was investigated through the Language and Social Background Questionnaire for Children (LSBQ; Luk & Bialystok, 2013). The LSBQ was forward and backward translated in Greek and it was completed by the parents in their most convenient language (Greek or English). It consisted of information about the child's age, grade, date of birth, country of birth, age of onset of all the languages, knowledge of playing a musical instrument, and length of exposure to different educational mediums. The questionnaire included information about the parents' language backgrounds, namely the number of languages each parent speaks. The SES of the parents was measured as the mean of the highest attained educational level of both parents rated on an 8-point scale, which was then converted into percentages. Parental education is the most commonly used index of socioeconomic background, is highly predictive of other SES indicators (e.g., income, occupation), and is a better predictor of cognitive performance than other SES indicators (see Calvo & Bialystok, 2014).

The child's understanding and speaking in all of their languages was rated on a 5-point scale ranging from Poor to Excellent. The percentage of both scores for speaking and understanding in Greek was used as the Greek proficiency parental score used in the analysis. Similarly, the percentage of both scores for speaking and understanding in English was used as the English proficiency parental score used in the analysis. General language use throughout the child's lifetime with parents, siblings, grandparents, neighbours, friends, and caregivers in

various situations was measured on a 7-point scale ranging from 1 (only English) to 7 (only Greek/or other language). This was converted into a percentage, where 0% of language was only English and 100% was only Greek.

Non-verbal Intelligence

Non-verbal intelligence was assessed using the Kaufman Brief Intelligence Test, Second Edition (K-BIT-2; Kaufman & Kaufman, 2004). The test consists of 46 items including a series of abstract images, such as designs and symbols, and visual stimuli, such as pictures of people and objects. Participants are required to understand the relationships among the presented stimuli and complete visual analogies by indicating the relationship between the images by either pointing to the answer or saying its letter. All items include an option of at least five answers thus reducing chance guessing. The Matrices non-verbal subtest was individually administered, and standardised scores were calculated according to the K-BIT-2 manual for screening purposes.

Language Measures.

To assess the proficiency of the children in both their languages, receptive and expressive vocabulary measures in each language were administered along with receptive grammar assessments. Raw scores converted to percentages were used in the analysis.

English Language Measures.

The British Picture Vocabulary Scale, Third Edition (BPVS3; Dunn & Dunn, 2009) was used to assess the receptive vocabulary of the bilingual and monolingual children in the English language. It is an individually administered, standardized test of Standard English receptive vocabulary for children ranging between 3 to 16 years and 11 months. In this task, children are asked to select, out of four coloured items in a 2 by 2 matrix, the picture that best corresponds to an English word read out by the researcher. The assessment consists of 14 sets of 12 words

of increasing difficulty (e.g., ball, island, fictional). The administration is discontinued when a minimum of eight errors is produced in a single set.

The Clinical Evaluation of Language Fundamentals – Fourth UK Edition (CELF- 4^{UK}; Semel, Wiig, & Secord, 2006) is an individually administered standardised measure used to assess the participants' expressive vocabulary in the English Language in children and adolescents ranging from 5 to 16 years of age. Expressive vocabulary was screened through the Expressive Vocabulary for children. All initial raw scores were converted to percentages.

The Test for Reception of Grammar – Version 2 (TROG-2; Bishop, 2003) was used to assess receptive grammar. It is an individually administered standardised test for children and adults and it comprises 80 items of increasing difficulty with four picture choices. Children are asked to select the item that corresponds to the target sentence read out by the researcher. For each grammatical element there is a block of four target sentences. If not all four items of each block are established by the children, then the block is failed. The sentences include simple vocabulary of nouns, verbs, and adjectives. If a child fails five consecutive blocks the administration is terminated.

Greek Language Measures.

A standard Modern Greek version of the Peabody Picture Vocabulary Task (PPVT; Dunn & Dunn, 1981) was adapted and used based on the Greek adaptation by Simos, Sideridis, Protopapas and Mouzaki (2011). The test included listening to words, such as nouns, verbs, or adjectives, and one image out of four possible choices that best corresponded to the word heard. The words were of increasing difficulty and the children needed to click on the image out of the four that best matched to the word they heard. The children sat comfortably in front of the computer screen after their age and school grade was added to the test. This assessment lasted up to 10 minutes. If eight incorrect responses were provided to ten consecutive items, then the

task was stopped thanking the child for their participation. Both Greek-English bilingual and Greek monolingual children were assessed to test their Greek receptive vocabulary.

The Picture Word Finding Test (PWFT; Vogindroukas, Protopapas, & Sideridis, 2009) is an individually administered standardised measure used to assess standard Modern Greek expressive vocabulary. It is a tool norm-referenced for Greek. It is adapted from the English Word Finding Vocabulary Test - 4th Edition (Renfrew, 1995). The children are presented with 50 black and white images consisting of nouns in developmental order. The words included originate from objects, categories of objects, television programs and fairy-tales very familiar to children. A score sheet is used to record the responses provided during testing and afterwards scored as correct (1) or incorrect (0). The children are asked to name the objects they saw and when they are ready, they move to the following one. The assessment is discontinued after five consecutive wrong replies.

The Developmental Verbal Intelligence Quotient (DVIQ; Stavrakaki & Tsimpli, 2000) was used to assess Greek receptive grammar. It consists of five subtests used to measure children's language abilities in expressive vocabulary, understanding metalinguistic concepts, comprehension and production of morphosyntax, and sentence repetition. This was an assessment that measured language development in standard Modern Greek, and it was administered individually. For this study, only the subtest measuring comprehension of morphosyntax was used. Each child was given a booklet with 31 pages, each including 3 images. The researcher read out a sentence and each child was asked to show the picture that best represented the situation in the sentence. For example, the sentence might have been *μην καπνίζετε* (do not smoke) and the correct answer depicted a "No Smoking" sign. An answer sheet was used to record the child's answers (as A, B, or C) during testing and afterwards scored as correct (1) or incorrect (0).

2.3 Procedure

The children were tested individually in a quiet school classroom setting, during one session in Greek and one session in English. Each lasted 40 minutes on average. The second session was conducted within one months' time after the first one. Parents were administered the questionnaire (LSBQ) and returned it to the researcher, or the classroom teacher, or the school head teacher.

Greek Session.

The first session was the Greek session for the participants. Each child completed the tasks in the following order: i) Greek adapted PPVT, ii) Picture Word Finding Test, iii) DVIQ. A pilot study with 4 children was conducted before the actual data collection.

After the end of the session the researcher thanked the child for their participation. All tasks were administered as games and stickers and candy/chocolate were provided to the children after the end of the session. All children participated enthusiastically.

English Session.

The second session was the English session for the participants. Each child completed the tasks in the following order: i) K-BIT-2, ii) BPVS, iii) CELF-4, and iv) TROG-2. The choice of the above order of tests was such so the children did not feel tired or uninterested.

After the end of the session the researcher thanked the child for their participation. All tasks were administered as games and stickers and candy/chocolate were offered to the children after the end of the session. All children participated enthusiastically.

3. Results

3.1 Test performance

The performance of the children in the receptive and expressive vocabulary tasks and the receptive grammar tasks is presented in Table 2.

(Table 2 here)

3.2 Multiple Regression Analysis

A multiple regression was run using the following variables: age in months, total number of parental languages, SES, language use, English proficiency (parental report), and years in supplementary school. Greek proficiency based on the parental report was highly correlated with language use, so language use was only used in the model.

The risk of multi-collinearity was checked by calculating the collinearity statistics of variance inflation factor (VIF) and tolerance (see Table 3). VIF and tolerance values did not indicate any multicollinearity concern (VIF < 10 and tolerance > .10 for all variables) (Hair et al., 1998; Tabachnick & Fidell, 2001). All the VIFs of the model's predictors ranged from 1.390 to 5.439, therefore the effect of multicollinearity fell within acceptable limits. Tolerance was above .184 in all cases.

Greek tasks

A multiple regression was run to predict Greek receptive grammar skill (DVIQ; see Table 4). Language use added significantly to the prediction, $p = .001$ and significantly predicted the Greek receptive grammar score in the DVIQ, $F(6, 24) = 3.36$, $p = .030$, $R^2 = .456$ (Adjusted $R^2 = .321$).

A second multiple regression was run to predict Greek receptive vocabulary skill (adapted PPVT; see Table 5). Language use statistically significantly predicted the Greek receptive vocabulary score in the PPVT, $F(6, 24) = 6.55$, $p < .001$, $R^2 = .621$ (Adjusted $R^2 =$ .526).

A third multiple regression was run to predict Greek expressive vocabulary skill (PWFT; see Table 6). Language use significantly predicted the Greek expressive vocabulary score in the PWFT, $F(6, 24) = 4.96$, $p = 002$, $R^2 = .554$ (Adjusted $R^2 =$ .442).

English tasks

A multiple regression was run to predict English receptive grammar skill (TROG; see Table 7). Age in months added statistically significantly to the prediction, $p < .001$. This variable statistically significantly predicted English receptive grammar skill in TROG, $F(6, 24) = 14.12$, $p < .001$, $R^2 = .779$ (Adjusted $R^2 =$ .724).

A second multiple regression was run to predict English receptive vocabulary skill (BPVS; see Table 8). Age in months added statistically significantly to the prediction, $p < .001$. This variable statistically significantly predicted English receptive vocabulary skill in BPVS, $F(6, 24) = 31.89$, $p < .001$, $R^2 = .889$ (Adjusted $R^2 =$ .861).

A third multiple regression was run to predict English expressive vocabulary skill (CELF; see Table 9). Age in months added statistically significantly to the prediction, $p = .032$. This variable statistically significantly predicted English expressive vocabulary skill in CELF, $F(6, 24) = 3.66$, $p = .010$, $R^2 = .478$ (Adjusted $R^2 =$ .347).

(Table 3 here)

(Table 4, 5, 6, 7, 8, 9 here)

4. Discussion

The overall aim of this study was to explore language in a group of Greek-English bilingual children attending a supplementary school in England together with English mainstream school. More specifically, we aimed to explore what variables predict performance in Greek and English language tasks and if the length of attending a supplementary school affects the performance in language tasks in the majority (English) and heritage (Greek) language. In order to pursue this, we assessed the children's receptive and expressive vocabulary as well as their receptive grammar in both languages, in order to investigate which variables such as years in supplementary school, general language use throughout the lifetime, SES, total number of languages spoken by the parents and parental report of proficiency affect these scores. This is the only study to date that investigates this relationship between exposure to a supplementary school setting and scores in both languages.

Our first aim was to investigate the variables that can predict these vocabulary and grammar scores. We performed a multiple regression analysis for each task. Language use significantly affected the scores in all Greek language tasks, namely the higher the use of Greek, the higher the scores in the Greek vocabulary and grammar tasks. This is in line with Papastefanou et al. (2019) who found that Greek expressive vocabulary was related to the Greek language use in and out of the home. Papastefanou et al. (2019), who tested 40 Greek-English bilingual children in Year 1 and Year 3, found that language use and expressive vocabulary test scores were strongly correlated in the heritage language, Greek, which highlights the importance of parental language use in the heritage language.

On the other hand, language use did not significantly predict scores in the English vocabulary and grammar tasks. Age was a significant predictor in the model, which was

expected since these are standardised tasks and children perform better as they grow older. Similarly, Duursma et al. (2007) found parental use of English in the home was not a predictor for English language proficiency of 96 Year 5 Latino English language learners.

The fact that higher scores in Greek language tasks were dependent on the use of Greek highlights that parents wishing to maintain Greek should use Greek in and out of the home. Importantly, the fact that English scores were not affected by Greek language use may help allay fears that heritage language could affect the development of mainstream language negatively. This is in line with studies failing to find evidence that maintaining a home language endangers the acquisition of the majority language (Poarch & Bialystok, 2017).

Our second aim was to investigate if the length of attending a supplementary school affects the performance in language tasks in the majority (English) and heritage (Greek) language. We found no significant negative relationship between attending a supplementary school and the development of English vocabulary and grammar skills. One might expect that years in supplementary school would be a positive predictor for the scores in Greek vocabulary and grammar tasks, however this was not found. One interpretation could be that the tests used are designed for monolingual Greek speakers and not bilingual ones and may not accurately reflect the proficiency of the bilingual children in each language. Secondly, it might be an issue of amount of input. Children attended supplementary school 2.5 – 3.5 hours per week where they were taught via the Greek medium. This possibly is sufficient to maintain these skills but not develop them.

5. Implications, Future Directions and Limitations

Since some Greek-English pupils in the UK sit GCSEs or A Levels in the Greek and English language, this study has further implications in regard to academic achievement. During the last few years, this rise in first generation Greek nationals and their children who have moved

to the U.K. with their parents due to the 2010 government-debt crisis (also see Karatsareas, 2020) has changed the Greek population attending these supplementary schools, calling for future changes in the curriculum followed in these schools. More research is needed into the amount and nature of educational input needed to develop children's academic skills.

Further support and encouragement could be provided to parents in using the heritage language with their children based on the fact that no significant negative relationship was found between attending a Greek supplementary school or using more Greek (heritage language) in the home, and the development of English vocabulary and grammar skills.

We used non-standardised tasks to assess Greek receptive vocabulary and grammar skills in the children as well as English tests which are not standardised for bilingual children. As a result, tests in Greek and English were not comparable. Future development of tests is needed in Greek and English which should also include bi-mutilingual children (Babatsouli, 2019; Marinis et al., 2017). Also, standardised Greek tests assessing language skills are lacking or are outdated, and a large study would allow test standardisation and the establishment of quantitative norms.

The finding that years in supplementary school was not a predictor for the scores in Greek vocabulary and grammar tasks could be further investigated by comparing scores from Greek-English bilingual children who attend Greek supplementary schools with Greek-English bilingual children who attend a Greek-English bilingual school and with those who do not. This was not possible in this study but is an important future direction to further understand this result.

Finally, the relatively small sample size of this study is one of its limitations. Nevertheless, this is the only study to date that investigates this relationship between exposure to a supplementary school setting and scores in both languages.

Our findings, together with previous research on heritage/Greek language education abroad on this emergence of a new emigration wave (e.g., Aravossitas & Sugiman 2019; Baros et al., 2019, Karatsareas, 2021a, b; Voskou, 2021), highlight the need for further investigation of this understudied and constantly changing Greek- speaking population. This significant rise in the emigration of couples and families from Greece after the 2010 crisis (Pratsinakis, 2019) underlines how important it is to explore what the opportunities and challenges are that "new" Greek migrants create to Greek language education abroad. This cannot be done without identifying the language skills of these children and how these develop. Due to this increase of Greek migration not only to the U.K. but around the world, as Lytra (2019, p. 238) stresses, "Greek schools, their leaders and teachers are called upon to adapt and change in response to the increased heterogeneity and complexity of children and their families' multilingual repertoires, educational experiences, expectations and aspirations.". Cushing, Georgiou, and Karatsareas (2021) and Pantazi (2010) call for modified teaching approaches and practices, acknowledging student needs and identities, and closer links between community and mainstream educational settings.

6. Conclusion

In the current study we aimed to explore the role of supplementary educational setting on the Greek and English language skills of Greek-English bilingual children and which variables predict performance in Greek and English language tasks. While there are many qualitative studies exploring supplementary schools, to the best of our knowledge, no other study has explored if and how the length of attending a supplementary school affects the performance in language tasks in the majority (English) and heritage (Greek) language. In order to pursue this, we assessed the children's receptive and expressive vocabulary as well as their receptive grammar in both languages, and via a questionnaire parents provided information about their children's years in supplementary school, children's general language use throughout the

lifetime, their SES, their total number of spoken languages and their children's proficiency scores.

Findings suggest that more use of Greek is a significant predictor of higher scores in Greek tasks while at the same time it is not a negative significant predictor of scores in English tasks. At the same time, we did not find a significant negative relationship between attending a supplementary school and the development of English vocabulary and grammar skills. These findings provide support for parents/wider family to use Greek in and out of the home. Parents might be hesitant in using the heritage language in and out of the home so as not to disadvantage their child, however the current study suggests that use of Greek does not negatively affect English scores, while it enhances Greek language scores.

Finally, years in supplementary school did not significantly predict scores in Greek vocabulary and grammar tasks. Future intervention studies can further investigate the curriculum used and amount of exposure/time that these children attend Greek supplementary schools in order to enhance their vocabulary and grammar in Greek.

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Disclosure statement

We have no known conflict of interest to disclose.

Data availability statement

The datasets generated for this study are available on request to the corresponding author.

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Table 1 *Participant information: parent questionnaires and scores on language and IQ tests (raw scores reported for tests)*

Variable		Descriptive scores
Age	*N*	31
	M (SD)	104 *(28.72)*
	Range	63 – 153
Sex		19f 12m
Years in supplementary school	*M (SD)*	3.78 *(2.63)*
	Range	.25 - 9
English Proficiency	*M (SD)*	95.81 *(8.07)*
	Range	80 - 100
Greek Proficiency	*M (SD)*	74.52 *(21.58)*
	Range	20 - 100
K-BIT-2	*M (SD)*	104.84 *(10.65)*
	Range	85 - 124
Language Use	*M (SD)*	44.61 *(21.96)*
	Range	0 - 76.79
Total of Mum and Dad languages	*M (SD)*	4.35 (1.33)
	Range	3 - 9
SES	*M (SD)*	77.42 *(16.90)*
	Range	37.5 - 100

Note: Age = participants' age in months; f = female and m = male; English and Greek proficiency = percentage of proficiency from parental report; K-BIT-2 = non-verbal intelligence standardised score; Language Use = Percentage of language use with 0% being only English and 100% being only Greek; SES = the average percentage of mother and father education.

Table 2 *Descriptive Statistics – Performance in tests (out of 100 scale)*

Variable		Score
PWFT	*M (SD)*	36.06 *(22.96)*
	Range	0 - 82
Adapted PPVT	*M (SD)*	35.67 *(18.76)*
	Range	10.98 – 75.14
CELF-4	*M (SD)*	57.89 *(24.24)*
	Range	9.26 – 100
BPVS3	*M (SD)*	64.52 *(16.47)*
	Range	34.52 - 89.88
DVIQ	*M (SD)*	78.56 *(15.12)*
	Range	38.71 – 96.77
Trog-2	*M (SD)*	71.51 *(18.67)*
	Range	20 - 95

Note: PWFT = Greek expressive vocabulary score; Adapted PPVT = Greek receptive vocabulary score; CELF-4 = English expressive vocabulary score; BPVS3 = English receptive vocabulary score; DVIQ = Greek receptive grammar score; Trog-2 = English receptive grammar score. All scores are out of 100%.

Table 3 *Collinearity Statistics*

Independent Variables	Tolerance	VIF
SES	0.535	1.868
Years in supplementary school	0.184	5.439
English proficiency	0.778	1.286
Language use	0.647	1.545
Mum & dad languages total	0.720	1.390
Age in months	0.190	5.268

Note: English proficiency = percentage of English proficiency from parental report; Language Use = Percentage of language use with 0% being only English and 100% being only Greek; SES = the average percentage of mother and father education.

Table 4 *Regression for DVIQ*

Model	*B*	SE *B*	*t*	*p*
Age in months	0.15	0.18	0.83	.418
Total number of parental languages	-1.77	2.02	-0.88	.388
SES	-0.35	0.18	-1.89	.071
Language use	0.50	0.13	3.84	.001
English proficiency	-0.18	0.32	-0.55	.589
Years in supplementary school	1.36	2.02	0.67	.506
Constant	87.15	35.25	2.47	.021

Table 5 *Regression for adapted PPVT*

Model	*B*	SE *B*	*t*	*p*
Age in months	0.16	0.19	0.85	.404
Total number of parental languages	-0.53	2.09	-0.25	.802
SES	0.04	0.19	0.22	.829
Language use	0.57	0.13	4.23	.000
English proficiency	-0.08	0.33	-0.24	.811
Years in supplementary school	3.09	2.09	1.48	.153
Constant	-11.11	36.52	-0.30	.764

Table 6 *Regression for PWFT*

Model	*B*	SE *B*	*t*	*p*
Age in months	0.05	0.25	0.21	.835
Total number of parental languages	2.76	2.77	1.00	.329
SES	-0.09	0.25	-0.36	.721
Language use	0.75	0.18	4.25	.000
English proficiency	0.17	0.44	0.39	.700
Years in supplementary school	3.24	2.78	1.17	.254
Constant	-36.65	48.49	-0.76	.457

Table 7 *Regression for TROG*

Model	*B*	SE *B*	*t*	*p*
Age in months	0.75	0.14	5.26	.000
Total number of parental languages	1.59	1.59	1.00	.327
SES	0.22	0.15	1.54	.136
Language use	-0.05	0.10	-0.45	.659
English proficiency	0.30	0.25	1.18	.249
Years in supplementary school	-3.13	1.59	-1.97	.060
Constant	-45.62	27.74	-1.65	.113

Table 8 *Regression for BPVS*

Model	*B*	SE *B*	*t*	*p*
Age in months	0.52	0.09	5.83	.000
Total number of parental languages	1.75	0.99	1.74	.095
SES	-0.03	0.09	-0.38	.710
Language use	-0.04	0.06	-0.68	.501
English proficiency	0.24	0.16	1.52	.142
Years in supplementary school	-0.17	1.00	-0.17	.865
Constant	-15.06	17.38	-0.87	.395

Table 9 *Regression for CELF*

Model	*B*	SE *B*	*t*	*p*
Age in months	0.65	0.29	2.28	.032
Total number of parental languages	-1.62	3.17	-0.51	.614
SES	0.05	0.29	0.18	.861
Language use	0.19	0.20	0.96	.348
English proficiency	0.61	0.50	1.21	.237
Years in supplementary school	-1.49	3.17	-0.47	.643
Constant	-68.19	55.38	-1.23	.230