The language and literacy profile of young Polish children learning English as an additional language in the UK school system

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Abstract

Children's reading comprehension difficulties can lead to lower performance at school and limited access to the curriculum. Reading may be a particular challenge for those children who are learning English as an additional language (EAL). While a number of studies have been conducted on the development of literacy in children, this research aimed to add to a growing avenue of investigation into the population of children learning EAL. The aim of this research project was an in depth examination of the language and literacy performance of the population of Polish children learning EAL in the UK school system both in their first and second language. The three hundred and nineteen children who were assessed in this study were sampled from three language backgrounds: Polish children learning EAL and two monolingual groups of Polish and English native speakers. The children were assessed with a range of standardised and bespoke tools assessing pre-literacy abilities, oral language, decoding, reading comprehension and higher level comprehension skills. This thesis benchmarked the performance of children learning EAL against their monolingual peers in both languages spoken, along with investigating the relationships between reading comprehension, decoding and language comprehension in this language pair and in comparison to their monolingual peers. Cross-language transfer both within and between language and literacy constructs was also investigated in the EAL group. Finally, the issue of low language performance in this group and the necessity of conducting assessment in both languages spoken by the EAL child were explored. The relevance of these findings for this group of EAL learners in the school setting as well as practical implications and future directions were also discussed.

Table of Contents

List of Tables

List of Figures

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Author's Declaration

I declare that this thesis is a presentation of original work and I am the sole author with supervision from Dr Emma Hayiou-Thomas and Dr Claudine Bowyer-Crane. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as References.

Chapter 1 – An overview of literature in second language learning and literacy acquisition

Proficiency in reading involves a high level of comprehension of different types of text (Lipka & Siegel, 2012). Children's failures in reading comprehension may lead to lower performance or even failing at school, across the curriculum (Ricketts, Sperring, & Nation, 2014; Nation & Snowling, 1997). What is more, reading may be a particular challenge for those readers who are learning English as their second language (Lipka & Siegel, 2012). This literature review will focus on the language abilities and early reading comprehension of Polish children learning EAL (English as an additional language) as well as their English and Polish monolingual peers. Linguistic differences between the two languages spoken by this group of EAL learners will be considered. Furthermore, the school setting as well as the educational progress and outcomes of children learning EAL will be outlined. The Simple View of Reading framework will be used as a theoretical model of reading comprehension and will be outlined in the beginning of this review. Factors such as languages other than English and orthographic depth will be discussed with regards to this model as well as a more in-depth consideration of the two main components of the model both in L1 and L2. The phenomenon of cross-linguistic transfer will be considered and literature on higher order comprehension skills beyond the Simple View will be examined.

1.1 Bilingualism and second language acquisition

A fundamental question in bilingual research is whether the acquisition of the two (or more) languages resembles the process and path of acquisition presented by a monolingual child. According to Bialystok (2001), it is unlikely that the experiences would be the same in both languages. Individuals can become bilingual in two ways – simultaneously or successively.

Successive bilinguals can also be referred to as learners of EAL (English as an additional language) and often in literature the term bilingual can be used to refer to children learning EAL. The difference between the two types lies in the age of acquisition. Grosjean (2010) suggests that before four years of age children are typically considered simultaneous and after their fifth birthday they are defined as successive. Other researchers indicate an earlier cut-off point at three years of age (e.g. McLaughlin, 1984) however suggesting this cut-off point as arbitrary.

In addition to an age cut-off the question remains as to what is the level of proficiency in each language which determines whether a child can be labelled as a bilingual (Bialystok, 2001). Bilingual speakers engage in a range of language functions varying on a continuum from monolingual (mimicking the language behaviour of a monolingual speaker) to bilingual (naturally incorporating aspects of both languages into production) (Grosjean, 2010). If bilingual children's language acquisition differs from their monolingual peers, a question arises whether there is an advantage or disadvantage to being bilingual. On one hand, some may suggest that the earlier the second language is acquired, the more fluent the child will be, often indicating a critical period within which language can be acquired (Lenneberg, 1967). However, native-level acquisition of a second language does not rely only on factors such as age of acquisition or amount of exposure. What is more, it is important to consider that young children are not yet sophisticated and mature learners and have yet to fully develop certain cognitive skills (e.g. the capacity to generalise, abstract or make inferences) which may be valuable in adults acquiring a second language (Grosjean, 2010). A more frequent concern in children acquiring multiple languages is whether learning two or more languages could cause a delay in language acquisition. Although some variability is present in the rate of acquisition, bilingual children tend to meet the main milestones of language acquisition within the same age span as their monolingual peers. The two groups start babbling at the

same age (Oller et al., 1997) and show similar rates of progress over time with a vocabulary spurt at around the age of two. Bialystok (2001) also noted that the way bilingual children learn the structure of the two languages is parallel to that of monolingual children. Cummins (1984), on the other hand, found that children learning EAL (or sequential learners with L2 introduced after some initial exposure to L1) require two years to develop communicative language in their L2 and over five years to acquire full academic language proficiency. Other researchers suggest that, although vocabulary must be considered as an important factor in text comprehension, children learning EAL also face gaps in cultural and background knowledge in their L2 which may affect their understanding (Brisk & Harrington, 2000).

1.2 Applicability of EAL research in the school setting

In a study of EAL academic language, English proficiency at 4–5 years of age has been shown to predict academic language and literacy skills among a population of children learning EAL by 10–11 years of age leading to the conclusion that children who begin school without English proficiency are at a higher risk of difficulties with academic language and literacy (Dennaoui et al., 2016). Similarly, Miller and Peleg (2010) suggest that EAL learners may be at a significant disadvantage compared to their monolingual peers when learning new information mediated in a second language with the amount of linguistic and pragmatic knowledge acquired in their particular L2 being the most central factor. Not accessing the meaning of text due to poor vocabulary skills, poor comprehenders can miss the opportunity to acquire new vocabulary and knowledge creating a reciprocal relationship between reading and vocabulary (Hutchinson et al., 2003). And while there is a large body of research highlighting the benefits of bilingualism such as on executive control (Bialystok, 2011), or life outcomes, there are also contradicting studies suggesting that having to undertake classroom learning in an L2 has a detrimental impact on the learning process and classroom

achievement of many students (e.g. Gunderson, 2007).

The extent to which minority children succeed in identifying with the majority language and culture appears to be important for the course of their reading development in the second language (Verhoeven, 1990). Because L2 readers start literacy instruction from a disadvantaged position in oral comprehension, a continued attention to their L2 oral proficiency is important (Verhoeven & van Leeuwe, 2012). Children learning EAL would benefit from their teachers having some idea about their linguistic and literacy backgrounds. With respect to the early stages of instruction of L2 children it has been advised that a strong general focus is placed on the development of oral language proficiency and in particular on vocabulary acquisition. Grabe (2009) suggests beginning students' abilities should be checked by reading a few high frequency words in English and a few basic non-words. It is beneficial for L2 children to build a large sight vocabulary to aid automatic access to word meanings with low-frequency words being particularly relevant. Lessons should be designed to show L2 learners how to tackle less frequent words as well as unfamiliar high-frequency words. In order to develop a more accurate understanding of word meanings and use, numerous encounters with the word in many different contexts should be provided (Droop & Verhoeven, 2003). Acquisition of literacy in L2 requires a certain level of oral proficiency in that language and therefore children with better oral language skills have a greater chance of making the correct inferences during literacy instruction (Verhoeven, 2000). Some researchers have suggested that L2 children's reliance on the literal information could be due to instruction with teachers not encouraging L2 speakers to use their background knowledge to construct meaning from text (Garcia, 1991). Burgoyne et al. (2013) suggested that relevant background knowledge should be activated before comprehension to encourage children to use it to facilitate comprehension. Finally, research in L2 can also be applied to the population of children learning EAL with language disorders. Previous studies have shown

that a number of children from the population of bilingual children with DLD in the UK are not being identified and therefore are not accessing services. This is mostly due to a lack of bilingual speech and language therapists and a reliance on interpreters without necessary training and qualifications. With respect to diagnosis, clinicians are faced with a difficulty finding a set of tools to assess the competencies of bilingual children. The normative patterns for bilingual acquisition may be different both for each language spoken by the child and in comparison with the acquisition patterns of their monolingual peers for each language. Additionally, normative data should never be applied to a population other than that from which it was developed (Stow & Dodd, 2003).

1.3 Linguistic differences between Polish and English

An increasing number of children of Polish origin are entering the British school system. According to the National Association for Language Development in the Curriculum (NALDIC), by 2012 Polish was the fourth most popular language spoken by non-native children in UK schools with 0.8% of children learning EAL speaking Polish as their L1 across schools in England, this number having doubled since 2008. The Polish community in the United Kingdom has been reported to reach one million (White, 2011; Kułakowska, 2014) with around 25,000 children being born to Polish speaking families each year (Office for National Statistics [ONS], 2014). The development of both languages spoken by these children learning EAL is often a cause of worry for their parents (Otwinowska et al., 2012).

In terms of instructional differences, in the Polish education system, children have a right to attend preschool up until the end of the school year of the calendar year in which the child reaches the age of 7. Children can start formal education at primary school at age six and are required to start at age 7. This is in contrast to the UK where children start formal education

at age four. By the end of preschool, according to the Polish Ministry of Education, children should be able to construct short sentences, break sentences down to individual words, break words down to syllables and identify sounds in phonologically simple words as part of their readiness to learn to read and write at school. In Poland, children's readiness to begin school level education is assessed one year before their entering primary school. Teachers in preschools are tasked with preparing children for learning to read and write which they will commence in primary school. By the end of the first grade of primary school, according to the Polish Ministry of Education guidelines, children should be able to decode simple drawings, signs and inscriptions, know all letters of the alphabet, read and understand short and simple texts, use and understand terms such as words, sounds, letters, syllables and sentences, and, to the best of their ability read key texts suggested by the teacher (Frydrychowicz, Koźniewska, Matuszewski, & Zwierzyńska, 2006). In the UK, children of the same age (around 7 years old) are expected to be comfortably decoding words and reading age-appropriate texts with comprehension.

As for the development of vocabulary, Rescorla et al. (2017) found there are similarities between early vocabulary development in both languages, such as a significant gender effect (with girls displaying larger vocabulary size) and large individual differences in vocabulary size among children of the same age. Polish vocabulary acquisition was also found to be slower than in English suggesting some language specificity in vocabulary development and attributing it to the complexity of Polish. A similar conclusion was drawn by Smoczyńska et al. (2015) whose results showed that over 24% of Polish 2-year old children in their sample had scored less than 50 words on the Polish adaptation of the CDI with particular problems displayed in learning Polish nouns. What is more, this study found that the use of Polish

nouns was often lower than the use of a corresponding English noun suggesting that Polish nouns may be especially difficult to acquire, even by monolingual children.

Polish is an Indo-European language and a member of the West Slavonic branch (Śpiewak & Gołębiowska, 2001). It is a very morphologically rich language (Dąbrowska & Tomasello, 2008; Smoczyńska, 1985) with seven cases (each signaled by different suffixes); different sets of case inflections for singular and plural nouns; gender of nouns determining word endings; verbs inflected for aspect, voice, mode, person, number, and kind as well as inflected numerals, adverbs, and adjectives. There are also many prefixes, suffixes, and interfixes (Haman, 2002, 2003). Adjectives conform to the gender, number and case of the noun. Each verb governs a particular case. With regards to tense, there are no Polish equivalents to perfect and progressive tenses and additionally Polish uses the passive tense much less than English and reflexive verbs are more common in Polish.

Furthermore, Polish phonology can also be considered as difficult, with some hard to pronounce sounds, including spirant consonants and consonant groups (Śpiewak & Gołębiowska, 2001). Pronunciation errors can also occur in stressing words due to the consistent penultimate stress in Polish in contrast to the multitude of stress patterns in English. Furthermore, while Polish has only 8 vowels, there are 22 in English. In contrast to English, Polish has no length distinction and no dipthongs and tripthongs which can lead to articulation difficulties and problems with perception. Initially Polish learners of English can have some difficulties with spelling in their L2 due to Polish spelling being largely phonetic. Polish unlike English is a highly inflected language with a much freer word order. In teaching English to Polish pupils Jaskulska and Łockiewicz (2017) suggest that strong emphasis should be placed on listening comprehension and training of these speech sounds which do

not occur in Polish. Understanding the differences in phonological complexity of these two languages can aid in understanding the path of acquisition of word-level phonology in Polish pupils learning English as their L2 (Tamburelli, Sanoudaki, Jones, & Sowinska, 2015).

The two languages differ on the orthographic depth continuum, a classification of the consistency in correspondence between graphemes and phonemes within a given language system, with English being considered as a more opaque language and Polish being described as semi-transparent (Miles, 2000). According to a review by Śpiewak and Gołębiowska (2001) Polish learners of English often find problems with the apparent lack of consistency between spelling and pronunciation in English leading to a number of mispronunciations in the early stages of acquisition, for example when expecting each written letter to be pronounced. Nijakowska (2010) outlines four main difficulties faced by learners of EAL with regards to decoding English words: the aforementioned issue of one phoneme being represented by a number of different graphemes, or by different letters or their combinations in different words, one grapheme or combination of graphemes can be sounded out in different ways and finally, the numerous irregularities and exceptions of English compared to the more transparent Polish. Jaskulska and Łockiewicz (2017) outline the possible spelling errors of Polish learners of EAL as follows: using Polish orthography when spelling words or using Polish letters to spell English phonemes assuming there is no difference in the sound produced, or dropping silent letters and double consonants.

1.4 Simple View of Reading

The Simple View of Reading model has been chosen as the theoretical framework for explaining the components of reading comprehension in this research. The strengths, limitations and applicability to EAL research of this model are outlined below. One of the

key reasons for choosing this particular framework has been due to its use in the UK classroom to teach reading comprehension. Furthermore, it has been shown as an appropriate and applicable framework in languages other than English and it has been used in studies of children learning EAL.

1.4.1 SVR in Monolinguals

Reading is a complex process involving a range of coordinated component subprocesses (Gough, Hoover, & Peterson, 1996) with a number of frameworks having been suggested proposing that reading comprehension is influenced by a broad range of these processes (Tilstra et al., 2009). The Simple View of Reading (SVR) is an example of such a model. In the Simple View of Reading, reading comprehension consists of two components: decoding and linguistic comprehension (Gough & Tunmer, 1986). Despite its name, this model does not deny that reading is a complex process and the subcomponents of it are complex phenomena (Kirby & Savage, 2008). Importantly, the two components are equally important and neither is sufficient by itself. While both skills correlate with reading comprehension, the strength of these correlations changes with development. Early in development, the correlation with decoding is substantially stronger. However, in later grades the relationship between linguistic comprehension and reading comprehension becomes dominant (Gough & Tunmer, 1986; Hoover & Gough 1990; Gough, Hoover, & Peterson, 1996). The Simple View of Reading explains decoding as efficient word recognition, rapidly deriving a representation from printed input and allowing for the retrieval of semantic information at the word level. Linguistic comprehension, on the other hand, is the ability to derive sentence and discourse interpretations from lexical information. Finally, reading comprehension relies on graphic-based (written) information (Gough & Tunmer, 1986; Hoover & Gough, 1990).

Although the Simple View of Reading has been applied in a number of studies, the appropriateness of the model, especially with regards to older readers (e.g. secondary school) has been questioned, one of the concerns being that it is too simple an explanation for such a complex mechanism. Tilstra et al. (2009) suggest adding cognitive linguistic measures explicitly tapping into decoding, fluency, listening and verbal proficiency (i.e. ability to explain word meanings and relationships between words) constructs to the comprehension component of the model. The researchers furthermore highlight the relevance of reading fluency, beyond decoding, to reading comprehension for readers across all levels of education. While expanding the model contradicts the simplicity advantage, researchers have suggested more closely examining the potential shifts in its components at the different levels of schooling (Tilstra et al., 2009). Comprehension itself is a complex process which may reflect a combination of a wide range of factors such as innate levels of verbal aptitude, early stimulation in infancy, extent of parent initiated literacy activities such as shared book reading or letter learning, memory resources, vocabulary knowledge, metacognitive reasoning strategies as well as cultural factors (Katzir, Lesaux, & Kim, 2009; Kirby & Savage, 2008). Despite these criticisms, the SVR model has been identified as a good predictor of future performance in reading comprehension over the first four years of reading acquisition (Kirby & Savage, 2008) with individual differences in both decoding and linguistic comprehension correlating strongly with variability in reading comprehension across children (e.g. Hoover & Gough, 1990). What is more, a number of strengths of this model have been identified with regards to teaching. It provides a relatively transparent explanation for a highly complex phenomenon, thereby enabling teachers to understand that while word recognition is necessary for reading comprehension, it is not sufficient and that language comprehension also plays a crucial role in reading (Kendeou, Savage, & van den Broek, 2009). It also highlights that children may have distinct patterns of decoding and

linguistic comprehension skills and therefore may need appropriately differentiated teaching strategies (Kirby & Savage, 2008; Kendeou et al., 2009).

Comprehension occurs as the reader builds a mental representation of a message they are exposed to, and the acquisition of reading comprehension is achieved through learning to understand writing (Perfetti, Landi, & Oakhill, 2005). In the beginning of learning to read, the correlations between reading and spoken language comprehension are small (Curtis, 1980) because, at this stage, children are learning to decode and identify words with limited comprehension. On top of decoding, to become proficient readers, children need to develop word recognition and fluency (Nation & Snowling, 2004). In addition to oral language, much research in monolinguals has demonstrated a strong influence of accuracy and speed of single word reading in explaining individual differences in reading comprehension outcomes (Perfetti, 1988; Perfetti, Landi, & Oakhill, 2005). Then, as children shift from decoding to comprehension, the correlations between reading comprehension and spoken language comprehension increase (Sticht & James, 1984). While phonological factors provide an essential base for decoding, aspects of oral language, such as vocabulary and listening comprehension, have been identified as important for reading comprehension (e.g. Hoover & Gough, 1990; Oakhill, Cain, & Bryant, 2003). A meta-analysis by Spencer and Wagner (2018) has shown that children with a profile of poor comprehension despite adequate decoding display deficits in oral language including vocabulary (both receptive and expressive), knowledge of idioms, syntactic and morphological awareness, listening comprehension and story structure.

1.4.2 SVR research in L1s other than English

Since the Simple View of Reading framework was first proposed by Gough and Tunmer in 1986, a number of researchers have investigated it in studies beyond English (see García & Cain, 2014 for a meta-analysis). Megherbi, Seigneuric and Ehrlich (2006) assessed the impact of decoding and linguistic comprehension on reading in a population of French children and found that listening comprehension was a more powerful predictor than decoding ability as early as in the first grade of school. The SVR has also been investigated in Dutch providing another insight into the applicability of the model in a L1 other than English. In a review by Aarnoutse and van Leeuwe (1988) decoding and linguistic comprehension have shown correlations with reading comprehension ranging from .46 to .69 in the early grades of elementary school. De Jong and van der Leij (2002) found that both word decoding speed and linguistic comprehension influenced the development of reading comprehension from first through to third grade with listening comprehension having a greater impact than vocabulary. In Hebrew, both decoding and linguistic comprehension have been shown to explain a substantial proportion of the variance in reading comprehension supporting the SVR framework in that language. What is more, both decoding and linguistic comprehension have been shown to contribute differently at different grade levels (decoding more in the early grades and listening comprehension later on). However, in Hebrew, unlike in other orthographies which can be considered as more transparent, decoding seemed to play an important role in reading comprehension for a longer period of time (e.g. Joshi et al., 2015 where decoding contributed beyond Grade 3).

In more transparent orthographies linguistic comprehension has been shown to be a very important predictor of reading comprehension, exerting a greater influence on it than decoding even in beginner readers. Decoding seems to be more important in English than it is

in other orthographies. In more transparent orthographies, with more regular grapheme and phoneme correspondences, reading fluency has been shown as a better predictor of reading comprehension (Florit & Cain, 2011). Some researchers suggest that RAN may be particularly important as a predictor in languages with shallow orthographies (Miller, Kargin, & Guldenoglu, 2014) where the mapping between graphemes and phonemes is more consistent in both directions. In the context of assessment in different languages, it is very important to ensure that measures of decoding are sensitive to the properties of the orthography of that specific language. This allows for an accurate assessment of the influence of linguistic comprehension on reading ability development. Furthermore, models of reading development can be misleading if tested predominantly in one language.

1.4.3 SVR and Orthographic Depth

A number of languages have been classified along a continuum in terms of their orthographic transparency (e.g. Seymour et al., 2003) and the languages on the extreme ends of this continuum have been identified placing Finnish at the transparent extreme and the English irregular orthography at the other end. However, establishing objective locations of each orthography on this continuum has not been undertaken and remains approximate in relation to other previously investigated languages and so far limited cross-linguistic research has been conducted in this area (Borleffs, Maassen, Lyytinen, & Zwarts, 2017). As for the language pair which will be investigated in this research, English, with the occurrence of different pronunciations for the same spelling patterns, is considered to be a deep orthography while Polish is identified as a more transparent language.

Models of acquiring the skill of reading comprehension tend to be developed with a specific language in mind (most often English which has some singular properties). A concern with

regards to the Simple View of Reading model is its applicability to other alphabetic orthographies beyond English. In alphabetic writing systems, orthographic depth has been identified as crucial in determining reading acquisition and efficiency (e.g. Frost, Katz, & Bentin, 1987) including reading development, disorders (both developmental and acquired), and theoretical accounts (Miller, Kargin, & Guldenoglu, 2014). With regards to predictors of reading ability, in deep orthographies, phonological awareness appears to be a stronger predictor, as it is needed to make sense of the complicated print-to-speech conversion system. On the other hand, in shallow orthographies, rapid automatised naming seems to be a better predictor of reading abilities due to its importance for developing fluency (Miller et al., 2014). In a meta-analysis Caravolas and Samara (2015) conclude that, as reading develops, the key abilities of phonological awareness, RAN and letter knowledge play a role in the development of literacy with their relative importance weighing similarly in different alphabetic languages and persisting as predictors at least as far as Grade 1. Research by Florit and Cain (2011) shows that the SVR demonstrates the importance of both components in determining early reading comprehension across a range of alphabetic orthographies. While English results were in line with the SVR, in transparent orthographies linguistic comprehension was a stronger influence on reading comprehension from the early stages. Furthermore, in transparent orthographies decoding fluency was a better predictor of reading comprehension compared to decoding accuracy while the two measures showed similar correlations to RC in English. These findings lead to the conclusion that the decoding component of this model has to be refined and considered with relation to the level of transparency of the language to which this model is applied. Finally, it is also suggested that not all measures of comprehension are equal – some being more dependent on decoding than others and this influencing the extent of the relationship between the components of the model. Decoding and listening comprehension have been shown to explain a substantial

extent of variance in reading comprehension in French (Megherbi, Seigneuric, & Ehrlich, 2006), while the model has also been shown to apply in Dutch (Verhoeven & van Leeuwe, 2012) and Greek (Protopapas, Sideridis, Mouzaki, & Simos, 2007).

1.4.4 SVR in pupils learning multiple languages

Although reading has been widely researched with the monolingual population, less is known about the process of reading acquisition in bilingual children (Deacon & Cain, 2011). With this in mind, research has investigated the Simple View of Reading framework with EAL populations and the results of a number of studies have shown it to be adequate for this group of learners (e.g., Gottardo & Mueller, 2009; Proctor, Carlo, August, & Snow, 2005; Yaghoub Zadeh, Farnia, & Geva, 2012). Longitudinal data collected among Spanish-English bilinguals has shown support for the Simple View of Reading as a product of skill in decoding and linguistic comprehension (Hoover & Gough, 1990). For Spanish-speaking children learning English as their L2, English oral language proficiency and word reading are the strongest predictors of reading comprehension in that language (Gottardo & Mueller, 2009). Another longitudinal analysis of data from second language learners showed the Simple View of Reading to be equally valid for L1 and L2 learners in Dutch. Data collected by Verhoeven and van Leeuwe (2012) show that, with progression through school grades, the impact of word decoding on reading comprehension decreases and the impact of listening comprehension increases to the same extent in L1 and L2 learners. A more in-depth analysis of the two subcomponents of the SVR in L2 will be outlined in further sections of this review.

Children who speak English as an additional language (EAL) may be at a greater risk of underachieving in their L2 literacy, particularly in the early school years (Hutchinson,

Whiteley, Smith, & Connors, 2003) and in line with this, knowledge of the second language is an important predictor of L2 reading comprehension (Schoonen, Hulstijn, & Bossers, 1998). According to some researchers, in children learning EAL, with the development of English fluency comes the development of L2 comprehension skill (Hutchinson et al., 2003). With regards to decoding no differences are usually found between the groups (e.g. Lervåg & Aukrust, 2010). Reading accuracy also does not seem to be a specific area of difficulty for these children (Gregory, 1996) with EAL readers often demonstrating fast and accurate reading accuracy skills (Burgoyne, Whiteley, & Hutchinson, 2011). Research has also shown that EAL readers can achieve similar accuracy and fluency in their English word reading skills as compared to their native speaking peers in spite of significant differences in their oral language proficiency (Lesaux & Siegel, 2003). In general, children learning EAL showed weaker oral language skills than their monolingual peers, regardless of their reading comprehension abilities. In their study, Melby-Lervåg and Lervåg (2014) found that, compared to first-language learners, L2 readers showed a medium-sized deficit in reading comprehension moderated by language comprehension as well as decoding, a large deficit in language comprehension (this was more pronounced in children from lower SES families and children who spoke only in their L1 at home), and only small differences in phonological awareness (no reliable differences) and decoding (children learning EAL showed poorer decoding skills than their monolingual peers in the US but better in Canada). Similarly, Hutchinson, et al. (2003) found lower levels of reading comprehension, listening comprehension and receptive comprehension in their sample of children learning EAL across three time points. What is more, although a significant yearly progress was observed in both language groups, there was a difference in the magnitude of the developmental change for listening comprehension in favour of the monolingual population (Hutchinson et al., 2003). Another study showing the relation between vocabulary and reading comprehension was

performed by Lesaux, Crosson, Kieffer and Pierce (2010). These researchers found a dissociation between word-level reading and reading comprehension both in L1 and L2 with word reading skills within normal range and reading comprehension abilities scoring significantly below. This study suggests that limited vocabulary knowledge, in both languages can contribute to difficulties in reading comprehension. Although such a pattern of strong word reading skills and poorer reading comprehension has been shown in a number of studies (Babayiğit, 2014, 2015; Hutchinson, et al., 2003; Lesaux et al., 2010) longitudinal research provides evidence of a shift in the differences in performance between children learning EAL and native speakers in time: Lesaux, Rupp and Siegel (2007) found children learning EAL underperformed on early literacy tasks in kindergarten, but reached similar performance to their monolingual peers by fourth grade. Similarly, Lesaux and Siegel (2003) showed that while in kindergarten children learning EAL were underperforming on a range of tasks, by Grade 2 their performance on reading and spelling tasks was comparable to or even surpassed that of native speaking peers. In another study by Bowyer-Crane, Fricke, Shaefer, Lervåg, and Hulme (2017), while the children learning EAL displayed weaker language skills but superior word reading compared to the monolingual group with language weaknesses; there were no differences in reading comprehension with both groups displaying low comprehension ability.

1.5 Decoding and its predictors

Most previous research supports the idea that children with decoding difficulties also display poor phonological abilities (Snowling & Hayiou-Thomas, 2006), while their reading or listening comprehension skills are otherwise intact. Skills such as phonological awareness, rapid automatized naming, and working memory have been shown to predict accurate word reading ability and explain individual differences in word reading. Furthermore, performance

on tasks of sentence repetition, phonological awareness, rapid naming and letter knowledge at the preschool level has been shown to uniquely predict second grade reading outcomes (Morris, Bloodgood, & Perney, 2003; Erdos et al., 2010). This has been confirmed using evidence from intervention studies where training phoneme awareness has resulted in an improvement of reading skills (e.g. Elbro & Petersen, 2004), as well as longitudinal data specifically showing that early phoneme awareness facilitates the acquisition of reading, and especially decoding (Haigh et al., 2011). Phonological awareness and naming speed as measured in preschool have been shown to account for reading development up to Grade 5. In the first two years of school phonological awareness was shown as most strongly related to reading with a weaker relationship between naming speed and reading. This initially weaker relationship did, however, increase with grade level (Kirby, Parrila, & Pffeifer, 2003).

Print knowledge and phonological awareness play a critical role in the early elementary school years with phonological awareness being a well-established predictor of early reading development (Melby-Lervåg, Lyster, & Hulme, 2012). Phonological awareness skills make the task of decoding printed words easier (e.g. Bradley & Bryant, 1985) and therefore enhance literacy development (Byrne & Fielding-Barnsley, 1993). Preschool children also show a reciprocal relationship between phonological awareness and letter knowledge (which could be considered as a rudimentary reading skill) (Burgess & Lonigan, 1998). Foulin (2005) suggests that since strings of letter names are essentially phonological sequences, their involvement in literacy acquisition is a matter of phonological sensitivity. It is no surprise then, that knowledge of letter-sound relationships has been shown to correlate strongly with early literacy development (Byrne & Fielding-Barnsley, 1993).

Phonological awareness, along with speeded naming have been shown to predict unique variance in initial reading acquisition. The phonological awareness and speeded naming skills of children in kindergarten have both been shown to make independent contributions to the prediction of reading with phonological awareness being the more powerful predictor in early stages and speeded naming being more powerful in later grades. In a study by Kirby, Parrila and Pfeiffer (2003) children with poorer phonological awareness and speeded naming skills in kindergarten were shown to make slower progress in reading development and suffer from reading difficulties by fifth grade. In English, speeded naming tasks have been shown to distinguish good from poor readers (McBride-Chang & Kail, 2002). Research has shown that RAN and reading display overlapping neural networks including the inferior frontal cortex, temporo-parietal areas, and the ventral visual stream (Misra, Katzir, Wolf, & Poldrack, 2009). Bishop et al. (2009), on the other hand found RAN to correlate with performance on the TOWRE word reading task and not, as may have been expected, with the language level leading to a prediction that RAN may serve as a good predictor for early reading difficulties both for typically developing children and their peers with language impairment. On the other hand, a number of researchers have criticized the overemphasis of phonological abilities, and suggested that other components of oral language, such as semantic and syntactic ability could play a key role in reading development (e.g. Bishop & Adams, 1991). Phonological awareness seems to be of great importance in predicting single word reading ability in the early primary school years (van den Bos & de Groot, 2012) as also demonstrated in a multinational study (including four languages: English, Spanish, Slovak and Czech) where, together with letter sound knowledge and rapid naming, phonological awareness measured at the beginning of literacy instruction has been identified as a strong and reliable predictor of both reading and spelling (Caravolas et al., 2012). Furthermore, evidence from another cross-linguistic study by Caravolas et al. (2013) suggests that these predictors of phoneme

awareness, letter-sound knowledge and naming speed as measured in the beginning of literacy instruction are of equal importance regardless of the language being acquired and the orthographic transparency of that language, as shown in a comparison of predictors in the opaque English versus the transparent Czech and Spanish. With regards to phonological awareness, Caravolas et al. (2005) point out that the tasks assessing phonological awareness need to be of a sufficient level of difficulty when assessing a more transparent orthography for comparable effects of phonological awareness on reading ability to be obtained.

1.5.1 Decoding and its predictors in children learning multiple languages

Initially research into phonological awareness has focused mostly on monolingual children, but in recent years the abilities of bilinguals have also attracted growing interest as a consequence of rising prevalence of children acquiring more than one language in the school system (e.g. Loizou & Stuart, 2003 who assessed English-Greek and Greek-English bilingual children, the former born in the UK to Greek parents and the latter living in Greece and attending private schools with an equal amount of schooling in both languages). While early research suggested that bilingual children may be at risk of slowed cognitive achievement, more recent studies have presented a more positive view hypothesizing that exposure to more than one language may be beneficial to the growing child (Campbell & Sais, 1995). This advantage seems to be metalinguistic (involving the ability to reflect upon and manipulate the forms of language). Studies have shown phonological skills develop at a similar rate in monolingual and bilingual children (e.g. Limbird, Maluch, Rjosk, Stanat, & Merkens, 2014 whose bilingual children came from Turkish-speaking families in Germany and presented Turkish proficiency at a level of no more than one standard deviation below the average for the Turkish speaking sample on the Bilingual Verbal Abilities Test, Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 1998). Early research conducted by Bialystok (1988) shows

that bilingual children are more able to decouple semantic referents from their known lexical tokens as well as identify and correct syntactic anomalies, although also suggesting that fully bilingual children are likely to perform better than their partly bilingual peers (children learning EAL). In the Campbell and Sais (1995) study, children who were schooled in two languages (bilingually) at the preschool level performed better than monolingual participants on a range of metalinguistic tasks despite a slightly younger age and similar letter knowledge. Bilingually schooled children were also better at both semantic and phonologically based tasks (Campbell & Sais, 1995). Bilingualism seems to be associated with a superior level of phonological awareness (with bilingual children showing superior performance on tasks demanding high levels of control of processing, Bialystok, 1988) and transferring across languages and tasks (Durgunoglu, Nagy, & Hancin-Bhatt, 1993).

Children's overall oral proficiency has previously been shown as a significant predictor of phonological awareness (e.g. Chaney, 1992). Other significant predictors of phonological processing include vocabulary knowledge (e.g. Metsala, 1999) and letter name knowledge (e.g. Wagner et al., 1997). Studies by Geva, Yaghoub Zadeh and Shuster (2000) and Lesaux and Siegel (2003) found that both EAL and monolingual children with poor word recognition also displayed poor rapid automatized naming, phonological awareness and decoding skills as compared to their typically performing peers in both language groups. Longitudinal data suggests that early phoneme awareness facilitates the acquisition of reading (Haigh et al., 2011). While phonological awareness has been identified as a strong predictor of reading ability in English (Adams, 1990), the extent to which it predicts reading development may differ across other languages depending on their orthography and phonology (Goswami, 1999). McBride-Chang and Kail (2002) suggest similarities across cultures in the early phases of reading acquisition. According to the authors, at least in the very earliest stages,

some level of phonological awareness is probably a universal aspect of learning to read (also Caravolas et al., 2013). Perhaps the bilinguals' phonological awareness transfers across languages (e.g. Bruck & Genesee, 1995) and the children's familiarity with more than one language enables them to understand the flexible relationship between the form and function of language facilitating the manipulation of speech sounds in their second language (McBride-Chang & Kail, 2002). Furthermore, the impact of learning a second language may extend to processing capabilities in L1 (Haigh et al., 2011). Word decoding skills of L1 and L2 learners have been shown to develop at more or less equal rates in the long term, possibly due to cross-language transfer (Verhoeven, 2000). In more transparent orthographies, individual variation in word decoding abilities in both L1 and L2 also tends to level off over the years (Verhoeven & van Leeuwe, 2012). In a study by Verhoeven (2000), after two years of formal reading instruction the L2 decoding of the second-language learning children was found to be just as efficient as that of their L1 peers for the most part, although L2 children did show some additional difficulties with decoding more complex orthographic patterns.

1.5.2 Phonological complexity

According to Bialystok (1988), bilinguals display a superior level of phonological awareness with better performance on tasks demanding superior control of processing. However, it has to be noted that this facilitation may depend on the degree of similarity between the phonological and orthographic structures of the two languages (Kang, 2012), as well as the phonological complexity of each language. Previous studies suggest specific co-occurrence relationships and tendencies among the phonological properties of language (Gierut, 2007). Complexity can be dictated by richer and more varied loops or network relations (Johnson, 2007), giving the speaker the ability to establish increasingly more fine-grained phonetic categories (e.g. Blumenfeld & Marian, 2009). Maddieson (2005) divides languages into three

syllable complexity classes: the ‘simple’ class permitting only (C)V patterns (e.g. Maori), a ‘moderate’ class of languages allowing CC onsets with common structures and/or permitting a single coda consonant (e.g. Mandarin) and finally a ‘complex’ class allowing even more elaborate clusters (e.g. Georgian or French). According to this research, languages can also be divided into three tonal groupings: those with no tone contrasts, those with simple tone systems (e.g. Japanese or Norwegian) and those with more elaborate tone systems (occurring often in East and South-East Asian and African language groups). Languages can also differ according to their phonotactic requirements (Tamburelli et al., 2015) dictating which consonants may cluster in which position (allowing rising, falling, or plateau sonority profiles). English and Polish differ in this regard, with Polish allowing all three sonority profiles both word-initially and word-medially and English allowing all three of these profiles only word-medially and only two of the three profiles word-initially (Tamburelli et al., 2015). On the other hand, the two languages allow the same levels of complexity with regards to permitting onset branching, adjunction, and coda-onset sequences.

The extent of a bilingual advantage in such areas as phonological awareness may depend on the degree of similarity between the phonological and orthographic structures of the two languages (Kang, 2012) as well as the phonological complexity of each language with the possibility that an exposure to a phonologically more complex second language may impair the development of phonological awareness (Loizou & Stuart, 2003). At the phoneme level, learning to read in an alphabetic language contributes to the development of phonological awareness (Loizou & Stuart, 2003). Phonological awareness emerges through the child’s experiences in spoken language (as well as print); as children acquire more words, they have to learn to distinguish similar-sounding words and re-represent the phonological segmentation of those words to differentiate them (Goswami, 2001). However, since research

has mostly been conducted in English, it is difficult to establish whether this pattern would hold for children acquiring different languages with different levels of transparency. Durgunoglu and Oney (1999) suggest that phonological awareness develops as a function of the characteristics of the spoken language. In their study children learning Turkish performed better than their English counterparts on phonological tasks (e.g. manipulated syllables more accurately in earlier stages). According to the researchers this was due to phonological characteristics of Turkish as compared to English (such as a more consistently defined syllable structure, a smaller number of syllable types and a stronger vowel harmony). Caravolas and Bruck (1993) hypothesized that compared to English children, their Czech peers will be superior on tasks involving phonological awareness due to a greater complexity of the syllable structures in that language. Their findings show that the development of phonological awareness is mediated by both the oral and written input with orthographic depth exerting an influence on acquisition of spelling skill. It is also suggested that rather than the simplicity of phonological structures it may be their phonological status in the particular language that influences awareness. This language pair is particularly interesting due to the similarities between Czech and Polish. Finally, Bunta, Davidovich and Ingram (2006) suggest that children build phonological systems from the same phonological units using them in differentiated ways which in turn produce different-looking surface forms. In other words, while surface differences can be observed between languages, they can be traced back to shared underlying phonological building blocks. Therefore, the presence and extent of facilitation in performance on phonological awareness tasks in speakers learning EAL is likely to be dependent on the languages spoken by that speaker and the similarity between the languages (Kang, 2012) with the fact of learning two languages alone not being a guarantee of an advantage in performance (Bialystok, Majumder, & Martin, 2003).

1.6 Linguistic Comprehension

Hoover and Gough (1990) define linguistic comprehension as the ability to derive sentence and discourse interpretations from lexical information. Previous research has shown that word level skills and listening comprehension skills are at least to some extent separable in young children. A study by Kendeou, Savage and van den Broek (2009) showed strong and significant associations between non-word reading fluency, oral reading and vocabulary. The researchers concluded that language comprehension is necessary for reading comprehension. Early oral language difficulties have been predicted to lay the foundation for later reading problems (Roth, Speece, Cooper, & de la Paz, 1996) and both word recognition and oral language have been identified as predictors of reading comprehension abilities (Hoover & Gough, 1990). The extent of unique variance in reading comprehension predicted by linguistic comprehension has been shown to increase with progress through school grades. A longitudinal study by Catts, Hogan and Adlof (2005) found this increase from 9% in second grade to 21% in fourth grade and 36% by eighth grade. Listening comprehension, according to Hogan, Adlof and Alonzo (2014) requires understanding individual words and later sentences in a story. To understand a text, the reader must first understand the individual words it is made up of. This explains why measures of vocabulary abilities have consistently been shown as good predictors of reading comprehension. Listening comprehension draws on the same language processes used to understand language through written text, but it is free of the cognitive demands of decoding (Hogan et al., 2014). Linguistic comprehension is furthermore influenced by higher order skills such as inferences and background knowledge which will be discussed more in depth later in this chapter.

1.6.1 Linguistic Comprehension in L2

Second language learners often develop their English language and reading skills concurrently (Geva & Massey-Garrison, 2012). Well-developed language skills are considered crucial and the demands of reading increase when the focus of reading shifts from decoding (accurate and fluent word recognition skills) to reading comprehension (Schatschneider et al., 2004; Geva & Massey-Garrison, 2012). Oral language competence has been linked to reading comprehension (Proctor, August, Carlo, & Snow, 2006) and researchers have suggested that L2 oral proficiency can facilitate L2 text reading (Nation, 2001). In their 2011 study, Farnia and Geva found that even after 6 years of consistent schooling in English, children learning EAL still lagged behind their monolingual peers on vocabulary skills. A similar finding was reported by Manis, Lindsey and Bailey (2004) where children learning EAL developed slowly in the domains of English vocabulary and memory for sentences also lagging in English oral language comprehension skills. What is more, measures of oral language skills (such as standardised vocabulary assessments) have been found to be related to reading measures (e.g., Catts, Fey, Zhang, & Tomblin, 2001). Second language oral language skills play a major role in predicting L2 reading skills. A study by Swanson, Rosston, Gerber and Solari (2008) has shown that this relationship between the two factors strengthens as children enter the third grade. Researchers also found that oral language skills were a stronger predictor of reading within as compared to across languages (Manis et al., 2004). Research literature also supports vocabulary as a contributing factor to an observed gap in reading comprehension between monolingual and L2 readers (e.g. Verhoeven & van Leeuwe, 2012). In fact, L2 oral language skills may play a more prominent role in explaining L2 reading comprehension than is the case in monolingual speakers (Droop & Verhoeven, 2003) although these findings have been shown as inconsistent across studies (e.g. Babayiğit, 2014; Babayiğit, 2015). L2 oral language proficiency, with a particular

emphasis on L2 vocabulary knowledge has been identified as a crucial predictor of L2 reading comprehension (e.g. in Spanish: Lesaux et al., 2010 or Italian: Tobia & Bonifacci, 2015). Therefore, a limited oral proficiency level may pose a risk to the development of reading comprehension in L2 with reduced size of L2 vocabularies of second language learners possibly impeding the development of L2 reading ability (Verhoeven & van Leeuwe, 2012). Tobia and Bonifacci (2015) further suggest reading accuracy as a significant predictor of reading comprehension, although secondary to oral proficiency. Longitudinal research has identified strong similarities in L1 and L2 with respect to the Simple View of Reading (Verhoeven & van Leeuwe, 2012). For example, in both cases reading comprehension becomes highly dependent on oral language skills when decoding becomes more automated. However, the reciprocity of the relationship between linguistic and reading comprehension has been shown to be stronger in L1. Verhoeven and van Leeuwe (2012) tentatively conclude that in L2 reading comprehension development is more strictly dependent on oral language proficiency compared to L1. All three of the SVR components show a high level of stability of individual differences across school years. Individual differences which occur at the beginning of reading instruction tend to prevail across grades (Verhoeven & van Leeuwe, 2012). Researchers have suggested that the semantic networks of L2 learners may be less tight compared to their L1 peers with L2 learners forming fewer associative links between words. This can also be referred to as the depth of vocabulary knowledge where words are perceived as nodes in a network and the higher density of this network surrounding a word indicating better knowledge of that word (Vermeer, 2001). Second language learners may have difficulties with building a body of visual word representations due to their reduced vocabulary size in the target language compared to their L1 peers (Verhoeven, 1990).

While problems with the spoken second language may have an impact on reading (Geva & Verhoeven, 2000; Verhoeven, 2000), there are other aspects of oral language beyond vocabulary which have been considered as important in the development of reading comprehension of pupils learning EAL. These include listening comprehension and grammatical skills as demonstrated in a study by Geva and Farnia (2012). While Grade 2 vocabulary skills were identified as a predictor of Grade 2 reading comprehension in the EAL and monolingual groups; by Grade 5 the predictors of reading comprehension included Grade 2 vocabulary, phonology, listening comprehension and grammar with syntactic skills and listening comprehension identified as additional proficiency predictors of reading comprehension only in the EAL group (and not the monolinguals). These findings further suggest a more nuanced framework of reading comprehension predictors including other components of language proficiency beyond vocabulary. Problems in reading comprehension may also arise from sentence comprehension difficulties (Verhoeven & van Leeuwe, 2012). The morphosyntactic knowledge of L2 learners significantly predicts their L2 reading comprehension by the end of the second grade (Verhoeven, 1990). Although L2 learners often perform more poorly compared to monolingual speakers on early literacy measures, these differences tend to disappear later on in school. Lesaux, Rupp and Siegel (2007) found that kindergarten predictors of fourth grade word reading and reading comprehension were almost identical for the two groups of learners.

1.7 Cross language transfer

In a simplified definition, transfer refers to using prior linguistic information in the context of a second language (Gass, 1988). Gregory (1996) argued that phonological skills in L1 at preschool level can transfer to the L2 school learning environment also seen in other research studies indicating bilingual phonological awareness transferring across languages (e.g. Bruck

& Genesee, 1995). Being familiar with more than one language may facilitate the manipulation of speech sounds in the L2 of children learning multiple languages (Campbell & Sais, 1995; Kang, 2012; McBride-Chang & Kail, 2002) although this has not been replicated in all studies (see Melby-Lervåg & Lervåg, 2014 for a review). However, it should be noted that the similarity between the two languages may affect the degree of this bilingual advantage in phonological processing (e.g. Bialystok, Majumder, & Martin, 2003; Loizou & Stuart, 2003). Another example can be found in the study by Alexandra Gottardo (2002) who found that the phonological processing skills of first grade Spanish EAL learners were related to both within and across language skills in reading. De Sousa, Greenop and Fry (2010) also found that phonological awareness in L1 is related to spelling across both languages in emergent bilinguals. In their study both L1 spoken proficiency and English-only (L2) literacy instruction influenced phonological awareness skills used to spell within both L1 and the L2. Other pre-literacy abilities, such as letter name and sound identification skills have also been somewhat highly positively correlated across languages in the beginning of preschool. Cardenas-Hagan et al. (2007) also identified phonological awareness skills as the area with the most significant and direct transfer of knowledge in their EAL group in the preschool stage. In Spanish, Swanson et al. (2008) found a positive correlation between L1 and L2 phonological awareness measures. Another study by Manis, Lindsey and Bailey (2004) showed a transfer of phonological awareness and word decoding skills from Spanish (L1) to English (L2) in the second grade. What is more, Gomez and Reason (2002) suggest that phonological awareness skills can predict word recognition cross-linguistically as a result of the linguistic interdependence of L1 and L2 as well as the previous finding that phonological skills as assessed in L2 correlate with achievements in both languages. In their own study they found that L1 phonological processing skills enabled the children to decode non-words in an L2 task. Finally, Verhoeven, Steenge and van Balkom (2012) found medium to high

correlations between the two languages on phonological memory, phonological awareness, grammatical skills and story comprehension. Furthermore, a regression analysis of their findings showed that children's L2 language proficiency levels could be explained by their proficiency in L1 linguistic skills suggesting transfer from their dominant language and support of L2 linguistic skills by their abilities in their first language.

Language knowledge from the children's L1 does not always transfer well to L2. Vocabulary and syntactic knowledge usually do not transfer across languages (Grabe, 2009). Lervåg and Aukurst (2010) found only a marginally significant contribution of L1 vocabulary to initial L2 reading comprehension. Cardenas-Hagan, Carlson and Pollard-Durodola (2007) found that at the time of preschool, the relationship between oral language skills across languages was low.

A weak cross-language transfer was also found by Swanson, Rosston, Gerber and Solari (2008) who reported a negative correlation between English and Spanish language measures with English vocabulary yielding negative correlations with all measures of Spanish literacy and oral language. Grabe (2009) also points out that L2 reading development is not just the result of L1 transfer, but also involves the development of L2 language proficiency, exposure to language and print and L2 processing skills. Previous investigations of cross-linguistic relationships show no relationship between oral proficiency in L1 and L2 comprehension or at best an indirect link through L1 reading comprehension (see Geva & Genesee, 2006 for a review). A study by van der Leij, Bekebrede and Kotterink (2010) has shown that L2 instruction, on top of contributing to L2 vocabulary has also positively influenced L1 (Dutch) orthographic knowledge and reading comprehension supporting the researchers' hypothesis that concurrent instruction in L1 and L2 can have a positive effect on acquisition of both languages.

1.8 Beyond the Simple View: higher order comprehension skills

Lower level language skills, such as vocabulary or grammar, have been identified as essential for comprehension providing literal meaning of the text by enabling the understanding of individual words and sentences (Kintsch & Kintsch, 2005). It is possible for monolingual children to have comprehension problems in the absence of word recognition problems and with adequate vocabularies (Oakhill & Cain, 2000). For example, poor comprehenders differ from their more skilled peers in their ability to make inferences, integrate information in text, understand story structure and monitor their understanding (e.g. de Sousa & Oakhill, 1996). In addition to these abilities, higher level skills such as inferences (going beyond the information provided in the text and integrating general knowledge into the read sentences in order to extract meaning, Silva & Cain, 2015) and comprehension monitoring (evaluating and subsequently correcting or regulating comprehension processes while they are in progress, Baker, 1979) are independently important in predicting both linguistic and reading comprehension and distinguishing good from poor comprehenders (Silva & Cain, 2015; Cain & Oakhill, 1999; Baker, 1979). According to Barnes, Dennis and Haefele-Kalvaitis (1996) both skills contribute to and result from the reader's text representation. The language of any text, whether it be spoken or written, is rarely completely explicit. Therefore, a deeper comprehension of such text requires the reader to make inferences bridging elements in the text (Perfetti, Landi, & Oakhill, 2005). Making inferences is essential for the correct understanding of narrative and constructing a situational model (a mental representation of factors such as events, settings or people either mentioned explicitly or inferred from world knowledge, Graesser, Singer, & Trabasso, 1994). The development of inference-making ability is suggested to be largely dependent on the extent of knowledge which is available to the child (Barnes et al., 1996). Inference skills have been shown to longitudinally make an independent contribution to comprehension (Silva & Cain, 2015). Some studies suggest that

young children are already able to make inferences, much like their older counterparts, however they are less likely to do so spontaneously (Barnes et al., 1996). Children with poor reading comprehension show, unsurprisingly, poor recall of literal information and additionally poor inference making. Vocabulary and inference making have been shown to share a bi-directional relation – word knowledge supports inference making and inference from context is a driver of vocabulary learning (Silva & Cain, 2015). Furthermore, skilled readers tend to make causal inferences that make sense of otherwise unconnected actions in a story (Graesser & Kruez, 1993; Trabasso & Suh, 1993).

To understand a narrative, the reader also needs to pay careful attention to the events in the story. Monitoring has been identified as an important component of reading comprehension (Cain, Oakhill, & Bryant, 2004). This higher level skill requires the reader to identify inconsistencies between what they are reading and previously gathered information or prior knowledge and, if necessary, to use comprehension repair strategies. Previous research has shown that children often find this task difficult with children who experience reading comprehension difficulties showing impaired performance compared to good comprehenders (Cain, 2007) with poorer comprehenders displaying lower monitoring performance (Barnes et al., 1996). In other words, while skilled readers use comprehension breakdowns as a signal to re-read the passage, their less skilled peers may not engage in such a process (Baker, 1984).

In addition to the previously identified difficulties such as less extensive vocabulary, other factors, such as a lack of appropriate background knowledge can also have an impact on L2 text understanding. Children learning a second language may not have the same cultural experiences as their peers meaning that they may lack the appropriate and relevant background knowledge to aid reading comprehension. For example, materials used in British

classrooms are often strongly tied to traditional Western culture and therefore may be incongruent with the cultural experiences of some L2 learners (e.g. Robertson, 2002). In such cases, L2 readers would have to depend on literal input which poses a problem if their vocabulary skills are weaker in that language. However, Burgoyne, Whiteley and Hutchinson (2013) found no significant differences on questions requiring inference generation from previously taught knowledge base between L2 learners and their native speaking peers. In their study they taught the two groups of children a number of facts about a made up world to control for the background knowledge base the participant would have to draw on to answer questions. Their results showed that L2 learners were just as likely as the monolingual children to use previously learned information to aid with reading comprehension. The researchers did find a significant difference between the two groups on literal questions as well as questions requiring interpreting a simile. They went on to conclude that it is important to consider other factors besides vocabulary to understand how L2 readers develop reading comprehension (Burgoyne et al., 2013). For children learning EAL, metalinguistic awareness, in particular the monitoring of comprehension, is relevant both in learning to read and in learning a second language (Bialystok & Ryan, 1985). It can be hypothesised that comprehension monitoring is particularly important for children learning EAL as they are more likely to encounter unfamiliar language and will need to 'repair gaps' in understanding more frequently than their native speaking peers (Block, 1992). A comparison of comprehension monitoring performance undertaken by Block (1992) showed, however, that differences on the monitoring task seemed related to reading proficiency rather than to EAL language background. While a number of research studies have been conducted on comprehension monitoring in native speakers, less is known about the utilization of these processes by children learning EAL.

1.9 Summary

Reading competence has been linked to educational outcomes. In particular, children presenting difficulties with reading comprehension are considered to be at risk of poorer educational attainment (Cain & Oakhill, 2006). This is becoming evident early in school and carries over to later grades. A study by Ricketts, Sperring and Nation (2014) found a link between reading comprehension difficulties in mid to late childhood and poor educational outcomes at 11 and 16. The Simple View of Reading (Gough & Tunmer, 1986) identifies reading comprehension as the product of decoding and linguistic comprehension. A number of researchers have since suggested this model is too simplified (e.g. Tilstra et al., 2009) and several other factors have since been proposed as influencing the development of reading comprehension. One of these factors may be metacognitive skills, such as inference making and comprehension monitoring.

While a number of studies have been conducted on the development of literacy in children, this research study aims to add to a growing avenue of investigation into the population of children learning EAL. In addition to investigating the children's performance in their L2, this research aims to add to a relatively smaller pool of studies also investigating the L1 of an EAL population. This is particularly interesting in the UK context where this research has taken place due to the characteristics of second language learners in this country. Unlike other countries where second language research has been conducted (such as the US or Canada) where there is a dominance of one language group which tends to be heavily researched, the UK is characterised by a number of varied language groups differing in prevalence depending on the area. As it has been previously stated, Polish has been identified as one of the more prevalent language pairs making this research particularly informative, especially in the context of relevance for educators and in the school setting. In addition to

the different profile of language and literacy acquisition of this population in comparison to monolingual native speakers, in this group the relationship between reading comprehension and its components of decoding and language comprehension may also be impacted by the phonological complexity and orthographic depth differences between the language pairs. This will be explored further in one of the chapters of this thesis. Furthermore, the benchmark comparisons to Polish and English have somewhat different functions. The English comparison informs us about school performance and therefore can tell us about the children's outcomes and possibilities in future educational and job success. The first language comparison, on the other hand, has been linked to outcomes in adulthood as well as individual well-being and preservation of language in the community (Haman et al., 2017). Performance of children learning EAL in the first and second language and its comparison to native speakers in these languages may also be informative for the Simple View of Reading. Differences which may emerge in the relationships between decoding, language comprehension and reading comprehension in the three groups is likely to be linked to their performance on these tasks.

Another phenomenon previously documented in literature on children learning EAL which will also be explored in this thesis is the possibility of transfer between the two languages. Investigating language transfer is particularly interesting as it may have an effect on language and comprehension outcomes within the EAL population (e.g. Gottardo, 2002; de Sousa, Greenop, & Fry, 2010; Cardenas-Hagan et al., 2007; Swanson et al., 2008) as compared to native speakers who do not benefit from transfer. The final issue which will be discussed is the group of children learning EAL who have been identified as showing a low language performance. A number of studies have been conducted in this area, also with children learning EAL outlining difficulties in identifying this group among EAL speakers and the

likelihood of misdiagnosis when assessment is conducted using only their L2 (e.g. Bedore & Peña, 2008).

1.10 Aims of thesis

This thesis sets out to add to existing research in the field of language and literacy acquisition of children learning EAL through investigating a group of Polish children in the UK school system. The performance of this group of children will be benchmarked against their monolingual peers in both languages spoken, along with investigating the relationships between reading comprehension, decoding and language comprehension in this language pair in reference to both Polish and English and in comparison to their monolingual peers. The possible cross-language transfer on the tasks performed by the EAL group will also be considered. Finally, the issue of low language performance in this group will be investigated and the necessity to assess in both languages spoken by the EAL child will be explored.

Chapter 2 – Methodology

2.1 Sample

Three hundred and nineteen children took part in this study. Children were divided into three age groups (Reception, Year 1 and Year 2) and three language groups (Polish children learning EAL, monolingual native speaking Polish and native speaking English). See Table 2.1 for distribution of participants across the groups and for participants' mean ages in each group. A one way ANOVA showed no significant age differences between the three language groups, $F(2,316)=1.43$, $p=.242$.

Table 2.1
Sample details: number and mean age of participants in each language and year group

	Children learning EAL		**Polish native speakers**		**English native speakers**	
	N (% female)	Mean age (SD)	N (% female)	Mean age (SD)	N (% female)	Mean age (SD)
Reception	34 (61.76)	60.71 (3.72)	42 (57.14)	57.86 (4.53)	32 (68.75)	62.47 (2.82)
Year 1	36 (41.67)	70.39 (5.67)	38 (78.95)	73.11 (4.81)	34 (52.94)	74.53 (3.55)
Year 2	31 (64.52)	82.48 (3.76)	38 (44.74)	85.45 (3.79)	34 (32.35)	82.24 (3.18)

2.1.1. Justification for Sample Size

Having run a GPower analysis, for independent samples t-tests with an error probability of .05 and a power of .8, and an effect size of .8, the suggested sample size was 21 participants in each group. In case of regression models, the rule suggested by Field (2013) is to include 10-15 cases per predictor. The number of participants to be included in each group was also

informed by previous research on benchmarking abilities of EAL children (e.g. Rubin & Turner, 1989 with 32 EAL children and sixteen native speakers; or Burgoyne, Whiteley & Spooner, 2009 who assessed 46 EAL children and 46 native speakers (however, without the constraint of only recruiting one mother tongue) or analyses of predictors of decoding and reading comprehension (e.g. Georgiou et al., 2008 who assessed 110 English speakers and 70 Greek-speakers; Nation & Snowling, 2004 who assessed 72 English speaking children; or Droop & Verhoeven, 2003 who collected data from 163 Dutch children, as well as 72 Turkish and 67 Moroccan peers). Finally, the size of the sample obtained in this study was restricted by practical constraints in recruitment of a special population within the time frame provided.

2.1.2. Characteristics of the EAL population

Demographic information was obtained via parental questionnaires with parents of 43 children (42.57% of the whole EAL sample) providing questionnaire data. This questionnaire indicated 58.1% out of the 43 children were born in the UK (this data is, however, unavailable for the 58 other children whose parents did not fill out the questionnaire). Within the sample of parents who provided questionnaire data, there were a three instances where one of the parents did not speak Polish as their L1 (these were always fathers, two were Lithuanian and one was Ghanian).

According to questionnaire data collected from a subset of the EAL population (n=43), most of the children sampled spoke their first word between 6-12 month of life (67.3%), most parents were not concerned about their child's use of their L1 (70.2%) and 68.9% reported the family found the child was very easy to understand. Furthermore, most families reported an absence of speech and language problems in the family (89.1%) with only one family reporting language and pronunciation problems and two families difficulties with reading and

writing. Most of the sampled children did not attend nursery before starting school (85.1%). As for the languages spoken to the child, in the sampled questionnaire group, mothers and fathers tended to use Polish more than English. There was an even split between the two languages when it came to the child's friends and similarly for the child's relatives. Only 2.4% of the parents chose 'never' when asked how often their neighbours spoke to the child in a language other than English. Most parents reported their children never attend extracurricular activities in a language other than English (66.7%). On the other hand, only 34.1% reported their child never receives formal instruction in a language other than English (most likely indicating a large proportion of these children attend Polish Sunday school). This questionnaire data was only analysed for the EAL population due to a very low response rate in the native speaking English group.

2.1.2.1 Selection of schools to sample the EAL group

Children in the EAL and English native speaking groups were sampled from the same schools. The schools were selected from areas with large populations of Polish speakers. This data was obtained using resources available from the Department of Education and an interactive map obtained from the Guardian webpages. The selected institutions were largely Roman Catholic Primary Schools.

2.1.3 SES status of the sample

The SES status was available for the schools at which data was collected in the UK. This data was obtained from the 2015 English Indices of Deprivation from the Ministry of Housing, Communities and Local Government. Out of the eight schools involved in this project, on the Index of Multiple Deprivation, five schools were in the first decile (i.e. most deprived), one was in the second and two were in the third. Additionally, data for supplementary indices concerned with income deprivation among children (IDACI) was available and four schools

ranked in the first decile, three in the second and one in the third. As for the Education and Skills deciles, four schools were in the first decile and one school each were in the 2nd, 3rd, 4th and 5th deciles. Information regarding the percentage of pupils eligible for free school meals was collected for each of the schools included in this study. This ranged from 8.8% to 31.1% with a mean of 17.8%. In comparison, the national average for 2017 was reported at 14.0% (for all school types). This information was not publicly available for the Polish school and kindergartens where the monolingual Polish comparison group was sampled from. However, the primary school and one of the preschools were sampled from a generally lower SES area of the city and the other two preschools were sampled from an average SES area.

2.1.4 Curriculum differences between Poland and the UK

As this study included a monolingual Polish comparison group, this section will outline the differences in curricula between the two countries.

In England children were sampled from primary schools which included year groups from Nursery to Year 6. In Poland, children aged 4-6 were sampled from kindergartens while children aged 7 were sampled from separate primary schools. Kindergarten children were sampled from three classrooms of 4 year olds, 5 year olds and 6 year olds. "Classrooms" or groups in kindergarten are assembled based on age of the child so that in each institution there are 4 age-based classrooms of 3-6 year olds. In the Polish kindergarten system, at the time of testing, children were assigned to a year group based on the year of birth not considering which month they were born in. The Polish native speaking children in the present study who were allocated to the Reception and Year 1 groups were therefore sampled from kindergarten. They were age-matched to the children learning EAL and the native speakers of English. The Reception group was therefore made up of children from the 4 year old kindergarten group and the 5 year old kindergarten group and the Year 1 group was in

fact made up of kindergarteners from the 5 year old and the 6 year old kindergarten group. The Year 2 comparison group in the native Polish speaking sample was the only one in this language group where the children were primary school pupils. The children in this group were sampled from Polish Grade 1. They were matching in age to the children in the UK, however, there are curriculum exposure differences between the two groups.

Another important difference is in the curriculum the two groups are exposed to. In Poland, kindergarten does not have a specified curriculum applicable across the country. Instead the pre-literacy and literacy activities the children are exposed to are determined by the class teacher or the head teacher of the preschool. These are based on one of a number of different curriculum sets available on the market. Exposure to literacy practices is one of the main goals of the early primary school years in Poland and, at this stage specific outcomes are outlined by the Ministry of Education. In contrast in England children at this stage are uniformly exposed to the Early Years/Foundation Stage (Reception) and Key Stage 1 (Year 1 and Year 2) National Curriculum which has been introduced by the government and which includes specific literacy instruction.

In Poland, at age six, at two time points during their last year in kindergarten (first in October/November and then in March/April) the child's readiness to progress to primary school is assessed by their teacher. This is a requirement from the Polish Ministry of Education. This information is then given to the parents who may choose to pass it on to the primary school which their child will attend. In the UK children are assessed at the end of Key Stage 1 (in Year 2) using the SATs – national curriculum assessments of progress and attainment in a range of academic subjects including English, mathematics and science. These are formal assessments the results of which are reported at school level.

2.2 Materials

Children were assessed with a battery of standardised tests and bespoke tasks created by the researcher for the purpose of the study investigating their performance on the following constructs: nonverbal IQ, pre-literacy skills, oral language, word level reading, reading comprehension and higher level comprehension skills. Corresponding tasks used to measure each construct were available in both Polish and English. The measures used for each construct are outlined below. See Appendix 7 for graphs of the distributions of norms for each measure for children learning EAL and native speakers in both languages shown separately.

2.2.1 Nonverbal IQ

The Block Design task from the Wechsler Preschool and Primary Scale of Intelligence (WPPSI; Wechsler, 2003) and the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999) was used to compare the groups' non-verbal IQ. As norms for the WPPSI are available only for children up to 7 years, 3 months and 15 days of age, the WASI was used with the oldest groups (Year 2 children in the UK and Polish primary school children in Grade 1). In this task children were given a set of blocks and were shown patterns which they were then asked to replicate within the time limit. The maximum score on the WPPSI was 42 and on the WASI was 71. The test-retest reliability reported in the manual was .74 for the WPPSI and r=.77 for the WASI.

2.2.2. Pre-literacy skills

The following four pre-literacy skills were assessed in both languages: phonological awareness, verbal short term memory, speed of lexical access and letter sound knowledge.

2.2.2.1 Phonological awareness

In English phonological awareness was tested using the Elision subtest of the Comprehensive Test of Phonological Processing (CTOPP-2; Wagner, Torgesen, Rashotte, & Pearson, 2013). In this task children were required to extract parts of words in an oral task, extracting either a sequence of sounds or one sound at a time (e.g. "Say doughnut. Now say doughnut without dough" or "Say winter. Now say winter without t"). The maximum score which could be obtained on this task was 34. The test-retest reliability reported in the manual was r=.93.

In Polish, a bespoke measure of Elision was created for the purpose of the study. More information about this measure is provided in a sub-section below including the result of a reliability test for this measure.

2.2.2.2 Verbal short term memory

In English verbal short term memory performance was measured using the Non-word Repetition subtest of the CTOPP-2. The child was played a recording of a non-word and asked to repeat it. The items increased in length and difficulty. The test was discontinued after three incorrect responses in a row. The maximum score for this task was 30 points. The reliability score reported in the CTOPP-2 manual was r=.87.

In Polish this ability was measured using a Non-word Repetition task from the Language Development Test (Test Rozwoju Językowego – TRJ: Smoczyńska et al., 2015). In this version, the researcher read out the non-word items and the child was asked to repeat each as best they could. The test required all items to be administered. There were 28 items in total, all similar in length. The manual reported Cronbach's alpha reliability scores ranging from .78 – .85 for the assessed age groups.

2.2.2.3 Speed of lexical access

Two tasks were used to measure this construct in English: the CTOPP-2 RAN objects subtest and the Phonological Assessment Battery (PhAB; Frederickson, Frith, & Reason, 1997) RAN Objects subtest for children in Year 2. The tasks required the child to name a series of objects from a sheet of paper as fast as possible. The children's accuracy and time were recorded. The manual reported a reliability score of .86 for the CTOPP subtest. No test-retest or Cronbach's alpha was available for the PhAB subtest.

A bespoke measure of speed of lexical access was developed in Polish. This is described in more detail below. In the Polish version, the child was also asked to name a series of objects as fast as possible and their accuracy and time were recorded.

2.2.2.4 Letter sound knowledge

In English, the Letter knowledge subtest of the York Assessment of Reading for Comprehension (YARC; Hulme et al., 2009) was used. The child was shown a series of cards with letters as well as digraphs and asked what sounds these made. The child was given a score out of 32. The YARC manual reports the Cronbach's alpha reliability score for this task is .98.

In Polish children were given the Letter knowledge task from Bateria Testów Czytania (Reading Tests Battery, IBE; Krasowicz-Kupis, Bogdanowicz, & Wiejak, 2015) where they were shown a page of letters and asked to name as many as they were able to. The children were given a score out of 31. The manual reports the reliability of this task was a Cronbach's alpha of .98.

2.2.3 Oral language measures

Expressive as well as receptive abilities were measured in both languages using standardised assessments.

2.2.3.1 Expressive vocabulary

In English this was assessed using the expressive vocabulary subtest of the Clinical Evaluation of Language Fundamentals Preschool (CELF Preschool; Wiig, Secord, & Semel, 2004) and the Clinical Evaluation of Language Fundamentals 4th Edition (CELF-4 Semel, Wiig, & Secord, 2003 in Year 2). Children were shown a series of pictures and asked to name these items. The discontinuation rule for both tests was to stop after seven consecutive scores of zero. On CELF-Preschool the maximum score was 40 and on CELF-4 the children scored out of 54 (maximum score of 2 on each item). The manual reports the test-retest reliability for the task is .88 in CELF-Preschool and .80 for CELF-4 Year 2 sample.

In Polish expressive vocabulary was measured using the Słownik Produkcja subtest of the Language Development Test (TRJ). Children were asked to name six verbs and 19 nouns. There was no discontinuation rule. Children were given a score out of 25. The manual reported reliability for this task ranged between a Cronbach's alpha of .78 to .81.

2.2.3.2 Expressive grammar

The Word structure subtest from CELF Preschool and CELF-4 was used in English. Children were shown two pictures side by side. The experimenter would describe one and ask the child to finish their sentence or describe the one next to it (e.g. "This man teaches. He is called a _"). There was a discontinuation rule on the CELF Preschool to stop after 8 consecutive incorrect responses and no discontinuation rule on CELF-4. The maximum score for this

subtest was 24 for CELF preschool and 32 for CELF-4. The manual reports the reliability for the task is .80 in CELF-Preschool and .79 for CELF-4 Year 2 sample.

In Polish, the Odmiana Wyrazów subtest of the Language Development Test (TRJ) was administered. This task was similar to the English version in that the child was shown a picture which would be described by the experimenter and then was asked to finish the sentence describing a second picture. There was no discontinuation rule. The maximum score which could be obtained by the child was 14. The manual reported reliability for this task ranged between a Cronbach's alpha of .74 to .71.

2.2.3.3 Receptive vocabulary

In English the Receptive One Word Picture Vocabulary Test (Martin & Brownell, 2010) was used. The child was asked to choose one of four pictures by pointing to the picture named by the researcher. After the practice trials the test started on the page indicated by the child's age. The test was stopped if the child incorrectly identified 6 out of 8 consecutive items. The manual reports the test-reliability for the task is .93 for children aged 2–4 and .81 for children aged 5–7.

In Polish Słownik Recepcja subtest of the Language Development Test (TRJ) was used. This test consisted of 28 sets of four items where the child was asked to point to the item named by the researcher. The items included both verbs and nouns. There was no discontinuation rule. The manual reported reliability for this task ranged between a Cronbach's alpha of .69 to .72.

2.2.3.4 Receptive grammar

In English the CELF Preschool/CELF-4 Sentence Structure subtest was used. The researcher read out a series of sentences and the child's task was to point to one of four pictures presented to them which best corresponded to the sentence spoken by the researcher. There

were 22 items on the CELF Preschool and 26 on CELF-4. There was no discontinuation rule for CELF-4, however, for CELF Preschool the discontinuation rule was after five consecutive 0 scores. The manual reports the reliability for the task is .77 for CELF Preschool and .49 for CELF-4.

A corresponding task in Polish was the Rozumienie Konstrukcji Składniowych subtest of the Language Development Test (TRJ). This task consisted of 32 items. There was no discontinuation rule. The manual reported reliability for this task ranged between a Cronbach's alpha of .80 to .91.

2.2.3.5 Sentence repetition

In English, the CELF Preschool/CELF-4 Recalling Sentences subtest was used. The child repeated a series of sentences after the researcher increasing in length and complexity. There were 13 sentences on the Preschool subtest and 32 on CELF-4. If the child did not correctly repeat three sentences on the CELF Preschool or five sentences on CELF-4, the task was discontinued. The manual reports the reliability for CELF Preschool is α=.88 and for CELF-4 α=.89.

In Polish the corresponding Powtarzanie Zdań subtest of the Language Development Test (TRJ) was used. The child was asked to repeat all 34 sentences after the experimenter. The manual reported reliability for this task ranged between a Cronbach's alpha of .94 to .91.

2.2.3.6. Listening comprehension

To measure listening comprehension in English, the age appropriate YARC Passages from Form B were read to the child by the experimenter. Following this, the child was asked the questions corresponding to each passage.

Rozumienie Tekstu ze Słuchu subtest of the Language Development Test (TRJ) was used in Polish. After each passage the child was asked five questions. There were five passages in total. The first passage was administered to all children. Then the experimenter moved on to the next passage if the child answering four out of the five questions correctly. The manual reported reliability for this task ranged between a Cronbach's alpha of .73 to .84.

2.2.4 Measures of reading ability and comprehension

2.2.4.1 Decoding real words

In English, two tasks were used: Test of Word Reading Efficiency (TOWRE) Sight Word Efficiency (Torgesen, Wagner, & Rashotte, 2012) and the York Assessment of Reading Comprehension (YARC) Single word reading subtest (Hulme et al., 2009). The YARC task was a non-timed measure where the child was asked to read a series of single words increasing in length and complexity. The manual reports the reliability for the task is Cronbach's alpha of .98. The TOWRE subtest, on the other hand was a timed measure in which the child was asked to read as many words as possible in 45 seconds. The task consisted of 108 words increasing in length and difficulty. The manual reports the reliability for the task is .94 for children aged 6 and .95 for children aged 7 for the alternate forms reliability coefficient.

In Polish a task from Bateria Testów Czytania IBE (Battery of Reading Tests) was used containing 28 words of which the child was asked to read as many as possible in 60 seconds. This is a standardized test of reading ability normed on pupils in Grade 0 (preparatory year before starting primary school) and Grade 1 to assess their pace and errors while reading. This test was therefore suitable for the Year 2 groups (monolingual and EAL) as these children were corresponding Grade 1 and therefore we did not expect many children in these two groups to reach ceiling on this and the timed non-word measure. In order to match the

Polish test to the corresponding English one, the sheet containing words which was presented to the child was rearranged into the same number of columns and the child was asked to read down each column instead of reading from left to right and then moving on to the next row. The number of words read in 45 seconds was also noted. The manual reports the reliability for the task is a Cronbach's alpha of .91.

2.2.4.2 Non-word reading

Both a timed and an untimed measure of non-word reading were included in this study. In English, the Graded Non Word Reading test (Snowling, Stothard, & McLean, 1996) was used as the untimed measure. In this task, the child was given a booklet with twenty words printed individually on each page. The child was asked to read all items. Duff, Mengoni, Bailey and Snowling (2015) report high internal reliability for the task, α=.96. Non-word reading was also measured using the timed TOWRE Phonemic Decoding Efficiency test. As in the other TOWRE subtest, the child was asked to read as many out of the 66 non-words as possible in 45 seconds. The manual reports the reliability for the task is .95 and .86 for children aged 6 and 7 respectively on the alternate forms reliability coefficient.

In Polish, two tasks were also used from the Bateria Testów Czytania test. The untimed measure was the Wyspa subtest. The original task has accompanying pictures which were removed so that the layout of the task corresponded to the English version with individual words printed on each page. The child was asked to read 12 non-words in total. The manual reports the reliability for the task is Cronbach's alpha of .83. Bateria Testów Czytania Sztuczne Wyrazy subtest was used as the timed measure. This task was also formatted to match the TOWRE in layout. The test consisted of 28 items of which the child had to read as many of as possible in 60 seconds. The child's score at 45 seconds was also recorded. The manual reports the reliability for the task is Cronbach's alpha of .92.

2.2.4.3 Reading comprehension

In English age appropriate passages from York Assessment of Reading for Comprehension Form A were used (Snowling et al., 2009). The child read passages and then was asked questions about each. These were both literal questions requiring finding information in the text and inference based ones (the answer was not explicitly stated in the text). The child's time and accuracy were reported along with the comprehension score. The manual reports the reliability for the task as ranging from a Cronbach's alpha of .48 to .77 on the individual passages.

In Polish, Dom Marka test of Reading Comprehension (Bogdanowicz, 2009) was used. This test only included one passage to be read by the child. After reading, the child was asked eight literal comprehension questions about the passage (answers to all questions could be given based on the literal information provided in the text – no inferences had to be made by the child). Reading time and accuracy were also recorded. No reliability information is available for this task.

2.2.5 Higher level comprehension skills

2.2.5.1 Comprehension monitoring

In English comprehension monitoring was measured using a story task (an adaptation of the original from Snowling & Frith, 1986). The child was asked to listen to two stories which contained words out of context. The child's task was to identify these words.

A corresponding Polish version of the task was created for the purpose of this study. This will be outlined below along with the reliability test for this measure.

2.2.5.2 Inference task

This study used the Gan Story inference making task (Barnes, Dennis, & Haefele-Kalvaitis, 1996). The task consists of a series of episodes of a story where after each episode the child is asked coherence and elaborative inference questions. Burgoyne, Whiteley and Hutchinson (2011) assessed the reliability of the items on a group of children learning EAL and their monolingual peers. The items in this task showed a good internal consistency (Cronbach's α=.77). Literal questions yielded an α=.50, coherence inferences an α=.60 and elaborative inferences α=.70.

A Polish version of the inference making task was created based on the Gan Story. This version of the task is outlined below together with a calculation of Cronbach's alpha reliability score.

Norms were available for the standardised assessments both in English and Polish. However, we were cautious in this study to use standard, scaled or stanine scores as these were normed on the monolingual population. Research has cautioned against the use of standard scores in children learning EAL as they may not be a true representation of the children's abilities possibly over-identifying this group of children as underperforming or below average compared to their monolingual peers. Instead we opted for z scores regressed for age (these were calculated on EAL and native speakers together in each language).

2.3 Bespoke measures created for the purpose of this research

2.3.1 Elision

This task was based on the CTOPP-2 Elision subtest. In this task, the child was asked to repeat a word after the researcher and then to drop a part of the word when saying it out loud again. For example, the child would be asked to say *samolot* and then to say *samolot* without *samo*. This would then result in the child saying *lot*. The Polish version was matched to the

English version for the number of items and whether the words (or later sounds) were removed from the beginning, middle or end of the words. The word list chosen for this task was checked for complexity by an independent researcher to ensure they were not too difficult for a child of that age to understand. After one practice (non-scored) item, the test consisted of 34 items. The first nine required removing a word or multiple letters, five of them from the beginning and four from the end of the given word. After the first nine items the child was told the rule has changed and now only one letter would be removed. Six of the items required removing a sound from the beginning of the word, 18 from the middle and one from the end. This task was not timed, but there was a discontinuation rule which was taken from the CTOPP subtest (three consecutive incorrect responses). The child was given feedback up to item 14, after this the feedback was stopped. The child received identical instructions in both languages as these were translated directly from the English version (see Appendix 9 for the Polish Elision answer sheet). The child was given one point for each correctly pronounced item giving a maximum score of 34.

A reliability analysis was conducted on the items of the elision subtest, yielding a Cronbach's alpha of .97 indicating very high internal consistency.

2.3.2 Rapid Automatized Naming (RAN Objects)

The bespoke RAN Objects task was modeled on the CTOPP-2 subtest (see Appendix 8 for the RAN practice and test cards). The images chosen were of objects that would be easily recognizable for the children between the ages of 4 and 7. The items were chosen to differ from those used in the CTOPP subtest. When choosing the items, the age-appropriate pronunciation difficulty level was also ensured. This was checked by a Speech and Language Pathologist. There were six test items. Each appeared six times. The items were presented in four rows of nine items in each. All but one item were one syllable words (with the exception of *szalik* - *scarf*). The words ranged from three to six letters (five phonemes as *sz* is a

digraph) in length. The child was first given a practice trial which consisted of one row of the six items which would appear in the test. This was presented here to ensure the child knew their names. Then they were given the test sheet and asked to name the objects as quickly as possible in each row from left to right. The child's time and number of errors were recorded. Errors included omissions, providing a more specific name for the object e.g. *kalosz* (*wellington*) instead of *but* (*shoe*), providing a real word sounding similarly to the name of the object e.g. *szlafrok (bathrobe)* instead of *szalik (scarf)* as well as, in the EAL group, providing the English name for the object.

To analyse the reliability of this task, a Cronbach's alpha was calculated with a score of .73 considered acceptable.

2.3.3 Inference generation assessment

This assessment was modelled on the Gan Story task (Barnes, Dennis, & Haefele-Kalvaitis, 1996). The structure mirrored that of the original task. Like in the original, the child is taught 12 facts about a made-up place, in this case called Mep (e.g. *On Mep centipedes wear wellingtons*; *On Mep children eat gummy bears for breakfast*; *The sand on the beach on Mep is green*). The child then completes a picture task and is asked questions about Mep to test his memory for the facts. Then, the child is read six episodes of a story unfolding on Mep. After each episode the child was asked one literal question, one coherence inference and one elaborative inference question. Finally, the child's memory for the facts is tested again along with a series of post-hoc inference questions (see Appendix 11 for the picture test, episodes and answer sheets). Children obtained five sets of scores on this task: a score on the picture task (this included how many times each picture card had to be shown for the child to indicate the correct answer corresponding to one of the facts); a total score for the child's pre-test memory of the facts (this score also included the amount of trials it took for the child to recall the fact correctly); total episode score (a score out of 24, literal questions were given a

maximum of two points while the inference questions were given one point each); a post-test memory for the facts (scored out of 12, each question was only asked once); and an inference score (also out of 12 where inference questions were asked about each of the facts, with an equal amount of coherence and elaborative inference questions). Analyses were run on the post-test memory of facts, total episode score and inference score. The story episodes were matched for complexity and length with the original. They were checked by a linguist and were determined to be at a complexity level sufficient for a child in Year 2 (UK)/Grade 1 (Poland) to understand. The story followed a similar pattern to the original with a couple of children and their animal friend who have an adventure one day in the made up land. The researcher ensured the story was sufficiently different that a child learning EAL, who would be exposed to both might not confuse the two. The picture task was created using Clip Art images and Paint. As in the original version, one of the pictures was the correct answer, one was the true state of things on Earth, one was the Mep property assigned to another object and finally one was the object with a different property. The picture task was checked by two independent researchers to ensure clarity. To ensure that the post-hoc inference questions were tapping into coherence or elaborative inferences, the researcher worked with two other investigators who aided in amending the questions. Next, the 12 inference questions were given to a group of five adults (fellow researchers at the Psychology Department who were not familiar with the task). They were also given the definitions of coherence and elaborative inferences and asked to decide which type of inference was probed in each question. Five out of the 12 items received a score of 3/5 or lower. The researcher clarified these to ensure they more clearly fit their inference category. These questions were given again to the same group who were asked to rate them again. This time all items obtained a score of 4/5 and 5/5. Before administering the Mep task as part of the study, a pilot test was run with two EAL Polish-English adult speakers and no significant differences were found between the

corresponding English and Polish subtests of the two tasks for either participant indicating a similar level of difficulty.

The last step was to assess the reliability of this adaptation of the inference task. An item-by-item analysis was conducted for each of the subtests of this task, and the two learning tasks showed high internal reliability at .80 for the picture learning task and .82 for the verbal fact learning. The episode scores showed an internal reliability of .55. The two tasks performed after reading the episodes – the post recall and inference task scored .68 and .52 respectively. At this point, the English GAN task was also analysed for internal reliability on this sample of children. These yielded very low reliability scores. The two learning tasks scored .31 for both pictures and facts while the episodes yielded a score of .46. The two post-episode tasks yielded a score of .43 for fact recall and a very low score of .08 for the inference task. These very low reliability scores meant analyses from this task will not be reported in this thesis.

2.3.4 Comprehension monitoring

For this task, the original tool was composed of three short stories about animals. In the stories some of the words did not fit in with the rest of the narrative. These could be either nouns, verbs or adjectives (three of each in either text). The child's task was to identify these words. Due to the age of the children tested, in order to avoid confounds related to the children's reading performance, the texts were read out loud to the child. Monitoring of comprehension was indicated by the child clapping their hands when they heard something that did not fit with the rest of the story. In this study, two of the original texts were used (Snowling & Frith, 1986) in English and one text was translated to Polish by the researcher. To have an equal amount of stories in each language one more story was created. This story was written by the researcher and reflected the language used in the previous stories as well as the degree of complexity of events and was of a similar length to the other stories (see Appendix 10 for the Polish sub-tests and an English translation of the bespoke story).

Reliability analyses were performed for both texts separately, yielding a Cronbach's alpha of .71 for the translated subtest and .63 for the bespoke story. Taken together, the Polish version of the Comprehension Monitoring task scored an alpha of .81. For a comparison, the Cronbach's alpha was also calculated for the English version where the two stories scored .63 and .70 with an overall score of .78 for both stories. The reliability analyses were conducted on the entire sample who completed this task (both EAL and native speakers).

2.4 Procedure

In England data was collected in schools in the North Yorkshire area (Hull, Bradford and Manchester) and in London. In Poland children were sampled from four preschools in Katowice and one primary school in Chorzów (Silesia voivodeship, South Poland). Each child was assessed individually in their school during school hours. The children learning EAL were assessed in both languages, always starting with English. The number and length of sessions was adjusted for each child taking age and concentration levels on the day into account, ranging from two to six sessions (doubled for children learning EAL). The children learning EAL were never tested in two languages on the same day. Each session lasted between 30 and 45 minutes. Each child was taken out of the classroom and tested in a separate room (a spare classroom or the staff room). The order of administering the tasks was the same for all children, beginning with oral language tasks, moving on to phonology, then decoding and reading comprehension (for Year 1 and Year 2 children) and finishing with higher level comprehension tasks (only Year 2 children). Children were audio recorded on the expressive tasks for scoring purposes. All responses were recorded by the researcher in an answer sheet pack.

Not all children were assessed with the full battery of language and literacy assessments which have been outlined in the Materials section. Table 2.6 below presents which constructs were assessed in Reception, Year 1 and Year 2.

Table 2.2
Constructs on which each year group was assessed

Year group	Constructs assessed
Reception	Pre-literacy skills Oral language Non-verbal reasoning
Year 1	Pre-literacy skills Oral language Decoding Reading comprehension Non-verbal reasoning
Year 2	Pre-literacy skills Oral language Decoding Reading comprehension Higher level comprehension skills Non-verbal reasoning

2.5 Ethics

The children's data remained confidential and their answer sheets were kept under lock and key. Opt-in consent forms were sent out to the parents of the Polish native speakers in this sample. Initially opt in consent forms were also sent out to the parents of Polish children learning EAL and native speaking English children in the same classrooms (see Appendices 1 and 2 for the Polish and English versions of the information letters and Appendices 3 and 4 for the Polish and English consent forms). However, due to a low response rate (particularly from the parents of English native speakers), the researcher decided to change to opt out consent. Using opt out forms, parents were sent two letters, the second one a week before testing began asking them to return the signed letter to the class teacher if they did not wish

for their child to take part (see Appendices 5 and 6 for the English and Polish opt out consent forms). The parents were reassured that their child's participation was voluntary and that they could withdraw at any time. The researcher conducting the study has obtained a DBS check clearing them to work with children. The study was also approved by the Ethical Committee at the Department of Psychology at the University of York.

2.6 Parent questionnaires

In addition to assessments conducted with the children, the researcher sent out questionnaire packs to the parents of the assessed children. These were sent out to the parents of children learning EAL and English native speaking participants in the UK. Out of the 101 EAL participants, only 49 questionnaires were returned, in varied stages of completion. Out of 100 native English speaking participants, 14 questionnaires were returned. The questionnaire packs included the following: the Strengths and Difficulties Questionnaire (SDQ) and its Polish translation (behavioural screening), a Polish and English version of a literacy checklist with real and made up names of authors of popular children's books and real and made up book titles (see Appendices 14 and 15). The Polish version was based on a checklist of popular book titles created as part of the *Cała Polska Czyta Dzieciom* action (Eng. Poland Reads to Children). The Polish version of this checklist was created by the researcher for the purpose of this study and the English version which it was based on was obtained from the PhD thesis of Dr Lorna Hamilton (Hamilton, 2013, see Appendices 16 and 17).

The researcher also created a short, two-page parental questionnaire in both English and Polish for the purpose of this study. This was based on the family history and home literacy questionnaire used by Dr Dea Nielsen in her PhD thesis (Nielsen, 2016). The first part of the questionnaire asked for demographic information such as education level of the mother and father and their ability to read and write in English, family background, age at which the child spoke their first word, whether the parents were concerned with the child's language and

whether or not the child attended nursery. The EAL version also asked questions about language use to estimate what languages the child used, with which family members and other people in the child's environment as well as how much the child spoke with these family members in that language. The last part of this questionnaire was concerning literacy practices at home – the parents were asked about library visits, reading with their child and number of books at home as well as pretend play and sounding out words (see Appendices 12 and 13 for both the EAL version and the native speaking version of the parent questionnaire).

2.7 Statistical Analyses

2.7.1. Analysis plan

The following statistical analyses were undertaken in this thesis: reliability testing, independent samples t-tests, correlations and regressions. In Chapter 2, the bespoke measures were assessed for their reliability in the collected sample of children. In Chapter 3, the performance of children learning EAL was benchmarked against that of their native speaking peers using independent samples t-test. Independent samples t-test were also conducted in Chapter 7 comparing low language performance groups within the EAL sample. Since independent samples t-test were performed on a large number of DVs in the same population, in order to counteract the problem of multiple comparisons a Bonferroni correction was applied to the p-values. In Chapter 3, there were 40 comparisons between the children learning EAL and English native speakers, and 36 comparisons in Polish. Therefore, for each language, the Bonferroni correction gave a new significant *p* value of less than or equal to .001.

Correlations were used in Chapter 2 when creating composites (see sub-section below for further details) as well as in Chapter 6 in within-construct analyses. Correlations performed in

Chapters 4 and 5 before conducting regressions were a form of data exploration to confirm that the variables of interest (such as pre-literacy skills in predicting decoding and decoding and oral language when predicting reading comprehension) which have also been indicated by previous research did in fact show a relationship with the two dependent variables of interest in the present sample. Furthermore, they served as an initial check for the issue of collinearity in the regression analyses.

Regressions were performed in Chapters 4 and 5 to investigate the relationships between pre-literacy skills, decoding, oral language and reading comprehension in the three language groups as well as in Chapter 6 to test these relationships cross-linguistically. Scatterplots were plotted to check for the linearity assumption in the regressions. Normality was checked by plotting distribution curves (see Appendix 7) and multicollinearity was checked by visually inspecting correlations and through VIF and tolerance statistics.

2.7.2 Reliability assessment

As mentioned in the sub-section on bespoke measures, each of the tasks designed for the purpose of this study underwent a reliability check. For each task, a Cronbach's alpha was calculated on the item-by-item responses of the entire sample. Elision, RAN and comprehension monitoring yielded alphas between .63 and .97 ranging from acceptable to excellent. The Polish inference task yielded poor to good reliabilities between .52 and .82. Only these tasks, which ranked above the threshold of .5 were used in the statistical analyses in further chapters leading to the exclusion of the English inference subtest as the reliability scores obtained were below .5.

2.7.3 Oral language composite

In addition to the above described measures, an oral language composite was assembled in each language for further analyses (e.g. predictors of reading comprehension). The rationale behind creating a composite of the language performance measures was in part their previous identification as better indicators of language problems compared to single measures (e.g. Dockrell & Marshall, 2015) as well as for the purpose of data reduction when including in regressions. Being able to include one item instead of five reduces the size of the sample required for these analyses.

In order to identify which oral language measures were suitable to be included in the composite, correlations were run between these measures in both languages. These were run separately for the EAL and native speaking children's scores for the three year groups for both languages. Tables 2.2 to 2.5 display the correlations and significance levels (*p* values) between oral language tasks for English and Polish subtests.

Table 2.3
Correlations between oral language measures in children learning EAL in English

	1.	2.	3.	4.	5.
1. Receptive vocabulary	-				
2. Expressive vocabulary	.51**	-			
3. Sentence Repetition	.71**	.56**	-		
4. Receptive grammar	.74**	.41**	.73**	-	
5. Expressive grammar	.69**	.67**	.86**	.76**	-

** correlations significant at p<.001.

Table 2.4
Correlations between oral language measures in native English speakers

	1.	2.	3.	4.	5.
1. Receptive vocabulary	-				
2. Expressive vocabulary	.51**	-			
3. Sentence Repetition	.70**	.53**	-		
4. Receptive grammar	.72**	.37**	.74**	-	
5. Expressive grammar	.56**	.49**	.66**	.63**	-

Table 2.5
Correlations between oral language measures in children learning EAL in Polish

	1.	2.	3.	4.	5.
1. Receptive vocabulary	-				
2. Expressive vocabulary	.72**	-			
3. Sentence Repetition	.61**	.62**	-		
4. Receptive grammar	.71**	.57**	.68**	-	
5. Expressive grammar	.61**	.61**	.62**	.59**	-

** correlations significant at p<.001.

Table 2.6
Correlations between oral language measures in Polish native speakers

	1.	2.	3.	4.	5.
1. Receptive vocabulary	-				
2. Expressive vocabulary	.81**	-			
3. Sentence Repetition	.57**	.60**	-		
4. Receptive grammar	.76**	.66**	.63**	-	
5. Expressive grammar	.55**	.64**	.61**	.53**	-

** correlations significant at p<.001.

Since in each of the three language groups the correlations were highly statistically significant and between medium and high in magnitude, it was possible to assemble the oral language composite in both English and Polish. In each language the oral language composites were created by the addition of z scores for receptive and expressive vocabulary and grammar as well as sentence repetition subtests.

Chapter 3 – Benchmarking the abilities of children learning EAL, monolingual English and monolingual Polish children aged 4–7 years

3.1 Introduction

Recent Government statistics show that as many as 20.6% of children in UK primary schools are learning English as an additional language (EAL; DfE, 2017). Within that group, an increasing number of children are identified as being of Polish origin (Haman et al., 2014). A fundamental research question with regards to this group of children is how language and literacy skills develop in children who are learning English as an additional language in comparison to their monolingual peers. There is evidence that children learning EAL can still lag behind monolingual peers on oral language measures, even after six years of formal schooling (Farnia & Geva, 2011) as well as facing gaps in cultural and background knowledge in their L2 which may also affect their understanding (Brisk & Harrington, 2000). It seems unlikely that the acquisition of two (or more) languages resembles that presented by a monolingual child and furthermore, it is unlikely that the experiences would be the same in both languages (Bialystok, 2001). English proficiency upon entry to primary school has been shown to predict academic language and literacy skills at the end of primary school suggesting that children learning EAL who begin school without sufficient English proficiency are at a higher risk of difficulties with academic language and literacy compared to their typically developing monolingual peers (Dennaoui et al., 2016).

In this research project the Simple View of Reading (SVR, Gough & Tunmer, 1986) model was used as the theoretical framework for the development of reading. The SVR has been

identified as a good model for predicting performance in reading comprehension across the early stages of school in L1 learners (e.g. Kirby & Savage, 2008) and is also applicable to second language learners (e.g., Gottardo & Mueller, 2009; Yaghoub Zadeh, Farnia, & Geva, 2012). According to this model, reading comprehension is the product of decoding and linguistic comprehension (Gough & Tunmer, 1986). Following the components of the SVR model, this first study will benchmark the reading comprehension of children learning EAL in comparison to monolingual English and Polish speaking children of the same age along with their decoding (word level reading) skills, linguistic comprehension (oral language abilities) and pre-literacy measures (in view of their relationship with word level reading). Each of the constructs will briefly be outlined below from the standpoint of second language learners.

3.1.1 Pre-literacy skills

Phonological awareness follows a typical pattern of development such that, children become sensitive to progressively smaller parts of words as they get older (Anthony & Francis, 2005). This pattern is seen across languages (Goswami, Ziegler, & Richardson, 2005; Durgunoglu, Nagy, & Hancin-Bhatt, 1993; Ho & Bryant, 1997). Importantly, the rate of progress through the levels of acquiring phonological awareness varies for different languages (Anthony & Francis, 2005). What is more, it has been suggested that children learning more than one language may present an advantage in their phonological abilities compared to their monolingual peers. For example, according to Verhoeven (2007) it can be expected that bilingual children, due to exposure to two sets of linguistic input, would attain relatively high levels of phonological awareness as a consequence of frequent exposure to the phonotactic aspects of multiple languages. Since phonological awareness has been associated with acquisition of literacy in childhood (e.g. Bradley & Bryant, 1983; National Reading Panel,

2000), it can be surmised that bilingual children who show an advantage in their understanding of phonemic structures, may also show an advantage in learning to read (Bialystok, 2012). A bilingual advantage should have an impact on reading development such that those children who are able to attend to sound units should show better performance in mapping written symbols onto sounds and therefore find it easier to decode words (Bryant & Goswami, 1987; Wagner, Torgesen, & Rashotte, 1994). In line with this, Campbell and Sais (1995) found their sample of bilingual preschoolers performed significantly better than monolingual children on a task of spoken morpheme deletion (e.g. "rainbow" – "bow"). In this study's bilingual group, the children's Italian skills were reported as worse (less strong) than their English skills possibly identifying them more as second language learners (sequential bilinguals), and it was furthermore disclosed that some of the monolingual group's parents did not speak English natively. According to this study, early (pre-literate) exposure to a second language may have a positive effect on metalinguistic skills benefiting later reading mastery. In a different study, Rubin and Turner (1989) compared native speaking English first-graders with their peers in a French-immersion program. The children in the immersion program, although considered by the researchers as "minimally bilingual" showed a better performance on a phonological awareness task which in this study involved analyzing the internal syllabic and phonemic structure of orally presented words.

Yelland, Pollard and Mercuri (1993) also compared monolingual English speakers with children exposed to a second language, in their case Italian. In this study, children in kindergarten and Grade 1 were asked to make judgments of the sound structure of words by determining whether the names of objects presented to them were polysyllabic or monosyllabic. The results showed an initial advantage for the children exposed to English and Italian, however, this disappeared by the end of Grade 1. At Grade 1 the second language

learners maintained an advantage in word recognition. Yelland et al. (1993) suggest that, rather than providing evidence for a bilingual advantage in phonological awareness, the initial advantage may be specifically due to learning Italian as the syllabic and phonological structure is more systematic compared to English. Bruck and Genesee (1995), like Rubin and Turner (1989), also compared monolingual English-speaking children with English-speakers attending French schools (making French their second language with the only exposure to it being at school). This longitudinal study found the children in French schools showed better performance on onset-rime segmentation in kindergarten compared to their monolingual English peers. However, similarly to Yelland et al. (1993) findings, this advantage disappeared in Grade 1. In first grade, while the French school children showed an advantage on a syllable counting task, the monolingual children performed better on the phoneme counting task. Bruck and Genesee (1995) suggest that the finding of superior performance in syllable awareness can be attributed to the structure of French phonology, where, in comparison to English, the syllable is more salient.

On the other hand, in a series of three experiments, Bialystok, Majumder and Martin (2003) found no consistency in the effect of bilingualism on phonological awareness tasks which may suggest that this effect of bilingualism on phonological awareness is selective (Bruck & Genesee, 1995), perhaps depending on particular language pairs or specific tasks used (Bialystok et al., 2003). In their research the bilingual children were recruited from French-speaking communities in English-speaking cities and attending French-medium schools where English is introduced in later grades. These children were described as fluent in French and English by the researchers. In the third study, two bilingual groups were sampled: Spanish-English and Chinese-English participants who were exposed to either Spanish or Chinese at home and whose parents indicated English was not a language of communication

at home (although it was present through media). Both cases of bilingual children can therefore be considered as fitting more the sequential bilingual description, acquiring English at school and through media.

3.1.2 Oral language

Theories of language acquisition are largely modelled on monolingual children. Some researchers argue, however, that in order to be comprehensive, some level of insight to how bilinguals learn their first language should also be considered (Genesee, 2006). The main question is whether the path and timeline of language development of bilinguals in their L1 mirrors or differs from monolingual children (Genesee & Nicoladis, 2006), and in particular, whether the ability to learn language is compromised by having to master multiple languages at the same time. Bilingual children seem to be producing their first words at about the same age as monolingual children (Genesee, 2003; Patterson & Pearson, 2004). On the other hand, it has been suggested that the amount of time spent exposed to each language can affect the vocabulary size in each of the languages of a bilingual child (Pearson, Fernández, Lewedag, & Oller, 1997). This area of research, however, tends to focus on simultaneous bilinguals (children acquiring both languages at the same time). Therefore, it is uncertain what path of language development is characteristic of sequential bilinguals (who are exposed to the second language having gained some level of proficiency in their L1). The distinction between the two types of bilingualism is particularly relevant for the present study as the sample investigated largely consists of children who can be classified as children learning EAL and who were first exposed to one language and then, at varying time points were exposed to the second language. Furthermore, the sample differs in the levels of exposure to both languages. Overall, this description resembles more that of a sequential rather than a simultaneous bilingual.

With regards to oral language abilities of second language learners, previous research has consistently shown them to lag behind their native speaking peers. Studies comparing oral language of EAL pupils with their monolingual native speaking peers tend to assess vocabulary using it as a proxy for oral language abilities more broadly. This has been shown across different year groups throughout primary school. For example, in a study by Bowyer-Crane, Fricke, Schaefer, Lervåg and Hulme (2016), EAL pupils at school entry were compared to native speakers with language weaknesses, with the second language learners showing significantly lower performance on expressive language measures (both vocabulary and grammar) persisting across time. The level of language weaknesses in the group of children learning EAL is particularly telling as their performance in this study was not only worse than that of their monolingual peers but these peers were also classified as having poor language performance compared to monolingual norms. Two studies by Burgoyne and colleagues (Burgoyne, Kelly, Whiteley, & Spooner, 2009; Burgoyne, Whiteley, & Hutchinson, 2013) using standardised assessments of expressive and receptive vocabulary on children in Year 3 found children learning EAL underperformed significantly on both measures with bigger effect sizes for expressive vocabulary. In a sample of older children (Year 5), Babayiğit (2014) showed that children learning EAL performed significantly worse on receptive vocabulary, in this case compared to native speakers matched for levels of exposure to English in formal education (through excluding children who have recently arrived in the country), further highlighting the gap between EAL pupils and monolinguals on oral language. What is more, this persistent problem in vocabulary knowledge has also been shown in longitudinal studies, for example by Hutchinson et al. (2003) between Years 2–4 or Burgoyne, Whiteley and Hutchinson (2011) who assessed children in Year 3 and 4. This effect has furthermore been observed in other language pairs – e.g. by Droop and Verhoeven

(2003) from 3rd to 4th grade (assessing Dutch-Turkish and Dutch-Moroccan speakers). These studies consistently showed that while both groups improved in their performance between time points, children learning EAL consistently lagged behind their monolingual peers.

3.1.3 Word reading and reading comprehension

Developing good reading skills is crucial for children's academic success (Lonigan, Burgess, & Anthony, 2000) and children whose abilities lag behind their peers may have fewer opportunities to develop reading comprehension strategies (Brown, Palincsar, & Purcell, 1986). In research on the acquisition of reading skills by children learning EAL, the general findings seem to show a pattern of strong word-level reading but poorer reading comprehension compared to native speakers (e.g. Babayiğit, 2014, 2015; Hutchinson, et al., 2003; Lesaux et al., 2010), although some studies have yielded contrasting evidence (e.g. Lesaux, Rupp, & Siegel, 2007; Lesaux & Siegel, 2003). There is evidence to suggest that children learning EAL perform better than their monolingual peers on decoding tasks. For example, Bowyer-Crane et al. (2016) found that compared to native speakers with a language weakness, children learning EAL performed significantly better on an early word reading task. Similar results were obtained by Hutchinson et al. (2003) and Burgoyne et al. (2011) where the children learning EAL outperformed native speakers on both word reading and non-word reading. On the other hand, Chiappe, Siegel and Wade-Woolley (2002) suggest that children learning EAL acquire literacy in a similar manner to their monolingual peers, a finding supported by Lervåg and Aukrust (2010) who suggest that no differences are usually found on decoding tasks between monolinguals and second language learners.

Differences between the two groups are, however, evident on reading comprehension tasks where EAL readers tend to show some difficulties (e.g. Babayiğit, 2014; Burgoyne et al.,

2009). For example, a study by Melby-Lervåg and Lervåg (2014) found a medium-sized deficit in reading comprehension abilities of their EAL participants. Furthermore, Hutchinson, et al. (2003) showed a longitudinal effect finding lower levels of reading comprehension across three time points between Year 2 and Year 4 also suggesting that learning to read is the key to a better access to the school curriculum.

Taken together these findings provide a profile of second language learners' abilities within the constructs of pre-literacy, oral language, decoding and reading comprehension in their second language. The present study provides an opportunity to test this pattern of performance on a sample of Polish-English second language learners as well as allowing for a comparison between the EAL sample and native speaking monolinguals both in their first and second language.

3.2 Aims and hypotheses

This study aims to benchmark the abilities of Polish children learning EAL in the early stages of school against the abilities of their native speaking monolingual English and Polish peers in the context of pre-literacy, oral language, decoding and reading comprehension as well as higher level comprehension skills. The Methodology chapter includes a list of assessments administered to each year group. Additionally, in each year group the focus is on a different construct reflecting the stages of development of the children's language and literacy. In accordance with this, in Reception, the main focus is on phonological processing and pre-literacy abilities. In Year 1, the focus shifts to decoding and in Year 2 to comprehension tasks.

Considering previous research, the following hypotheses were put forward:

1. Children learning EAL will underperform on English oral language tasks compared to their monolingual English peers (in line with a number of previous studies in the field showing this underperformance in L2, e.g. Bowyer-Crane et al., 2016, Burgoyne et al., 2009 and Burgoyne et al., 2013) and perform similarly on Polish tasks to their monolingual peers (due to an expectation that the children use Polish as their L1 at home as well as with siblings and relatives, and are therefore more familiar with it compared to English).
2. The pre-literacy abilities of children learning EAL will be similar to their English peers as both children learning EAL and native speakers are exposed to the same extent of phonics curriculum at school. In the early years (Reception and Year 1) these skills will be superior to their Polish peers, as the children learning EAL are practicing phonics in the English school system and the Polish native speakers have little or no exposure to them, but will be comparable in Year 2 (due to the introduction of phonics in the Polish schools at that stage).
3. There will be no differences between EAL and monolingual pupils on decoding in both languages (based on previous research showing children learning EAL perform similarly to their native speaking peers on word-level reading but underperform on reading comprehension, e.g. Babayigit, 2014, 2015; Hutchinson, et al., 2003; Lesaux et al., 2010).
4. Children learning EAL will underperform on reading comprehension compared to both groups.

3.3 Method

3.3.1 Sample

Three hundred and nineteen children took part in this study. Children were divided into three age groups (Reception, Year 1 and Year 2) and three language groups (children learning EAL, native speaking Polish and native speaking English). Children were assessed with a battery of standardised tests and bespoke tools created by the researcher for the purpose of the study investigating their performance on the following constructs: pre-literacy skills, oral language, word level reading and reading comprehension. Corresponding tasks used to measure each construct were available in both Polish and English. The measures used for each construct and the procedure for participant testing are outlined in the Methodology chapter.

3.4 Results

3.4.1 Part 1: Standard Scores

Standard, stanine and scaled scores were calculated for children in the three groups. These were not available for all subtests (e.g. the bespoke tasks) and therefore the figures presented below only include these constructs for which standardized data was available. The figures below show comparisons of mean standard scores for children learning EAL and native speakers for the available subtests divided into three constructs (oral language, pre-literacy and reading). Scaled and stanine scores were re-calculated to standard scores for the sake of these comparisons. Standard, scaled and stanine scores were available for the following tests: WASI and WPPSI, CTOPP Preschool and CTOPP-2, PhAB, CELF Preschool and CELF-4, GNRT, YARC, Test Rozwoju Językowego, Bateria Testów Czytania.

While the Polish native speakers are, for the most part, performing within the normal range on the oral language assessments (see Figure 3.2 below), the English native speakers seem to show a performance often below the standard score, particularly on expressive measures (as seen on Figure 3.1 below). The children learning EAL perform lower than their native speaking peers in both languages, particularly in English and this difference especially stands out on the expressive measures.

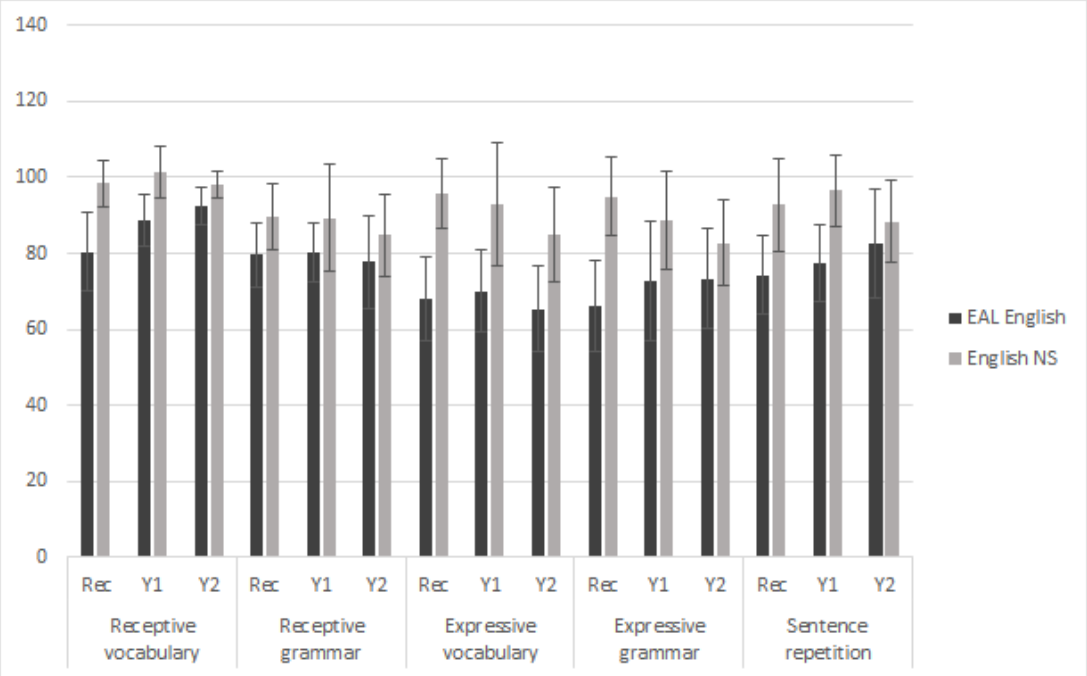


Figure 3.1 Mean standard scores on oral language measures in English (error bars indicate standard deviations)

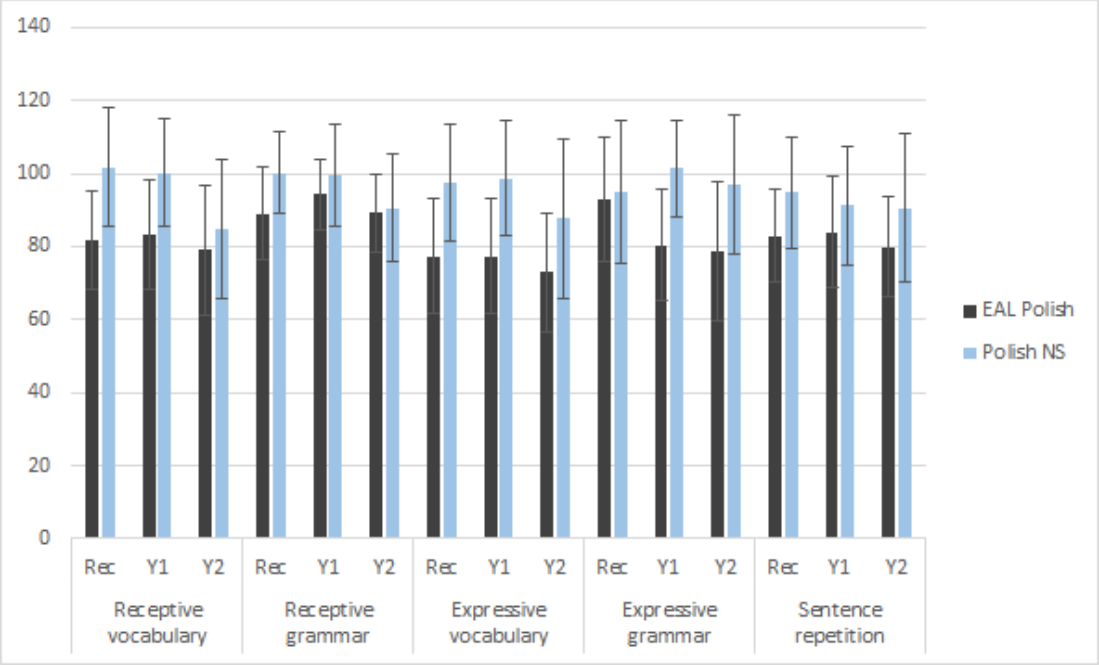


Figure 3.2 Mean standard scores on Polish oral language measures (error bars indicate standard deviations)

In English, the EAL children and native speakers show similar performance which is within normal range on the pre-literacy assessments, with the exception of non-word repetition where the scores of both groups are lower (see Figure 3.3). In Polish, standard scores were only available for letter knowledge and non-word repetition. While both groups show typical performance on non-word repetition, both groups underperform on Polish letter knowledge (see Figure 3.4).

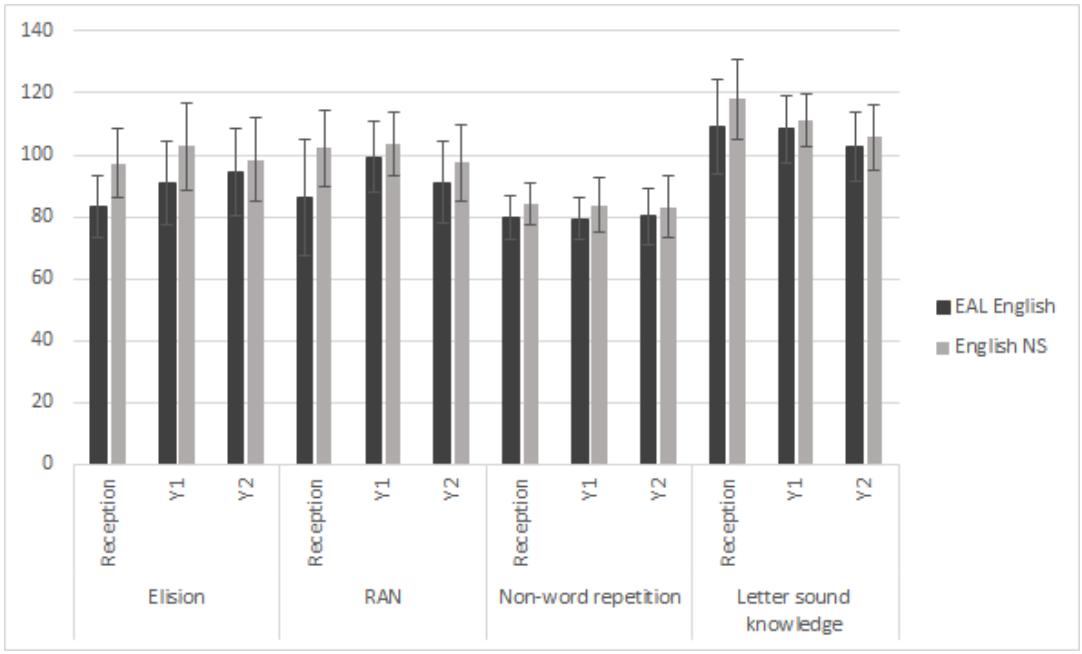


Figure 3.3 Mean standard scores obtained by children learning EAL and native speakers on pre-literacy tasks in English

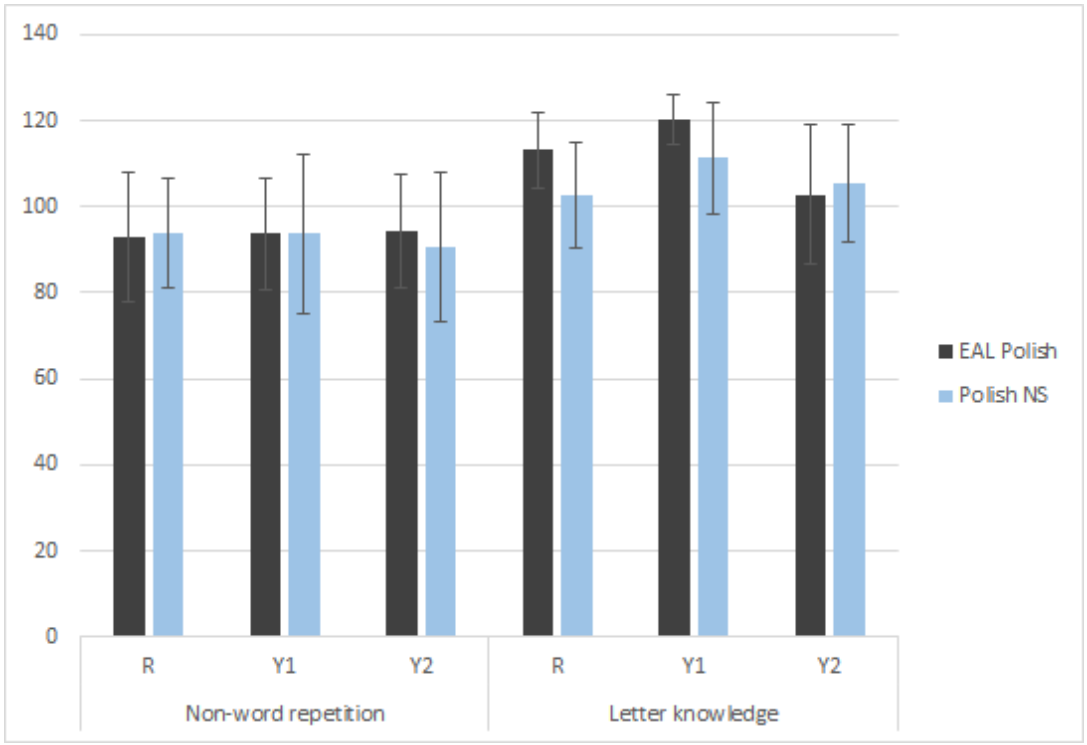


Figure 3.4 Mean standard scores obtained by children learning EAL and native speakers on Polish pre-literacy tasks (standard scores were only available for non-word repetition and letter knowledge)

Looking at the standard scores for decoding and reading comprehension in Figure 3.5, in English both groups show average or above average performance across measures. In Polish, standardised scores were available for the decoding measures. The performance of both children learning EAL and native speakers on those tasks was below average (see Figure 3.6). In the native speaking group, this may be attributed to the low SES area of the school these children were sampled from while in the EAL group it may be due to their lack of exposure to Polish print at home.

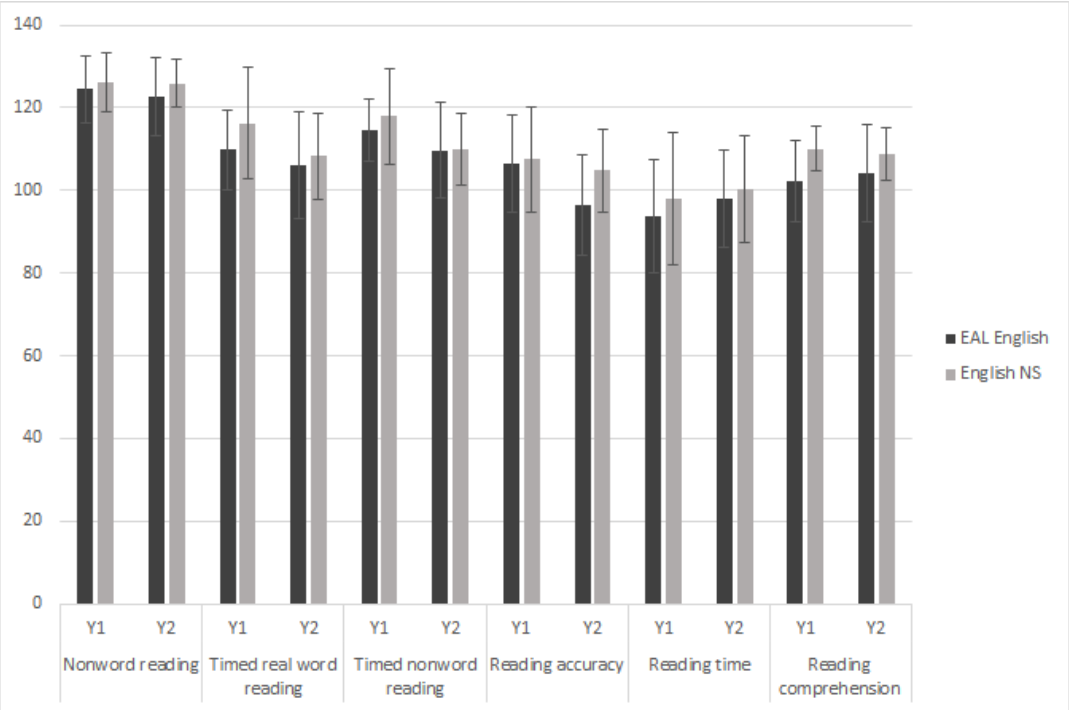


Figure 3.5 Mean standard scores on decoding and reading comprehension tasks in English

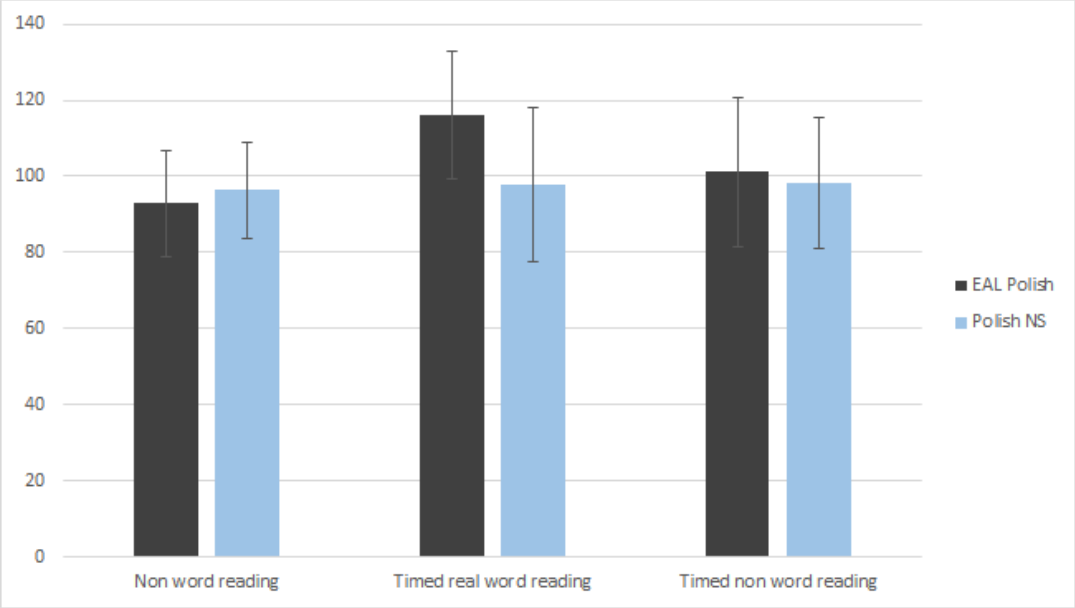


Figure 3.6 Mean standard scores on Polish decoding tasks for the native speakers and children learning EAL

As previously mentioned in the Methodology chapter research has cautioned against the use of standard scores in children learning EAL as these may not be a true representation of their abilities. Therefore, the analyses in this chapter were conducted on z-scores regressed for age comparing children learning EAL to their monolingual peers in both languages. The z scores were calculated on the entire sample including both EAL and monolingual speakers. Each age group was considered separately.

3.4.2 Part 2: Non-verbal IQ

Fist, the three groups were compared on their performance on the Wechsler Block Design task to check for between-group differences in nonverbal reasoning ability. The results of a one-way ANOVA showed a significant difference between the groups, $F(2,316)=12.98$, $p<.001$. This difference was only not significant between children learning EAL and English native speakers, $t(199)=.63$, $p>.05$ and was driven by the very high performance of the Polish native speaking group.

3.4.3 Part 3: Benchmarking oral language

3.4.3.1 Analyses comparing children learning EAL to their English speaking peers

In English, t-test analyses revealed significant differences between the two groups on both expressive and receptive oral language measures in all three age groups with children learning EAL performing significantly worse compared to their native speaking peers (see Table 3.1 below). After a Bonferroni correction, however, the only statistically non-significant finding is the Year 2 listening comprehension comparison.

Table 3.1

Results of descriptive analyses and t-test outcomes on English oral language tasks

Measures of oral language		Mean (SD)	*t* test	*p*
Receptive vocabulary				
	Reception			
	EAL	-1.02 (1.05)	-8.45	<.001
	English monolingual	.78 (.60)		
	Year 1			
	EAL	-.43 (.82)	-6.44	<.001
	English monolingual	.80 (.77)		
	Year 2			
	EAL	-.38 (.58)	-5.32	<.001
	English monolingual	.30 (.44)		
Receptive grammar				
	Reception			
	EAL	-.38 (.95)	-4.30	<.001
	English monolingual	.57 (.84)		
	Year 1			
	EAL	-.66 (.94)	-3.71	<.001
	English monolingual	.21 (1.01)		
	Year 2			
	EAL	-.18 (.97)	-3.42	.001
	English monolingual	.50 (.62)		

Measures of oral language		Mean (SD)	*t* test	*p*
Listening comprehension				
	Reception			
	EAL	-.66 (.68)	-5.26	<.001
	English monolingual	.47 (1.04)		
	Year 1			
	EAL	.12 (1.23)	-1.79	<.001
	English monolingual	.56 (.78)		
	Year 2			
	EAL	-.45 (.87)	-2.08	.042
	English monolingual	-.05 (.68)		
Expressive vocabulary				
	Reception			
	EAL	-.71 (.58)	-10.82	<.001
	English monolingual	.76 (.52)		
	Year 1			
	EAL	-.53 (.63)	-9.01	<.001
	English monolingual	.92 (.71)		
	Year 2			
	EAL	-.92 (.85)	-6.98	<.001
	English monolingual	.48 (.77)		
Expressive grammar				
	Reception			
	EAL	-.71 (.74)	-9.71	<.001
	English monolingual	.87 (.56)		
	Year 1			
	EAL	-.58 (1.13)	-4.21	<.001
	English monolingual	.37 (.70)		
	Year 2			
	EAL	-.32 (.99)	-3.75	<.001
	English monolingual	.44 (.62)		
Sentence repetition				
	Reception			
	EAL	-.46 (.52)	-7.08	<.001
	English monolingual	.60 (.69)		
	Year 1			
	EAL	-.71 (.77)	-5.83	<.001
	English monolingual	.29 (.64)		
	Year 2			
	EAL	-.71 (.85)	-7.58	<.001
	English monolingual	1.00 (.96)		

3.4.3.2 Analyses comparing children learning EAL to their Polish speaking peers

With regards to Polish comparisons, the children learning EAL significantly underperformed on receptive vocabulary in Reception and Year 1 but not in Year 2. On receptive grammar, the significant difference was only found in Reception (children learning EAL again scoring significantly lower). EAL linguistic comprehension scores were significantly lower than their native speaking peers in Reception and Year 1 but not in Year 2. Children learning EAL underperformed significantly at all three age levels on expressive vocabulary and expressive grammar. With regards to sentence repetition, there were significant differences in Reception and Year 1 (children learning EAL showing poorer performance) but not in Year 2 (see Table 3.2 for t-test results between EAL and native speakers). Taken together, it appears that young Polish children learning EAL have substantial oral language weaknesses relative to their monolingual peers in Polish in the first two years of school; however, while expressive language continues to lag behind at Year 2, the two groups do not differ on their receptive skills at this stage. After a Bonferroni correction of the *p* value, the listening comprehension differences are no longer significant, as well as expressive vocabulary in Year 2 and sentence repetition in Year 1.

Table 3.2

Results of descriptive analyses and t-tests comparing the two language groups on Polish oral language tasks

Measures of oral language	Mean (SD)	*t* test	*p*
Receptive vocabulary			
Reception			
EAL	-.74 (.65)	-6.44	<.001
Polish monolingual	.45 (.97)		
Year 1			
EAL	-.31 (.86)	-5.20	<.001
Polish monolingual	.69 (.86)		
Year 2			
EAL	-.22 (.80)	-.91	.369
Polish monolingual	.02 (1.04)		

Measures of oral language	Mean (SD)	*t* test	*p*
Receptive grammar			
Reception			
EAL	-.66 (1.01)	-4.37	<.001
Polish monolingual	.29 (.94)		
Year 1			
EAL	.10 (.79)	-1.63	.108
Polish monolingual	.43 (1.05)		
Year 2			
EAL	-.17 (.72)	-.32	.750
Polish monolingual	-.09 (1.00)		
Listening comprehension			
Reception			
EAL	-.30 (.64)	-3.00	.004
Polish monolingual	.19 (.82)		
Year 1			
EAL	-.18 (.75)	-2.36	.021
Polish monolingual	.22 (.73)		
Year 2			
EAL	-.45 (1.31)	-1.97	.054
Polish monolingual	.32 (1.49)		
Expressive vocabulary			
Reception			
EAL	-.57 (.60)	-6.14	<.001
Polish monolingual	.42 (.83)		
Year 1			
EAL	-.49 (.72)	-6.68	<.001
Polish monolingual	.70 (.87)		
Year 2			
EAL	-.54 (.81)	-2.54	.014
Polish monolingual	.23 (1.23)		
Expressive grammar			
Reception			
EAL	-.52 (.95)	-4.65	<.001
English monolingual	.44 (.91)		
Year 1			
EAL	-.54 (.82)	-6.35	<.001
English monolingual	.60 (.77)		
Year 2			
EAL	-.58 (.98)	-3.81	<.001
English monolingual	.35 (.83)		

Measures of oral language	Mean (SD)	*t* test	*p*
Sentence repetition			
Reception			
EAL	-.47 (.92)	-3.84	<.001
English monolingual	.34 (.98)		
Year 1			
EAL	-.23 (.87)	-2.67	.009
English monolingual	.32 (.99)		
Year 2			
EAL	-.29 (.84)	-1.74	.087
English monolingual	.19 (1.07)		

Effect sizes for oral language comparisons in English and Polish were then analysed (see Figure 3.7 below) showing large effects for all English comparisons and most Polish ones apart from selected age groups on the receptive tasks.

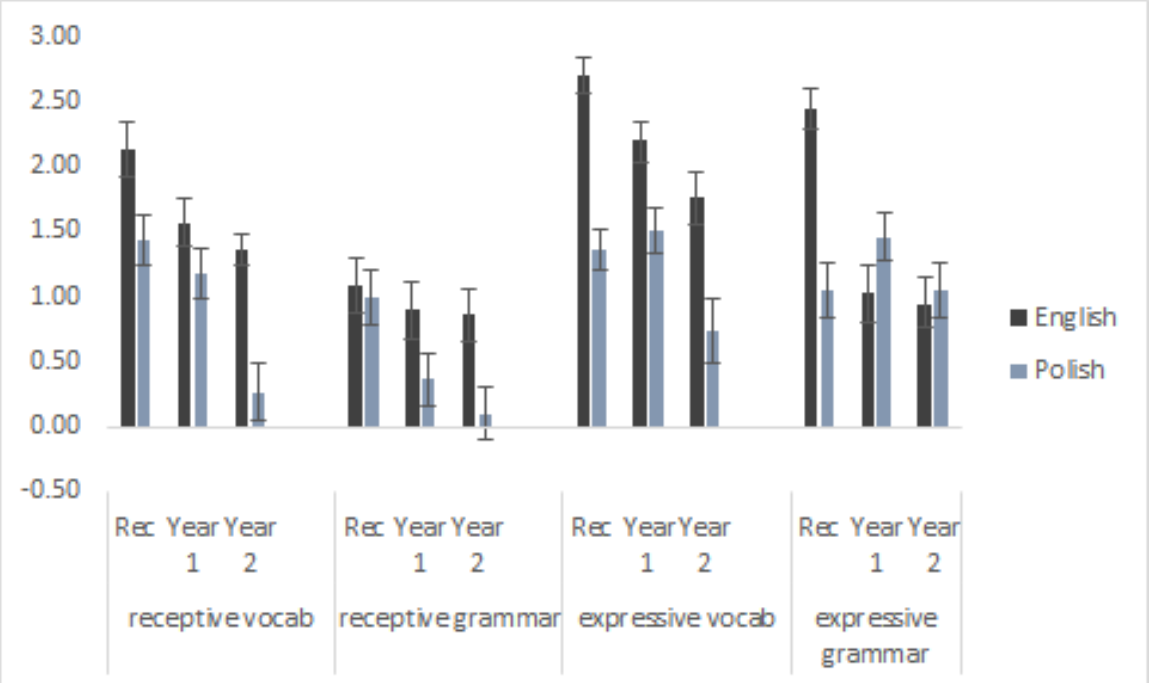


Figure 3.7 Effect sizes (Cohen's d) for oral language comparisons in both languages

3.4.4 Part 4: Benchmarking pre-literacy

3.4.4.1 Analyses in English

T-test analysis on the elision subtest showed significant differences between the two groups in Reception and Year 1 (with poorer EAL performance) but no significant difference by Year 2. The RAN and non-word repetition subtests yielded the same patterns of findings with significant differences between the two groups in Reception and Year 1, but not in Year 2. The letter sound knowledge task showed significant differences between the two groups only in Reception, with children learning EAL underperforming significantly compared to native speakers (See Table 3.3 for means, standard deviations and t test results). After a Bonferroni correction to account for multiple comparisons, the two groups no longer differ in Year 1 on the RAN measure, as well as on non-word repetition and letter sound knowledge.

Table 3.3

Descriptives and results of independent samples t-tests on English pre-literacy tasks

Pre-literacy measures	Mean (SD)	*t* test	*p*
Elision			
Reception			
EAL	-.43 (.56)	-4.49	<.001
English monolingual	.31 (.76)		
Year 1			
EAL	-.29 (.94)	-3.33	.001
English monolingual	.55 (1.17)		
Year 2			
EAL	-.21 (1.12)	-1.13	.261
English monolingual	.09 (1.00)		
RAN			
Reception			
EAL	.70 (1.70)	3.35	.001
English monolingual	-.37 (.62)		
Year 1			
EAL	-.35 (.53)	2.63	.011
English monolingual	-.66 (.47)		
Year 2			
EAL	.51 (.75)	1.95	.056
English monolingual	.21 (.48)		

Pre-literacy measures	Mean (SD)	*t* test	*p*
Non-word repetition			
Reception			
EAL	-.23 (.98)	-2.47	.016
English monolingual	.36 (.96)		
Year 1			
EAL	-.39 (.95)	-2.93	.005
English monolingual	.29 (.99)		
Year 2			
EAL	-.17 (.99)	-1.38	.173
English monolingual	.16 (.94)		
Letter sound knowledge			
Reception			
EAL	-.69 (1.76)	-3.09	.003
English monolingual	.45 (1.16)		
Year 1			
EAL	.30 (.49)	-.70	.486
English monolingual	.37 (.30)		
Year 2			
EAL	-.28 (.44)	-1.31	.195
English monolingual	-.15 (.37)		

3.4.4.2 Analyses in Polish

After running t-test analyses on pre-literacy measures in Polish, no significant differences were found between native speakers and EAL participants in each year group on the elision, RAN and non-word repetition subtests. However, the children learning EAL in Reception and Year 1 performed significantly better on letter sound knowledge compared to their Polish monolingual peers (but no significant difference was found in Year 2). Mean scores and results of the t-test analyses are reported in Table 3.4 below. After a Bonferroni correction, the only significant difference in letter sound knowledge performance remains in Reception.

Table 3.4

Results of descriptive analyses and t-test comparisons between EAL and native speakers on Polish pre-literacy tasks

Pre-literacy measures	Mean (SD)	*t* test	*p*
Elision			
Reception			
EAL	-.07 (.59)	-.58	.565
Polish monolingual	.05 (.63)		
Year 1			
EAL	-.09 (.88)	-.98	.332
Polish monolingual	.14 (1.16)		
Year 2			
EAL	.28 (1.33)	1.22	.227
Polish monolingual	-.18 (1.37)		
RAN			
Reception			
EAL	.07 (.77)	.92	.361
Polish monolingual	-.13 (1.12)		
Year 1			
EAL	.03 (.95)	-.02	.985
Polish monolingual	.04 (1.30)		
Year 2			
EAL	-.04 (.78)	-.20	.84
Polish monolingual	.01 (.91)		
Letter knowledge			
Reception			
EAL	.38 (.87)	3.70	.000
Polish monolingual	-.34 (.97)		
Year 1			
EAL	.35 (.83)	2.77	.007
Polish monolingual	-.29 (1.40)		
Year 2			
EAL	-.27 (.66)	-1.24	.220
Polish monolingual	.03 (.95)		

After completing the analyses between children learning EAL and their native speaking peers in both languages on pre-literacy tasks, the effect sizes in both languages were compared (presented in Figure 3.8 below). While English analyses show moderate to large effects, Polish comparisons yielded small effect sizes.

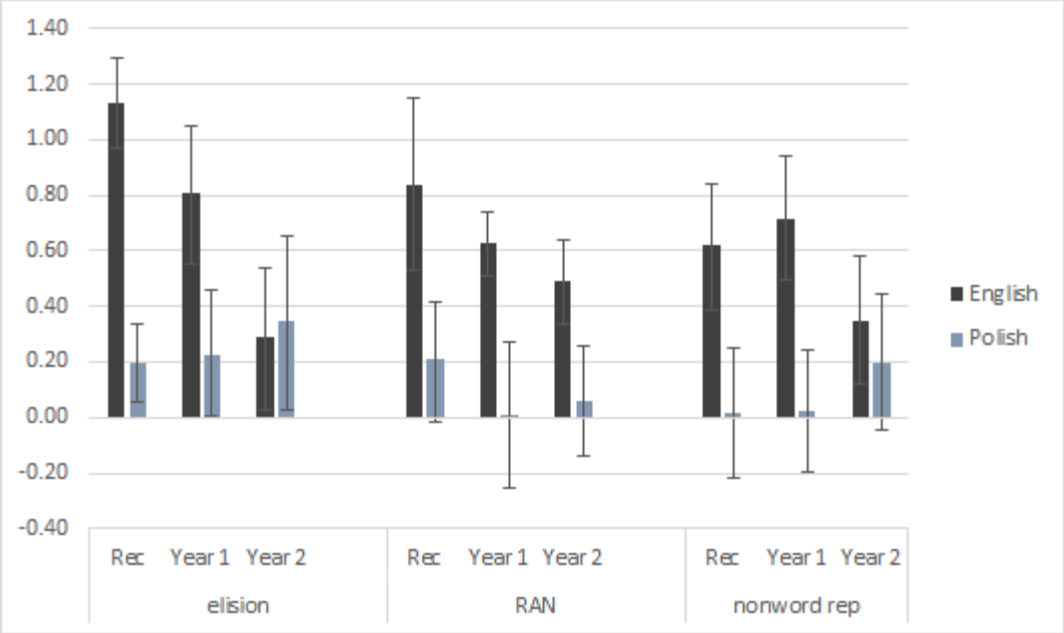


Figure 3.8 Effect sizes (Cohen's d) for pre-literacy comparisons in English and Polish

3.4.5 Part 5: Benchmarking decoding and reading comprehension

3.4.5.1 Analyses in English

With regards to decoding, the results of independent samples *t*-tests have shown the only significant difference between EAL and English native speakers occurred on non-timed decoding of real words in Year 1. The results showed there was a significant difference in the reading comprehension score in both Year 1 and Year 2 (See Table 3.5 for means, standard deviations, and t-test results on decoding and reading comprehension tasks). After a Bonferroni correction, however, the only difference in reading skills is observed in Year 1 reading comprehension.

Table 3.5

Results of descriptive analyses and t-tests on English decoding and reading comprehension tasks

Decoding and reading comprehension	Mean (SD)	*t* test	*p*
Single word reading			
Year 1			
EAL	-.22 (.84)	-3.21	.002
English monolingual	.49 (1.00)		
Year 2			
EAL	-.35 (1.04)	-1.71	.092
English monolingual	.07 (.95)		
Graded Non-Word Reading Test			
Year 1			
EAL	-.09 (.97)	-1.15	.256
English monolingual	.19 (1.05)		
Year 2			
EAL	-.15 (1.15)	.80	.429
English monolingual	.04 (.80)		
TOWRE real words			
Year 1			
EAL	-.08 (.82)	-1.67	.100
English monolingual	.31 (1.10)		
Year 2			
EAL	-.23 (1.10)	-.87	.386
English monolingual	-.01 (.93)		
Reading accuracy			
Year 1			
EAL	.16 (.95)	1.99	.051
English monolingual	-.30 (1.01)		
Year 2			
EAL	.33 (.98)	2.11	.039
English monolingual	-.17 (.95)		
Reading time			
Year 1			
EAL	-.001 (1.29)	.53	.595
English monolingual	-.16 (.99)		
Year 2			
EAL	.23 (1.01)	1.09	.283
English monolingual	-.01 (.70)		

Decoding and reading comprehension	Mean (SD)	*t* test	*p*
Reading comprehension			
Year 1			
EAL	-.44 (.91)	-4.94	<.001
English monolingual	.57 (.74)		
Year 2			
EAL	-.22 (1.05)	-2.47	.017
English monolingual	1.00 (1.00)		

3.4.5.2 Analyses in Polish

Since the Polish native speakers receiving education in Poland do not begin reading instruction

at school until age 7, which is Grade 1 in Poland however age-wise corresponds to Year 2 in the UK, comparisons were available only for Year 2 groups. The two groups did not differ significantly on any of the measures of Polish decoding. While there were no significant differences on Polish reading accuracy and fluency, the EAL group performed significantly better compared to their monolingual peers on reading comprehension (See mean scores, standard deviations and t-test results in Table 3.6).

Table 3.6

Results of descriptive analyses on Polish decoding and reading comprehension tasks in Year 2

Decoding and reading comprehension measures	Mean (SD)	*t* test	*p*
Non word reading			
EAL	-.03 (1.18)	-.14	.891
Polish monolingual	.01 (.95)		
Timed real word reading			
EAL	.05 (1.09)	.49	.626
Polish monolingual	-.10 (1.12)		
Timed non-word reading			
EAL	.27 (1.27)	1.46	.151
Polish monolingual	-.21 (1.06)		

Decoding and reading comprehension measures	Mean (SD)	*t* test	*p*
Reading time			
EAL	-.27 (.56)	-.10	.922
Polish monolingual	.16 (.89)		
Reading accuracy			
EAL	.001 (.95)	-1.84	.072
Polish monolingual	.03 (.89)		
Reading comprehension			
EAL	.52 (1.03)	3.76	<.001
Polish monolingual	-.42 (.70)		

Effect sizes were presented for comparisons between native speakers and children learning EAL in both languages on measures of reading ability and comprehension (see Figure 3.9). Large effects were only obtained for reading comprehension comparisons in both languages.

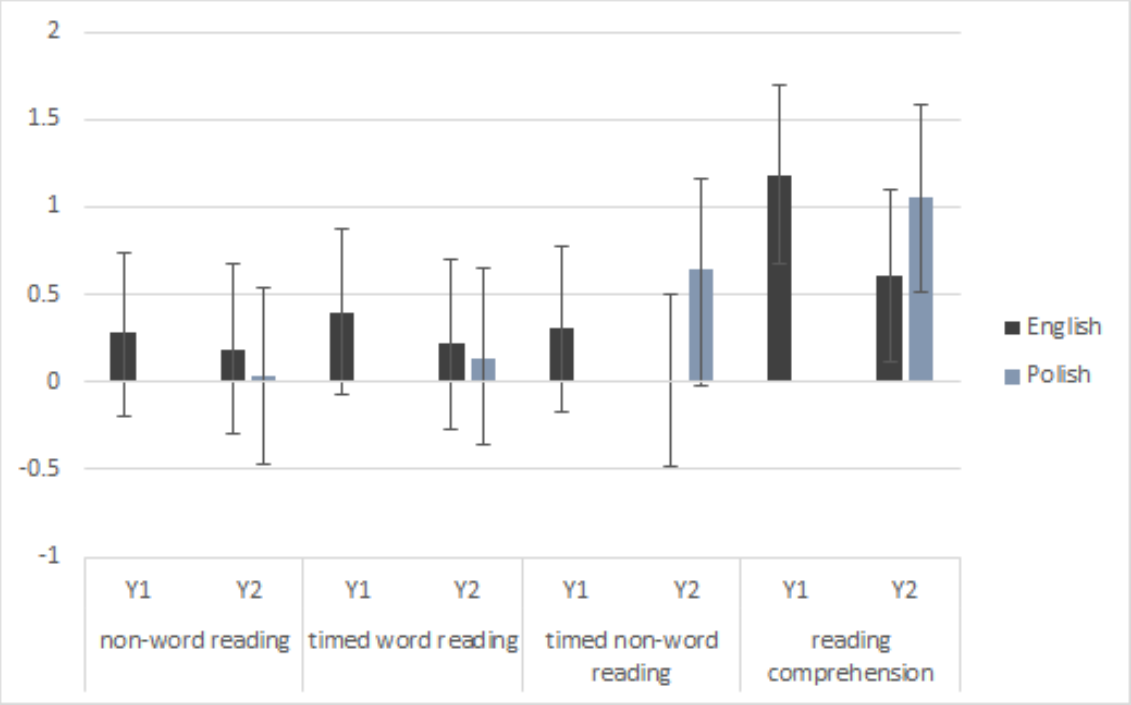


Figure 3.9 Effect sizes (Cohen's d) for comparisons of reading ability and comprehension

3.5 Discussion

In this chapter we aimed to investigate the performance of second language learners in comparison to their native speaking peers in both their L1 and L2. A group of school aged pupils was assessed with measures of phonology, oral language, word-level reading and reading comprehension providing a detailed profile of their areas of strengths and weaknesses.

Upon assessing phonology, it was found that in English the EAL sample underperformed in Reception and Year 1, but the children in Year 2 scored comparably to their monolingual peers. Looking at their raw scores, in Reception the EAL children are almost at floor on the Elision measure of phonological awareness, while their native speaking counterparts were scoring a mean of about 8 out of the 34 points. Due to how the task is constructed, this most likely means that the native speaking children were able to complete the first part of the task, where an entire word had to be removed but were not yet able to complete the trials which required removing only one sound. In Year 1 the EAL performance was close to that of English native speakers in Reception, meaning that at this stage the EAL children are beginning to understand this task and able to remove entire words. By Year 2, both groups scored a mean of approximately 15 out of 34 points showing some understanding of the relationship between sounds and words, however, they were far from the ceiling indicating that they have not yet fully acquired this skill. The performance in the earlier years could be attributed either to a reduced level of exposure to English or to the fact that phonological awareness draws on broader oral language skills which is an area of underperformance for the EAL children at this stage.

With regards to exposure to instruction, a longitudinal study by Muter and Diethelm (2001) of monolingual and bilingual children between kindergarten and first grade found that the level of phonological awareness did not depend on language status but rather that the effect of literacy instruction interacted with phonological awareness and that instruction was the more important factor. In the present study, children in England were exposed to the same level of instruction in classrooms therefore providing support for the explanation of oral language relevance in phonological awareness performance. Previous research further supports this suggestion that oral language may play a role in the development of phonological awareness, such as Anthony and Francis (2005) finding that early forms of phonological awareness develop prior to literacy instruction, or the conclusion from the lexical restructuring model (Metsala & Walley, 1998) that the development of phonological awareness is dependent on vocabulary knowledge. The latter was further supported by Metsala (1999) in a study which found vocabulary to be strongly associated with non-word repetition performance in a sample of preschool children (between the ages of 3–5), leading to a suggestion that word familiarity and vocabulary growth can explain individual differences in non-word repetition or phonological processing.

On the Polish assessments of phonology, the children learning EAL performed comparably to their native speaking counterparts meaning that either the children learning EAL are performing at baseline or that Polish native speakers show poor phonological awareness skills. In Polish preschools, phonology is not part of a set curriculum and many teachers do not instruct children using phonics games or tasks. Letter knowledge is only introduced in primary school (which in Poland is at the age of seven). Looking at the raw scores on the Elision measure, the EAL group's performance in Polish is mimicking that in English, with an almost floor score in Reception (a mean of about 2 out of 34), around 7 points in Year 1

(meaning the children can take out the whole word out another but cannot yet do the same operation with only one sound), and a mean score of about 15 in Year 2 (some ability to manipulate words at the sound level but still far from ceiling at 34). It is possible that this similar result can be an evidence of a transfer between languages in the EAL population. As most of the phonological awareness tasks were created for the purpose of this study and were not standardised assessments it is not possible to identify whether both groups are performing within average scores. This was only possible for the non-word repetition task, which was taken from a standardised language battery with norming data based on monolingual Polish children, where both groups performed within the lower end of the average range. While Verhoeven (2007) concludes that the level of bilingual development is likely to have an impact on the development of phonological awareness, there are a number of arguments for factors beyond bilingualism affecting the performance on phonological awareness. Bruck and Genesee (1995) conclude that differences in phonological awareness are more likely due to the specificity of the languages learned and the instruction received rather than the bilingualism status of the child. Bialystok (2012) similarly suggests that bilingualism by itself has little influence in promoting phonological awareness and instead it is literacy instruction that carries the strongest effects in erasing group differences.

Turning to oral language skills, EAL participants showed a significant performance lag relative to monolingual English-speaking children on both expressive and receptive measures. This pattern was observed consistently across the three age groups. This finding is, however, not surprising given previous research which has consistently identified a similar gap between the two groups at this age (e.g. Burgoyne, Whiteley, & Hutchinson, 2013; Babayiğit, 2014; Bowyer-Crane et al., 2016). This effect of exposure was also clearly demonstrated in a study by Thordardottir (2011) who found that even in a sample of children

who experienced equal exposure to L1 and L2 (English-French bilingual children in Canada) while the bilinguals showed native-level performance on receptive tasks, they required more exposure in the language tested to reach monolingual-level performance on a productive vocabulary task. Children learning EAL may enter the English school system after their monolingual peers or not at the start of the academic year therefore missing out on the curriculum as well as being exposed to Polish, rather than English at home and through extracurricular activities.

Somewhat more surprising were the Polish results in this study. It was expected that children learning EAL would perform similarly to their native speaking peers as this was their native language, and previous research has shown bilinguals at least reach milestones in language acquisition at the same time as monolinguals in their L1 (Genesee, 2003; Patterson & Pearson, 2004). In this study, they in fact significantly underperformed on expressive measures and, the younger children (before Year 2) also on receptive measures. This can again be attributed to levels of exposure being significantly less than their monolingual peers in Poland or due to the quality of this exposure. Other researchers have also observed that L1 grammatical performance may be related to impoverishment in L1 exposure or greater influence of the majority (L2) language (Gathercole & Thomas, 2009; Hoff & Ribot, 2017). This diminished input of L1 is often coupled with the fact that these children may not receive any formal instruction in Polish. These findings of poorer L1 performance are particularly relevant in the current discussion about fostering the native language when immersed in UK culture as both this study and previous research show that diminished input can result in performance poorer than that of native speaking peers.

Finally, reading proficiency and comprehension of EAL pupils was benchmarked against their monolingual peers. The findings in English showed that, at the word decoding level, the only task where children learning EAL differed from English monolinguals was the Year 1 single word reading assessment. Although some previous research has shown an advantage for EAL readers on decoding tasks (Babayiğit, 2014, 2015) there is also evidence for EAL pupils performing comparably to their monolingual peers (e.g. Bowyer-Crane et al., 2016). Apart from the one task, these participants seem to conform to previous research in the area. This may be because they need to rely on their oral language (vocabulary) abilities on which they have been shown to underperform. On the other hand, these children show no significant difference in the timed real word reading task compared to their native speaking peers.

As for reading comprehension in English, analyses showed significantly worse performance from the children learning EAL. This again is consistent with previous findings (Burgoyne et al., 2009; Melby-Lervåg & Lervåg, 2014). This gap in performance corresponds to and therefore may be attributed to significantly worse oral language scores of this group, this will be explored in another chapter. In addition to poorer oral language, this underperformance may also be a result of lesser exposure to English print or, at is has been suggested before, the possibility of children learning EAL being exposed to the curriculum later than native speakers having entered the country after the typical age of school entry. This, however, may not apply in the sample investigated above as, according to the questionnaire data obtained from a proportion of the children who took part, only a few of these children entered the UK after the age of 3 and a number of parents reported their child was born in the UK.

In Polish, there were no significant differences between the two groups at the word-level. This corresponded to their comparable scores on phonological awareness tasks. An

interesting finding in Polish was the superior EAL performance on Polish reading comprehension. While the EAL pupils at this stage were shown to underperform on expressive language measures, their receptive vocabulary and grammar abilities were comparable to native speakers also showing no differences in decoding. This pattern of abilities may be what explains their comprehension performance. The comparison between the language groups was only performed at Year 2 (this corresponding by age to the first year of Polish primary school). The children in Poland were assessed at the end of the school year, having therefore obtained only one full year of reading instruction. The extent of Polish reading instruction of the children learning EAL is not known having either occurred at home or in Sunday school likely without a set curriculum standardised for the entire sample. Finally, it may be possible that for the children learning EAL, instruction in English aids their performance in Polish through cross-language transfer effects. This, along with transfer in other areas of language and literacy will be considered in a further chapter.

This study aimed to provide an overview of the language and early literacy abilities of Polish children learning EAL in the first three years of their school career. As this was to be a comprehensive look at a number of factors, only one task was chosen for each construct which might be considered as a limitation. On the other hand, despite using one task per construct, the battery provided a rich set of meaningful data, often replicating previous findings. An additional strength of this study in comparison to the majority of research in the field, especially in the UK, was the opportunity to investigate the children's abilities in both languages spoken giving a more in-depth picture of their profiles as EAL learners and providing a first language benchmark group rather than relying on monolingual Polish norms. What is more, considering the large sample size and the fact that the children learning EAL

were assessed in both languages this battery of tests was the more rational choice, also from the perspective of the children tested.

Although parental questionnaires were collected during this study, less than 50% of them were returned. While data from the questionnaires was used to suggest possible explanations for some of the findings, a higher return rate would provide an opportunity for an even more in-depth understanding of the children's language and literacy background and home practices.

To conclude, through assessing a large group of Polish children learning EAL in early school grades with an extensive battery of tools, this study has replicated previous findings regarding the abilities of this group of children in reference to their monolingual peers including a lower performance on their L2 oral language throughout the early grades and lower scores on reading comprehension assessments, but on the other hand showing their decoding ability to be comparable to their native speaking peers. This study has added to an extensive investigation into the pattern of development of language and literacy abilities of second language learners.

Chapter 4 – Predicting decoding in an EAL population

4.1 Introduction

Phonological awareness plays an important role in enhancing the development of literacy (Byrne & Fielding-Barnsley, 1993). Phonological awareness, or the awareness of the sound structure of words (Swank & Catts, 1994) and the knowledge that words comprise of smaller units, has been linked to making it easier to decode (or sound out) printed text (e.g. Bradley & Bryant, 1985) through mapping letters onto sounds. This relationship has been confirmed in a number of studies identifying phonological awareness as a powerful predictor of reading ability (Mellby-Lervåg, Lyster, & Hulme, 2012) particularly in the early stages of learning to read, with early phoneme awareness facilitating later reading development (longitudinal study by Haigh et al., 2011). This relationship may not be so pronounced later on in school career, as shown by Hogan, Catts and Little (2005) who found phonological awareness abilities in kindergarten to predict 2nd Grade reading outcomes but by 2nd Grade phonological awareness did not significantly predict word reading at Grade 4 beyond second-grade word reading. Instead, word reading in second Grade predicted Grade 4 phonological awareness. Phonological skills have also been shown to mediate other predictors of word reading, for example Russel et al. (2018) identified a variety of factors associated with reading at the age of seven, such as male gender, maternal education or vocabulary at age 5 and for all of these between 52-89% of the effect was mediated by phonology. As for the phonological processing skills which show the strongest relationship with word reading in these early stages, researchers indicate phonemic sensitivity and speeded naming tasks (e.g. McBride-Chang & Kail, 2002). What is more, Muter et al. (2004) found phoneme manipulation and letter knowledge assessed at school entry accounted for 54% of variance in decoding at the end of the first year.

Letter knowledge strongly correlates with early development of literacy (Byrne & Fielding-Barnsley, 1993) and in preschool children there is evidence of a reciprocal relationship between phonological awareness and letter knowledge (Burgess & Lonigan, 1998). Speeded naming can predict unique variance in early reading development, along with phonological awareness, and in English speeded naming can be used to distinguish between good and poor readers (McBride-Chang & Kail, 2002), some considering it a more important predictor among poor readers (Johnston & Kirby, 2006). That said, the role of speeded naming tasks is somewhat unclear in early development of reading. For example, it has been shown that the alphanumeric naming tasks are better predictors compared to the color and object RAN subtests and speeded tasks are considered better predictors of reading speed than accuracy (e.g. Savage & Frederickson, 2005).

The abovementioned studies considered the relationship between phonology and decoding from the point of view of children learning one language, usually English. However, this research study investigates the abilities and performance of children who speak and read in two languages: one relatively transparent (Polish) and the second more opaque (English). When it comes to the relationship between phonology and decoding, it has been suggested that it is not as strong in more transparent orthographies (Furnes & Samuelsson, 2011) as it is in a more opaque orthography of English (e.g. Adams, 1990). It has been suggested that the extent of this prediction differs across languages depending on their orthographic depth and phonological transparency (e.g. Goswami, 1999). When the long-term predictive value of phonological awareness in English is compared with that of phonological awareness in other languages, the extent of the strength of this relationship differs (e.g. German vs. English in Mann & Wimmer, 2002).

Furnes and Samuelsson (2011) argue that in transparent orthographies phonological awareness cannot be considered as a reliable predictor of decoding beyond Kindergarten. Another example of this is a study by Georgiou, Parrila and Papadopoulos (2008) where the relationship between phonological awareness and decoding was assessed and compared between two groups of monolingual speakers: English and Greek at Grades 1 and 2. In this study English phonological awareness (measured using an Elision task) significantly predicted an English decoding measure of Word Attack and on the TOWRE subtest (Grade 1). What is more, this predictive value of phonological awareness was stronger in English compared to Greek – Elision was found as a stronger predictor of Word Attack in English compared to Greek both longitudinally and concurrently. The researchers argue that consistent (transparent) orthographies generate fewer demands on phonological awareness compared to opaque ones. There are a number of studies which agree with this finding that the extent of relationship between phonological awareness and decoding can vary depending on the transparency of the orthography, some suggesting a marginal impact (Aarnoutse, van Leeuwe, & Verhoeven, 2005; Holopainen, Ahonen, & Lyytinen, 2001). It seems that in these cases the reliability of phonological awareness as a predictor tends to lessen after the first two grades of school, particularly in these orthographies (e.g. Lervåg, Bråten, & Hulme, 2009; Verhagen, Aarnoutse, & van Leeuwe, 2008; de Jong & van der Leij, 2002). On the other hand, other researchers have found phonological awareness to predict individual differences in decoding to a similar extent in English and the following languages: Czech (Caravolas, Volin, & Hulme, 2005) and Slovak (Caravolas et al., 2012), Norwegian and Swedish (Lervåg, Braten, & Hulme, 2009; Furnes & Samuelsson, 2009) and Dutch (Patel, Snowling, & de Jong, 2004). Furthermore, McBride-Chang and Kail (2002) suggest that, at least in the early stages of reading development, phonological awareness is a universal aspect of learning to read and Limbird et al. (2013) identify it as a much stronger predictor in bilingual children

compared to monolinguals. All in all, these findings show that the transparency of the orthography a child reads in may be an important factor which needs to be considered when attempting to generalise findings on predictors of reading across languages (Georgiou et al., 2008).

It would also seem that in more transparent orthographies rapid naming may play a considerable role in predicting decoding ability. Cross-language comparisons show that in general learning to read in more transparent orthographies is faster and easier compared to opaque ones and the pattern of predictors of reading is possibly different between the two types (e.g. Caravolas et al., 2005). Naming speed seems to be more related to reading in transparent orthographies compared to phonological awareness (e.g. Ziegler et al., 2010 in second grade readers of Dutch, Finnish, French, German, and Hungarian) and compared to opaque orthographies (de Jong & van der Leij, 1999; Mann & Wimmer, 2002). Georgiou et al. (2008) showed that while phonological awareness was a stronger predictor of decoding in English compared to Greek, RAN Digits was a stronger predictor of decoding in Greek compared to English (in Grade 1). This study also found, however, that only in English RAN had a direct effect on reading fluency (in Grade 2).

A study by Furnes and Samuelsson (2011) comparing English-speaking and Scandinavian (Norwegian and Swedish) samples similarly found phonological awareness at kindergarten or Grade 1 did not account for significant variance in decoding in Grades 1 and 2 respectively. However, RAN as measured in kindergarten accounted for a small but significant amount of variance in word recognition and phonological decoding in Grade 1, and Grade 1 RAN was a significant predictor of phonological decoding one year later. Rapid naming has been identified as a predictor of later reading ability in both types of orthography but the pattern of this prediction differs from that of phonological awareness in that while

RAN was more related to reading than spelling across orthographies, phonological awareness showed the opposite pattern (Furnes & Samuelsson, 2011). In previous studies the predictive value of RAN has been shown to be time-limited in English (e.g. Parrila et al., 2004) but persists as a predictor across grades in more transparent orthographies (e.g. de Jong & van der Leij, 2003).

4.2 Aim

The present study aimed to identify the predictors of decoding in an EAL population of early school aged children in both their L1 and L2. The predictors in both languages were compared to those of the two native speaking control groups. Based on the previous research into predictors of decoding, it is hypothesised that in both languages phonological awareness will be the strongest predictor in this sample of children learning EAL. In the more transparent Polish it is also expected that RAN will emerge as a significant predictor. Phonological awareness is also expected to emerge as a stronger predictor in Year 2 as compared to Year 1 where letter knowledge and RAN will also contribute.

4.3 Method

In this cross-sectional design, three groups of participants were investigated: Polish children learning EAL, and two native speaking monolingual control groups of Polish and English speakers. Children in this study were sampled from Year 1 and Year 2 in England (EAL group in both languages and monolingual native speakers of English) and from Year 2 only in Poland. Only including one year group of Polish native speakers was necessary due to a difference in Education systems between the two countries. Children in Polish schools only start learning to read in the first year of primary school which corresponds to Year 2 in the

UK. Therefore, decoding and reading comprehension tests were only administered to the oldest group of children in the Polish monolingual sample.

Participants were administered a range of tasks assessing their phonological processing, oral language, decoding and reading comprehension. These assessments and the procedure have been outlined in the methodology chapter.

4.4 Results

Predictors of decoding in the children learning EAL were assessed separately in both English and Polish and these were compared to predictors which resulted from analyses of the native speaking samples in this study. Analyses were performed separately for the two year groups. Linear regressions were performed separately for the language and year groups entering RAN, letter sound knowledge, non-word repetition and elision together in one step and timed word or non-word tasks entered as dependent variable depending on analysis.

The previous chapter showed no differences between the children learning EAL and their English and Polish native speaking peers on either the measure of timed decoding of real words and non-words. In English the decoding skills on both real and non-words of children learning EAL and their native speaking peers were within the average range (EAL: M=108.06, SD=11.32 for real words, M=112.36, SD=9.75 for non-words; native speakers: M=112.24, SD=12.63 for real words, M=113.94, SD=10.99 for non-words). In Polish both groups performed within the average as assessed by stanine scores with exception of the mean EAL real word reading scores which were above average (EAL: M=7.76, SD=1.59 for real words, M=5.09, SD=2.01 for non-words; native speakers: M=5.20, SD=2.48 for real words, M=5.23, SD=2.18 for non-words).

4.4.1 English analyses

Prior to entering the variables into a regression, correlations were run between pre-literacy and decoding measures as a check of the strength of the relationships between them. Tables 4.2 and 4.3 below show correlation matrices for children learning EAL and native speakers respectively.

Table 4.1
Correlation matrix for pre-literacy and decoding tasks for the EAL group in English

	1.	2.	3.	4.	5.	6.	7.	8.
1. RAN	-							
2. Non-word repetition	-.21*	-						
3. Letter knowledge	-.43**	.25*	-					
4. Elision	-.26**	.41**	.14	-				
5. Single word reading	-.37**	.39**	.24*	.63**	-			
6. Non-word reading	-.41**	.39**	.11	.69**	.79**	-		
7. TOWRE SWE	-.46**	.27*	.25*	.66**	.90**	.80**	-	
8. TOWRE PDE	-.41**	.32**	.10	.54**	.83**	.77**	.88**	-

* correlations significant at the .05 level
** correlations significant at the .01 level

Table 4.2
Correlations between pre-literacy and decoding tasks for English native speakers

	1.	2.	3.	4.	5.	6.	7.	8.
1. RAN	-							
2. Non-word repetition	.28**	-						
3. Letter knowledge	.15	.14	-					
4. Elision	.26**	.21*	.29**	-				
5. Single word reading	.41**	.26*	.28*	.66**	-			
6. Non-word reading	.29**	.27*	.22	.68**	.78**	-		
7. TOWRE SWE	.34**	.09	.15	.55**	.88**	.71**	-	
8. TOWRE PDE	.41**	.18	.21	.55**	.86**	.72**	.85**	-

* correlations significant at the .05 level
** correlations significant at the .01 level

In addition, to address the issue of collinearity, the correlations between pre-literacy tasks were visually inspected in both language groups. Although most correlations were significant, none were high enough to suggest perfect collinearity. However, a variance inflation factor was also calculated. In the group of children learning EAL, the VIF ranged from 1.19 to 1.61 in Year 1 and from 1.15 to 1.79 in Year 2 while the tolerance statistic ranged from .62 to .84 in Year 1 and from .56 to .87 in Year 2. In the native speaking group, the data were as follows: the VIF ranged from 1.33 to 1.95 in Year 1 and from 1.08 to 1.47 in Year 2 while the tolerance statistic ranged from .51 to .75 in Year 1 and from .68 to .93 in Year 2. These values suggest that in English, the predictors did not have strong linear relationships as the highest VIF values were well below 10, the individual VIF values were not substantially greater than 1 (Field, 2013), and the tolerance statistics were higher than .2 (which is the cut-off point indicating potential causes for concern (Menard, 1995).

To further investigate the relationship between decoding and some of the key predictors, Figures 4.1 and 4.2 below illustrate scatterplots of the correlation between decoding and RAN as well as decoding and Elision for the English assessments.

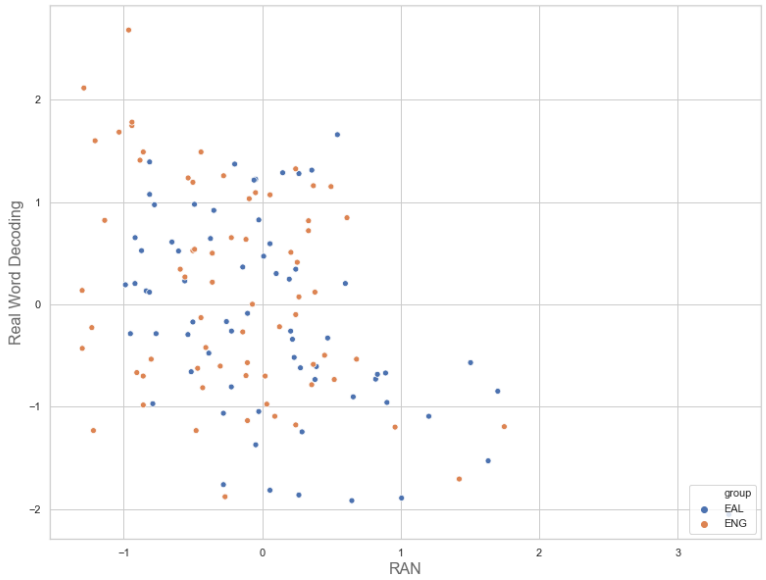


Figure 4.1 A scatterplot of the correlation between RAN and word decoding in English

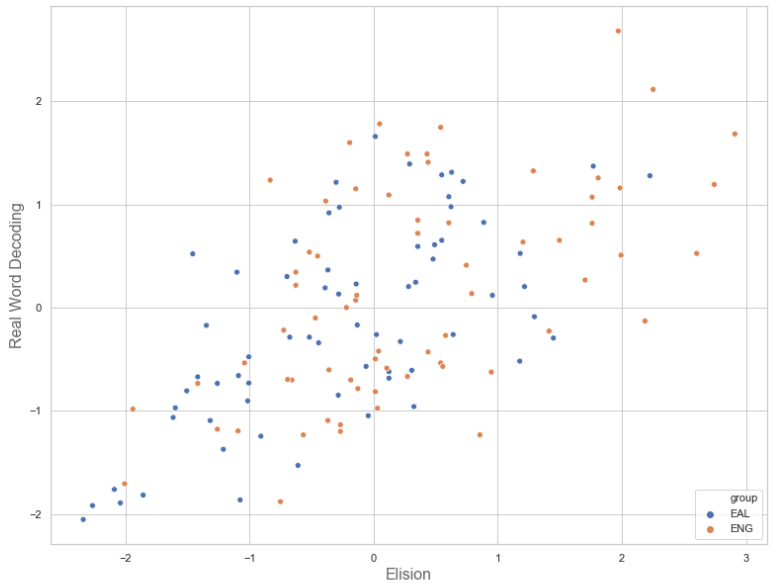


Figure 4.2 A scatterplot showing the correlation between Elision and decoding in English

While little linearity is present in the correlation with RAN (this might be related to the fact that the RAN data reflects reaction times while decoding reflects number of words read), a more linear relationship is seen in the Elision correlation.

Analyses were performed on both real-word and non-word reading. For the children learning EAL, in Year 1, pre-literacy phonological processing skills of RAN, non-word repetition, letter knowledge and elision accounted for 44.9% of the variance in decoding real words, $F(4,31)=6.33$, $p=.001$. In Year 2, the predictive value of these tasks was at 60.7%, $F(4,26)=10.02$, $p<.001$. As for English native speakers, in Year 1, phonological processing predicted 38.6% of variance, $F(4,29)=4.56$, $p=.006$ and in Year 2 it predicted 52.7%, $F(4,29)=8.08$, $p<.001$. Tables 4.4 and 4.5 outline the standardised Beta and t values as well as confidence intervals for the individual predictors. In Year 1, in addition to elision, RAN and non-word repetition in monolinguals were identified as unique predictors of decoding. On the other hand, in Year 2, only elision was a significant predictor.

Table 4.3

Betas, t values, significance levels and confidence intervals for the predictors of decoding real words in EAL and native speakers in English in Year 1. Statistically significant beta values have been highlighted

	Children learning EAL			English monolinguals		
	Beta	t (*p*)	95% CI (lower, upper)	Beta	*t* (*p*)	95% CI (lower, upper)
RAN	**-.359**	-2.59 (.015)	(-1.00, -.12)	**-.429**	-2.68 (.012)	(-1.79, -.24)
Non-word repetition	.009	.06 (.952)	(-.25, .27)	**-.417**	-2.46 (.020)	(-.85, -.08)
Letter knowledge	.100	.70 (.492)	(-.32, .65)	-.056	-.34 (.737)	(-1.45, 1.04)
Elision	**.476**	3.17 (.003)	(.15, .68)	**.521**	2.95 (.006)	(.15, .83)

Table 4.4

Betas, t values, significance levels and confidence intervals for the predictors of decoding real words in EAL and native speakers in English in Year 2. Statistically significant beta values are shown in bold

	Children learning EAL			English monolinguals		
	Beta	*t* (*p*)	95% CI (lower, upper)	Beta	*t* (*p*)	95% CI (lower, upper)
RAN	-.193	-1.31 (.200)	(-.72, .16)	-.053	-.35 (.726)	(-.69, .49)
Non-word repetition	.068	.45 (.658)	(-.27, .42)	.210	1.48 (.151)	(-.08, .49)
Letter knowledge	.116	.90 (.377)	(-.37, .95)	.017	.13 (.900)	(-.63, .71)
Elision	**.591**	3.60 (.001)	(.25, .91)	**.669**	5.06 (<.001)	(.37, .87)

To investigate whether RAN in Year 1 and Elision in both age groups was significantly stronger as a predictor in either language group, a dummy EAL variable and two interaction variables EAL*RAN and EAL*Elision were created. The two variables were entered into the regression (in two separate models, one including all of the pre-literacy predictors and EAL*RAN and the second with the aforementioned predictors and EAL*Elision). However, in either case, there were no significant differences between the two predictors.

The same analyses were run for non-word reading. In the Year 1 EAL group, phonological processing predicted 33.9% of variance on that task, $F(4,31)=3.97$, $p=.010$ and in Year 2, it predicted 45.7%, $F(4,26)=5.47$, $p=.002$. As for the native speakers, in Year 1, phonology predicted 41.4% of variance, $F(4,29)=5.13$, $p=.003$ and in Year 2 it predicted 48.2%, $F(4,29)=6.75$, $p=.001$. Tables 4.6 and 4.7 show Beta's, *t* and *p* values along with confidence intervals for each of the tasks for both year groups and language groups. While in Year 1 RAN was identified as a significant predictor of non-word decoding in both groups with elision emerging as another significant predictor only in the monolingual group, by Year 2 elision was the only significant predictor for both language groups.

Table 4.5

Betas, t values, significance levels and confidence intervals for the predictors of decoding non-words in EAL and native speakers in English in Year 1. Statistically significant beta values are shown in bold

	Children learning EAL			English monolinguals		
	Beta	*t* (*p*)	95% CI (lower, upper)	Beta	*t* (*p*)	95% CI (lower, upper)
RAN	**-.424**	-2.79 (.009)	(-1.03, -.16)	**-.488**	-3.12 (.004)	(-2.13, -.44)
Non-word repetition	.200	1.23 (.228)	(-.10, .42)	-.193	-1.16 (.254)	(-.66, .18)
Letter knowledge	-.110	-.70 (.489)	(-.65, .32)	.085	.53 (.602)	(-1.01, 1.70)
Elision	.290	1.77 (.087)	(-.04, .49)	**.398**	2.30 (.029)	(.05, .79)

Table 4.6

Betas, t values, significance levels and confidence intervals for the predictors of decoding non-words in EAL and native speakers in English in Year 2. Statistically significant beta values are shown in bold

	Children learning EAL			English monolinguals		
	Beta	*t* (*p*)	95% CI (lower, upper)	Beta	*t* (*p*)	95% CI (lower, upper)
RAN	-.167	-.97 (.343)	(-.77, .28)	-.068	-.43 (.669)	(-.69, .45)
Non-word repetition	.061	.34 (.734)	(-.34, .48)	.153	1.03 (.312)	(-.14, .41)
Letter knowledge	.071	.47 (.641)	(-.60, .96)	.005	.03 (.973)	(-.63, .65)
Elision	**.521**	2.70 (.012)	(.12, .90)	**.648**	4.68 (<.001)	(.31, .79)

The strength of the Beta values was also compared for non-word reading through including the interaction terms in the separate regressions. Again, there were no significant differences in the strength of both RAN and Elision between the two language groups.

4.4.2 Polish analyses

Correlations were first run between pre-literacy and decoding tasks for both children learning EAL and Polish native speakers to outline strengths of the relationships between these items going into regression analyses. Tables 4.8 and 4.9 show correlation matrices for the two language groups.

Table 4.7
Correlation matrix for Polish pre-literacy and decoding tasks for children learning EAL

	1.	2.	3.	4.	5.	6.	7.
1. RAN	-						
2. Non-word repetition	-.21*	-					
3. Letter knowledge	-.01	.40**	-				
4. Elision	-.07	.39**	.39**	-			
5. Non-word reading	-.25*	.46**	.62**	.65**	-		
6. Timed word reading	-.21	.36**	.61**	.62**	.87**	-	
7. Timed non-word reading	-.19	.30**	.50**	.59**	.80**	.88**	-

* correlations significant at the .05 level
** correlations significant at the .01 level

Table 4.8

Correlation matrix for pre-literacy and decoding tasks for Polish native speakers. Decoding variables were calculated for the Year 2 group only

	1.	2.	3.	4.	5.	6.	7.
1. RAN	-						
2. Non-word repetition	-.45**	-					
3. Letter knowledge	-.27**	.39**	-				
4. Elision	-.33**	.35**	.46**	-			
5. Non-word reading	-.36	.42*	.54**	.59**	-		
6. Timed word reading	-.38*	.50**	.41	.86**	.83**	-	
7. Timed non-word reading	-.37*	.47**	.30	.84**	.76**	.88**	-

* correlations significant at the .05 level

** correlations significant at the .01 level

The correlations between Polish pre-literacy tasks were also visually inspected in consideration of possible collinearity. While the correlations were for the most part significant, they were not very high, however, the variance inflation factor was also considered. In the group of children learning EAL, the VIF ranged from 1.23 to 1.39 in Year 1 and from 1.16 to 1.77 in Year 2 while the tolerance statistic ranged from .72 to .81 in Year 1 and from .57 to .86 in Year 2. In the native speaking group the VIF ranged from 1.08 to 1.67 in Year 2 while the tolerance statistic ranged from .60 to .92 in Year 2. These values suggest that in Polish the predictors did not have strong linear relationships as the highest VIF values were always well below 10, the individual VIF values were not substantially greater than 1, and the tolerance statistics were higher than .2 (which is the cut-off point indicating potential causes for concern.

Scatterplots were also plotted on the Polish data on the main correlation of decoding and Elision (see Figure 4.3 below) showing little linearity in the data.

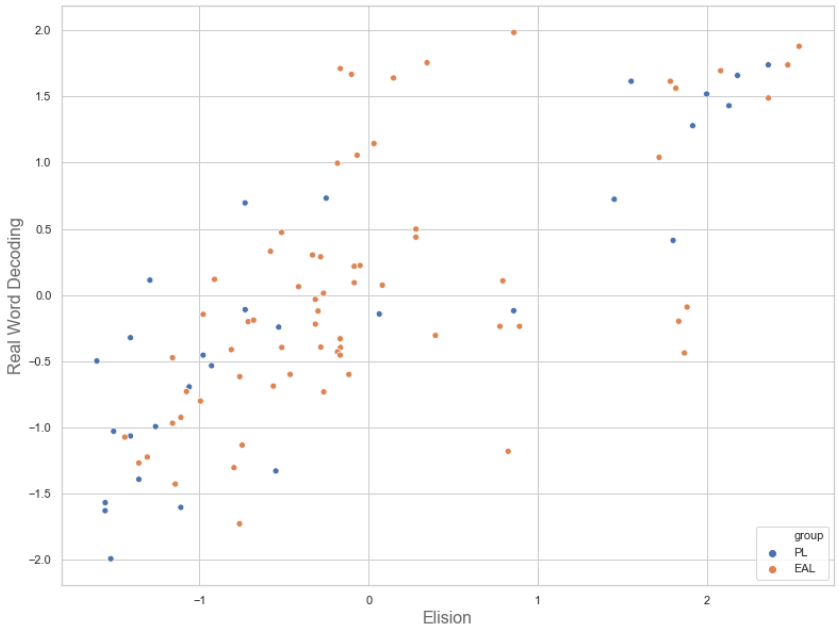


Figure 4.3 A scatterplot of the correlation between decoding and Elision in Polish

In real-word reading in the EAL Year 1 group, 60.5% of variance was accounted for by phonological processing skills, $F(4,33)=12.62$, $p<.001$ and in Year 2, phonology accounted for 80.5% of variance, $F(4,15)=15.44$, $p<.001$. In comparison, in the native speaking Polish group, in Year 2 phonology accounted for 79.6% of variance in real word reading, $F(4,24)=23.44$, $p<.001$. In Year 2, only elision was identified as a significant predictor of word decoding in both language groups. However, in Year 1 RAN and letter knowledge also emerged as significant predictors in the EAL group. Table 4.10 shows Beta's, *t* and *p* values along with confidence intervals for real word decoding for both year groups (children learning EAL) and language groups.

Table 4.9

Betas, t values and significance levels for the predictors of real word decoding in Polish for EAL and native speakers. Statistically significant beta values are shown in bold

	Year 1			Year 2					
	Children learning EAL			Children learning EAL			Polish monolinguals		
	Beta	*t* (*p*)	95% CI (lower, upper)	Beta	*t* (*p*)	95% CI (lower, upper)	Beta	*t* (*p*)	95% CI (lower, upper)
RAN	**-.285**	-2.51 (.017)	(-.52, -.05)	-.249	-2.01 (.063)	(-.72, .02)	-.152	-1.36 (.187)	(-.44, .09)
Non-word repetition	-.119	-.89 (.378)	(-.47, .18)	-.124	-.86 (.405)	(-.56, .24)	.040	.33 (.744)	(-.23, .31)
Letter knowledge	**.638**	5.09 (<.001)	(.57, 1.34)	.394	2.07 (.056)	(-.02, 1.32)	.168	1.68 (.106)	(-.08, .80)
Elision	**.284**	2.21 (.034)	(.02, .57)	**.625**	3.29 (.005)	(.18, .85)	**.756**	7.30 (<.001)	(.43, .76)

The strengths of the Betas was compared in Year 2 between children learning EAL and native speakers using the same method as in English comparisons. The analysis, however, produced a non-significant outcome suggesting that the two Betas do not differ significantly.

In the non-word reading subtest, in the EAL group, phonology accounted for 42.6% of variance in Year 1, $F(4,33)=6.12$, $p=.001$ and 73% in Year 2, $F(4,15)=10.14$, $p<.001$. In the native speaking Polish group, in Year 2 phonology accounted for 72.7% of variance in non-word reading, $F(4,24)=16.01$, $p<.001$. RAN and letter knowledge were the two significant predictors of non-word decoding in Year 1 while in Year 2 Elision was the only significant predictor (approaching significance in the EAL group). Table 4.11 outlines the Betas, *t* values and confidence intervals for non-word reading for the two groups.

Table 4.10

Betas, t values and significance levels for the predictors of non-word decoding in Polish for EAL and native speakers. Statistically significant beta values are shown in bold

	Year 1			Year 2					
	Children learning EAL			Children learning EAL			Polish monolinguals		
	Beta	*t* (*p*)	95% CI (lower, upper)	Beta	*t* (*p*)	95% CI (lower, upper)	Beta	*t* (*p*)	95% CI (lower, upper)
RAN	**-.291**	-2.12 (.041)	(-.51, -.01)	-.165	-1.13 (.275)	(-.77, .24)	-.165	-1.27 (.215)	(-.44, .11)
Non-word repetition	-.227	-1.41 (.168)	(-.60, .11)	.019	.11 (.913)	(-.52, .57)	.003	.02 (.982)	(-.28, .28)
Letter knowledge	**.563**	3.73 (.001)	(.35, 1.18)	.420	1.88 (.080)	(-.11, 1.72)	.074	.64 (.527)	(-.31, .60)
Elision	.246	1.59 (.121)	(-.07, .53)	**.474**	2.12 (.051)	(-.01, .91)	**.770**	6.43 (<.001)	(.37, .72)

The strengths of standardized Betas was compared for Year 2 Elision, but was again found to be non-significant.

4.5 Discussion

In this chapter we aimed to establish the predictors of word level reading in an EAL population of Polish children as compared to their native speaking peers in both languages. The findings show that overall elision – a measure of phonological awareness, was the best predictor of decoding. This was the case in both English and Polish and both for decoding real and non-words. This relationship between phonological awareness and decoding was also true both for EAL pupils and the native speakers. Interestingly, while in Year 1 other pre-literacy abilities including rapid naming and letter knowledge also contributed to the variance in decoding, by Year 2 elision was the only significant predictor.

Overall, the present study confirmed previous findings identifying phonological awareness as a powerful predictor of decoding in the early stages of reading (e.g. Mellby-Lervåg, Lyster, & Hulme, 2012) along with speeded naming (e.g. McBride-Chang & Kail, 2002) as two tasks with most predictive value in English along with letter knowledge (also Muter et al., 2004) in Polish. Also in line with previous research (e.g. Georgiou et al., 2008), in English (the more opaque language) elision was the stronger predictor compared to the other two tasks. Phonological awareness was also a strong predictor of decoding in Polish. The predictive value of phonological awareness in both languages was similar with no statistically significant differences between the Betas (following findings showing a similar extent of predictive value in English and other examples of transparent languages by Caravolas, Volin, & Hulme, 2005; Lervåg, Braten, & Hulme, 2009; Furnes & Samuelsson, 2009; Patel, Snowling, & de Jong, 2004).

With regards to the findings on rapid naming as a better predictor of decoding, particularly in more transparent languages (e.g. Ziegler et al., 2010) we did find that in Year 1 in the EAL sample RAN was indeed a slightly stronger predictor of decoding both real and non-words in Polish compared to elision. However, this task ceased to be a significant predictor in the Year 2 group. Ziegler et al.'s (2010) study on the other hand found their second graders showed this relationship between RAN and decoding. Furthermore, research shows RAN to be time-limited in English (e.g. Parrila et al., 2004) which is indeed what was also observed in the present study with RAN as a significant predictor of English decoding in Year 1 but not in Year 2. On the other hand, de Jong and van der Leij (2003) suggest that in more transparent orthographies RAN persists as a predictor which was not observed in this study – in Polish RAN was again only a significant predictor in Year 1 and by Year 2 only elision was a significant predictor.

Based on previous findings it could be expected for letter knowledge to be a predictor of decoding in Year 1 along with RAN and elision (e.g. Byrne & Fielding-Barnsley, 1993;Burgess & Lonigan, 1998). The absence of this effect may be due to the overall good performance of children on the letter sound task and a lack of variety in their responses. Nearing mastery on letter sound mapping, children rely instead on their phonological awareness for their decoding.

One major limitation of the present study is its cross-sectional design. Although this gives us information about the relationship between phonology and decoding at both grade levels, following the children through school grades would allow us to find out whether their performance on phonological awareness tasks in earlier grades affects their decoding ability some years later. Secondly, the measure used for rapid naming was an object subtest. It has been suggested that alphanumeric naming tasks are better predictors of decoding compared to the object and color subtests (e.g. Savage & Frederickson, 2005). Therefore, it is possible that the outcomes of predictions for the relationship between rapid naming and decoding could have been stronger had one of the alphanumeric subtests been used. However, an addition of another RAN subtest could have produced different findings.

The present study looked at the predictors of decoding in both languages spoken by the child. To conclude, the results of this study show that both in the case of EAL and monolingual readers, in the first few years of instruction, phonological awareness, and in particular the elision task was found to be the best predictor of decoding ability. Other tasks such as letter knowledge and rapid naming predicted decoding to some extent, albeit only in the earlier grades. This study adds to previous evidence of the relationship between phonology and decoding both in English as well as Polish which is a more orthographically transparent language.

Chapter 5 – Predictors of reading comprehension and higher level comprehension skills

5.1 Introduction

Reading comprehension is a multidimensional construct drawing on a number of different cognitive skills (e.g. van den Broek et al., 2005). While different reading comprehension theories have been proposed each involving a number of coordinated subprocesses (Gough, Hoover, & Peterson, 1996), this chapter will utilise the Simple View of Reading framework proposed by Gough and Tunmer (1986). The previous chapter explored the predictors of word level reading from phonological skills. This chapter will focus on the predictors of reading comprehension. As stated in Chapter 1, the Simple View of Reading suggests that successful reading comprehension relies on both decoding skills and language comprehension, an assumption supported by research (e.g. Lonigan, Schatschneider, & Westberg, 2008; Whitehurst & Lonigan, 1998).

In monolingual samples, the common finding is that the relative predictive value of decoding and linguistic comprehension to reading comprehension changes over time, with decoding taking precedence at the early stages of learning to read and linguistic comprehension becoming more important as children become skilled readers (Gough & Tunmer, 1986; Hoover & Gough, 1990; Gough, Hoover, & Peterson, 1996). This effect was clearly observed in a study by Vellutino, Tunmer, Jaccard and Chen (2007) who showed that while younger children showed a stronger, more stable relationship between word identification and related phonological skills and reading comprehension, in the older group the relationship between language comprehension and reading comprehension was the stronger, more stable one. In addition to phonological skills, Nation and Snowling (2004) found that measures of oral

language assessing vocabulary knowledge and listening comprehension were unique concurrent predictors of both reading comprehension and word recognition. Furthermore, their study showed that these measures of oral language predicted individual differences in reading comprehension after a delay of four and a half years leading to a suggestion that phonological skills alongside language proficiency influence the development of reading ability. A study undertaken by the Language and Reading Research Consortium (LARRC, 2015) further showed that listening comprehension influences reading comprehension even in the early stages becoming the more prominent predictor as compared to decoding early in the child's acquisition of reading competences with the LARRC finding the shift as early as Year 2. This study also suggests that oral language can affect reading comprehension directly through listening comprehension as well as indirectly whereby vocabulary can have an effect on reading comprehension through listening comprehension. Tunmer and Chapman (2012) on the other hand found listening comprehension indirectly impacted reading comprehension through its influence on word recognition. Finally, a meta-analysis review of studies undertaken by Quinn (2016) shows that across studies the common finding was that initially (in earlier grades) decoding, along with linguistic comprehension were important factors in reading comprehension, however, in later grades, once decoding became fluent, linguistic comprehension became the only significant predictor of reading comprehension.

Interestingly, relationships have been established between the two components of reading comprehension – Kendeou, van den Broek, White and Lynch (2009) found the two clusters (oral language and decoding) to be related in preschool, with a weakening of this relationship in later grades (Kindergarten and second grade). In their study, by second grade both clusters predicted reading comprehension, however, oral language skills accounted for more variance compared to decoding (Kendeou et al., 2009). Finally, it has been suggested that it is difficult to exactly pinpoint the timing (specific grade level) of the shift from decoding to oral

language as the stronger predictor of reading comprehension (Language and Reading Research Consortium, 2015) even in monolingual typically developing samples, with the situation perhaps even further complicated in readers learning English as their L2.

While extensive research has been conducted on the Simple View of Reading with monolingual populations, less is known about the acquisition of reading in bilingual children (Deacon & Cain, 2011), although some research studies have shown the model to be adequate for this population of students (e.g., Gottardo & Mueller, 2009; Proctor, Carlo, August, & Snow, 2005; Yaghoub Zadeh, Farnia, & Geva, 2012). Just as with monolinguals, oral proficiency has been suggested to facilitate L2 text reading in EAL learners (Nation, 2001). Measures of language skills have been shown to be related to measures of reading comprehension (e.g., Catts, Fey, Zhang, & Tomblin, 2001). In fact, some suggest that oral language skills in L2 are more important in explaining L2 reading comprehension than it is the case in monolingual speakers (Droop & Verhoeven, 2003), although other studies found inconsistencies in these findings: while Babayiğit (2014) reported that oral language as assessed on vocabulary and sentence processing skills was more significant in L2 reading comprehension compared to L1, in a later study (Babayiğit, 2015) she found that although the same pattern while present, was not statistically significant. Furthermore, Kieffer and Vukovic (2013) reported a comparable relationship between oral language and reading comprehension for both monolingual and L2 readers, also shown by Bowyer-Crane et al. (2016) who reported no differences in the strengths of relationships between oral language and reading comprehension for children learning EAL and monolingual readers. Babayiğit (2015) suggests socioeconomic backgrounds as a possible explanation for these inconsistencies in findings, adding language and ethnic group differences as well as the influence of home language environment as potential factors.

With a particular emphasis on vocabulary knowledge in the L2, oral language skills have been identified as a predictor of reading comprehension (e.g. in Spanish, Lesaux et al., 2010; and Italian, Tobia & Bonifacci, 2015). In one of the early studies on reading comprehension components in a bilingual population, Verhoeven (1990) found that, similar to monolingual populations, as the children progressed through school the predictive power of decoding decreased. This decrease of predictive power was again replicated with a different sample by Verhoeven and van Leeuwe (2012) who also showed that as children grew older and became better readers, the predictive value of listening comprehension on reading comprehension increased and what is more, this increase was to the same extent in monolingual and EAL learners. Swanson, Rosston, Gerber and Solari (2008) compared the predictive value of phonological awareness and oral language measures on reading comprehension in a third grade sample of children learning EAL. They too show that L2 oral language – in their case expressive vocabulary and syntax – were better predictors of L2 reading skills compared to phonology, contributing a substantial amount of variance to a measure of reading comprehension ability. In a sample of Spanish-English 4th Graders assessed by Proctor, Carlo, August and Snow (2005) decoding again played a lesser role compared to oral language. The researchers found that listening comprehension in the children's L2 made a significant proximal contribution to L2 reading comprehension and that L2 vocabulary knowledge had both proximal and distal relationships with reading comprehension. They conclude that provided a child learning EAL has an adequate level of decoding in their second language, their vocabulary knowledge in that language needs to be considered as a crucial factor in their development of L2 reading comprehension. In another study with a Spanish-English cohort, expressive vocabulary again showed language-specific relationships with reading comprehension where oral-language variables (picture vocabulary tasks in both

languages) showed better predictive value for reading comprehension over word decoding even in a sample followed from Kindergarten to Grade 1. (Lindsey, Manis, & Bailey, 2003). Kieffer (2012) further found that in another Spanish-English sample of children, expressive vocabulary in English was the best predictor of reading comprehension, over other measures such as listening comprehension and story retell. In a longitudinal analysis, in the final reading comprehension model, once oral language was included in the model, phonological awareness and RAN were no longer significant predictors (Nakamoto, Lindsey, & Manis 2007).

When investigating which skills predict reading comprehension in an EAL population, orthographic depth may affect the results in predicting L1 outcomes. Previous research has identified orthographic depth as a crucial factor in determining the trajectories of the development of reading (e.g. Frost, Katz, & Bentin, 1987). As shown in the studies outlined above, both decoding and listening comprehension explain a substantial proportion of variance in reading comprehension in a variety of languages varying on the transparency continuum. In addition, the model has been applied successfully to the less transparent French (Megherbi, Seigneuric, & Ehrlich, 2006) as well as the more transparent Dutch (Verhoeven & van Leeuwe, 2012) or Greek (Protopapas, Sideridis, Mouzaki, & Simos, 2007; see Protopapas & Vlahou, 2009 for a comparison of Greek against other languages such as German, French and Dutch with regards to transparency in reading and spelling). A previous study in Hebrew which is considered a more opaque orthography, found that decoding played an important role in predicting reading comprehension for a longer period of time compared to previous findings from more transparent orthographies (Joshi et al., 2015). Furthermore, while some studies show that in more transparent orthographies linguistic comprehension exerts greater influence on reading comprehension compared to decoding, other research

findings suggest that decoding fluency is in fact a better predictor (Florit & Cain, 2011). All in all, it seems that orthographic depth needs to be considered when analysing comparisons of reading comprehension predictors in different languages, particularly when they are far from each other on the transparency continuum.

The final aspect of comprehension which will be considered in this chapter is higher level comprehension abilities of school age children measured through their skills in monitoring comprehension and making inferences. Previous research has indicated that these skills are both important as predictors of both linguistic and reading comprehension and in distinguishing poor comprehenders from their typically performing peers (Silva & Cain, 2015; Cain & Oakhill, 1999; Baker, 1979). While making inferences is essential for correctly understanding narrative and constructing a situational model (Graesser, Singer, & Trabasso, 1994), the reader also needs to monitor the events in the story making this task an important component of reading comprehension (Cain, Oakhill, & Bryant, 2004). Studies have shown inference skills to contribute to comprehension longitudinally (Silva & Cain, 2015) with the development of inference-making skills largely dependent on the child's language knowledge (Barnes et al., 1996). In line with this, vocabulary and inference making have been shown to share a bi-directional relation – on the one hand word knowledge supports inference making, and on the other inference from context further drives the acquisition of vocabulary (Silva & Cain, 2015).

Comprehension monitoring requires the reader to identify inconsistencies between the text they are reading and previously gathered information. While this task has been shown to be difficult for younger children, Cain (2007) suggests it is also a good way of identifying children with reading comprehension difficulties as they show impaired performance on this task compared to good comprehenders (see also Barnes et al., 1996). Skilled readers, unlike

their peers with reading difficulties use comprehension breakdowns as a signal to re-read the passage (Baker, 1984). While a number of studies have been conducted on monolingual children's higher level comprehension skills, less is currently known about the extent of these abilities in the EAL population. Shahar-Yames and Prior (2018) suggest that while on one hand inferencing could be a way of bridging the gap between monolinguals and their EAL peers and supporting their literacy, on the other hand this task may be more difficult for these children because of their limited L2. However, in their recent study Shahar-Yames and Prior (2018) concluded inferencing can be used as a tool promoting vocabulary growth and comprehension in language minority students. Comprehension monitoring is likewise relevant in this group both for learning a second language and learning to read (Bialystok & Ryan, 1985). As children learning EAL are more likely to encounter unfamiliar words or phrases in their L2 they will need to frequently 'repair gaps' in their understanding of text (Block, 1992).

5.2 Aims

The first aim of this chapter was to investigate which tasks best predict reading comprehension in a sample of children learning EAL as compared to their native speaking peers in both languages spoken (English and Polish). Based on the research outlined above, it is expected that in Year 1 decoding will emerge as the stronger predictor of reading comprehension performance (contributing more variance to reading comprehension than oral language) while in Year 2 oral language should be the driving predictor compared to decoding the role of which should be reduced. Secondly, this study set out to investigate whether there were any differences between the children learning EAL and their monolingual peers on tasks tapping higher level comprehension skills of inference making and comprehension monitoring. Although previous research into higher level comprehension

performance in the EAL population is limited, it can be hypothesised that due to limited L2, children learning EAL are likely to show difficulties on these tasks in English but should perform comparably to their monolingual peers in their L1. Finally, these higher level skills will be correlated with other tasks administered to find out whether predictors of these skills could be found within the test battery (e.g. vocabulary knowledge, Barnes et al., 1996) and whether there is a relationship between higher level skills and reading comprehension (e.g. Silva & Cain, 201).

5.3 Method

This study analysed data collected from 165 participants divided into three language groups: children learning EAL and two monolingual native speaking groups of English and Polish. For this chapter data was analysed from children in Year 1 and Year 2. Analyses on the predictors of reading comprehension were conducted with both age groups but only Year 2 children were administered with tasks assessing higher level comprehension skills. More detail on the number of participants in each group, as well as mean age and gender split of participants is provided in the Methodology chapter.

Participants were administered a battery of tasks assessing their phonological processing, oral language, decoding, reading comprehension and higher level comprehension skills. These assessments and the procedure have been outlined in the methodology chapter along with details on creating the bespoke Polish tasks for assessing higher level comprehension skills. Results of reliability tests on the bespoke tasks are also provided in the Methodology chapter. Low reliability scores on the inference making assessment in English led to the decision to leave out this section of analyses in this chapter. However, analyses on inference making in Polish and comprehension monitoring in both languages will be presented below.

5.4 Results

5.4.1 Predictors of reading comprehension

First, the predictors of reading comprehension were considered in English. Taking previous research into account decoding (for this chapter the timed real word decoding task was entered in analyses) and oral language were included in the model. The raw score performance on reading comprehension of EAL children in English was a mean of 2.03 (SD=1.56) in Year 1 and 3.58 (SD=1.74) in Year 2 compared to 4.03 (SD=1.06) in Year 1 and 4.06 (SD=1.54) in Year 2 for the English native speakers (scores were out of 8). In Polish, the mean raw scores (also out of 8) for EAL Year 1 were 2.46 (SD=2.13) and 4.62 (SD=2.11) for Year 2 compared to a mean of 3.55 (SD=1.40) for Polish native speakers in Year 2.

In the EAL population, in Year 1, 31.5% of variance in reading comprehension was predicted by decoding and oral language, $F(2,33)=7.59$, $p=.002$ and in Year 2 this percentage changed to 60.8%, $F(2,28)=24.22$, $p<.001$. In the native speaking group, in Year 1, 32.6% of variance was predicted by decoding and oral language, $F(2,31)=7.48$, $p=.002$ and in Year 2 this changed to 26.7%, $F(2,31)=5.64$, $p<.05$. See Tables 5.1 and 5.2 below for the extent of contribution of decoding (measured using a real word reading task) and oral language (a composite of receptive and expressive vocabulary and grammar measures) separately in these two groups at the two time points.

Table 5.1

Betas, t values, significance levels and confidence intervals for reading comprehension predictors in English EAL and native speaking groups in Year 1. Statistically significant beta values are shown in bold

	Children learning EAL				English monolinguals			
	R^2 change	Beta	*t* (*p*)	95% CI (lower, upper)	R^2 change	Beta	*t* (*p*)	95% CI (lower, upper)
Real word reading	.28	**.389**	2.24 (.032)	(.04, .83)	.05	.278	1.86 (.072)	(-.02, .39)
OL composite	.04	.242	1.40 (.172)	(-.12, .64)	.28	**.527**	3.56 (.001)	(.23, .84)

Table 5.2

Betas, t values, significance levels and confidence intervals for reading comprehension predictors in English EAL and native speaking groups in Year 2. Statistically significant beta values are shown in bold

	Children learning EAL				English monolinguals			
	R^2 change	Beta	*t* (*p*)	95% CI (lower, upper)	R^2 change	Beta	*t* (*p*)	95% CI (lower, upper)
Real word reading	.56	**.542**	3.77 (.001)	(.24, .80)	.10	.134	.79 (.435)	(-.23, .52)
OL composite	.07	**.341**	2.37 (.025)	(.07, .98)	.17	**.447**	2.65 (.013)	(.18, 1.38)

To check for multicollinearity, the VIF and tolerance statistics were run for decoding and oral language composite. The VIF ranged from 1.45 in Year 1 to 1.58 in Year 2 in the EAL group compared to 1.01 and 1.20 in the native speaking group in the corresponding year groups. The tolerance statistic ranged from .68 to .63 in the EAL group and from .99 to .83 in the native speaking group. These results suggest a low chance of multicollinearity.

Scatterplots were also plotted for the correlations between oral language and reading comprehension as well as decoding and reading comprehension to check for linearity (see Figures 5.1 and 5.2 below). While some linearity is present in the correlation with oral language, little linearity is seen in the relationship with decoding.

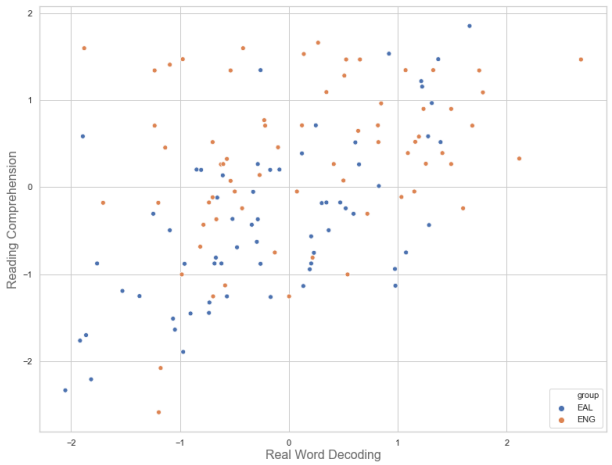


Figure 5.1 A scatterplot of the correlations between decoding and reading comprehension in English

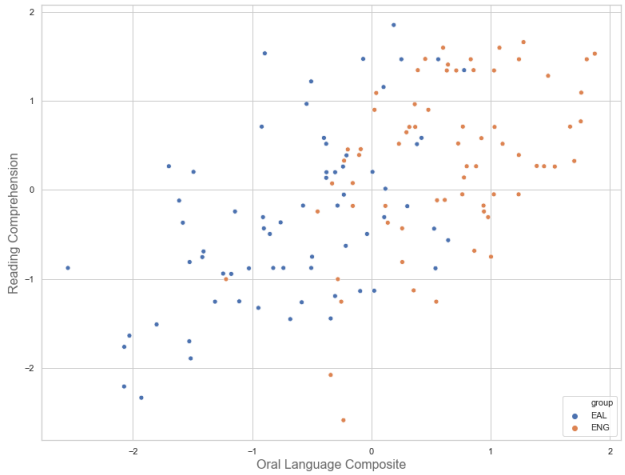


Figure 5.2 A scatterplot of the correlations between reading comprehension and the oral language composite in English

Next, reading comprehension predictors were analysed in Polish for both children learning EAL and their native speaking peers. The EAL data shows that in Year 1 decoding and reading comprehension account for 51.5% of the variance in reading comprehension $F(2,32)=16.96$, $p<.001$ and in Year 2 for 56%, $F(2,26)=16.57$, $p<.001$. As for the native speakers, in Year 2 decoding and oral language accounted for 48.5% of variance, $F(2,26)=12.25$, $p<.001$. Table 5.3 outlines the individual contribution of decoding and oral language in the model for Year 1 children learning EAL and Table 5.4 provides Betas, t values and significance levels for both language groups in Year 2.

Table 5.3

Betas, t values and significance levels for reading comprehension predictors in Polish Year 1 children learning EAL. Statistically significant beta values are shown in bold

	R^2 change	Beta	*t* (*p*)	95% CI (lower, upper)
Real word reading	.31	**.457**	3.63 (.001)	(.25, .91)
OL composite	.21	**.465**	3.69 (.001)	(.25, .87)

Table 5.4

Betas, t values and significance levels for reading comprehension predictors in Year 2 children in Polish for both language groups. Statistically significant beta values are shown in bold

	Children learning EAL				Polish monolinguals			
	R^2 change	Beta	*t* (*p*)	95% CI (lower, upper)	R^2 change	Beta	*t* (*p*)	95% CI (lower, upper)
Real word reading	.56	**.747**	5.74 (<.001)	(.50, 1.05)	.42	**.499**	3.07 (.005)	(.11, .54)
OL composite	.001	-.035	-.27 (.790)	(-.46, .35)	.07	.296	1.82 (.081)	(-.03, .46)

A multicollinearity check was also performed on the Polish data. The VIF value was 1.01 in Year 1 and Year 2 in the EAL group yielding a tolerance statistic of .99 compared to a VIF of 1.34 in the Year 2 native speaking group and a tolerance statistic of .75 suggesting a low chance of multicollinearity.

Scatterplots were also plotted for the Polish data. Figures 5.3 and 5.4 show the correlations with reading comprehension of decoding and oral language respectively. While the decoding scatterplot shows some level of linearity, the oral language one shows little linearity.

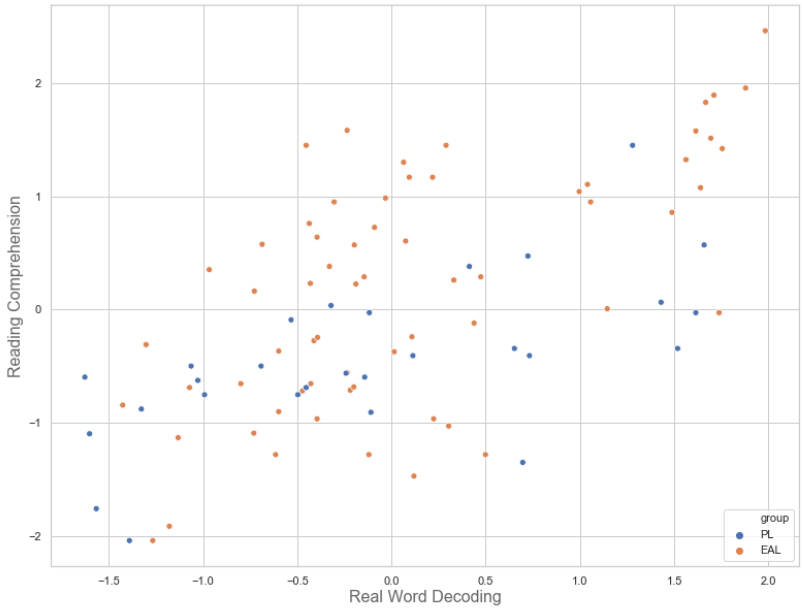


Figure 5.3 A scatterplot of the correlation between reading comprehension and decoding in Polish

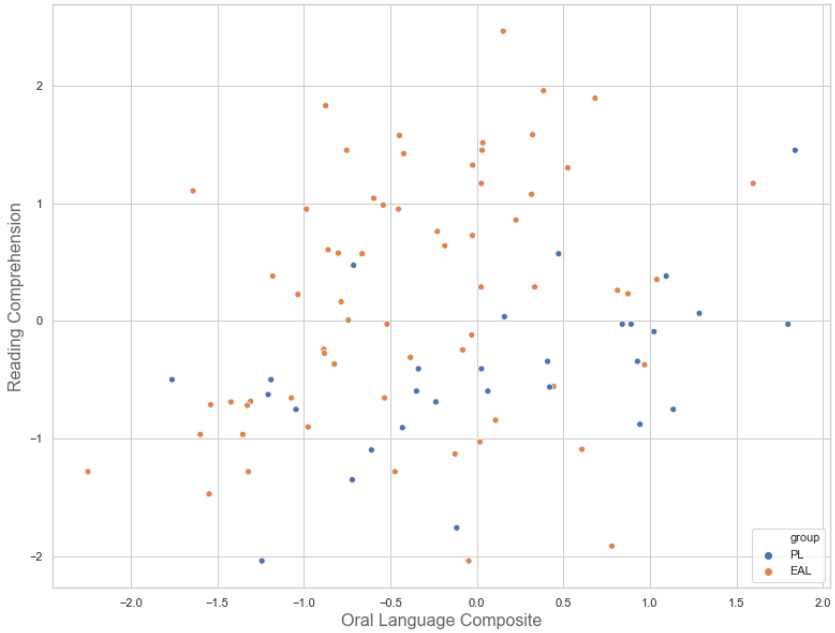


Figure 5.4 A scatterplot of the correlation between reading comprehension and the oral language composite in Polish

5.4.2 Higher level comprehension skills: comparison between EAL and monolinguals

First, the EAL group's results on the inference task were compared to their Polish native speaking peers. Inference abilities of the EAL group could only be compared with the performance of their Polish monolingual peers. English comparisons were not performed due to low Cronbach's alpha scores obtained by both children learning EAL and native speakers on the English inference task. In Polish, the three tasks assessed were overall episode score, post-test memory of learned facts and the post-test inference score. No significant differences were found between the two groups on all three assessments. See Table 5.5 below for means, standard deviations, *t* and *p* values for all three tasks.

Table 5.5

Means, standard deviations and t-test outcomes for comparison between EAL and native speaking Polish children on the MEP task

Task	Mean (SD)	*t* value	*p*
Episode total			
EAL	10.77 (3.17)	-.12	.907
Polish monolingual	10.87 (3.00)		
Post-test knowledge			
EAL	10.74 (1.44)	-.46	.645
Polish monolingual	10.93 (1.78)		
Inference score			
EAL	8.45 (1.21)	-.10	.922
Polish monolingual	8.50 (246)		

Table 5.5 shows that while the children in both groups had no problems with remembering the facts at post-test (maximum of 12 points) and performed adequately on the post-test inference task (also out of 12), their scores on the episode questions were relatively low (total score for this subtest was 24).

The EAL group was also compared on comprehension monitoring performance to both their Polish and English peers. While no significant differences were found between the two groups in Polish, $t(59)=-1.06$, $p>.05$, there was a significant difference in English $t(63)=-4.51$, $p<.001$ with the children learning EAL underperforming compared to their native speaking peers.

5.4.3 Higher level comprehension skills: correlations and predictors

5.4.3.1 MEP Inference subtest

The MEP inference subtest was correlated with a number of other tasks separately for both EAL and native speakers of Polish (see Tables 5.6 and 5.7 for correlation matrices in these two groups).

Table 5.6

Correlations with the MEP inference subtest for the children learning EAL in Polish

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. MEP inference score	-								
2. MEP episode score	36*	-							
3. MEP post-test score	.07	.31	-						
4. Comprehension monitoring	.20	.02	-.09	-					
5. Reading comprehension	.25	.47*	.13	.15	-				
6. Word reading	.31	.11	.11	.09	.64*	-			
7. OL composite	39*	.32	.26	.20	.29*	.17	-		
8. OL expressive composite	.23	.37*	.35	.23	.31*	.13	.88**	-	
9. OL receptive composite	48*	.29	.20	.13	.22	.29	.90**	.63**	-

* correlations significant at the .05 level

** correlations significant at the .01 level

Table 5.7

Correlations with the MEP inference subtest for Polish native speaking participants

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. MEP inference score	-								
2. MEP episode score	.56**	-							
3. MEP post-test score	.60**	.57**	-						
4. Comprehension monitoring	.39*	.42**	.44*	-					
5. Reading comprehension	.24	.31	.17	.09	-				
6. Word reading	.30	.41*	.32	.19	.65**	-			
7. OL composite	.73**	.52**	.44*	.38*	.55**	.54**	-		
8. OL expressive composite	.65**	.45*	.41*	.41*	.57**	.54**	.91**	-	
9. OL receptive composite	.67**	.54**	.41*	.44*	.33	.44	.92**	.73**	-

* correlations significant at the .05 level

** correlations significant at the .01 level

While there was a significant correlation with total episode score (r=.36, *p*=.028) and oral language composite (r=.39, *p*=.032) in the EAL group, the native speakers showed significant correlations with both MEP tasks (r=.56, *p*=.001 for episode scores and .60, *p*<.001 for post-test knowledge), Polish comprehension monitoring (r=.39, *p*=.018), oral language composite (r=.73, *p*<.001) as well as both the receptive (r=.67, *p*<.001) and expressive (r=.65, *p*<.001) oral language composites.

Since vocabulary and word knowledge (which can be obtained through reading) have been linked with inference making ability the researchers were interested to establish whether these tasks would predict children's performance on the Polish inference task. A regression

was performed with the MEP inference subtest as a dependent variable. When reading comprehension, real word reading and oral language composite were included in the model, these predicted 48% of variance in the native speaking group, $F(3,25)=7.77$, $p=.001$ with only the oral language composite contributing a significant Beta of .73 ($p<.001$). When this model was fitted for the EAL group, it accounted for 24% of variance $F(3,25)=2.66$, $p=.070$ and again only oral language had a significant contribution with a Beta value of .37 ($p=.044$).

Finally, the possible contribution of inferencing ability to reading comprehension was examined in a model which also included decoding. Inference making did not significantly add to the model explaining reading comprehension in either the EAL group, giving an R^2 change value lower than .001 (F change $(1,26)=.03$, $p>.05$, Beta for inference making was .02, $t=.16$, $p>.05$, 95% CI [-.45, .53]) nor the native speaking group where the R^2 change value was .01 (F change $(1,26)=.40$, $p>.05$, $\beta=.10$, $t=.63$, $p>.05$, 95% CI [-.12, .23]).

5.4.3.2 Comprehension monitoring in English

English comprehension monitoring was also correlated with other English tasks the children completed (the inference tasks, although included in the Polish correlations were left out here due to low reliability scores). Here EAL group scores showed no correlation with any other tasks apart from the episode score from the inference test. Performance of the native speakers, on the other hand, again showed correlations with the total episode score as well as oral language composites, including receptive and expressive oral language composites separately (see correlation matrices in Tables 5.8 and 5.9 below).

Table 5.8

Correlations with the English comprehension monitoring measure for children learning EAL

	1.	2.	3.	4.	5.	6.
1. Comprehension monitoring	-					
2. Reading comprehension	.27	-				
3. Word reading	-.06	.58**	-			
4. OL composite	.25	.55**	.59**	-		
5. OL expressive composite	.30	.54**	.60**	.91**	-	
6. OL receptive composite	.03	.34**	.37**	.86**	.60**	-

* correlations significant at the .05 level

** correlations significant at the .01 level

Table 5.9

Correlations with the English comprehension monitoring measure for the native speaking group

	1.	2.	3.	4.	5.	6.
1. Comprehension monitoring	-					
2. Reading comprehension	.28	-				
3. Word reading	.13	.37**	-			
4. OL composite	.63**	.46**	.24*	-		
5. OL expressive composite	.60**	.46**	.31*	.84**	-	
6. OL receptive composite	.44*	.32**	.04	.85**	.53**	-

* correlations significant at the .05 level

** correlations significant at the .01 level

A regression analysis was run to investigate the influence of the metacognitive skill of comprehension monitoring on reading comprehension. In the EAL sample, a model with real word decoding and comprehension monitoring explained 62.9% of the variance in reading comprehension, $F(2,28)=26.41$, $p<.001$ with comprehension monitoring explaining an R^2 change of 9.7%. In this model the Beta for decoding was .76 ($t=6.86$, p<.001, 95% CI [.54, 1.01]) and for comprehension monitoring was .31 ($t=2.80$, p=.009, 95% CI [.10, .66]). In the native speakers, in the same model, comprehension monitoring did not significantly contribute to reading comprehension with an R^2 change value of .01 F change (1,31)=.36, $p>.05$ (Beta for comprehension monitoring in this model was equal to .09, $t=.60$, $p>.05$, 95% CI [-.20, .37]).

5.4.3.3 Comprehension monitoring in Polish

When the Polish comprehension monitoring task was correlated with other items, performance of the children learning EAL did not correlate with any other tasks. Performance of the Polish native speakers on the other hand correlated with all three MEP subtests (episode score, post-test knowledge and inference score) as well as the oral language composite (including the receptive and expressive composites separately). See Tables 5.6 and 5.7 for the correlation values.

The same regression model as in English comprehension monitoring was also applied to the Polish monitoring measure. In the EAL group, comprehension monitoring in Polish did not significantly contribute to the model explaining reading comprehension above decoding with an R^2 change value of .002, F change (1,26)=.10, $p>.05$, Beta=.04, $t=.32$, $p>.05$, 95% CI [-26, .35]. This was also the case for Polish native speakers where the R^2 change value was below .001, F change (1,26)=.004, $p>.05$, Beta=.01, $t=.07$, $p>.05$, 95%CI [-.21, .20].

5.5. Discussion

The present study aimed to identify the predictors of reading comprehension in a sample of Polish children learning EAL and compare these to their monolingual peers in both languages. Furthermore, the aim of this chapter was to investigate higher level comprehension skills of these three groups of children. To begin with, in the EAL group both in English and in Polish, the children were relying on decoding more than oral language for their reading comprehension (in some cases decoding was the only significant predictor). Polish native speakers relied only on decoding in Year 2 (Grade 1, only received one year of instruction) and the English native speaking children, while in Year 1 OL composite was the significant predictor, the cohort of children in Year 2 relied on decoding. Secondly, the children learning EAL showed no difficulties compared to their native speakers on Polish higher level comprehension tasks of inference making or comprehension monitoring but they did underperform on the English comprehension monitoring subtest compared to their English peers. Finally, when the comprehension monitoring and inference making tasks were correlated with other language, comprehension and decoding tasks, the most prevalent correlation was identified with the oral language composite. This finding was, however, not replicated in all correlations. While these metacognitive higher level comprehension skills are considered as domain general, these findings show that they are dependent to a certain extent on oral language measures which in turn are language-specific.

The present study was able to apply the Simple View of Reading (Gough & Tunmer, 1986) framework in the Polish analyses, similarly to other previous studies on more transparent orthographies such as Dutch (Verhoeven & van Leeuwe, 2012) or Greek (Protopapas, Sideridis, Mouzaki, & Simos, 2007) by investigating the relationship between reading comprehension and the two skills identified by this model as its key components – decoding

and language comprehension. We observed a reliance on decoding in both EAL and native speaking children which may have been affected by orthographic depth. The finding that decoding was a better predictor of reading comprehension in Polish, which is the more transparent orthography, differs from the findings of Florit and Cain (2011) who found that in transparent orthographies linguistic comprehension becomes a better predictor of reading comprehension over decoding earlier than it is the case in more opaque languages (such as English). On the other hand, the majority of previous research in English showed older children to rely on linguistic comprehension rather than decoding (Gough & Tunmer, 1986; Hoover & Gough, 1990; Gough, Hoover, & Peterson, 1996; Nation & Snowling, 2004; Quinn, 2016) which was not replicated in the English analyses in the present study. One explanation may be connected with lower performance on oral language tasks compared to standard scores of monolinguals at that age. Perhaps this sample presented some particular difficulties with oral language and hence had to rely more on decoding for their reading comprehension. This lower performance on oral language may in turn be connected with the participants being sampled from lower SES areas (which was an outcome of searching for large Polish populations). Previous studies indicate the relationship between SES and low oral language outcomes both in monolingual and EAL samples. Children from low SES backgrounds show smaller vocabularies compared to their peers from higher SES families (e.g. Hoff, 2006) and this difference between vocabulary size can be observed as early as 36 months of age, getting bigger until age four, and then remaining relatively constant through to 13 years of age (Farkas & Beron, 2004). However, as shown in a 2017 paper by Norbury et al. while socioeconomic status was among the factors predicting initial language score, it did not predict language growth. As for second language learners, it is unclear how much of the underperformance on language measures can be attributed to low SES and how much of it is mediated by EAL status (Hoff, 2013). However, a study by Oller and Eilers (2002) found

independent and additive effects of SES and home language exposure on English language performance in a sample of Spanish-English children.

On the other hand, it is still unclear when exactly this shift from decoding to linguistic comprehension occurs (Language and Reading Research Consortium, 2015) – whether we can pinpoint it to an exact grade level, especially for the EAL population. For example, while Kendeou et al. (2009) found their second grade participants (eight year olds who at the time of testing were in or have recently completed second grade in the USA) to rely on oral language, second and third graders (also studies in the USA school system) in a study by Vellutino et al (2007) still showed a more stable relationship between decoding and reading comprehension. It is possible then, that the present study findings are related to the younger age of the participants (between ages of 6 and 7) as compared to some of the previous research. As for the difficulties in comprehension monitoring shown by the EAL sample in English, this finding is in somewhat of a disagreement with Shahar-Yames and Prior (2018) who suggest that higher level comprehension can promote reading comprehension and vocabulary development. This also links with the present study not finding strong relationships in particular between comprehension skills and reading comprehension, a finding which was also reported by Kinnunen and Vauras (1995) who found monitoring and reading comprehension to be related. Finally, while we were unable to compare children learning EAL and native speakers on their L2 inference making, we did not find any differences between the two groups in Polish. However, Burgoyne, Whiteley and Hutchinson (2013) also found no significant differences on making inferences to answer questions between EAL and native speakers (albeit in L2) with the children learning EAL using previously learned information to aid with reading comprehension to a similar extent as monolinguals.

The present study was not without limitations. To begin with, we were unable to compare the EAL and native speakers inferencing skills in English due to the low Cronbach's alpha reliability results of the English inference task. The lack of data from this comparison meant we could not establish whether children learning EAL were also underperforming on this task as well as English comprehension monitoring (in other words, if they were underperforming on higher level comprehension skills in English in general). What is more, we were unable to establish any correlations between inference making and both language and reading comprehension. This data would be interesting to compare to the recent study by Shahar-Yames and Prior (2018) who suggest inferencing may be a way of bridging the gap between EAL and native speakers. Furthermore, the analyses on higher level skills may have been affected by the age of the participants (the children were tested in Year 2) which may have led to difficulties understanding the task itself. That said, Cain et al. (2001) recruited 7–8 year olds in their study and both skilled and less skilled comprehenders and Barnes, Dennis and Haefele-Kalvaitis (1996) recruited children aged 6 to 15. What is more the Gan story inference task (Barnes et al., 1996) was used as the basis for the Polish inference making task to ensure that the language used in the episodes had the grammatical constructions and content vocabulary within the capabilities of an average 6-year-old (Carroll & White, 1973). In addition, in this present study, we opted to read the content of both tasks to the children to counteract any possible decoding difficulties and ensure they did not affect the understanding of the story content. This approach of reading the story to the participants has previously been utilised by Cain et al. (2001) with 7–8 year old skilled and less skilled comprehenders.

While a number of research studies have been conducted to investigate higher level comprehension abilities of monolingual children (both good and poor comprehenders), less is currently known about how children learning EAL or language minority students are coping

with these comprehension strategies (Shahar-Yames & Prior, 2018). Thus future research with EAL pupils speaking a variety of languages would greatly add to understanding whether they may have difficulties with these tasks in their L2 and whether these difficulties may affect their comprehension of text and through that, their academic achievements later on. It would be interesting not only to benchmark EAL performance on higher level comprehension but also investigate whether in other samples there is a relationship between comprehension strategies and reading comprehension.

To conclude, the present study added to previous research on the Simple View of Reading from the EAL perspective and the relationship between reading comprehension and decoding and oral language variables. Unlike some previous research we did not find in the EAL sample a shift to relying more on oral language for reading comprehension and instead at this point in time (Key Stage 1) the children still relied heavily on their decoding skills both in their first and second languages. In this group decoding was in fact the only significant predictor in Year 1 in English and Year 2 in Polish. This study also set out to add to a relatively under-researched field of the performance of children learning EAL on higher level comprehension tasks. This lead to a finding that while this sample demonstrated a good level of ability in these tasks in their L1, they were underperforming in their L2 compared to their native speaking peers.

Chapter 6 – Cross-language analyses

6.1 Introduction

Previously the relationships between constructs related to language and literacy skills have been investigated within the languages spoken by children learning EAL. However, another interesting avenue of research is the potential relationships between the EAL child's abilities in their two languages. Past research has suggested that cross-language transfer can occur due to a common underlying proficiency (Cummins, 1981) with the common underlying proficiency model stating that proficiencies in a child's first and second language are not separate abilities. In keeping with this underlying connection between the two languages, Cummins (1979) also suggests that, according to the developmental interdependence hypothesis, the development of a child's second language will be dependent on their proficiency in their mother tongue (L1). Two types of transfer have been identified – language-specific (information transferred is dependent on the languages used) and language-independent (transfer of knowledge applicable to multiple languages) with the likelihood of transfer across languages depending on commonalities between them (Cummins, 2008). Therefore, skills which are language-independent, such as phonological awareness (the knowledge that spoken language is made up of smaller sound units) tend to be significantly related across languages, and skills which are language-specific – such as vocabulary knowledge tend not to transfer well (Goodrich, Lonigan, Kleuver, & Farver, 2016). In addition, according to Bialystok, Majumder and Martin (2003) the presence and extent of transfer between languages is dependent on the following two factors, namely a shared linguistic feature (the authors suggest phonemes or specific phonological structures as well as sharing the alphabetic orthographic system) and secondly, whether a particular linguistic feature is more prominent or complicated in one language compared to the second language

(or in contrast the simpler structure of one of the languages – e.g. a simpler phonetic structure of Spanish compared to English could transfer to the child's reading of English words). It is further suggested that if only one or neither of these conditions is met, negative transfer (defined by Calvo Cortes, 2005 as the negative influence of L1 on learning the target language which is due to the differences between the two languages) is likely to occur. This is particularly the case when assessment is undertaken in the less dominant language with the more dominant one having simpler or less salient linguistic features (Bialystok, Majumder, & Martin, 2003). On the other hand, some researchers urge caution when interpreting findings from cross-language data, as this research tends to be correlational. Findings may not necessarily give proof of transfer and instead may be due to other alternative explanations and circumstances of these studies, such as shared language learning environments for both languages (e.g., Durgunoglu, Nagy, & Hancin-Bhatt, 1993; Lindsey, Manis, & Bailey, 2003) or individual differences in intrinsic linguistic capacity.

This study will investigate cross language transfer within and between constructs of phonology, decoding, reading comprehension and oral language, therefore assessing both language-specific and language-independent types of transfer. Previous research findings related to each of these constructs have been outlined below.

6.1.1 Phonology

Phonological awareness has been identified as a relatively language independent ability (Goodrich & Lonigan, 2017). It is therefore reasonable to expect a good degree of transfer between languages on measures of this construct as, according to the researchers, information about these phonological skills can be applied when learning a second language since it is independent of meaning. Once a child has achieved the understanding that words are made up

of sounds and that these sounds can be manipulated, this knowledge can be transferred across languages learned by this child, regardless of the L2 being learned. This has indeed been reflected in a number of studies, for example a cross-language meta-analysis performed by Melby-Lervåg and Lervåg (2011) of correlational studies on literacy, where large average cross-language correlations were found for phonological awareness (r = .54). Some researchers suggest that people familiar with multiple languages may possess an advantage in their phonological awareness compared to monolinguals. For example, Bialystok et al. (2003) found that bilingual children (divided into two language groups: Spanish and Hebrew learners of English) outperformed their English-speaking monolingual peers on phoneme awareness assessed in English, which was the bilinguals' weaker language. The researchers explained this advantage as due to a greater transparency (more consistent grapheme-to-phoneme consistency) of the two languages investigated: Spanish and Hebrew over English. The researchers also suggest that the level of exposure to the more transparent script may affect the extent to which this advantage occurs. When assessing cross-language predictors, Dickinson, McCabe, Clark-Chiarelli and Wolf (2004) found phonological awareness in the second language to be the strongest predictor of phonological awareness abilities in both languages in a group of four-year-old children as assessed longitudinally, between fall and spring of a school year. In addition, after controlling for age and previous performance in phonological awareness in the same language (in the Autumn term), highly significant amounts of additional variance in L1 phonological awareness were accounted for by the performance on L2 phonological awareness tasks. The research therefore adds to the growing evidence of strong transfer between Spanish and English phonological awareness.

Beyond cross-language correlations between phonological awareness abilities in children learning EAL, a cross-language relationship has also been found between phonological

awareness and language proficiency. This effect was found by Lopez and Greenfield (2004) who, in addition to finding a strong relationship between English and Spanish phonological awareness, also found phonological awareness to be related to both English and Spanish language proficiency (including assessments of both receptive and expressive oral language as well as pre-literacy components) with the relationship between Spanish proficiency and English phonological awareness as in part sharing variance with Spanish phonological awareness.

A similar finding was obtained by Goodrich, Lonigan and Farver (2014) in their study assessing preschool-age Spanish-English bilinguals, where they found that the relationship between children's phonological awareness abilities in L1 and L2 varied as a function of their oral language skills in both languages in that the transfer of elision skills across languages was dependent on the level of language ability in the transferred-to language. This effect was language specific as only same-language oral language skills moderated the relationship between phonological awareness in the two languages. Furthermore, the correlations between phonological awareness and oral language were predominantly stronger within languages compared to between languages similarly to a previous finding of stronger phonology and receptive vocabulary correlations within languages by Dickinson et al. (2004). These two studies therefore suggest that in the case of oral language, in preschool children L2 rather than L1 oral language skills are better predictors of L2 phonological awareness.

Taking this research evidence into consideration, it can be assumed that the development of phonological awareness in L2 is supported by first language phonological awareness abilities, and that it is possible for this relationship to occur in the opposite direction (Goodrich & Lonigan, 2017), in other words, that there is a within-construct relationship between the two languages on phonological awareness skills.

6.1.2 Word reading (decoding)

A strong relationship has been identified between phonology and decoding within a language, both for monolingual and second language learners. For example, Durgunoglu, Nagy, et al. (1993) reported phonological awareness in Spanish to be closely related to Spanish word recognition. Jared, Cormier, Levy and Wade-Woolley (2012) also found cross-language relationships, this time in a sample of young biliterate readers on a computer-based dictionary task. The researchers suggested that when learning to read in multiple languages at the same time, the mental representations which are involved in decoding are integrated across languages and activated simultaneously. One of the factors to consider with regards to this overview of cross-language transfer research is the large proportion of studies with Spanish-English speakers. This predominance may be relevant due to the effects of linguistic distance on the likelihood of transfer. This particular area has been investigated by Koda (2005, 2008) who in her transfer facilitation model identifies the orthographic distance between the two languages as a strong predictor of the development rate of L2 decoding. In other words, according to this model, the linguistic distance between L1 and L2 can have a considerable influence on the degree to which learning to read in L2 is facilitated by prior L1 literacy experience through cross-language transfer.

The presence and extent of transfer of literacy skills across languages is likely to be influenced by both language independent and language specific processes (Goodrich, Lonigan, & Farver, 2014). Compared to phonological awareness, print knowledge is a less language independent process. On the one hand, the knowledge that letter names are associated with corresponding sounds is language independent. On the other, the specific letter names and letter-sound correspondences are language specific (Goodrich & Lonigan, 2017). It appears that phonological awareness in one language is related to literacy in the second language. For example, Comeau et al. (1999) found phonological awareness in both

languages predicted word recognition and the development of spelling in both L1 and L2. Gottardo et al. (2001) also found a correlation between phonological awareness in both languages (English and Cantonese) and L2 reading with individual differences in phonology explaining individual differences in L2 reading. This was despite the fact that only one of the children's languages was an alphabetic orthography.

Beyond the relationship between phonology and decoding between languages, evidence of a direct relationship between L1 and L2 literacy has been collected in a number of studies, as shown in the review reported by the National Literacy Panel which summarised that literacy in the child's first language is related to the development of literacy in their L2 (in this case English), this including spelling, both real and non-word reading, reading comprehension and reading strategies (August, Shanahan, & Escamilla, 2009). This relationship was also found in a study with Taiwanese students using Mandarin Chinese as their L1 and English as L2 where regression analyses showed L1 proficiency significantly predicting L2 proficiency in reading scores (Chuang, Joshi, & Dixon, 2012). In another study comparing Chinese-English and Spanish-English bilinguals, the researchers found no transfer in Chinese-English learners on word reading accuracy but significant transfer in word reading fluency, while Spanish-English bilinguals showed transfer in both these skills from L1 to L2.

Linking this back to language specific and language independent skills, word reading accuracy seems to be more dependent on structural similarities between scripts, therefore resulting in significant findings in Spanish-English but not in Chinese-English pupils while word reading fluency (defined as speed and accuracy) can be considered as a largely 'script universal', or language independent process, therefore resulting in cross-language transfer effects in both language groups (Pasquarella, Chen, Gottardo, & Geva, 2015). This

relationship between languages on decoding measures did not replicate in all studies. For example, Bialystok, McBride-Chang and Luk (2005) reported no effect of bilingualism on reading concluding that decoding is a skill which develops separately for each language, suggesting that performance in this skill is more likely to depend on factors such as structure of the language, proficiency and experience with the specific writing system.

6.1.3 Oral Language

Studies on cross-language relationships tend to focus on the constructs of phonology or reading ability with most of them finding a degree of transfer between languages on these tasks. On the other hand, studies correlating oral language skills across L1 and L2 tend not to find this relationship. This is most likely due to the fact that oral language tasks tap primarily into language-specific knowledge. In keeping with this, a number of studies found non-significant correlations between languages on vocabulary knowledge (e.g. Bialystok et al., 2005; Goodrich et al., 2016; Gottardo & Mueller, 2009) as well as little relationship between oral language skills across languages (e.g. Cárdenas-Hagan, Carlson, & Pollard-Durodola, 2007) including abilities beyond vocabulary (e.g. grammar: Simon-Cereijido & Méndez, 2018).

On the other hand, a meta-analysis by Melby-Lervåg and Lervåg (2011) reported a small but significant correlation between L1 and L2 oral language skills. Other researchers found that L1 vocabulary knowledge can enhance English reading outcomes (in their analyses they controlled for the effects of language of instruction and L2 component skills) – although this effect was minimal (Proctor, August, Carlo, & Snow, 2006). Verhoeven (1994) tested Dutch learners with Turkish L1 on sentence repetition tasks in both languages and found a correlation between these tasks at the beginning of Grade 1. However, this correlation

became weaker during the next two years. A sentence repetition task requires short-term memory capacity and therefore this finding may have reflected differences in memory span rather than syntactic awareness. A relationship between the ability to recognise L1 language cognates and L2 reading comprehension has also been established (Nagy, Garcia, Durgunoglu, & Hancin-Bhatt, 1993). Overall, however, considering the research outlined previously, the likelihood of a relationship between languages with regards to oral language is rather small.

6.2 Aims

This study aimed to investigate whether cross-language transfer occurs between such constructs as reading ability and comprehension, pre-literacy abilities and oral language skills in a sample of early school-aged Polish children learning EAL from Polish to English and vice versa. Based on previous research in this area, cross-language transfer is hypothesised to occur in pre-literacy, decoding abilities and reading comprehension but not in oral language.

6.3 Method

6.3.1 Sample

A sample of 101 children was selected out of the overall pool of 319 participants who took part in the research project. The children in this study were Polish EAL speakers in Reception, Year 1 and Year 2. The Reception year group did not complete the decoding and reading comprehension subtests however their data was still used to investigate the between language relationships in phonology and oral language.

6.3.2 Materials

Participants were given assessments of pre-literacy skills, oral language, word reading and reading comprehension. See the Methodology chapter for measures used to assess each construct in both English and Polish as well as the procedure of assessment.

6.4 Results

6.4.1 Within constructs analyses

First, correlations were run between corresponding subtests. Findings for each construct are outlined below.

6.4.1.1 Pre-literacy skills

First, the English pre-literacy skills of rapid automatized naming, non-word repetition, letter knowledge and elision were correlated with their Polish counterparts. All four subtests were significantly correlated with correlations ranging from .24 to .80 with rapid automatized naming yielding the lowest correlations and elision (a measure of phonological awareness) yielding the highest (see Table 6.1 below for individual correlations).

Table 6.1

Results of correlations between pre-literacy skills in English and Polish with N=101 including year groups from Reception to Year 2

Subtests	Correlation coefficient
RAN objects	.24*
Non-word repetition	.56**
Letter knowledge	.69**
Elision	.80**

* indicates significant scores of p<.05

** indicates significant scores of p<.001

6.4.1.2 Decoding

Both real-word and non-word reading were correlated next. Here again analyses yielded high significant correlations between .76-.86 (See Table 6.2 below for individual correlations between languages).

Table 6.2
Results of Polish-English correlations between decoding subtests, N=67, correlations included Year 1 and Year 2 children

Subtests	Correlation coefficient
Non timed non-word reading	.76**
Timed real word reading	.86**
Timed non-word reading	.82**

** indicates significant scores of p<.001

6.4.1.3 Reading comprehension

Next, reading comprehension scores in the two languages were correlated for children in Year 1 and Year 2 (N=67) yielding an r=.65, p<.001.

6.4.1.4 Oral language

Within-construct analyses were also run on oral language measures to compare our data with the results of most previous studies which show no between-language correlations. The results of these analyses have been presented in Table 6.3 below. For the most part these results replicated previous findings in that there were no significant between language correlations on the oral language composite as well as most of the individual oral language measures. The only significant correlations were found in sentence repetition and receptive grammar.

Table 6.3

Correlations between oral language measures in English and Polish for the three age groups (Reception to Year 2, N=101)

Subtests	Correlation coefficient
Receptive vocabulary	.03
Expressive vocabulary	-.01
Sentence repetition	.25*
Receptive grammar	.32**
Expressive grammar	.02
Listening comprehension	.18
Oral language composite	.20

* indicates significant scores of p<.05

** indicates significant scores of p<.001

6.4.1.5 Metacognitive skills

Finally, correlations were run for comprehension monitoring in English and Polish. An analysis on a group of 31 Year 2 children who performed the task in both languages showed a significant correlation of r=.40, p=.027.

6.4.2 Between construct predictors

The next step in the analyses was to establish whether there was evidence for cross-language relationships between constructs.

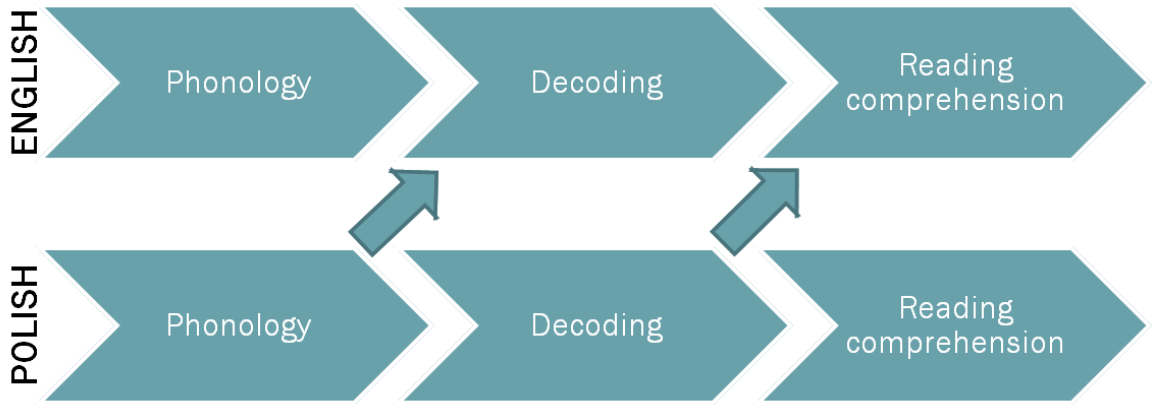


Figure 6.1 The investigated relationships between Polish phonology and English decoding and
Polish decoding with English reading comprehension

The first analysis was conducted to find out whether Polish phonology was related to English decoding ability. Regression analyses show that Polish RAN, non-word repetition, and elision significantly predicted single word reading in English, R^2=.40, $F(4,62)=20.47$, $p<.001$ (see Table 6.4 below for detailed findings for each task).

Table 6.4
R^2 change, standardised Betas and t-test results for Polish predictors of English decoding

	R^2 change	Standardised Beta	*t*	*p*	95% CI lower	95% CI upper
RAN	.07	**-.26**	-2.14	.036	-.39	-.01
Non-word repetition	.17	**.42**	3.70	<.001	.55	1.85
Elision	.35	**.59**	5.95	<.001	.40	.81

Next we aimed to establish whether a relationship could be found between Polish decoding and English reading comprehension. A regression shows that age, Polish phonological processing (RAN, non-word repetition and elision) and Polish decoding (real and non-word

reading) significantly predict English reading comprehension, R^2=.57, F(6,60)=13.35, p<.001 with phonological processing skills contributing an R^2 change of .16 to the model (F(3,62)=6.04, p=.001), and decoding contributing an R^2 change of .12 to the model (F(2,60)=8.28, p=.001).

In comparison, when age, English phonological processing and decoding skills were put in the model, they explained 60.8% of variance (F(6,60)=21.95, p<.001). Phonological processing predicted an R^2 change of .21, F(3,62)=8.97, p<.001 and decoding an R^2 change of .10, F(2,60)=7.66, p=.001 (see Table 6.5 for confidence intervals for both Polish and English predictors).

Table 6.5

Lower and Upper 95% confidence intervals for Polish and English pre-literacy and decoding factors in regression analyses

	Polish		English	
	Lower	Upper	Lower	Upper
RAN	-.05	.04	-.05	-.003
Non-word repetition	-.11	.21	-.08	2.65
Elision	.01	.13	.03	.14
Real word reading	-.04	.21	02	.11
Non-word reading	-.07	.17	-.09	.06

To investigate whether oral language measures in L1 contribute to L2 reading comprehension, the Polish oral language composite was introduced to the model. This yielded an R^2 change of .003, F(1,59)=.39, p>.05, 95% CI [-.11, .21] confirming that Polish oral language does not account for any significant variance in English reading comprehension.

Finally, an analysis was performed to check whether, in a model including Polish phonology and decoding, English oral language would still account for a significant amount of variance in reading comprehension (see Figure 6.2).

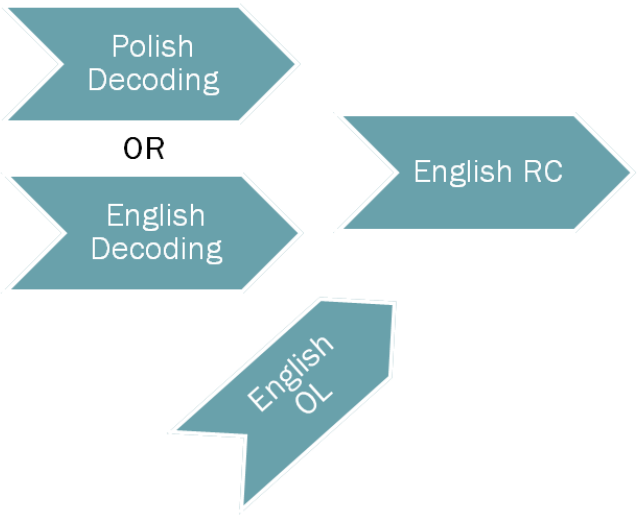


Figure 6.2 Adding English oral language composite to the model

Adding English oral language to the model yields an R^2 of .64, $F(7,59)=14.87$, $p<.001$ with the oral language composite contributing a significant R^2 change of .07, $F(1,59)=10.83$, $p=.002$ (95% CI lower .07 upper .29) which corresponds to the results from the previous chapter that these children tend to rely more on their decoding at this stage of their reading instruction.

The final analysis considered the role of non-verbal IQ in cross-language transfer. A measure of non-verbal IQ was added in both the model predicting decoding and reading comprehension as the first step in the regression. In both cases, non-verbal IQ failed to add significant variance to the model, contributing a non-significant R^2 change of .015 (F Change(1,64) = 1.11, p>.05) to the decoding model and a non-significant R^2 change of .011 (F Change(1,64) = 1.05, p>.05) to the model predicting English reading comprehension.

6.5 Discussion

In this study we aimed to establish whether there is a cross-language relationship on measures of literacy-related skills in a group of second language learners of English. Comparisons were made both within and between constructs. Within construct analyses showed significant correlations between corresponding tasks in the areas of pre-literacy (such as phonological processing and letter naming), decoding and reading comprehension but not in oral language. Regression analyses indicated that phonology and decoding in Polish (L1) significantly predicted English reading comprehension and these predictors were similar in strength to the English ones. What is more, while Polish oral language did not contribute significantly to the model, English oral language accounted for a significant amount of variance in English reading comprehension in the model including the Polish measures. Finally, the results show that adding non-verbal IQ to the models predicting decoding and reading comprehension does not have a significant effect on the models. This provides further evidence that the transfer occurring in these analyses is that of language abilities rather than a general cognitive ability.

When comparing these findings with the benchmarking data from a previous chapter, the present results may be used to further explain the performance of children learning EAL at this stage of schooling. For example, the normal performance of children learning EAL on the decoding tasks in their L2 may mean that they are drawing on their L1 phonology as well as their L2 phonology allowing them to match their decoding performance to their native speaking peers. Alternatively, L1 and L2 phonological awareness reflect the same underlying ability. While EAL L2 decoding is likely positively impacted by L1 phonology, the same cannot be said for oral language. The present study found that, in most cases, there was no relationship between language measures in this sample. Therefore, these children are not able to rely on their L1 to boost their L2 language skills. This could partly explain the significant

gap in their performance as compared to their native speaking peers. Finally, the previous chapter has shown children learning EAL to significantly underperform on L2 reading comprehension. Perhaps, although they are supported from their L1 decoding and phonology, this is not enough to even out their reading comprehension performance, indicating the importance of L2 oral language (in which these children are underperforming significantly).

The present findings fit well into the narrative of previous research conducted in a variety of other languages. For example, the findings of within-construct correlations reflect these collected by Melby-Lervåg and Lervåg (2011) in their meta-analysis or by Goodrich and Lonigan (2017) with regards to phonology and the review by National Literacy Panel (2009) which reports a relationship between literacy measures in the two languages. Like in previous research, the correlations between languages on oral language measures were non-significant for most measures (e.g. Bialystok et al., 2005). Finally, the between construct findings also reflect previous research for example reflecting the finding of a relationship between L1 phonology and L2 reading (e.g. Jared et al., 2012).

One limitation of this study is in the design. With the use of standardized tests of constructs in this study we are unable to investigate active transfer between the two languages spoken by a child learning EAL. In other words, it is not possible to investigate how the children's knowledge of Polish actively shapes how they learn or process their English. To counteract this an experiment actively measuring the transfer process should be designed. This could be modelled on the study by Durgunoglu et al. (1993) who taught Spanish-English speakers English-like non-words and then assessed their performance on a series of new 'words' created from the onset-rime sounds of the initially taught non-words. Another design which shows active transfer was Jared et al. (2012) dictionary task where the non-words created for

the purpose of the study were divided into two categories: half of them had letter clusters appearing only in English and the other half only in French. The child's task was to assign the non-word to either language. The results showed that children in the French immersion program performed better than monolinguals in both language groups on correctly assigning words, also showing active learning to discriminate word patters between languages.

An advisable step in the future would be to follow up this group of participants in later grades to re-test whether this relationship between languages holds as strongly as they progress in their L2 proficiency. Perhaps at a certain level of L2 education, when the gap between EAL and native speaking children narrows sufficiently, the L2 skills of children learning EAL no longer require that support from their L1 decoding and phonology and therefore this cross-language relationship with L2 reading comprehension may become weaker. Another follow-up analysis which may be considered is assessing children learning EAL using L1s other than Polish and comparing these findings to the present sample. These languages should be carefully chosen to lay on different points in the continuum of orthographic depth. Comparing bilinguals with systems differing with regards to the transparency of letter-sound mappings could show whether this effect is universal for all languages or whether some languages (perhaps the more transparent ones) are more likely than others to benefit from cross-language transfer. A similar study has already been undertaken by Ziegler et al. (2010) where the researchers compared Grade 2 children in five languages on different points on this transparency continuum (from a very transparent Finnish, through Hungarian, Dutch, Portuguese, and French which was the most opaque of the languages). Although this study tested monolingual relationships between reading and other factors, the findings showed that while phonological awareness was the main factor associated with reading ability, it was not

of equal importance in each of the languages, with its impact was modulated by the transparency of the orthography with less transparent orthographies yielding a stronger effect.

To conclude, the current study found significant relationships both within and between constructs on pre-literacy, decoding and reading comprehension measures in a group of Polish children learning EAL in the early stages of their education. This evidence of cross-language transfer has two major implications for the instruction of children learning EAL at this stage. Firstly, if L1 phonology and decoding can affect performance on second language reading comprehension, then this could potentially be used to improve this skill in children learning EAL. Previous research (including our previous benchmarking study) has shown that these children have a difficulty with reading comprehension at this stage. Perhaps it would be possible to improve their performance through interventions targeting their L1 phonology. This notion of continuing L1 development transferring to L2 skills having already gained support among some researchers (e.g., Lopez & Greenfield, 2004). For example, Cummins (2005) concludes that children's L1 abilities may complement L2 learning strategies to promote a more cognitively engaged profile of learning. A further study developing such an intervention could investigate its effect on L2 comprehension at this stage where children are still heavily relying on phonology and decoding in their reading comprehension. On the other hand, this study has also shown that despite the relevance of Polish (L1) phonology and decoding, English oral language still plays a significant role in L2 reading comprehension. This means that teachers should still be encouraged to pay close attention to the English language performance of children learning EAL. Ensuring that these pupils are able to narrow the gap in attainment between themselves and their native speaking peers is important due to the relationship between oral language and reading comprehension, particularly in later grades. In conclusion, this study adds to the previous cross-language research providing

evidence of relationships between different areas of language and literacy between this pair of languages on the transparency continuum in addition to suggesting possible outcomes for instruction of the large population of children speaking this language pair in the UK.

Chapter 7 – Identifying children who display a low language performance in an EAL sample

7.1 Introduction

Developmental language disorder (DLD) has been defined as a difficulty in learning language marked by an underperformance on both expressive and receptive language abilities compared to typically developing peers of the same age who are exposed to that language to a comparable extent (e.g. Bishop, 2006). Children who classify as sequential bilinguals (often classed as EAL – learning a second language having already been exposed to their L1 for some amount of time), despite having typical language skills, may appear to show language delays when compared to monolingual peers, leading to a possible diagnosis of DLD in children who do not actually have this disorder (Bedore & Peña, 2008). With regards to prevalence of DLD, it is estimated that it occurs in approximately 7.5% of cases among the monolingual population of school children (in the UK Norbury et al., 2016; in the US, Tomblin et al., 1997 have also estimated the prevalence at around 7%) with a comparable estimate for the bilingual population (Kohnert, 2010).

7.1.1 Identifying DLD in monolingual children

By definition children with DLD underperform on language measures. This can be perceived in their slower rate of vocabulary growth compared to their age-matched peers. Following from poorer vocabulary, children with DLD also tend to produce shorter utterances of lesser complexity compared to their peers (Rice et al., 2000). They also tend to underperform on word-finding tasks (German & Simon, 1991), show poor word learning (Peña et al., 2001) and higher error rates on picture naming tasks (Lahey & Edwards, 1999) as well as having

difficulties with grammar. Deficits in grammar, focusing in particular on morphology and syntax have been identified in English as well as other languages such as Hebrew, Japanese and Greek (Joanisse & Seidenberg, 1998). In English, children with DLD tend to have problems with tense marked forms (Rice et al., 2000; Marchman, Wulfeck, & Ellis Weismer, 1999; Rice, Wexler, & Cleave, 1995). Although younger children tend to display more uneven linguistic profiles of DLD, difficulties with grammatical morphology are especially salient at that stage and these are most commonly morphemes expressing tense and agreement (e.g. Leonard, Eyer, Bedore, & Grela, 1997; Leonard, Deevy et al., 2007).

Research into clinical markers of DLD has been divided into two main approaches: the above-mentioned linguistic-based frameworks (with tense often used as a marker) and the processing approach (Conti-Ramsden, 2003). Dollaghan and Campbell (1998) criticised knowledge dependent measures due to their reliance on vocabulary knowledge and subsequent bias against children from language minority backgrounds. Instead, processing-dependent measures (e.g. non-word repetition) were proposed as a better alternative. In their study, non-word repetition performance was better than language task performance (knowledge based assessment) in identifying children who had been previously diagnosed and were receiving language intervention which is consistent with other evidence indicating that measures of processing minimize the problem of test bias which may be associated with factors such as income status or educational levels. The performance of children with DLD was shown to differ significantly to their typically developing peers, with the DLD children performing approximately four years below the mean for their chronological age. What is more, this particular task was better at identifying children previously diagnosed or enrolled in language intervention as compared to a knowledge-dependent language assessment (Dollaghan & Campbell, 1998). The processing approach has focused on the role of short-

term memory on language performance. Non-word repetition has been identified as a good indicator of DLD (e.g. Gathercole & Baddeley, 1990; Bishop, North, & Donlan, 1996) and has been frequently used in screening for children with DLD. Comparisons between children with DLD and their typically developing peers on non-word repetition performance have been used for many years to establish it as a screening tool.

In 1990, Gathercole and Baddeley compared the performance of early-school-aged children with DLD with typically developing peers of the same age and younger typically developing children and found children with DLD scored lower than both the typically developing groups on three- and four-syllable non-words. Another study using non-words was conducted by Dollaghan and Campbell (1998) who carefully crafted their stimuli to ensure the non-words did not correspond to lexical items and that the performance on this task was not influenced by predictability of phonemes within the non-words or difficulties with articulation.

Conti-Ramsden (2003) measured the sensitivity and specificity of the non-word repetition task along with a sentence repetition measure and found an outcome of a sensitivity of 66% and a specificity of 100% (at the 25th percentile cut point) in distinguishing between children with DLD and their typically developing peers matched for age. The use of non-word repetition as a marker of DLD has also been assessed in languages other than English with very similar outcomes. For example, non-word repetition has been shown to score highly on sensitivity and specificity measures in Italian (Bortolini et al., 2006) and performance on a non-word repetition task was also identified as a marker of language impairment in Dutch providing a useful tool for predicting reading deficits in that language (de Bree, Rispens, & Gerrits, 2007).

Marton and Schwartz (2003) found that their participants with DLD, in addition to underperforming on non-word repetition also had a difficulty with recalling sentence content, further adding to the research suggesting that DLD can also be characterised by a reduced capacity of working memory. Summers et al. (2010) suggest that language knowledge may play a role in non-word repetition tasks. The researchers, having found a relationship between morphosyntax and non-word repetition tasks, explain that perhaps children rely on similar language-learning mechanisms when performing these. Although many studies, like the few outlined above, clearly show that non-word repetition is a good identifier of DLD, it has been suggested that for identification purposes this task should be used in conjunction with other measures (Ellis Weismer et al., 2000). One such measure is another repetition subtest. In their 2001 study with a group of older children (aged eleven), Conti-Ramsden, Botting and Faragher found sentence repetition was the best identifier of DLD, above their non-word repetition task.

A similar finding was reported by Botting and Conti-Ramsden (2003) who also found sentence repetition to better distinguish children with DLD from their typically developing age-matched peers compared to non-word repetition. The authors suggest that difficulties with sentence repetition may be a marker of a deficit in linguistic processing above problems with working memory further explaining that perhaps sentence repetition is a useful tool for identifying language impairment as it can tap a child's language knowledge.

7.1.2 Identifying DLD in children learning EAL

When it comes to children who use more than one language on a regular basis, the identification of DLD can be more difficult than is the case in monolingual children, however, it appears that bilingual children present difficulties with similar tasks as their

monolingual peers. For example, children with DLD will have deficits in their vocabularies in both languages. This example was observed in a case study of a bilingual child with DLD reported by Thordardottir et al. (1997) where the bilingual child showed significant delays in both receptive and expressive measures on tasks assessing both English and Icelandic including the English PPVT-R and its Icelandic translation. In a larger study, Peña et al. (2001) tested word learning of bilingual as well as monolingual children with DLD showing both of these groups had difficulties when it came to learning new words. Beyond word learning, bilingual pupils with DLD have also been shown to display difficulties in tasks assessing knowledge of word meanings and word retrieval (Bedore and Peña, 2008). The researchers also established that these difficulties tend to be comparable across languages which could suggest that semantic difficulties can be used as a clinical marker which will vary less across languages.

In a study with simultaneous bilinguals, Paradis, Crago, Genesee and Rice (2003) found that their bilingual group did not differ significantly from monolinguals with DLD on the aspects of grammatical morphology as examined in both languages further suggesting that DLD has an impact on language regardless of the language spoken. Other studies assessing grammar performance of bilinguals with DLD as compared to their typically developing bilingual peers have shown the DLD group to significantly underperform on a range of grammatical measures (e.g. studies with Spanish-English bilinguals in early school: Gutierrez-Clellen & Simon-Cereijido, 2007 assessing the sample on English morphosyntax; Restrepo & Gutierrez-Clellen, 2001 measured the percentage of article errors).

Bilingual children with DLD have also been assessed using non-word repetition tasks. Calderon and Gutierrez-Clellen (2003) for example, found that when compared to typically

developing Spanish-English bilinguals, children with DLD significantly underperformed on the non-word repetition subtest in Spanish. Finally sentence repetition has been considered as another marker of DLD for this group of children. Ziethe et al. (2013) suggest that, based on their finding of significant correlations with language abilities in both monolinguals and bilinguals with DLD, sentence repetition can be used as a predictor of vocabulary use and linguistic comprehension in both groups.

As already suggested above, children who are in the early stages of learning their second language tend to underperform on language assessments compared to their monolingual peers of the same age. In this way, these children may present some similar characteristics to children diagnosed with DLD. For this reason, a correct diagnosis of children learning EAL can be difficult (Vender et al., 2015). It would appear that bilingual children can be at risk of both being over- and under-identified as having a language impairment, either because of a lack of understanding of their developmental expectations by their educators or perhaps because their teachers tend to wait for a diagnosis until the child learns their second language (Bedore & Peña, 2008). A large problem faced when diagnosing children learning EAL is the lack of normative data. This is both with regards to their L2 – lack of information on the typical developmental trajectory of bilingual language acquisition (Bedore & Peña, 2008), and their L1 – educators and clinicians lack standardised assessments for most L1s of children learning EAL in their care (Ziethe et al., 2013). Some researchers try to overcome this limitation by assuming language impairment on the basis of group comparisons on L2 language abilities and parental reports of problems in L1 (Ziethe et al., 2013). Research shows that the performance of bilingual children with DLD is almost always normed on monolingual performance or that of bilinguals in only one of their languages (usually their L2; Bedore and Peña, 2008). The profiles of language acquisition of bilingual children are not

likely to mirror those of their monolingual peers in each language, this dissimilarity being particularly pronounced in the weaker language of an EAL learner (e.g. Paradis & Genesee, 1997).

Many researchers agree that using language assessments which have been normed on monolingual populations are not an accurate tool to identify bilinguals with DLD (Gutiérrez-Clellen & Simon-Cereijido, 2010). This sentiment is also voiced by Paradis et al. (2003) who suggest bilingual children with DLD need to be compared to typically developing bilingual children. This would allow us to understand whether certain linguistic profiles displayed by bilingual DLD children are due to this combination of DLD and dual language development or rather only due to bilingual language acquisition. A similar view is shared by Bedore and Peña (2008) who suggest that the only appropriate reference group for bilingual children with DLD is other bilingual children learning in that language context. Kohnert (2010) further suggests that beyond using bilingual peers as a comparison group, to ensure for a correct and accurate diagnosis, both languages need to be tested and entered into a composite. A study conducted by Gutiérrez-Clellen and Simon-Cereijido (2010) is yet another piece of evidence that a monolingual approach to assessing bilingual children is not appropriate, even if the child appears to be fluent in the language they are tested in. In this study, children were identified as DLD using an extensive assessment protocol including evidence of clinical concern, child's use of ungrammatical utterances in spontaneous speech, and low performance on both English and Spanish in a bilingual measure of morphosyntax (Bilingual English-Spanish Assessment – BESA). The accuracy of the non-word repetition task used varied depending on the language of testing. While the performance of a bilingual speaker on a single language resulted in inadequate rates of specificity and sensitivity, the clinical differentiation of bilingual children with DLD from their typically developing bilingual peers

was improved when both languages were evaluated. Individually, neither the English nor the Spanish non-word repetition task were able to rule out language impairment, this was likely caused by the variability in the children's language ability in the two languages. Including both languages in assessment improved both the specificity (from a moderate .82 to .95 which is considered as a good classification rate, Plante & Vance, 1994) and sensitivity scores. The results also suggested that assessing the child only in their dominant language would also lead to a greater rate of misclassification compared to an assessment in both.

7.1.3 Nonverbal ability in diagnosing DLD

Recent years have seen a considerable debate on the role of nonverbal ability (NVIQ) in the diagnosis and treatment of language impairment (Norbury et al., 2016) with many researchers questioning whether nonverbal abilities should be used as an exclusionary criterion for DLD (e.g. Reilly, Bishop, & Tomblin, 2014). Most speech-language therapy services in the UK have used NVIQ below average range (meaning standard scores below 85) as the exclusion criterion for admission to therapy (Dockrell, Lindsay, Letchford, & Mackie, 2006). While the ICD-10 includes average nonverbal ability within its diagnosis of developmental language disorder, along with severe language deficits (-2SD or more), NVIQ has been removed from the DSM-5 criteria for this disorder. An issue which comes from this difference in diagnostic criteria is variability in estimating the prevalence of the disorder, both among monolingual and bilingual populations (Whiteside & Norbury, 2017). In their longitudinal cohort study, Norbury et al. (2016) found minimal differences when comparing the language profiles of children with average and low-average nonverbal abilities leading the team to suggest a removal of NVIQ as an exclusion criterion for developmental language disorder from DSM-5. Since these findings, it seems that a majority of researchers no longer abide by this requirement for a discrepancy between language performance and nonverbal ability (Bishop

et al., 2016), in the present study, nonverbal ability will not be included as one of the criteria for language impairment.

7.2 Aim

This study aimed to identify those children learning EAL who have an intrinsic language impairment, as opposed to showing weak English performance for another reason (e.g. low exposure). Secondly, we wanted to find out whether these children with low language abilities could be identified through English-only assessment or whether it was necessary to assess them in both languages. In order to answer these questions, the sample of children learning EAL were divided into groups and analyses were conducted on children with weak language skills in either English or Polish only, and children with weak language skills in both English and Polish.

7.3 Method

7.3.1 Participants

The EAL group in this project consisted of 101 participants across three year groups (Reception, Year 1 and Year 2). These were divided into four groups: typical performance in both languages, low language performance in English only, low language performance in Polish only and low language performance in both English and Polish. The three low language performance groups were selected for further analysis. The selection criteria for including children in the low language performance groups have been outlined below.

7.3.2 Selection criteria for inclusion in low language performance groups

Scores from the four oral language subtests (receptive vocabulary and grammar, expressive vocabulary and grammar) were used to establish the groups. Children were classed as having low language performance if they performed below the following cut-offs on two or more of these four subtests with at least one of these being a receptive measure; a score of 6 or less on the scaled scores, a score of 85 or less on the standard scores and a score of 2 or less on the stanine scores (used for Polish measures). Criteria were based on previous research and adapted for the purposes of this analysis (e.g. Norbury et al., 2016; Bowyer-Crane, Duff, Hulme, & Snowling, 2011). Children in the low language performance in English and Polish group had to satisfy these selection criteria for both languages. See Table 7.1 below for number of children in each group as well as their age range and gender.

Table 7.1
Participant characteristics in the language performance groups

Group	Number of children	Age range (months)	% male
Typical performance (TP)	19	57-89	42.1
low language performance in English only (LLE)	47	56-93	44.7
low language performance in Polish only (LLP)	12	60-86	25
low language performance in English and Polish (LLEP)	23	53-86	56.5

Applying the same selection criteria to the native speaking monolingual groups identified 17 (out of 118) children in the Polish group and 23 (out of 100) children in the English native speaking group as characterised with low language performance.

7.4 Results

Although four language performance groups were identified, to answer the research questions raised in this chapter, analyses are conducted with the low language performance in English (LLE) and low language performance in English and Polish (LLEP) groups.

7.4.1 Age differences

First, we examined whether younger children (Reception) were more likely to have weak English language abilities. The youngest children would be likely to struggle most with oral language skills due to the lower levels of exposure to English in the school setting. The LLE group and the LLEP group were compared using an independent samples t-test. The results indicate that there are no significant differences between the mean ages of the two groups, $t(68)=-1.01$, $p>.05$.

7.4.2 Comparison of severity in English

The LLE and LLEP groups were then compared on the severity of low language performance in English on each of the four selection measures. These comparisons were run on the participants' raw scores. The results of an ANOVA showed that the two groups did not differ significantly on the severity on English measures of oral language: receptive vocabulary $F(1,70)=.59$, $p>.05$; receptive grammar $F(1,70)=.09$, $p>.05$; expressive vocabulary $F(1,70)=.28$, $p>.05$; expressive grammar $F(1,70)=.43$, $p>.05$ (see Table 7.2 for confidence intervals).

Table 7.2
Confidence intervals for comparisons of low language performance severity between the two groups

	95% CI English only		95% CI both languages	
	Lower	Upper	Lower	Upper
Receptive vocabulary	47.29	54.57	47.28	58.98
Receptive grammar	12.08	14.55	11.24	14.77
Expressive vocabulary	6.52	9.73	6.58	11.16
Expressive grammar	6.39	10.04	6.66	11.87

7.4.3 Profile of English measures

We next checked whether the profiles of the four measures differed between the two low language performance groups, i.e. if there was one particular English measure which may aid in differentiating between the LLE and LLEP groups. To this end, each of the four oral language variables were re-coded to give the participant a score of 1 if they fell below the low performance cut-off (see Method section) or a 0 if they performed above this cutoff. Frequencies were then calculated on the four oral language measures. The two groups showed very similar profiles apart from receptive grammar (see Table 7.3 below).

Table 7.3
Frequencies of children displaying low performance on the four language measures in the LLE vs LLEP group

Group		Receptive vocabulary	Receptive grammar	Expressive vocabulary	Expressive grammar
LLE	Below cut-off	26	39	47	42
	Above cut-off	21	8	0	5
LLEP	Below cut-off	12	23	22	19
	Above cut-off	11	0	1	4

7.4.4 Language processing

The previous analyses show that the oral language tasks in English were not successful at differentiating between the low language performance in the LLE and LLEP groups. However, as it has been outlined above, children with DLD show language processing difficulties. The next step was therefore to compare the two groups on non-word and sentence repetition performance in English. The results of an independent samples t-test showed no significant differences between the two groups on either non-word repetition ($t(68)=-.11$, $p>.05$) or sentence repetition ($t(68)=-.81$, $p>.05$).

7.4.5 Use of Polish tests

English tests were unable to differentiate between the two low language performance groups. Next, the performance on the four oral language tasks in Polish was compared between the LLE and LLEP groups. The results of an ANOVA showed the two groups did differ significantly on all oral language tasks (except receptive grammar). There was also a significant difference on Polish sentence and non-word repetition.

Table 7.4

Results of the ANOVA comparing the two low language performance groups

	F	95% CI for LLE group		95% CI for LLEP group	
		Lower	Upper	Lower	Upper
Receptive vocabulary	20.29**	14.97	17.41	9.65	13.13
Receptive grammar	3.86	20.46	23.58	17.12	21.57
Expressive vocabulary	11.13**	5.43	7.64	1.72	4.89
Expressive grammar	11.48**	7.98	9.60	5.24	7.55
Sentence repetition	5.17*	14.58	18.57	9.76	15.46
Non-word repetition	12.88**	18.62	20.74	14.83	17.87

* indicates $p<.05$

** indicates $p<.01$

Once the difference between the two groups on Polish tasks has been checked, the next step was to identify whether any one Polish test in particular (excluding these used to classify the children into the language performance groups) would help to differentiate the two groups (e.g. non-word repetition would be easy to administer for non-native clinicians). The logistic regression model for non-word repetition was statistically significant, $\chi^2(1)=11.87$, $p=.001$. The model explained 21.7% (Nagelkerke R^2) of the variance in low language performance and correctly classified 26.1% of cases in the LLEP group. The second task considered was sentence repetition. Here again the model was statistically significant $\chi^2(1)=5.03$, $p=.025$. The model explained 9.7% (Nagelkerke R^2) of the variance in low language performance and correctly classified 21.7% of cases in the low performance in the LLEP group. This indicates that while assessment in Polish is required, it is not possible to only use one task to identify this group.

7.4.6 Consequences for literacy outcomes

The final question to answer is whether this division into English only and English and Polish have any consequences for literacy outcomes – whether the two groups differ on decoding and reading comprehension performance in English. These analyses showed no significant differences between these two groups on decoding or reading comprehension, however a significant difference was shown on comprehension monitoring where the LLE group showed better scores compared to the LLEP group (see Table 7.5 for means and outcomes of t-test analyses).

Table 7.5
Comparisons between the LLE and LLEP groups on literacy outcomes

Outcome measures	Group	Mean (SD)	*t* (*p*)
Word reading	English only	30.43 (15.78)	.12 (.907)
	Both languages	29.80 (18.41)	
Non-word reading	English only	16.86 (8.97)	.10 (.920)
	Both languages	16.53 (11.79)	
Reading comprehension	English only	2.25 (1.65)	-1.02 (.331)
	Both languages	2.80 (1.78)	
Comprehension monitoring	English only	7.83 (3.51)	**2.69 (.014)**
	Both languages	4.11 (2.52)	

7.5 Discussion

The criteria set to create the low language performance groups led to a large proportion of the EAL sample (almost half of the EAL group) being identified as having a low language performance in English. Using only English measures led to a much larger group of children being included leading to the question how many of these children may run the risk of being mis-represented as having DLD and are in fact only underperforming due to their EAL status. Compared to English native speakers where 23 children were identified, 47 children learning EAL were classed as showing low language performance in English (over double the amount of children). Furthermore, when the groups were compared on their performance of these criteria subtest, there was a lack of significant differences between English only and English and Polish groups on the English measures indicating that English measures by themselves are not sufficient to diagnose possible DLD in the EAL population. While the LLE and LLEP groups significantly differed on the Polish measures, no single one by itself was a good marker of DLD. Finally, the two groups did not differ significantly on decoding and reading

comprehension measures in English but the LLE group was significantly better at comprehension monitoring.

According to Kohnert (2010), DLD affects similar numbers of bilingual and monolingual children at about 7% of the school aged population having a diagnosis of this disorder. In comparison, the prevalence rates found in the present study were much higher with a prevalence of around 20% of the sample when tested in both languages. This prevalence was significantly higher when only English tests were used, at around 45% of the sample. This large discrepancy between the two prevalence estimates as well as the large group of children classified as having low language performance when only tested in English provide a strong argument in favor of diagnosis being broadened on assessment in both languages. Research has suggested that a great proportion of the English assessments of language ability do not meet criteria for accurate diagnosis of the EAL population (e.g. Spaulding et al., 2006). As previously mentioned, the risk of over-identifying bilingual children as having a language disorder, and following from that, their over-representation in speech-language therapy services and special education programs is a well acknowledged problem (e.g. Cummins, 2000). Children learning EAL have been consistently shown to underperform on language measures compared to their native speaking peers, especially in the early stages of school. A study with a similar outcome in over-representation has been conducted by Paradis (2005), who found that when the children learning EAL were tested in their L2, over 87% of them scored in the range of monolinguals with DLD when their results were compared to age-matched monolingual criterion scores. In a follow up study, Paradis (2008) shows the children learning EAL perform above monolinguals with DLD only after three additional years of exposure. These studies, in the same vein as the study outlined above clearly show the risk of assessment only in the child's L2. Kohnert (2008) suggests the ideal assessment

should include a combination of both direct and indirect language measures, a number of sources for assessment including child's cultural and language history and the child's family as a resource with the child-specific data being interpreted against literature on typically developing bilinguals from a similar setting and bilinguals with DLD. On the other hand, researchers are realistic about the limitations in developing bilingual assessments. While in some regions it is possible to develop normative comparisons due to large populations using the same L1 (e.g. Spanish EAL speakers in the US or English-speaking children in French immersion programs in Canada), in other parts of the world (such as the UK where the EAL population comprises of many different languages and nationalities, often in one classroom) this approach would be impossible. Furthermore, in such areas, there is a limited number of SLTs who can match some of the languages spoken who would be able to administer and interpret bilingual assessments (Kohnert, 2010). What is more, a study by Whiteside and Norbury (2017) found that a group of both EAL pupils as well as their monolingual peers who met monolingual criteria for language impairment at Year 1 showed low levels of academic attainment in Year 2 therefore displaying the impact of their poorer language abilities on school performance and this impairment in language ability was also observed in both groups by Year 3. Whiteside and Norbury (2017) suggest their findings indicate that there is some practical value to these monolingually normed language assessments in L2 in identifying children with language difficulties regardless of their origin.

The finding of the present study that the performance on decoding and comprehension tasks in the low language performance group diagnosed only in English did not differ from that of the group where the diagnosis was based on both English and Polish may be a further argument that using only English tasks in diagnosis is sufficient in terms of identifying

children whose weak language skills regardless of origin put them at risk of poor academic achievement.

A possible explanation for the high percentage of children with low language performance in the EAL sample, even when the diagnostic criteria had to be fulfilled in both English and Polish, may be the socio-economic background of the sampled population. The children in this study came from predominantly low SES areas. Children in lower SES environments have shown slower rates of language development (e.g. Hoff & Tian, 2005) and children with poorer communication skills tend to also cluster in low SES backgrounds (Tomblin, Hardy, & Hein, 1991). On the other hand, the only measure of SES in this study was obtained through school postcodes. We did not have information on the SES status of the individual families and what is more, what their status would have been previously in Poland, if at all different.

The major limitation of this study is the lack of clinical evaluations of this group of children either in English or in Polish. Therefore, it is impossible to say whether these children would be classified as DLD. Another limitation in this study is that the children were only assessed at one time point. Following the children's performance through school as well as re-establishing whether they still fall into the low language performance group, particularly when only tested in English, could show whether their initial position in this group was correctly identified as they actually had a language disorder or whether they in fact were just underperforming on their L2 language skills and having caught up in later grades were no longer characterised as having low language performance.

Having considered the issues surrounding the diagnosis of DLD in children learning EAL, the intervention for this particular group should be considered with regards to future directions of research. Since early 2000s there has been a shift from considering which of the EAL child's languages should be supported in such intervention to ways of supporting both of the child's languages (Kohnert, 2008, 2010). Some resources have already been created for this purpose, such as training parents and others in the child's community to provide intervention in L1, indirect delivery through incorporating typically developing siblings or peers in the process, on in addition to SLT lead intervention (Kohnert et al., 2005). It should, however be noted that research investigating the effectiveness of these procedures is still scarce (Kohnert & Medina, 2009).

To conclude, the present study has identified a group of children at a low level of language performance using only English criteria as well as assessments in both languages spoken by this EAL population. Using both English and Polish resulted in a smaller group of children being identified suggesting that assessment in both the child's L1 and L2 is necessary for an accurate diagnosis. The limitations of this assessment and implications in intervention have also been discussed.

Chapter 8 – General Discussion

The aim of this research project was an in depth examination of the performance of one of the many EAL populations in the UK school system. This project focused on the language and literacy acquisition of Polish children living in the UK in their first school years. The first aim of the project was to benchmark the performance of this group of EAL speakers in both English and Polish against their typically developing, native speaking monolingual peers in the areas of phonological processing, oral language, decoding, reading comprehension and higher level comprehension skills. Secondly, relationships between these language and literacy tasks were investigated to establish whether the predictors of decoding and reading comprehension in this group of children learning EAL would differ from the outcomes of these predictors for the monolingual populations in both languages spoken by this EAL population. We also wanted to find out whether there would be any cross-language transfer of knowledge and abilities in the EAL sample, both within constructs such as phonology and decoding and across these tasks. Finally, the children learning EAL displaying lowest performance on the assessments were considered in an effort to investigate the group characterised by the lowest language performance within the EAL population. The findings from Chapters 3, 4, 5, 6 and 7 will be considered below, along with the discussion of the strengths, limitations, and practical implications of this research project.

8.1 Benchmarking EAL abilities against L1 and L2 native speakers

In the first study, we set out to benchmark the abilities of children learning EAL in the beginning of their school career against their peers in their L1 (Polish) and L2 (English).

Overall the results show areas of low performance in both languages as well as a number of tasks where the EAL children do not differ from their monolingual peers.

First, when phonological abilities were compared, in English the EAL sample underperformed in Reception and Year 1, but the children in Year 2 scored comparably to their monolingual peers, while in Polish children learning EAL performed comparably to their native speaking counterparts across tasks and year groups. Oral language in English showed a significant performance lag behind their native speaking peers on both expressive and receptive oral language measures at each time point while in Polish the children learning EAL significantly underperformed on expressive measures across all year groups and in Reception and Year 1 also on receptive measures. On word reading tasks, in contrast to oral language, children learning EAL performed at the same level as their monolingual peers in both English and Polish with the sole exception of the single word reading assessment in Year 1 in English. As for reading comprehension, English analyses showed significantly worse performance from the children learning EAL (with a large effect size in Year 1 but a medium effect size in Year 2) but in Polish the EAL performance on reading comprehension was superior to monolinguals (with a large effect size, Cohen's d of 1.07).

When it comes to the EAL performance on English phonology, one explanation for the poorer scores in the early years may be that oral language perhaps plays a role in the development of phonological awareness. This suggestion has previously been voiced by Anthony and Francis (2005) and by Metsala and Walley (1998) who, in their lexical restructuring model, suggest that the development of phonological awareness is dependent on vocabulary knowledge. The influence of vocabulary knowledge on phonology appears to go beyond phonological awareness, as there are also studies showing that word familiarity and

vocabulary knowledge can contribute to individual differences in non-word repetition tasks as well (Metsala, 1999). Since the children learning EAL show poorer English oral language performance this could affect their phonology in that language in the early stages.

As for phonology performance in Polish, although the initial suggestion was that the children learning EAL would perform better than their native speaking peers, having found a few studies showing superior bilingual performance on phonological tasks (Campbell & Sais, 1995 on a task of spoken morpheme deletion; Rubin & Turner, 1989 on a phonological awareness task), we instead found no differences in performance comparable more to the findings of Bialystok, Majumder and Martin (2003). A suggestion by Bialystok et al. (2003) as to the cause of this similar performance is that the effect of bilingualism on phonological awareness is selective (Bruck & Genesee, 1995), perhaps depending on particular language pairs or specific tasks used (Bialystok et al, 2003). In this study assessing Polish learners of EAL, this lack of advantage in L1 phonological awareness may be explained by the difficulty of Polish phonology with hard to pronounce words and consonant groups (Śpiewak & Gołębiowska, 2001) as compared to English.

Alternatively, following on from the argument that phonological awareness draws on broader oral language skills, the particular language pair of Polish and English may have again had an effect on the outcomes. Rescorla et al. (2017) found Polish vocabulary acquisition to be slower than in English suggesting some language specificity in vocabulary development and attributing it to the complexity of Polish. A similar conclusion was drawn by Smoczyńska et al. (2015) who found that even in monolingual samples use of Polish nouns was often lower than the use of corresponding English nouns suggesting that Polish nouns may be more difficult to acquire.

As for oral language comparisons, the outcomes in English follow previous findings in the field, for example studies by Burgoyne, Kelly, Whiteley and Spooner (2009) and Burgoyne, Whiteley and Hutchinson (2013) who also used standardised assessments of vocabulary (one of these being the ROWPVT which was also used in the present study) with children in Year 3 and who found that children learning EAL underperformed significantly on standardised assessments of vocabulary measures. What is more, similar to the present study, they also found expressive vocabulary produced bigger effect sizes. Our findings also correspond to these by Babayiğit (2014) on receptive vocabulary as well as a number of longitudinal studies, such as Hutchinson et al. (2003) between Years 2–4 or Burgoyne, Whiteley and Hutchinson (2011) who assessed children in Year 3 and 4. Finally, Bowyer-Crane, Fricke, Schaefer, Lervåg and Hulme (2016) also found that children learning EAL at school entry tended to display lower performance on language measures (as compared to monolingual children with low language outcomes) and that this underperformance persisted across time. Although English was the second language investigated in the present study, this effect of underperformance in L2 has also been observed in other language pairs, such as Droop and Verhoeven (2003) who assessed Dutch-Turkish and Dutch-Moroccan speakers. The present study, as well as other examples of previous literature consistently show that while second language learners will improve their performance across grades (between time points), their performance may consistently lag behind their monolingual peers through the early school grades.

When it comes to the oral language development of their L1, the main question is whether the path and timeline of language development of bilinguals in their L1 mirrors or differs from monolingual children (Genesee & Nicoladis, 2006). Previous research has shown bilinguals at least reach early milestones in language acquisition at the same time as monolinguals in

their L1 (Genesee, 2003; Patterson & Pearson, 2004). However, relatively few UK-based studies in this field have assessed the L1 development of EAL populations. Our study shows, that at least in their receptive language, the children learning EAL are catching up to their native speaking peers. As for their expressive abilities, this lag in Polish may be connected to reduced exposure to their L1 or the quality of this exposure, depending on the source (e.g. parents whose language has already attrited, e.g. Sorace, 2005) and lack of instruction in that language.

The trend previously observed in EAL research is for second language learners to perform comparably to their monolingual peers on word-level reading with poorer reading comprehension (e.g. Babayiğit, 2014, 2015; Hutchinson, et al., 2003; Lesaux et al., 2010). Although some previous research has shown an advantage for EAL readers on decoding tasks (Babayiğit, 2014, 2015) this was not found in the present study, instead mirroring the findings that children learning EAL are comparable in their decoding performance (e.g. Chiappe, Siegel, & Wade-Woolley, 2002; Lervåg & Aukrust, 2010). As for reading comprehension in English, analyses showed significantly worse performance from the children learning EAL corresponding to previous findings (Burgoyne et al., 2009; Melby-Lervåg & Lervåg, 2014; Babayiğit, 2014; Hutchinson et al., 2003). This performance gap in reading comprehension may be a consequence of underperformance on oral language in the EAL group.

This extensive benchmarking study set out to compare the EAL performance to that of native speaking monolinguals in both languages. A profile of strengths (phonology and decoding) and weaknesses (oral language and reading comprehension) in this group was established. The pairs of constructs making up the strengths and weaknesses tell an interesting story

leading to the next chapter on predictors of decoding and reading comprehension and the relationships between these skills. What is more, this profile can serve as a guideline for educators and assessors as to which skills require additional attention in this group of children (e.g. oral language, particularly expressive) and where they are more likely to catch up with their peers without intervention (such as decoding or phonology).

8.2 Concurrent predictors of decoding and reading comprehension in children learning EAL

After group comparisons on L1 and L2 performance, we next set out to investigate the relationships between constructs. We examined whether the same predictors would contribute to outcomes to the same extent in the EAL as in the monolingual groups of young readers. Specifically, we predicted that phonological awareness and other pre-literacy tasks such as RAN or non-word repetition would predict decoding and oral language and that decoding ability would show a strong relationship with reading comprehension.

To explore predictors of decoding and reading comprehension, the Simple View of Reading framework was adopted to explain the relationships between the assessed variables. This chapter's findings identified elision as the best predictor of decoding both in English and in Polish in the EAL group. Although other pre-literacy tasks such as rapid automatized naming and letter sound knowledge also contributed to decoding in Year 1, by Year 2 elision was the only significant predictor. Elision was also the best predictor of decoding in both monolingual groups. With regards to reading comprehension, again in both languages spoken by the child learning EAL, at this stage in their school career, the children were relying on decoding more than oral language. In comparison, oral language was the stronger predictor for English monolinguals both in Year 1 and Year 2. Polish monolinguals (only assessed in Year 2), on the other hand, relied on decoding for their reading comprehension.

First, when predictors of decoding were considered, the results showed that, in line with other previous studies on the EAL population, phonological awareness was identified as a strong predictor at this early stage (e.g. Mellby-Lervåg, Lyster, & Hulme, 2012) with phonemic awareness (identified as a predictor by Muter et al., 2004) and speeded naming (e.g. McBride-Chang & Kail, 2002) as two tasks with most predictive value in English along with letter knowledge (also Muter et al., 2004) in Polish. Also in line with previous research, (e.g. Georgiou et al., 2008) in English (the more opaque language) elision was the stronger predictor compared to the other two tasks. While in Year 1 predictive value of phonological awareness was better in English compared to Polish (similar to Georgiou et al., 2008 who found phonological awareness as a better predictor in English than Greek) in Year 2 the predictive value in both languages was more similar (following findings showing a similar extent of predictive value in English and other examples of transparent languages by Caravolas, Volin, & Hulme, 2005; Lervåg, Braten, & Hulme, 2009; Furnes & Samuelsson, 2009; Patel, Snowling, & de Jong, 2004).

With regards to the predictors of reading comprehension, decoding was found as the better predictor in Polish compared to an oral language composite. As Polish is a more transparent orthography, this finding fits with another study by Florit and Cain (2011) who also found decoding fluency to be the better predictor. In this sample, however, decoding was also the best predictor of reading comprehension in English for children learning EAL, which is in contrast to a number of studies where the findings suggest that older children rely on linguistic comprehension rather than decoding (Gough & Tunmer, 1986; Hoover & Gough, 1990; Gough, Hoover, & Peterson, 1996; Nation & Snowling, 2004; Quinn, 2016). On the other hand, the present study assessed children only until Year 2 (aged between 6 and 7) and it is possible that in later grades this shift will indeed occur in this sample of children. The

reliance on decoding, may also be connected with lower performance on oral language tasks in comparison to standard scores. This poorer oral language may have led to relying more on decoding for reading comprehension. Lower than average performance on oral language may in turn be connected with the participants being sampled from lower SES areas (e.g. Hoff & Tian, 2005). Another argument to explain the stronger relationship with decoding at this stage (Year 2) is connected with the lack of exact time point when this shift from decoding to linguistic comprehension occurs (Language and Reading Research Consortium, 2015) – it seems debatable whether it should be expected to occur at a specific grade level, especially in case of the varied EAL population. For example, while Kendeou et al. (2009) found their second grade participants to rely on oral language, second and monolingual third graders in a study by Vellutino et al. (2007) still showed a more stable relationship between decoding and reading comprehension.

To conclude, the two chapters attempting to identify predictors of decoding and reading comprehension in this particular EAL sample add to a growing database of previous research on the applicability of the Simple View of Reading framework in the EAL population. The first study adds to previous evidence of the relationship between phonology and decoding in children learning EAL both in their L2 as well as in their L1 while the reading comprehension chapter suggests that perhaps at this stage of instruction, with the significant underperformance on oral language and good decoding skills, children learning EAL are still more likely to rely on decoding rather than on language comprehension. Both these studies provide implications for the instruction of children learning EAL suggesting that while they are likely to follow the same trajectory as native speakers in phonology and decoding, attention should be paid to their oral language abilities so that their reading comprehension can draw on oral language.

8.3 Cross language predictors: relationship between L1 and L2

Since in the present study we were able to collect data in both languages spoken by the children learning EAL, we investigated whether relationships could be identified between languages both within constructs (e.g. whether L1 phonology is related to L2 phonology) and between constructs (e.g. whether there is a relationship between L1 phonology and L2 decoding). We wanted to examine which aspects of the child's L1 could predict their performance on L2 tasks.

Analyses of within-construct relationships showed significant correlations between the corresponding tasks in the areas of pre-literacy, decoding and reading comprehension but no such correlation was found between oral language measures in the two languages. When regressions were conducted across constructs, phonology and decoding in Polish (L1) significantly predicted English reading comprehension as well as English phonological awareness and decoding. Furthermore, in a model including Polish decoding and phonology, English oral language still accounted for a significant amount of variance in English reading comprehension.

These findings fit into the narrative of two types of transfer, as identified by Cummins (2008) who suggests that in language-specific transfer, the information is dependent on the languages used and language-independent transfer can be applied to multiple languages. Goodrich, Lonigan, Kleuver and Farver (2016) class phonological awareness as language-independent and suggest it should be significantly related across languages, while they see vocabulary as language-specific and a skill which should not transfer well. This distinction was reflected in this chapter where phonological awareness across languages was highly correlated while oral language was not. The present findings fit into the previous research

conducted in a variety of other languages. For example, the findings of within-construct correlations follow those in a meta-analysis by Melby-Lervåg and Lervåg (2011) or, with regards to phonology, in the study by Goodrich and Lonigan (2017) as well as showing agreement with the review by National Literacy Panel (2009) which reports a relationship between literacy measures including a correlation in reading comprehension between languages. As predicted by Goodrich et al. (2016) and in line with findings by Bialystok et al. (2005) correlations between languages on the language specific skill of vocabulary and grammar were in this study also non-significant. The between construct relationships are also in agreement with previous research, for example the finding of a relationship between L1 phonology and L2 reading reflecting that obtained by Jared et al. (2012). Caution is necessary when interpreting correlational findings such as these obtained from within construct cross-language comparisons along with the possibility that transfer is due to other explanations and circumstances such as shared language learning environments for both languages as suggested by Durgunoglu, Nagy and Hancin-Bhatt, (1993) or Lindsey, Manis and Bailey (2003). However, the evidence of cross-language transfer found in this study poses major implications for instruction of EAL pupils. The finding that phonology and decoding in the child's first (and probably stronger) language can affect performance on second language reading comprehension could potentially be applied in order to improve this skill in children learning EAL through interventions on these L1 skills at home. This notion of continuing L1 development transferring to L2 skills having already gained support among some researchers such as Lopez and Greenfield (2004) who explain that the failure to meet milestones in literacy or oral language in L1 will make it difficult to learn these skills in the first language and then subsequently transfer them to English. Instead, the early development of language skills such as phonological awareness, morphology, syntax and narrative in L1 will provide the EAL child with the "meta" understanding of language which can then transfer to the

development of L2 ability. While such types of skills as morphology and syntax may not transfer spontaneously, fostering metalinguistic skills in L1 may boost these skills in their L2. Vaughn et al. (2006) also suggest that L1 intervention allowed the EAL group exposed to it to be better prepared for the next grade in school and provided them with skills which would facilitate their transition to reading in English. However, the EAL group's good performance on decoding and the findings of cross-language transfer analyses showing the importance of L2 oral language for reading comprehension suggest that to improve reading comprehension in children learning EAL, attention needs to be paid to their English oral language skills.

8.4 The issue of identifying language impairment in the EAL population

Finally, we wanted to find out whether we could use this dataset to identify children who satisfy criteria for intrinsic language impairment. There is an ongoing debate in research on children learning multiple languages with regards to which of these languages should be used in diagnosis of children learning EAL. This topic is particularly relevant as second language learners are at a greater risk of being both over- and under-identified as having a language impairment, either because of a lack of understanding of their developmental expectations by their educators or perhaps because their teachers tend to wait with the diagnosis until the child learns their second language (Bedore & Peña, 2008). This may lead to children either not getting access to therapy or being unnecessarily taken out of the classroom and missing sections of the curriculum.

We were guided by evidence from previous research when choosing which tasks should form the selection criteria for defining low language performance in this study. For example, findings from studies by Thordardottir et al. (1997) and Peña et al. (2001) showed that children with language impairment had difficulties with vocabularies in both languages and

in learning new words leading us to use oral language as the criteria. Bilingual children with language impairment were also shown to display difficulties in non-word repetition as compared to typically developing bilingual peers (e.g. Calderon & Gutierrez-Clellen, 2003) with Summers et al. (2010) suggesting that language knowledge may also play a role in non-word repetition tasks. We decided to create our four language performance groups based on their oral language outcomes.

Among the monolingual population, language impairment has been estimated to occur in approximately 7.5% of school children (Norbury et al., 2016 in the UK; Tomblin et al., 1997 have estimated the prevalence at around 7% in the USA). When it comes to the bilingual population, Kohnert (2010) suggests these numbers are comparable to monolinguals. The present study has shown a higher estimate (around 20%) even when both languages are taken into account. With regards to the percentage of the sample diagnosed with low language performance only in English, the present study is comparable to that of Paradis (2005), who found that when children learning EAL were tested in their L2, over 87% of them scored in the range of monolinguals with DLD when their results were compared to age-matched monolingual criterion scores. In the present study, the lower SES status of the participants may be a possible explanation for this higher percentage of low language performance despite assessment in both languages. Previous research has shown that children in lower SES environments tend to present slower rates of language development (e.g. Hoff & Tian, 2005). However, SES data has not been provided for all EAL families and therefore this may not be the only explanation.

In our analyses, after setting the criteria for diagnosing weak language skills in English only, over half of the pool of children learning EAL were identified as showing low language

performance leading to the question how many of these children are mis-represented as having a language impairment and are simply underperforming due to their status as EAL learners. When criteria were set in both languages, a significantly smaller group was identified (~23%). When these two low language performance groups were compared on their performance of the identification criteria, there were no significant differences between English only group and low language performance in both English and Polish group on the English measures indicating that English measures by themselves are not sufficient to diagnose language impairment in the EAL population. Finally, there were virtually no significant differences between these two groups on other tasks such as decoding or comprehension suggesting that, especially in school settings, a faster and easier diagnosis in English (L2) only may be sufficient in terms of identifying these children who may be at risk of poor academic performance regardless of the languages they speak and whether the classroom language is their L1 or L2.

These outcomes provide arguments to the debate regarding whether children should be diagnosed using both (all) languages they speak or whether only diagnosing in their L2 would suffice. Many researchers agree that language assessments normed on monolingual populations are not an accurate tool to identify bilinguals with language impairment (Gutiérrez-Clellen & Simon-Cereijido, 2010; Paradis et al., 2003) and suggestions have been made to use bilingual peers as a comparison group, testing in both languages (Kohnert, 2010). Conceptual scoring (scoring the meaning of a response regardless of the language in which it is produced, Pearson, Fernandez, Lewedag, & Oller, 1993) has also been proposed as one of the ways to indicate which children learning EAL may have language delays and which are typically developing. In a study by Gross, Buac and Kaushanskaya (2014) conceptual scoring removed the significant difference between monolingual and bilingual

children on a receptive measure, but not on the expressive one, and differences still persisted between the two groups on both tasks. However, conceptual scoring was shown to increase the proportion of bilingual children with vocabulary scores within the average range. This lead the researchers to conclude that conceptual scoring may assist in ruling out vocabulary deficits (Gross, Buac, & Kaushanskaya, 2014). This study was, however, carried out with simultaneous bilinguals which needs to be taken into consideration when applying the outcomes to the present sample of children learning EAL who show a different profile of language acquisition. Another study which found a benefit of conceptual scoring over monolingual assessment in classifying the performance of typically developing children learning EAL was conducted by Bedore, Peña, García and Cortez (2005). In a group of Spanish speaking bilinguals, the conceptual score was more likely to be in the average range compared to the one-language score leading to a conclusion that bilingual children may benefit from conceptual scoring particularly, in the case of this study, when assessed in Spanish.

8.5 Overall strengths and limitations

The major strength of this project was the opportunity to assess the participants in both their L1 and L2. Most research studies, particularly in the UK tend to focus on the English performance of children learning EAL. This is associated with the large variety of languages spoken by children learning EAL in the classrooms. Just as it is difficult to provide support at school for children in their L1 due to lack of TAs speaking all the languages, it is impossible to assess all L1s spoken by children in the UK. Therefore, including Polish assessment in this study was important for a number of reasons. To begin with, this study provided an L1 comparison group which allowed to benchmark the abilities of the child learning EAL in their first language addressing the issue of limited exposure to their first language abroad

(compared to monolingual peers in Poland who receive near 100% Polish exposure) at this early stage of language and literacy development and how that may affect their performance in their L1. Secondly, through including Polish assessments we were able to investigate possible cross-language relationships in the children's abilities – an area of research which may inform the development of strategies for narrowing the gap between second language learners and monolinguals and therefore with applications in academic performance in later years. Finally, we were able to explore the subject of language impairment in the EAL population with regards to the issue surrounding diagnosis in English only or in both languages.

The breadth of the testing battery along with its corresponding tasks in both languages was another strength of this study. Before commencing the data collection, the researchers were able to put together a battery of corresponding tasks in the two languages as well as creating tasks which were unavailable in Polish at the time. What is more, this testing battery included a large number of measures both in Polish and English allowing the researchers to assess a number of abilities spanning phonological processing, oral language, reading and comprehension providing a comprehensive profile of abilities of children in the beginning of education and enabling an investigation of relationships between these abilities.

The present study was not without limitations. For example, this study adopted a cross-sectional approach with different groups of children sampled from Reception, Year 1 and Year 2. This meant that any analyses on predictors of reading comprehension or decoding were concurrent rather than longitudinal. This also meant we were unable to see progress in the abilities of children learning EAL and instead only observed a snapshot of their performance at one point in time. Thus in this study we couldn't definitely say if in this

sample, the gap between EAL and native speakers on tasks such as oral language narrows over time. There were also some issues with the recruitment of participants. Because we were looking for large EAL (Polish) populations, a lot of the schools targeted were in areas characterised by lower SES status. While this was often a characteristic of the native speaking families, it was not necessarily the case with the EAL families in the same schools which showed a bigger range of SES or parental education levels. Because we were looking specifically for Polish children rather than EAL pupils of various language backgrounds, and because recruiting participants often posed as a problem, we ended up with quite a varied sample of backgrounds among the group of children learning EAL.

The children in this study tended to differ with regards of age of arrival in the UK, with some being born in England, as well as number of years in the English education system or the extent of exposure to both English and Polish. This variability is often the case in the EAL population, however, it is likely that these factors affected some of our findings. While we were able to assess children's abilities their performance was also likely to be affected by the extent and quality of exposure to both languages as well as the home language and literacy environments. This influence of exposure on language outcomes has been noted before, for example both Haman et al. (2017) and Thordardottir (2011) reported L1 language exposure as a crucial factor in productive language tasks. Haman et al. (2017) also report that exposure can have a negative effect which in their study was reflected in the negative influence of L2 exposure on the production of grammatical structures in L1. Additionally, the frequency of exposure to particular words in either language is likely to influence the vocabulary development of children learning EAL through the context of learning one language at home and the other at school (Bedore et al., 2005). To obtain information on the levels and quality of exposure to both Polish and English we sent out parent questionnaires to the EAL and

native speaker families, however, we experienced very low return rate (less than 50% in the EAL group) and therefore couldn't draw conclusions from these.

As for methodological issues, although the EAL children were presented with two sets of assessments which could be considered as similar in structure, the corresponding assessments differed at the item level. Furthermore, children were only assessed once in each language, with a break of a few days between languages. It is therefore unlikely that results were influenced by training effects. On the other hand, one of the findings which may be affected by methodology is the assessment of reading comprehension. The measure of reading comprehension in this study, as well as in a number of other research projects, relies heavily on expressive language capabilities of the participant, as well as their cultural knowledge of the language of assessment. This means that children learning EAL, who already display difficulties with oral language are more likely to underperform on assessments using open-ended questions and lengthy passages compared to those relying on sentence-based cloze tests with shorter passages where these children are more able to lean on their decoding abilities (e.g. Melby-Lervåg & Lervåg, 2014, who in a meta-analysis found smaller differences between children learning EAL and their monolingual peers on cloze-based assessments as compared to those employing open-ended questions). Finally, while the English assessment of reading comprehension required answering both literal and inference questions, the Polish assessment only asked literal questions. This means that the English assessment tapped more into higher level comprehension skills over and above only requiring the child to find information in a written text as was the case in the Polish test.

Statistical limitations of the project follow on from the methodological issues. In some cases, the size of the sample may have affected the outcomes of analyses through insufficient

power. As previously explained, the size of the sample was informed by previous research and the pragmatics of testing a specific subset of the EAL population in schools in a limited span of time. Furthermore, in Chapter 3, due to performing a number of comparisons between the EAL children and their native speaking peers, we were required to correct for multiple comparisons, therefore losing some of the effects.

8.6 Future directions

Considering the shortcomings of this project, some future applications can be identified to improve this area of research. To begin with, following up some of these children at later stages of their school career would allow us to investigate whether they show the predicted narrowing of the gap in performance as compared to native speakers. Additionally, conceptual scoring could be introduced to avoid misdiagnosis and provide a measure more likely to reflect the performance of typically developing children learning EAL. Secondly, the relationship between decoding and oral language and reading comprehension could be re-tested to find out whether later on these children still rely on decoding or whether this relationship shifted to a stronger connection between oral language and reading comprehension.

The present study investigated cross-language relationships in one language pair, however, an interesting extension would be to compare the strength of cross-language transfer in the areas of phonology, language and reading in children learning EAL with various L1s from the point of view of the position of their first language on the orthographic depth continuum to compare the impact of orthographic depth on this cross-language transfer.

Finally, in any future studies, another way of collecting language exposure data should be considered to obtain more rich information about the languages the child is exposed to in

their environment including the prevalence or amount of both languages, source and quality of input, or whether input is tied to specific situations. This data is particularly relevant in explaining oral language and literacy outcomes and therefore optimally should be collected from each child. Measures beyond paper parental questionnaires should be considered such as recordings or observations.

8.7 Practical implications

There are a number of practical applications stemming from the findings in this study. Firstly, we hope that these outcomes can be useful for educators in schools. Our findings add to a growing area of research on the performance and outcomes of children learning English as their second language. Through identifying the areas of strengths and weaknesses as well as pointing out the relationships between certain constructs we can show teachers which areas to target when working with children learning EAL – where they need additional support and where they are likely to mirror the progress showed by their native speaking peers. For example, the cross-language and benchmarking analyses, along with evidence from previous research, all show the importance of supporting oral language development in this group of pupils. The findings of the cross-language analyses were also interesting with regards to its possible implications for the Simple View of Reading model. As it has been outlined in the introduction, the Simple View has been criticized for oversimplifying the complex relationships in reading comprehension. The present study has also shown that, although decoding and oral language account for reading comprehension (with varying weights in the two year groups), some unexplained variance remains unaccounted for. In addition, cross-language transfer analyses show that in children learning EAL phonology and decoding in L1 can account for variance in L2, therefore suggesting the addition of language transfer to the Simple View framework. Additional components also investigated in this thesis and other

previous research, which could be considered for the framework are higher level comprehension skills such as inference making and monitoring comprehension. The cross-language findings also provide implications for future interventions. While interventions in English have been considered and would be beneficial for EAL pupils, particularly those with greater difficulties in English, the present study has shown that, since there seems to be a relationship between the languages of a child learning EAL, first language interventions should also be considered. This introduces an interesting avenue of future research on the effectiveness of L1 intervention in L2 outcomes as well as taking advantage of using home interventions, instead of taking time out of the curriculum to implement ones in English. This could mean that the child has more time to interact with the curriculum, and this in turn could contribute to narrowing the gap in attainment between children learning EAL and native speakers. The final implication is in diagnosing children learning EAL. The present study provides arguments for diagnosis in both English and Polish (L1). Our findings showed that when only English was used, a large proportion of the EAL sample was classified as showing low language performance. This number reduced significantly when the children were tested in both languages. This study therefore provides another argument in favor of developing EAL tools designed and normed specifically with this population rather than adapting English assessments for native speakers. Ideally tools should be available in the first language spoken by the child, however, especially in the UK this would be a difficult undertaking. That said, some efforts are underway, such as the Receptive Vocabulary Screening app (Schaefer, Bowyer-Crane, Herrmann, & Fricke, 2016).

8.8 Final Conclusions

This project added to previous research on the language and literacy performance of EAL pupils in the UK. This study was unique in comparison to many previous investigations in the

UK as it assessed the ability of children learning EAL in both their languages providing a fuller picture of their language and literacy development in the early stages of school attendance. In addition to contributing to the field's understanding of the capabilities of EAL pupils, this study also informs on the skills underpinning reading in this sample which could inform practitioners with regards to what they should pay particular attention to in the instruction of children learning EAL at the different stages (e.g. phonology in Reception, continued attention to L2 oral language). The findings from cross-language comparisons reinforce the idea that children's first language may have an effect on their performance in their L2 and subsequently that these skills also need to be nurtured and developed in this population. Finally, the analyses on the EAL group underperforming on language measures, classified as showing potential signs of language impairment, leads to a discussion as to whether assessment carried out only in the child's L2 is a reliable indicator of their language impairment or whether steps should be taken to ensure diagnosis is carried out in both languages.

Appendix 1: Information sheet for parents: Polish

KARTA INFORMACYJNA DLA RODZICÓW

Badanie profilu językowego oraz umiejętności czytania monolingwalnych oraz bilingwalnych dzieci posługujących się językiem polskim i angielskim w wieku 4-7

Osoba prowadząca badanie: Marta Węsierska
Promotorzy: *Emma Hayiou-Thomas and Claudine Bowyer-Crane*

Państwa dziecko będzie proszone o wzięcie udziału w badaniu naukowym. Zanim zadecydują Państwo czy zgadzają się Państwo na udział dziecka w badaniu ważne jest by zrozumieli Państwo dla czego prowadzimy to badanie oraz na czym będzie ono polegać. Jeśli potrzebują Państwo dodatkowych informacji lub bardziej dokładnych objaśnień prosimy o kontakt.

Jaki jest cel badania?
Ten projekt badawczy skupia się na różnicach pomiędzy dziećmi, które posługują się jednym lub dwoma językami. Badaniu zostaną poddane umiejętności językowe oraz poziom czytania dziecka.

Dlaczego moje dziecko zostało wybrane do wzięcia udziału w badaniu?
W tym projekcie mamy nadzieję badać dzieci w wieku od lat 4 do lat 7 dla których język polski jest językiem ojczystym. Państwa dziecko zostało wybrane ponieważ wpisuje się w te kryteria.

Czy moje dziecko musi wziąć udział w tym badaniu?
Nie. Udział w tym projekcie jest całkowicie dobrowolny. Jeśli zdecydują się Państwo nie brać udziału w tym badaniu w żaden sposób ta decyzja nie wpłynie na Państwo lub Państwa dziecko. Jeśli wyrażą Państwo zgodę na udział dziecka w badaniu będą Państwo proszeni o podpisanie formularza zgody. Nawet po wyrażeniu zgody, w każdym momencie mogą Państwo poprosić o zaprzestanie badania dziecka bez podawania przyczyny. Dziecko będzie mogło przerwać badanie w każdym momencie poprzez powiedzenie osobie badającej, że nie chcą być badane.

O co będzie proszone moje dziecko jeśli wyrażę zgodę na badanie?
Dziecko będzie proszone, między innymi o nazywanie obrazków, powtarzanie zdań oraz pseudosłów, opisywanie obrazków, itp. Dotrzymamy wszelkich starań by badania nie były dla dziecka męczące poprzez podzielenie testów na kilka sesji. Część badań będzie nagrywane na dyktafonie w celu bardziej dokładnej analizy danych. Materiały te będą dostępne tylko dla osób prowadzących badanie.

Gdzie będą przeprowadzane badania?
Badania będą prowadzone w szkole/przedszkolu do którego uczęszcza dziecko. Osoby zaangażowane w badania dołożą starań by sesje badań były jak najbardziej przyjemne i zrelaksowane dla dziecka. Czas trwania indywidualnej sesji nie przekroczy 45 minut. Ilość sesji będzie zależna od tego jak szybko dziecko będzie postępować przez testy jednak totalna ich ilość nie powinna przekroczyć pięciu sesji.

Kto będzie prowadzić badania?
Osoby związane z tymi badaniami zostały poddane sprawdzianowi Disclosure and Barring Service pozwalającemu do pracy z dziećmi. Mgr Marta Węsierska będzie prowadzić badania z dziećmi.

Czy dane dziecka oraz wyniki badań zostaną utajnione?
Tak. Informacje na temat osób biorących udział w badaniu będą anonimowe oraz trzymate w bezpiecznym miejscu dostępnym tylko dla osób prowadzących badanie.

Nie możemy ujawniać wyników indywidualnych dzieci lub informacji na temat konkretnych testów użytych w badaniu.

Kontakt:

Jeśli mają Państwo więcej pytań na temat tego badania prosimy o kontakt z promotorami Emmą Hayiou-Thomas lub Claudine Bowyer-Crane:

Emma Hayiou-Thomas, Department of Psychology, The University of York, York, YO10 5DD
Numer telefonu: 01904 324360 E-mail: emma.hayiou-thomas@york.ac.uk

Claudine Bowyer-Crane, Department of Education, The University of York, York, YO10 5DD
Numer telefonu: 01904 434398 E-mail: claudine.bowyer-crane@york.ac.uk

Appendix 2: Information sheet for parents: English

INFORMATION SHEET FOR PARENTS/CARERS

Creating a language and literacy profile of EAL Polish children aged 4-7, and their monolingual Polish and English peers.

Researcher: *Marta Wesierska*

*(**Supervisors**: Emma Hayiou-Thomas and Claudine Bowyer-Crane).*

Your child is being invited to take part in a research study. Before you decide whether your child would like to take part, it is important for you to understand why the research is being done and what it will involve. Please ask if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

This research project is investigating differences between children who speak one language and children who are learning to speak two languages at a similar level of proficiency. The children's literacy and language abilities will be studied.

Why has my child been chosen?

As part of this research we are looking for children aged between 4 and 7 years, who speak English or Polish as their mother tongue to take part in the study. Your child has been chosen to take part because they fit these criteria.

Does my child have to take part?

No. This is an entirely voluntary project. If you choose not to participate it will not affect you or your child in any way. If you give your consent for your child to participate, you will be asked to sign a consent form. Even if you give consent, you will still be able to withdraw your child at any time and without giving a reason. Your child will also be able to withdraw from the study at any time by letting the researcher know that they do not want to take part.

What will my child be asked to do if we agree to take part?

Your child will be asked to complete a series of tasks such as naming pictures or repeating made up words. We will ensure that your child is not fatigued by these tasks by dividing them into a number of sessions.

We would also like to ask you and your child's teacher to fill in some questionnaires about your child's communication skills, strengths and difficulties, and the kinds of language and literacy activities you carry out at home.

We may need to take audio and video recordings in order to allow us to analyse the data in more detail. These will be kept confidential and only used for research purposes. They may be shared in research presentations at academic conferences. The child would never be identified by name. This

material would never be distributed to anyone other than the research team. The purpose of the video is entirely to allow a more fine-grained analysis of the data.

Where will the research sessions take place?

The sessions will take place at school. Every effort will be made to ensure that the research sessions are as enjoyable and relaxed as possible for the children. The testing time for each session will not exceed 45 minutes. The amount of sessions will depend on how quickly your child progresses through the tasks but should be no more than 5 sessions.

Who will run the research sessions?

All our researchers have a Disclosure and Barring Service check clearance for working with children. Miss Marta Wesierska will meet with and test the children taking part.

Will all my child's details and the assessment results be kept confidential?

Yes. Your child's name will be replaced with a code and identifying information will be stored separately from the data.

We are not at liberty to provide personal results or individualised feedback on any measures taken in the study.

Contact:

If you require any further information or have any questions about this study, please do not hesitate to contact Emma Hayiou-Thomas or Claudine Bowyer-Crane:

Address: Emma Hayiou-Thomas, Department of Psychology, The University of York, York, YO10 5DD

Phone: 01904 324360 E-mail: emma.hayiou-thomas@york.ac.uk

Address: Claudine Bowyer-Crane, Department of Education, The University of York, York, YO10 5DD

Phone: 01904 434398 E-mail: claudine.bowyer-crane@york.ac.uk

Appendix 3: Parent consent form: English

PARENT CONSENT FORM

Looking at the link between oral language and literacy in children aged 4-7.

Researcher's name: Marta Wesierska
Supervisors: Emma Hayiou-Thomas and Claudine Bowyer-Crane

		Please circle either YES or NO
1.	Have you read the parents' information sheet?	YES / NO
2.	Have you had a chance to discuss the study with the researcher and ask any questions that you may have?	YES / NO
3.	Have you had satisfactory answers to all of your questions?	YES / NO
4.	Have you been given enough information about the study?	YES / NO
5.	Do you understand that your child is free to withdraw from the study: • At any time? • Without having to give a reason?	YES / NO
6.	Have you had enough time to come to your decision?	YES / NO
7.	Do you understand the time requirements of the study?	YES / NO
8.	Do you agree to let your child take part in this study?	YES / NO
9.	Are you happy for us to make an audio recording of the assessment session with your child?	YES / NO

10. PARENT

Name of Child (BLOCK LETTERS): ……

Signature of Parent: …… Date: ……

Name of Parent (BLOCK LETTERS): ……

11. INVESTIGATOR

I have explained the study to the above parent and he/she has indicated his/her willingness for the child to take part in this study.

Signature of Investigator: …… Date: ……..

Name (BLOCK LETTERS): ……

Appendix 4: Parent consent form: Polish

Badanie profilu językowego oraz umiejętności czytania monolingwalnych oraz bilingwalnych dzieci posługujących się językiem polskim i angielskim w wieku 4-7

Osoba prowadząca badania: mgr Marta Węsierska, University of York, UK
Promotorzy: dr Ema Hayiou-Thomas, dr Claudine Bowyer-Crane, University of York, UK

	Prosimy o zaznaczenie właściwej odpowiedzi
12. Czy przeczytał/a Pan/i informację dla rodziców?	TAK / NIE
13. Czy miał/a Pan/i możliwość przedyskutowania celu oraz przebiegu badań z osobą prowadzącą i zadania ewentualnych pytań?	TAK / NIE
14. Czy otrzymał/a Pan/i satysfakcjonujące odpowiedzi na swoje pytania?	TAK / NIE
15. Czy poziom informacji, które otrzymał/a Pan/i na temat badań był wystarczający?	TAK / NIE
16. Czy rozumie Pan/i, że można zrezygnować z udziału dziecka w badaniach: • w każdym momencie? • bez potrzeby uzasadnienia?	TAK / NIE
17. Czy miał/a Pan/i wystarczająco dużo czasu na podjęcie decyzji o udziale dziecka w badaniach?	TAK / NIE
18. Czy rozumie Pan/i wymagania czasowe tych badań?	TAK / NIE
19. Czy wyraża Pan/i zgodę na udział Pana/Pani dziecka w badaniu?	TAK / NIE

20. RODZIC

Imię dziecka (DRUKOWANYMI LITERAMI): ……

Podpis rodzica: …… Data: ……

Imię rodzica (DRUKOWANYMI LITERAMI): ……

21. OSOBA PROWADZĄCA BADANIE

Wytłumaczyłam badanie podpisanemu powyżej rodzicowi i wyraził/a on/a zgodę na udział dziecka w badaniu.

Podpis osoby prowadzącej badanie: …… Data: ……..

Imię (DRUKOWANYMI LITERAMI): ……

Appendix 5: Parent consent form – opt out: English native speakers

INFORMATION SHEET FOR PARENTS/CARERS

Creating a language and literacy profile of EAL Polish children aged 4-7, and their monolingual Polish and English peers.

Researcher: *Marta Wesierska*

*(**Supervisors**: Emma Hayiou-Thomas and Claudine Bowyer-Crane).*

Your child is being invited to take part in a research study. Before you decide whether your child would like to take part, it is important for you to understand why the research is being done and what it will involve. Please ask if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

This research project is investigating differences between children who speak one language and children who are learning to speak two languages at a similar level of proficiency. The children's literacy and language abilities will be studied.

Why has my child been chosen?

As part of this research we are looking for children aged between 4 and 7 years, who speak English or Polish as their mother tongue to take part in the study. Your child has been chosen to take part because they fit these criteria.

Does my child have to take part?

No. This is an entirely voluntary project. If you choose not to participate it will not affect you or your child in any way. If you give your consent for your child to participate, you will be asked to sign a consent form. Even if you give consent, you will still be able to withdraw your child at any time and without giving a reason. Your child will also be able to withdraw from the study at any time by letting the researcher know that they do not want to take part.

What will my child be asked to do if we agree to take part?

Your child will be asked to complete a series of tasks such as naming pictures or repeating made up words. We will ensure that your child is not fatigued by these tasks by dividing them into a number of sessions.
We would also like to ask you and your child's teacher to fill in some questionnaires about your child's communication skills, strengths and difficulties, and the kinds of language and literacy activities you carry out at home.
We may need to take audio and video recordings in order to allow us to analyse the data in more detail. These will be kept confidential and only used for research purposes. They may be shared in research presentations at academic conferences. The child would never be identified by name. This material would never be distributed to anyone other than the research team. The purpose of the video is entirely to allow a more fine-grained analysis of the data.

Where will the research sessions take place?

The sessions will take place at school. Every effort will be made to ensure that the research sessions are as enjoyable and relaxed as possible for the children. The testing time for each session will not exceed 45 minutes. The amount of sessions will depend on how quickly your child progresses through the tasks but should be no more than 5 sessions.

Who will run the research sessions?

All our researchers have a Disclosure and Barring Service check clearance for working with children. Miss Marta Wesierska will meet with and test the children taking part.

Will all my child's details and the assessment results be kept confidential?

Yes. Your child's name will be replaced with a code and identifying information will be stored separately from the data.

We are not at liberty to provide personal results or individualised feedback on any measures taken in the study.

Contact:

If you require any further information or have any questions about this study, please do not hesitate to contact Emma Hayiou-Thomas or Claudine Bowyer-Crane:

Address: Emma Hayiou-Thomas, Department of Psychology, The University of York, York, YO10 5DD

Phone: 01904 324360 E-mail: emma.hayiou-thomas@york.ac.uk

Address: Claudine Bowyer-Crane, Department of Education, The University of York, York, YO10 5DD

Phone: 01904 434398 E-mail: claudine.bowyer-crane@york.ac.uk

If you **DO NOT** wish for your child to take part in this study please sign below and return this form to the teacher. If you do consent for your child to take part, you do not have to do anything.

Name of Child (BLOCK LETTERS): ……

Signature of Parent: …… Date: ……

Name of Parent (BLOCK LETTERS): ……

Appendix 6: Parent consent form – opt out: Polish children learning EAL

KARTA INFORMACYJNA DLA RODZICÓW

Badanie profilu językowego oraz umiejętności czytania monolingwalnych oraz bilingwalnych dzieci posługujących się językiem polskim i angielskim w wieku 4-7

Osoba prowadząca badanie: Marta Węsierska
Promotorzy: *Emma Hayiou-Thomas and Claudine Bowyer-Crane*

Państwa dziecko będzie proszone o wzięcie udziału w badaniu naukowym. Zanim zadecydują Państwo czy zgadzają się Państwo na udział dziecka w badaniu ważne jest by zrozumieli Państwo dla czego prowadzimy to badanie oraz na czym będzie ono polegać. Jeśli potrzebują Państwo dodatkowych informacji lub bardziej dokładnych objaśnień prosimy o kontakt.

Jaki jest cel badania?
Ten projekt badawczy skupia się na różnicach pomiędzy dziećmi, które posługują się jednym lub dwoma językami. Badaniu zostaną poddane umiejętności językowe oraz poziom czytania dziecka.

Dlaczego moje dziecko zostało wybrane do wzięcia udziału w badaniu?
W tym projekcie mamy nadzieję badać dzieci w wieku od lat 4 do lat 7 dla których język polski jest językiem ojczystym. Państwa dziecko zostało wybrane ponieważ wpisuje się w te kryteria.

Czy moje dziecko musi wziąć udział w tym badaniu?
Nie. Udział w tym projekcie jest całkowicie dobrowolny. Jeśli zdecydują się Państwo nie brać udziału w tym badaniu w żaden sposób ta decyzja nie wpłynie na Państwo lub Państwa dziecko. Jeśli wyrażą Państwo zgodę na udział dziecka w badaniu będą Państwo proszeni o podpisanie formularza zgody. Nawet po wyrażeniu zgody, w każdym momencie mogą Państwo poprosić o zaprzestanie badania dziecka bez podawania przyczyny. Dziecko będzie mogło przerwać badanie w każdym momencie poprzez powiedzenie osobie badającej, że nie chcą być badane.

O co będzie proszone moje dziecko jeśli wyrażę zgodę na badanie?
Dziecko będzie proszone, między innymi o nazywanie obrazków, powtarzanie zdań oraz pseudosłów, opisywanie obrazków, itp. Dotrzymamy wszelkich starań by badania nie były dla dziecka męczące poprzez podzielenie testów na kilka sesji. Część badań będzie nagrywane na dyktafonie w celu bardziej dokładnej analizy danych. Materiały te będą dostępne tylko dla osób prowadzących badanie.

Gdzie będą przeprowadzane badania?
Badania będą prowadzone w szkole/przedszkolu do którego uczęszcza dziecko. Osoby zaangażowane w badania dołożą starań by sesje badań były jak najbardziej przyjemne i zrelaksowane dla dziecka. Czas trwania indywidualnej sesji nie przekroczy 45 minut. Ilość sesji będzie zależna od tego jak szybko dziecko będzie postępować przez testy jednak totalna ich ilość nie powinna przekroczyć pięciu sesji.

Kto będzie prowadzić badania?
Osoby związane z tymi badaniami zostały poddane sprawdzianowi Disclosure and Barring Service pozwalającemu do pracy z dziećmi. Mgr Marta Węsierska będzie prowadzić badania z dziećmi.

Czy dane dziecka oraz wyniki badań zostaną utajnione?
Tak. Informacje na temat osób biorących udział w badaniu będą anonimowe oraz trzymate w bezpiecznym miejscu dostępnym tylko dla osób prowadzących badanie.

Nie możemy ujawniać wyników indywidualnych dzieci lub informacji na temat konkretnych testów użytych w badaniu.

Kontakt:

Jeśli mają Państwo więcej pytań na temat tego badania prosimy o kontakt z promotorami Emmą Hayiou-Thomas lub Claudine Bowyer-Crane:

Emma Hayiou-Thomas, Department of Psychology, The University of York, York, YO10 5DD
Numer telefonu: 01904 324360 E-mail: emma.hayiou-thomas@york.ac.uk

Claudine Bowyer-Crane, Department of Education, The University of York, York, YO10 5DD
Numer telefonu: 01904 434398 E-mail: claudine.bowyer-crane@york.ac.uk

Jeśli **NIE WYRAŻAJĄ** Państwo zgody na badanie dziecka, prosimy o podpisanie tego dokumentu oraz zwrócenie go do nauczyciela dziecka. Jeśli zgadzają się Państwo na udział dziecka w badaniu, prosimy o NIE ODDAWANIE tego dokumentu.

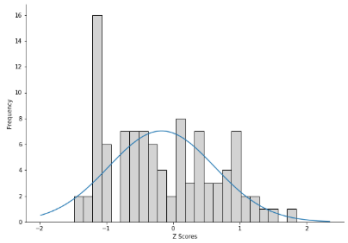
Imię dziecka (DRUKOWANYMI LITERAMI): ……

Podpis rodzica: …… Data: ……

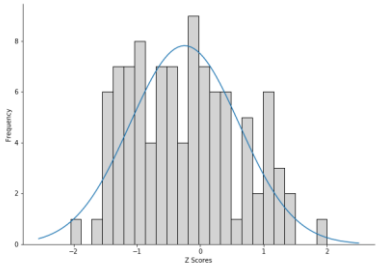
Imię rodzica (DRUKOWANYMI LITERAMI): ……

Appendix 7: Histograms showing the distribution of z scores for each task administered fitted with a normal distribution curve

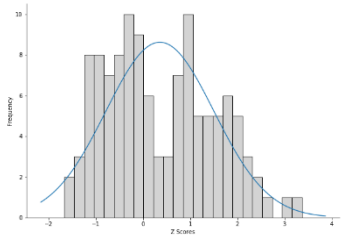
Non-verbal reasoning: Wechsler Block Design task.



Children learning EAL



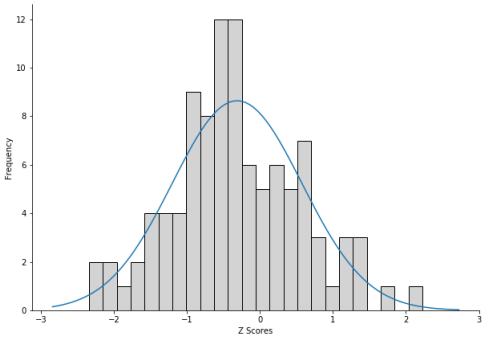
Monolingual English children



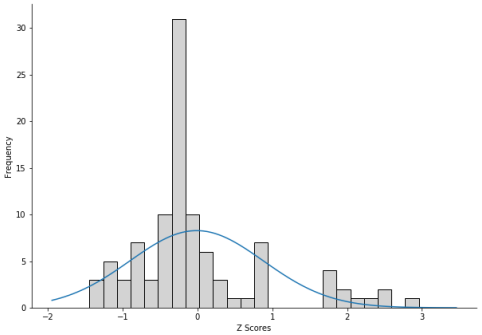
Monolingual Polish children

Pre-literacy skills

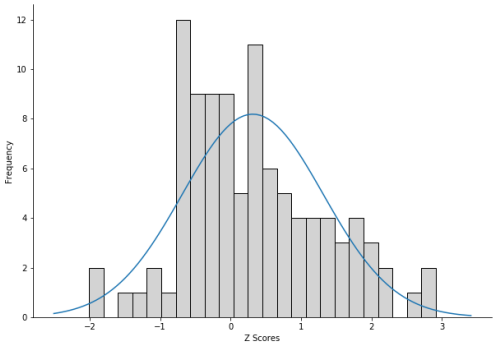
Elision



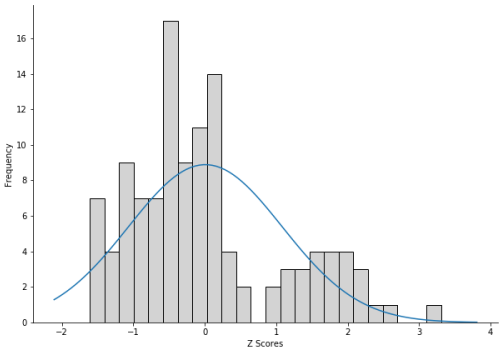
Children learning EAL, English subtest



Children learning EAL, Polish subtest

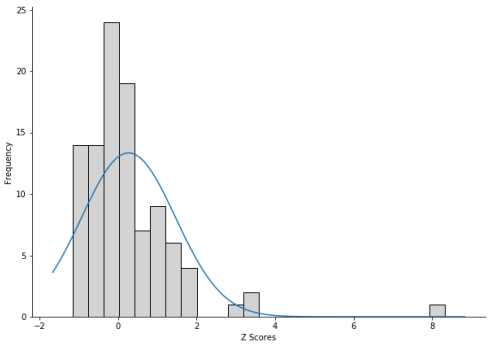


English native speakers

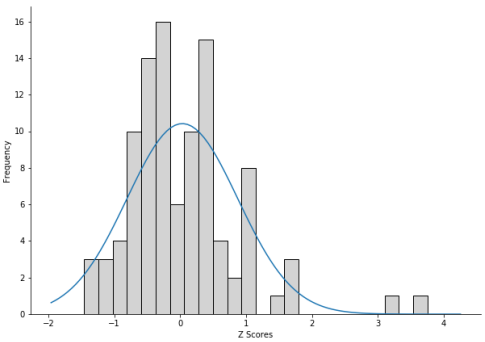


Polish native speakers

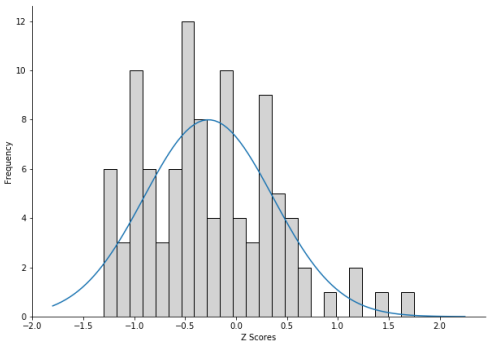
Rapid Automatized Naming (Objects)



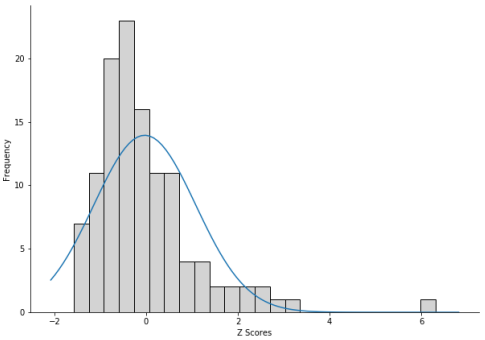
Children learning EAL, English



Children learning EAL, Polish

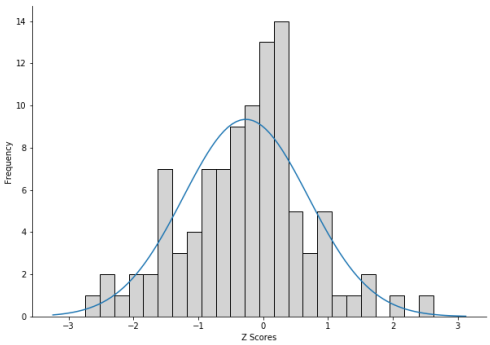


English native speakers

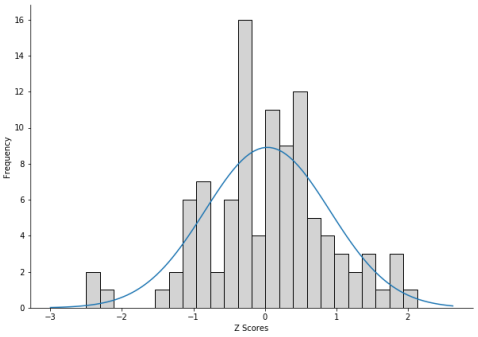


Polish native speakers

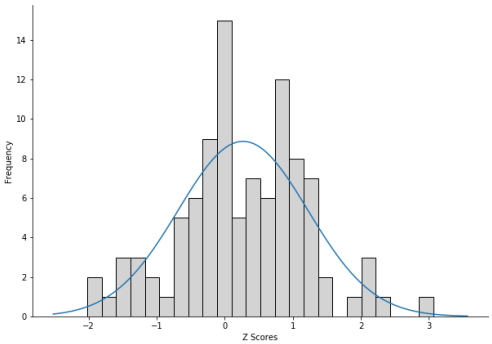
Non-word repetition



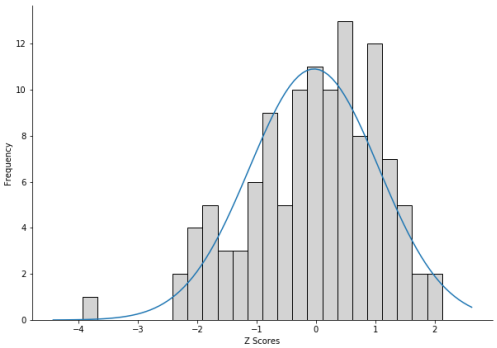
Children learning EAL, English



Children learning EAL, Polish

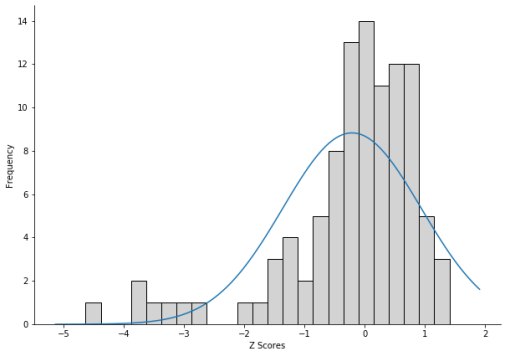


English native speakers

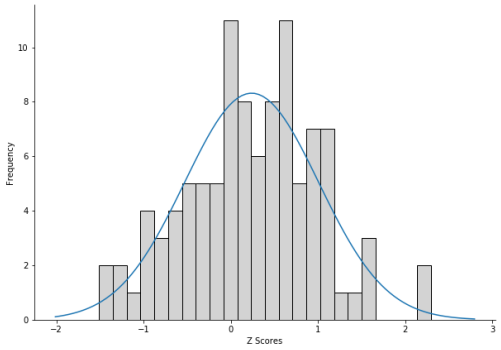


Polish native speakers

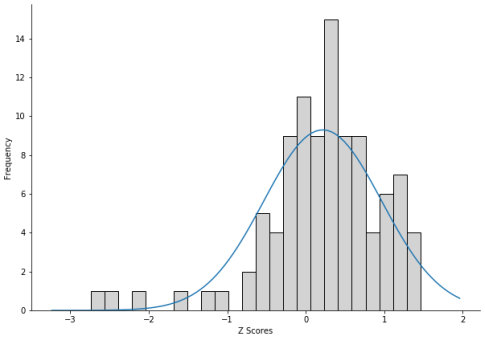
Letter knowledge



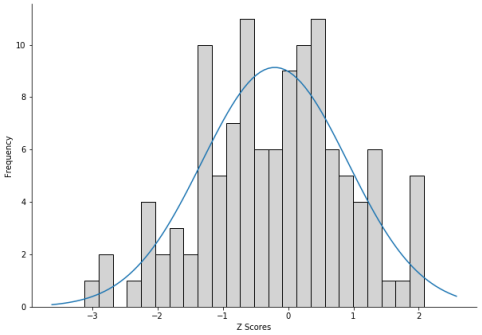
Children learning EAL, English



Children learning EAL, Polish



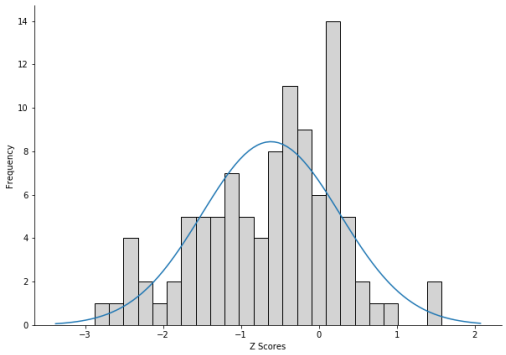
English native speakers



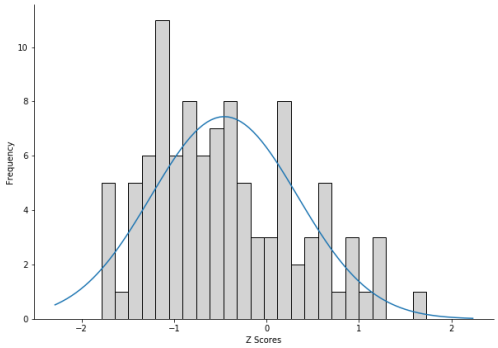
Polish native speakers

Oral language skills

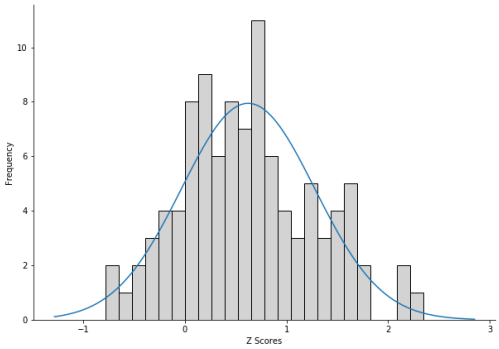
Receptive vocabulary



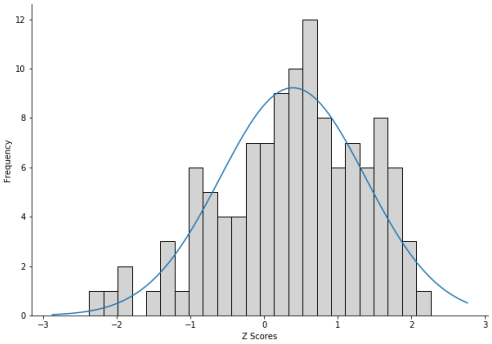
Children learning EAL, English



Children learning EAL, Polish

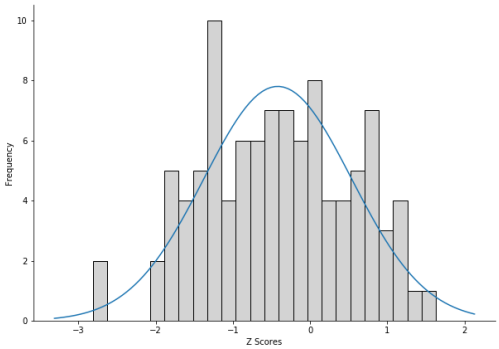


English native speakers

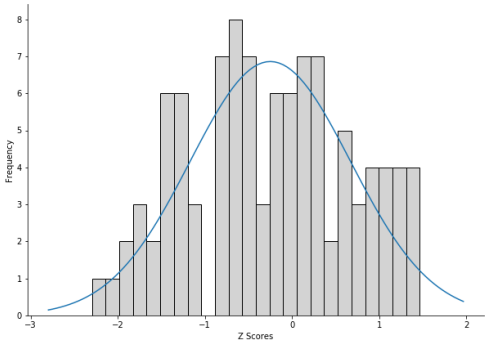


Polish native speakers

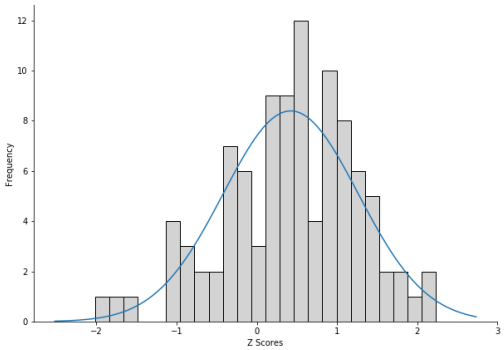
Receptive grammar



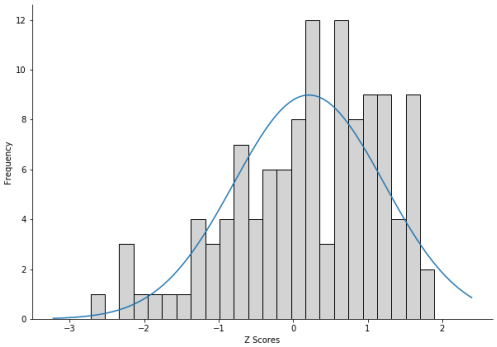
Children learning EAL, English



Children learning EAL, Polish

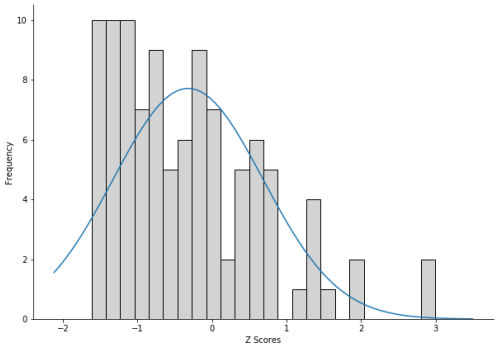


English native speakers

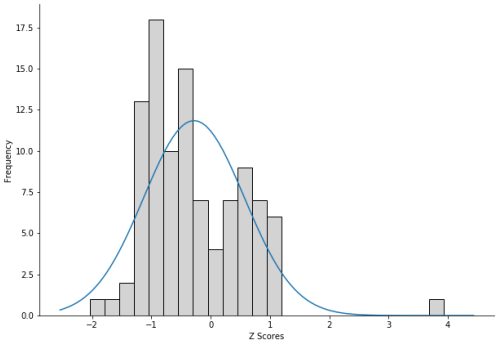


Polish native speakers

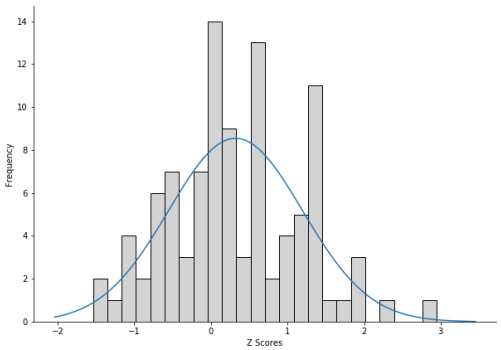
Listening comprehension



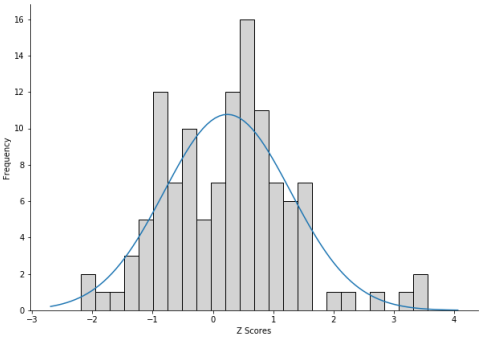
Children learning EAL, English



Children learning EAL, Polish

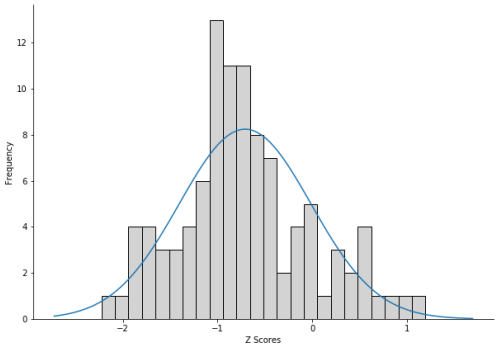


English native speakers

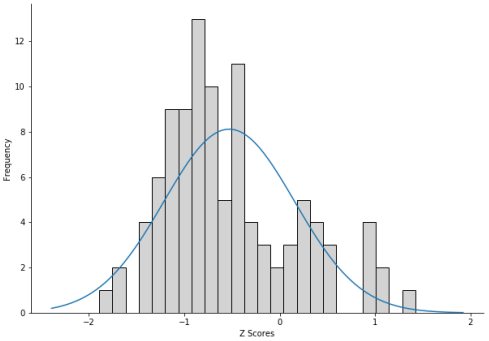


Polish native speakers

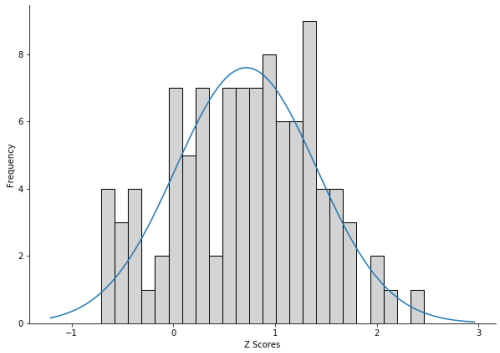
Expressive vocabulary



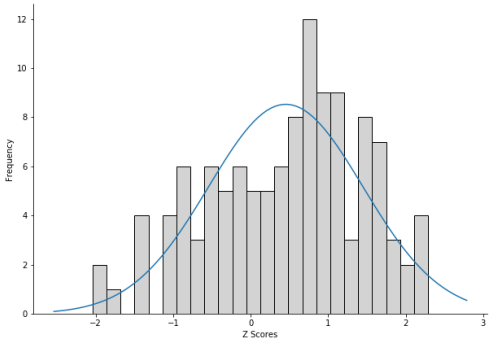
Children learning EAL, English



Children learning EAL, Polish

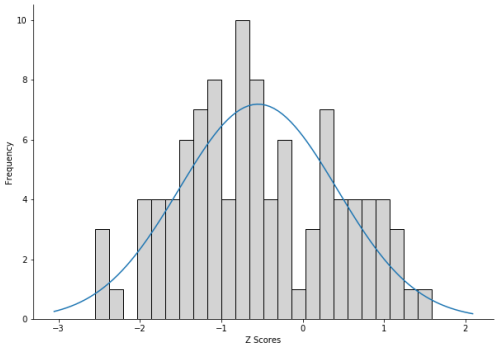


English native speakers

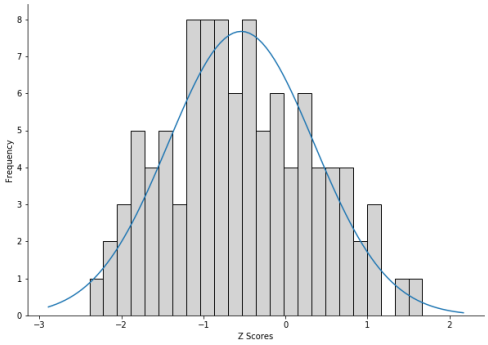


Polish native speakers

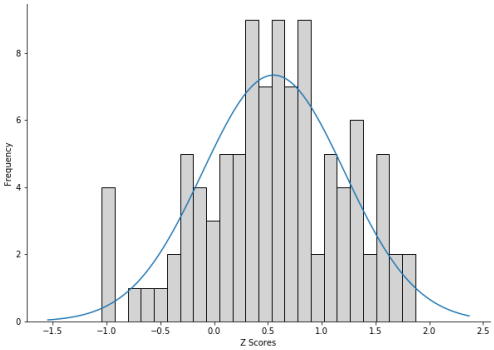
Expressive grammar



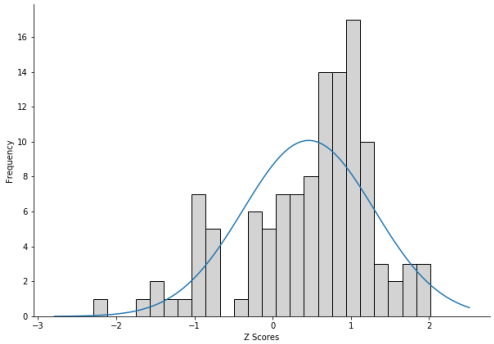
Children learning EAL, English



Children learning EAL, Polish

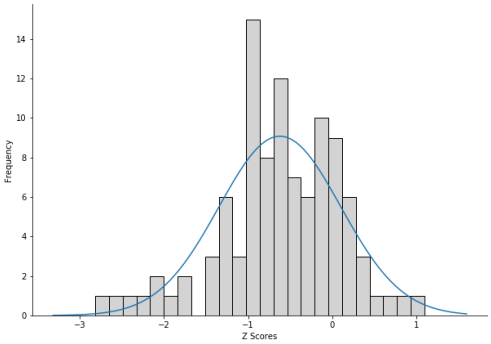


English native speakers

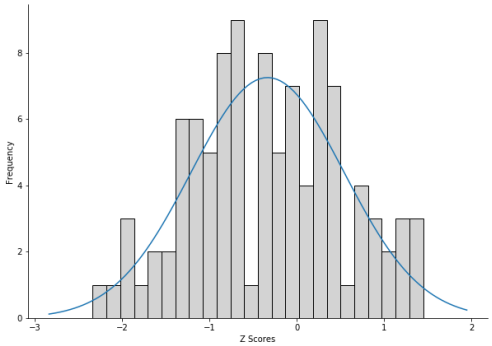


Polish native speakers

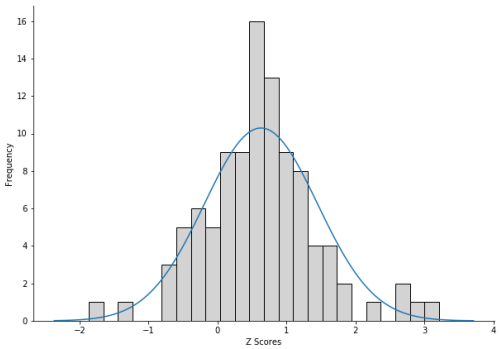
Sentence repetition



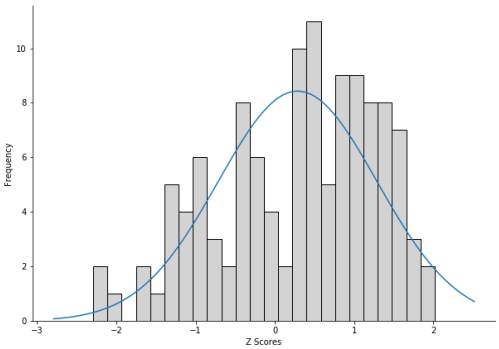
Children learning EAL, English



Children learning EAL, Polish

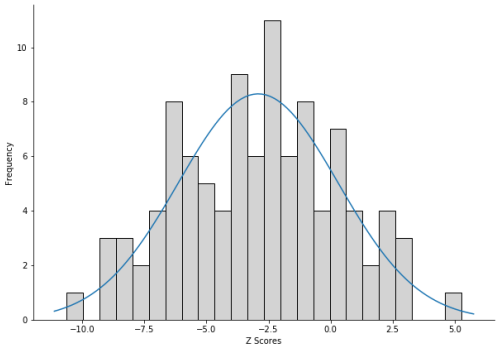


English native speakers

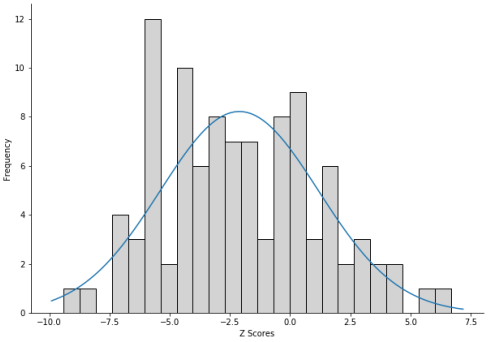


Polish native speakers

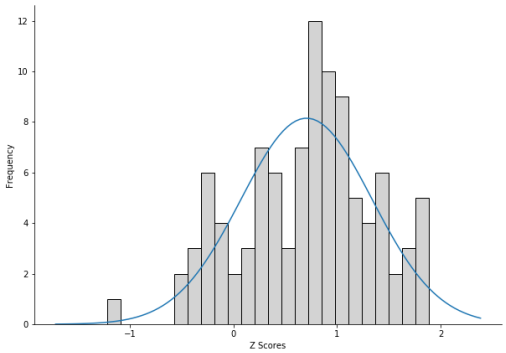
Oral language composite



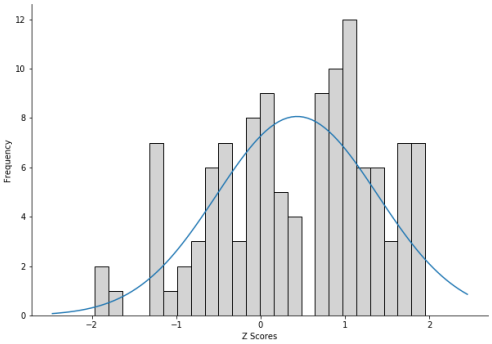
Children learning EAL, English



Children learning EAL, Polish



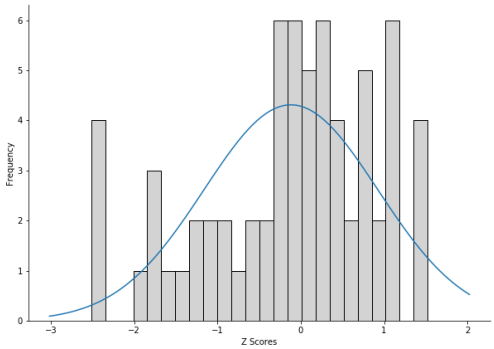
English native speakers



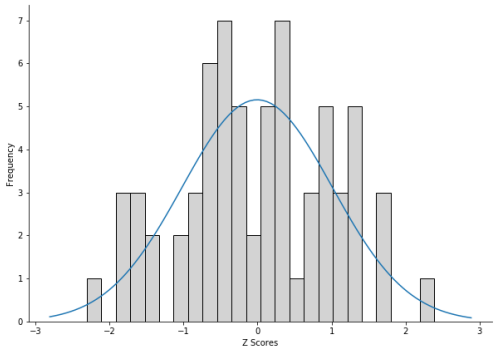
Polish native speakers

Decoding and reading comprehension

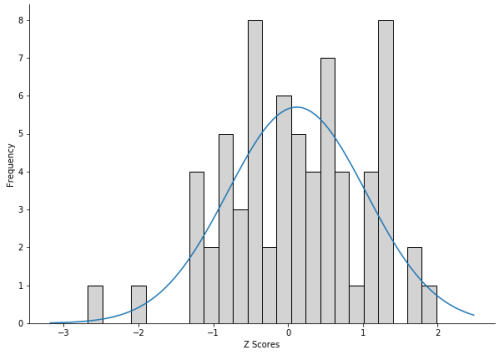
Non-timed non-word reading



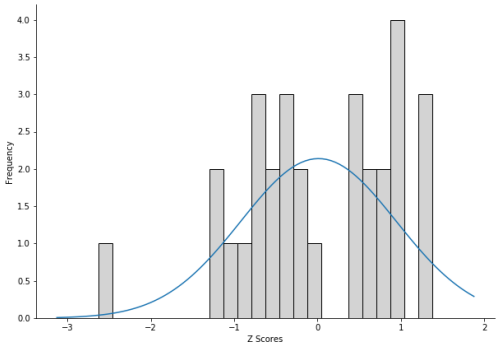
Children learning EAL, English



Children learning EAL, Polish

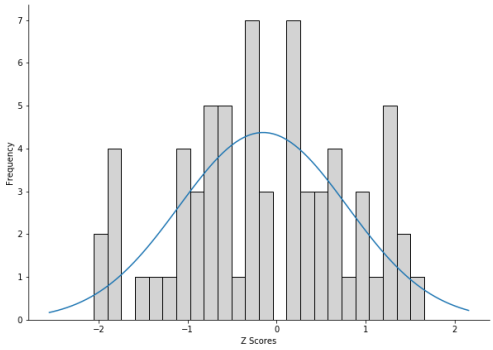


English native speakers

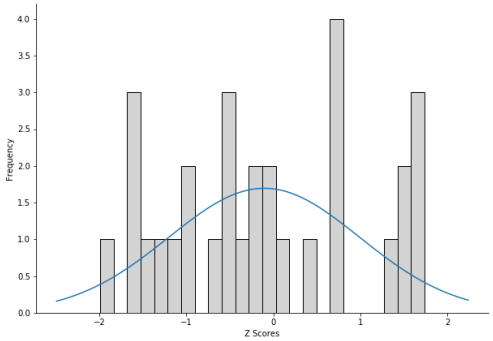


Polish native speakers

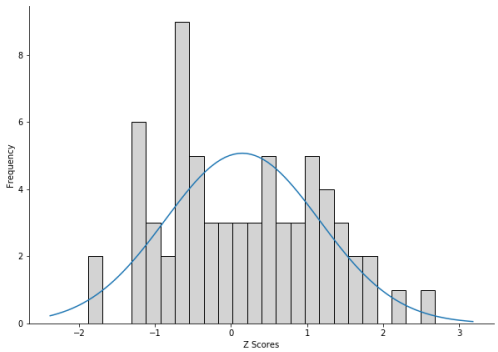
Timed real word reading



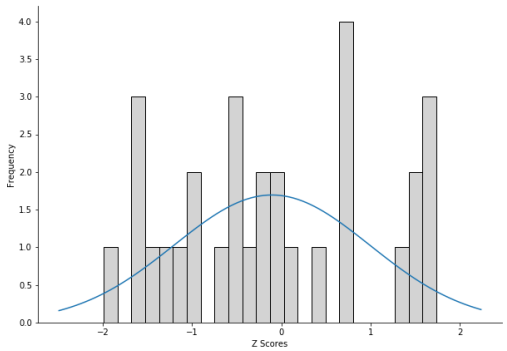
Children learning EAL, English



Children learning EAL, Polish

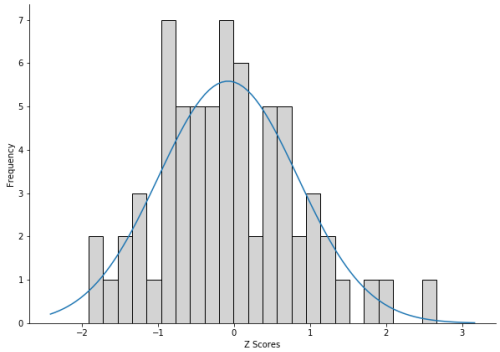


English native speakers

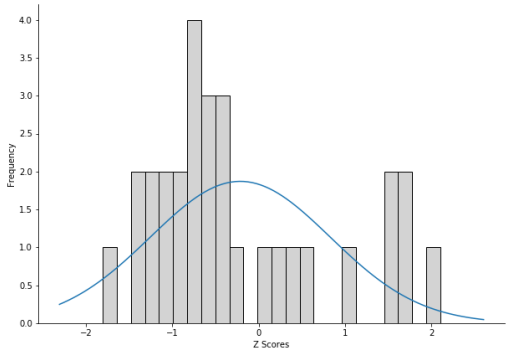


Polish native speakers

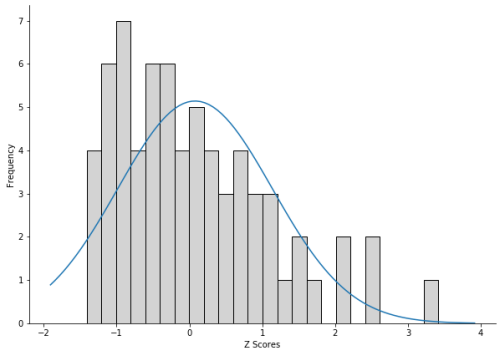
Timed non-word reading



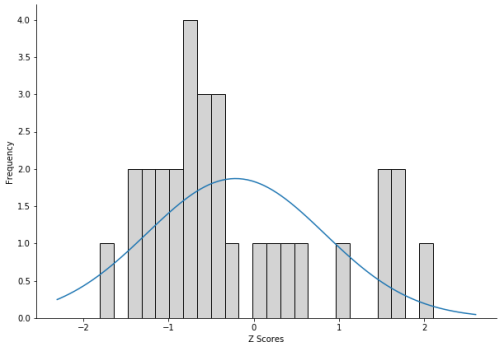
Children learning EAL, English



Children learning EAL, Polish

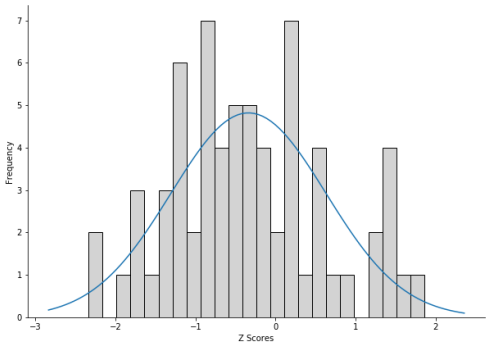


English native speakers

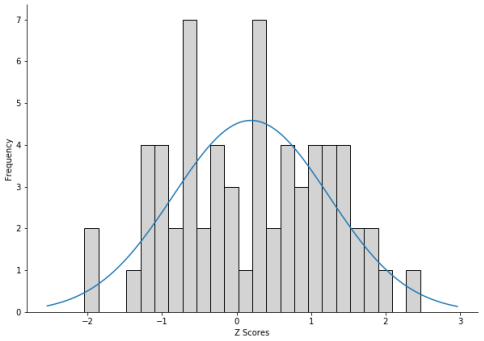


Polish native speakers

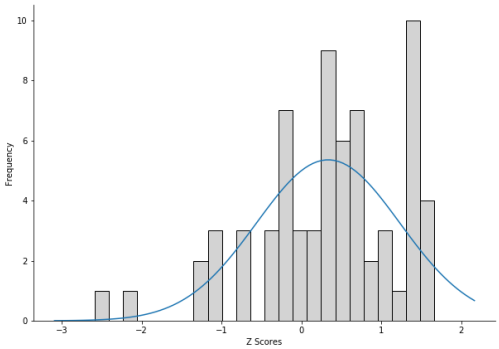
Reading comprehension



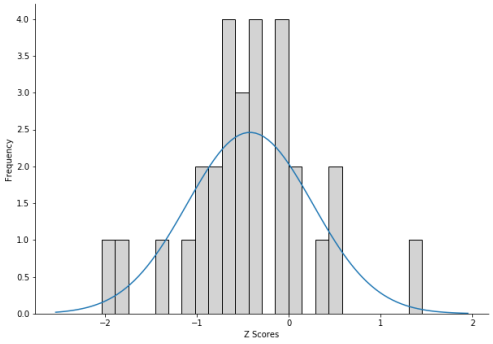
Children learning EAL, English



Children learning EAL, Polish



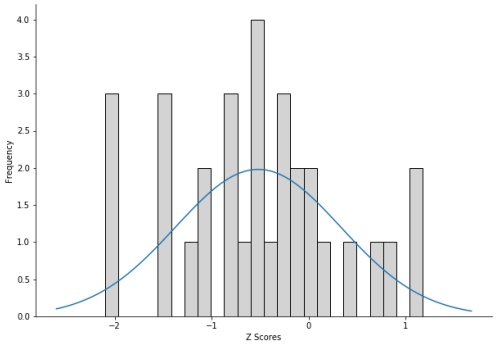
English native speakers



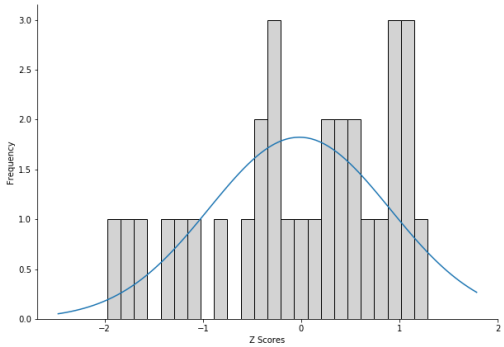
Polish native speakers

Higher level comprehension abilities

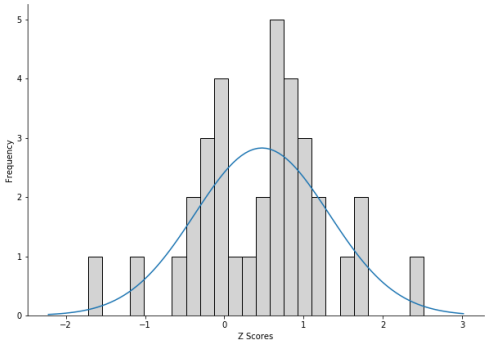
Comprehension monitoring



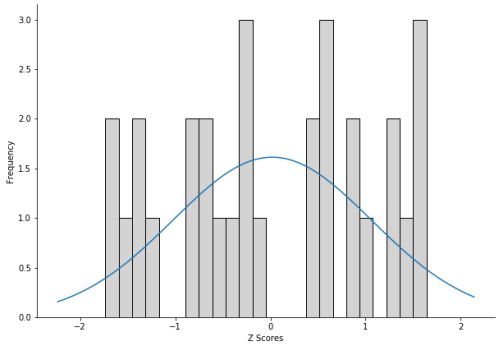
Children learning EAL, English



Children learning EAL, Polish

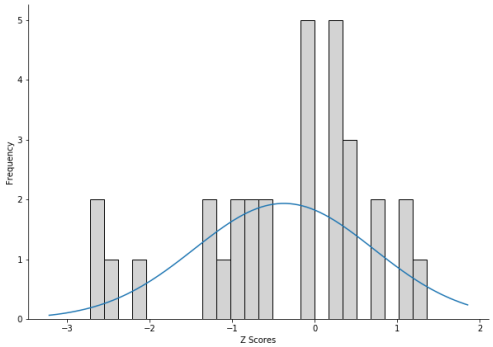


English native speakers

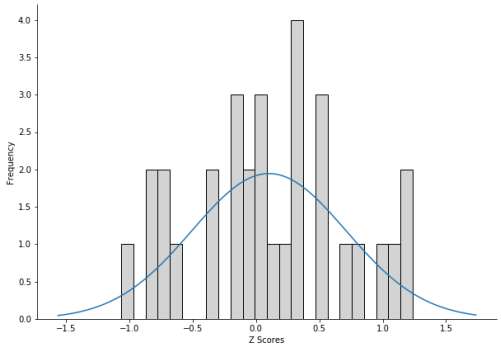


Polish native speakers

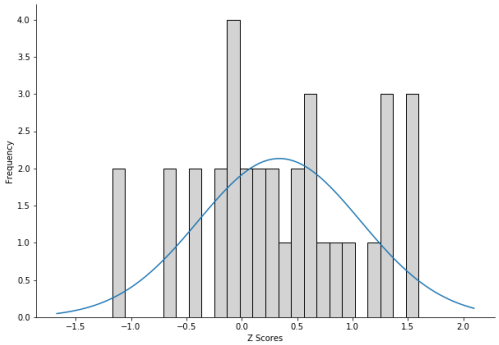
Inference task



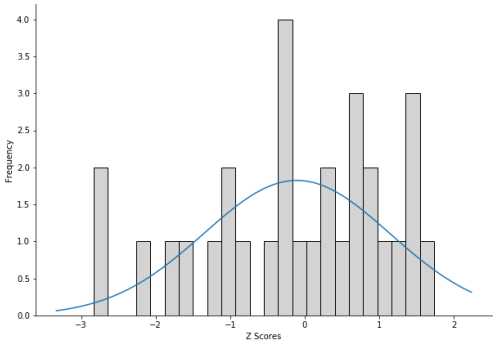
Children learning EAL, English



Children learning EAL, Polish

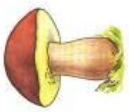


English native speakers



Polish native speakers

Appendix 8: Bespoke RAN task practice sheet and test sheet



Appendix 9: Bespoke Elision task answer sheet

Zakończ badanie jeśli dziecko otrzymuje 0 punktów w trzech pozycjach pod rząd. Podawaj informacje zwrotne tylko w pozycjach 1-14. Poprawnym odpowiedziom przyznawany jest 1 punkt, niepoprawnym – 0 punktów.

Powiedz: **Pobawmy się teraz w grę ze słowami**.
Przykład niepunktowany (z informacją zwrotną) **Powiedz „listopad". A teraz powiedz „listopad" bez „opad".**

	Poprawna odpowiedź	Punkty (1 lub 0)
1. Powiedz „samolot". Teraz powiedz „samolot" bez „samo".	Lot	
Jeśli odpowiedź dziecka jest poprawna powiedz: **Właśnie. Spróbujmy następne.** Jeśli odpowiedź dziecka jest błędna powiedz: **Posłuchaj. „Samolot" bez „samo" to „lot". Spróbujmy następne.**		
2. Powiedz „bokser". Teraz powiedz „bokser" bez „ser".	Bok	
3. Powiedz „malina". Teraz powiedz „malina" bez „lina".	Ma	
4. Powiedz „tulipan". Teraz powiedz „tulipan" bez „tuli".	Pan	
5. Powiedz „zapasy". Teraz powiedz „zapasy" bez „za".	Pasy	
6. Powiedz „stonoga". Teraz powiedz „stonoga" bez „noga".	Sto	
7. Powiedz „wiatrak". Teraz powiedz „wiatrak" bez „wiat".	Rak	
8. Powiedz „wielkanoc". Teraz powiedz „wielkanoc" bez „wielka".	Noc	
9. Powiedz „szuflada". Teraz powiedz „szuflada" bez „da".	Szufla	
Powiedz: **Spróbujmy teraz bez wypowiadania jednej głoski**. Dalej udzielaj dziecku informacji zwrotnej po każdym słowie. Wymawiaj głoski, które dziecko ma wycinać – nie nazwę litery.		
10. Powiedz „kość". Teraz powiedz „kość" bez k	Ość	
Jeśli odpowiedź dziecka jest poprawna powiedz: **Właśnie. Spróbujmy następne.** Jeśli odpowiedź dziecka jest błędna powiedz: **Posłuchaj. „kość" bez k to „ość". Spróbujmy następne.**		
11. Powiedz „listy". Teraz powiedz „listy" bez y	List	
12. **Powiedz „losy". Teraz powiedz „losy" bez l**	Osy	
13. **Powiedz „sucho". Teraz powiedz „sucho" bez s**	Ucho	
14. **Powiedz „chusta". Teraz powiedz „chusta" bez ch**	Usta	
Przestaj dawać dziecku informacje zwrotne po każdym słowie		
15. **Powiedz „uwaga". Teraz powiedz „uwaga" bez u**	Waga	
16. Powiedz „maski". Teraz powiedz „maski" bez s	Maki	
17. Powiedz „okno". Teraz powiedz „okno" bez n	Oko	
18. Powiedz „listek". Teraz powiedz „listek" bez t	Lisek	
19. Powiedz „szarfa". Teraz powiedz „szarfa" bez r	Szafa	
20. Powiedz „kloc". Teraz powiedz „kloc" bez l	Koc	
21. Powiedz „stok". Teraz powiedz „stok" bez t	Sok	
22. Powiedz „brud". Teraz powiedz „brud" bez r	But	
23. Powiedz „piłka". Teraz powiedz „piłka" bez k	Piła	
24. Powiedz „masło". Teraz powiedz „masło" bez s	Mało	
25. Powiedz „brak". Teraz powiedz „brak" bez r	Bak	
26. Powiedz „ekran". Teraz powiedz „ekran" bez e	Kran	
27. Powiedz „miska". Teraz powiedz „miska" bez k	Misa	
28. Powiedz „korty". Teraz powiedz „korty" bez r	Koty	
29. Powiedz „słowa". Teraz powiedz „słowa" bez ł	Sowa	
30. Powiedz „blok". Teraz powiedz „blok" bez l	Bok	
31. Powiedz „adres". Teraz powiedz „adres" bez a	Dres	
32. Powiedz „dreszcz". Teraz powiedz „dreszcz" bez r	Deszcz	
33. Powiedz „płaski". Teraz powiedz „płaski" bez ł	Paski	
34. Powiedz „gruz". Teraz powiedz „gruz" bez r	Guz	
	Wynik końcowy:	

Appendix 10: Polish comprehension monitoring task – answer sheet

Kod dziecka _____ Data _____

Historia bobra

Bóbr miał już prawie dwa lata. Pochodził z dużej rodziny bobrów, która zamieszkiwała w sporym domku zrobionym z błota i chłopców. Jego starsi bracia opuścili już dom rodzinny, by pisać samodzielnie. Nadchodził jego czas, by opuścić dom rodzinny. To był ciepły, letni wieczór. Bóbr powąchał powietrze i odgryzł małą gałązkę z drzewa, które śpiewało na brzegu rzeki. Gryząc miękką korę gałązki, bóbr wpatrywał się w drugi brzeg rzeki. Po drugiej stronie jego tata wraz z zielonymi braćmi ciężko pracowali. Bóbr obserwował ich przez chwilę, ale nie przyłączył się do nich. Zamiast tego zagotował i poszedł w stronę lasu. W lesie było ciemniej niż nad brzegiem rzeki, a szeleszczące samochody wydawały dziwne odgłosy. Przerażony bóbr początkowo nie był w stanie nic zobaczyć. Po czym dostrzegł uśmiechnięte światło przed sobą. To wyglądało jak dzikie, złote oczy tygrysa, które błyszczały w ciemności. Bóbr zamarł w bezruchu. Był zbyt daleko od wody, aby móc znaleźć książkę. Mógł tylko czekać, aż duży kot przejdzie obok niego. Kot zbliżył się, ale nie wyczuł ani nie zobaczył bobra. Kot ziewnął, oblizał się i powoli odszedł na swoich wielkich, szczęśliwych łapach.

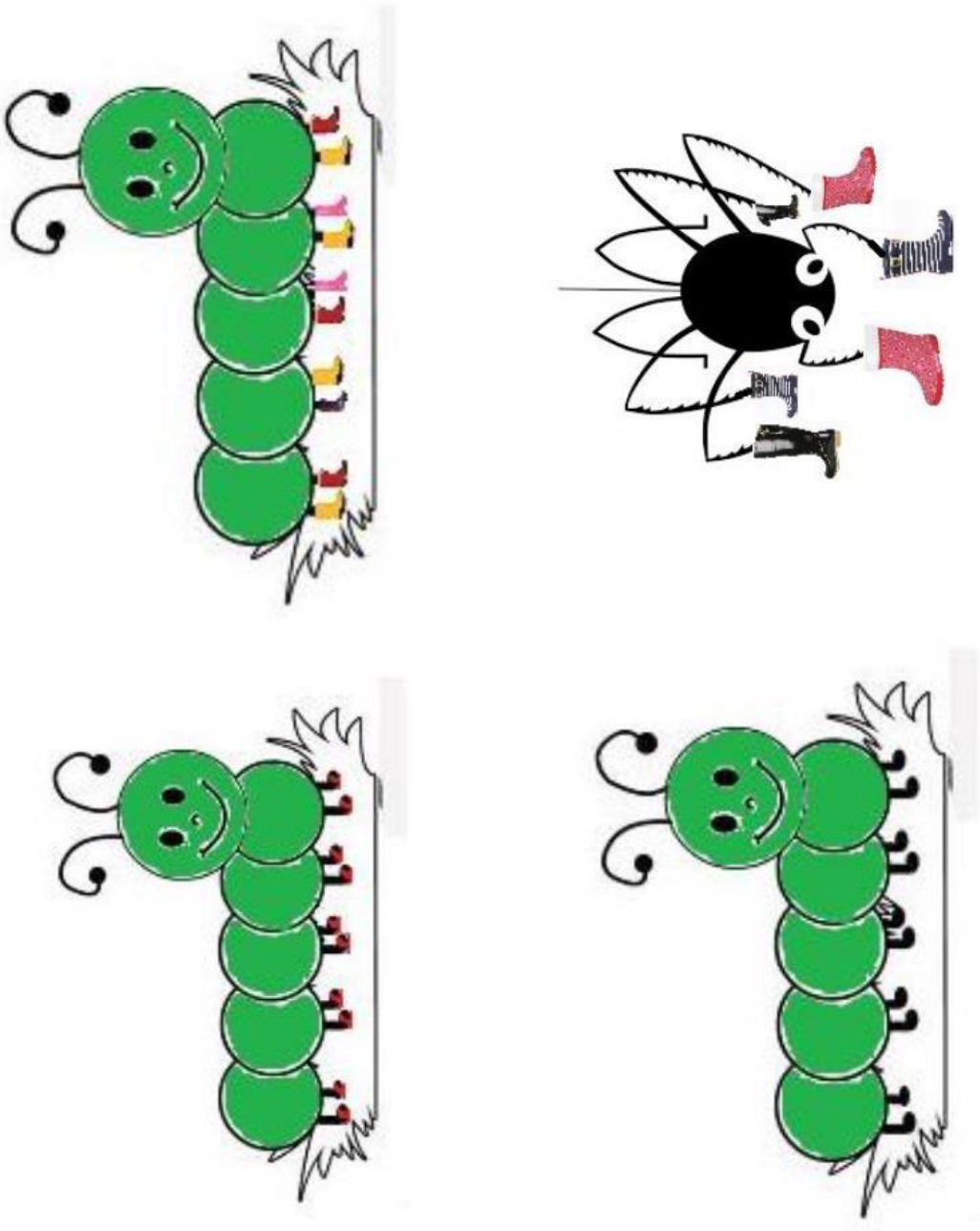
	Zidentyfikowane	Opuszczone	Fałszywy alarm/błędnie zidentyfikowane
Rzeczowniki			
Czasowniki			
Przymiotniki/ przysłówki			

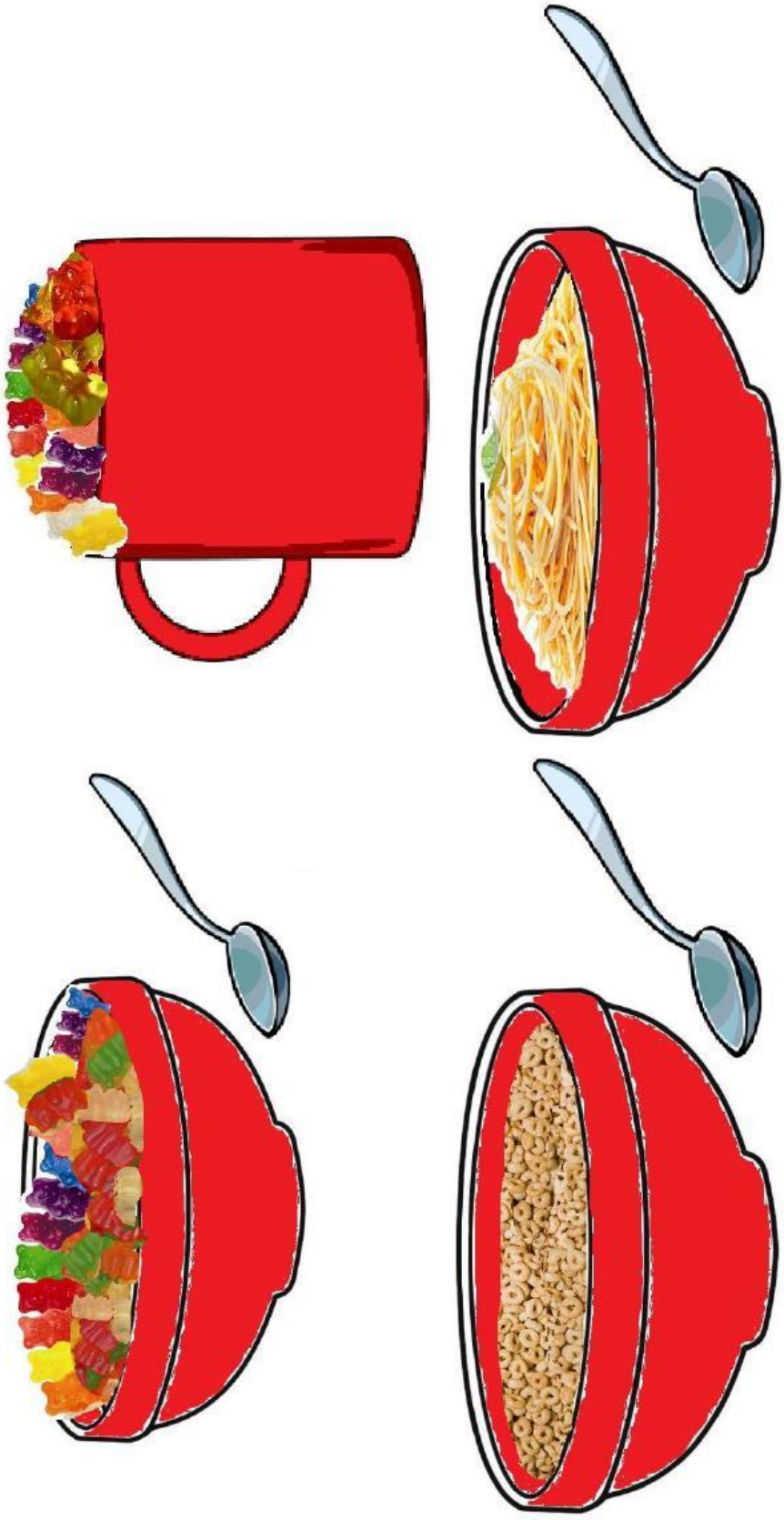
Historia o kocie

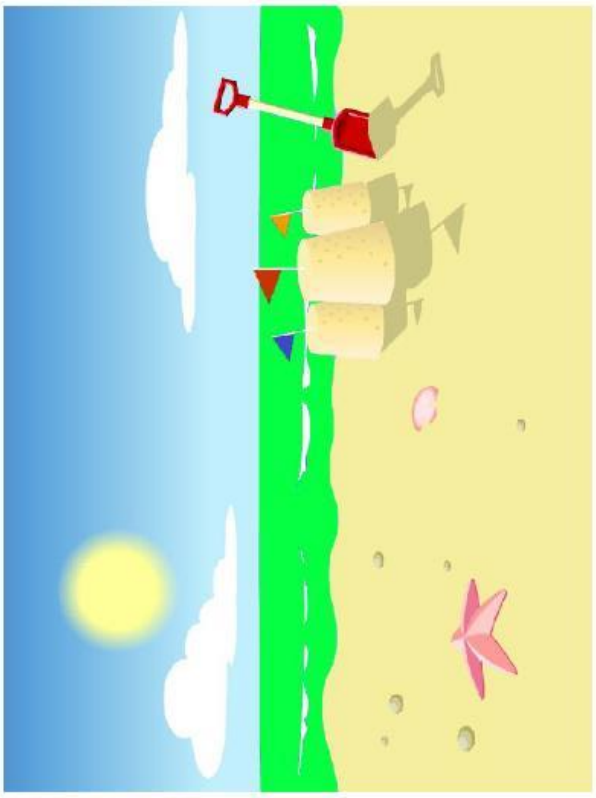
Mały, szary kotek mieszkał w gospodarstwie nad rzeką. Niedaleko rozciągały się pola, na których rosła czekolada. W pobliżu był też elektryczny las. Pewnego dnia dzieci, które mieszkały w gospodarstwie, postanowiły wybrać się na wycieczkę do lasu, by zbierać ołówki. Kotek zdecydował, że pospaceruje wzdłuż rzeki. Gdy tak maszerował, zauważył coś błyszczącego na drugim brzegu. Podszedł bliżej, by się przekonać co to takiego. Kiedy zaczął wdrapywać się na kamienie, poślizgnął się i z pluskiem pokolorował do rzeki. Przestraszony zaczął szybko pisać łapkami. Po chwili udało mu się wydostać z wody na drugim brzegu rzeki. Jego futerko było zupełnie smaczne. Gdy otrzepywał się z wody, kątem oka zobaczył błyszczący przedmiot leżący w trawie. Podszedł bliżej i zobaczył srebrny garnek błyszczący w słońcu. Z garnka dochodziły zielone odgłosy. Kotek trochę się przestraszył i już chciał zaśpiewać. Był jednak bardzo ciekawy co jest w garnku, więc ostrożnie podszedł bliżej i zajrzał do środka. W garnku zobaczył małą, zieloną żabkę, która próbowała wyskoczyć na zewnątrz. Kotek postanowił jej pomóc. Włożył łapkę do garnka, który przechylił się tak, że żabka zdołała szybko wyskoczyć na chmurkę i uciekła do rzeki.

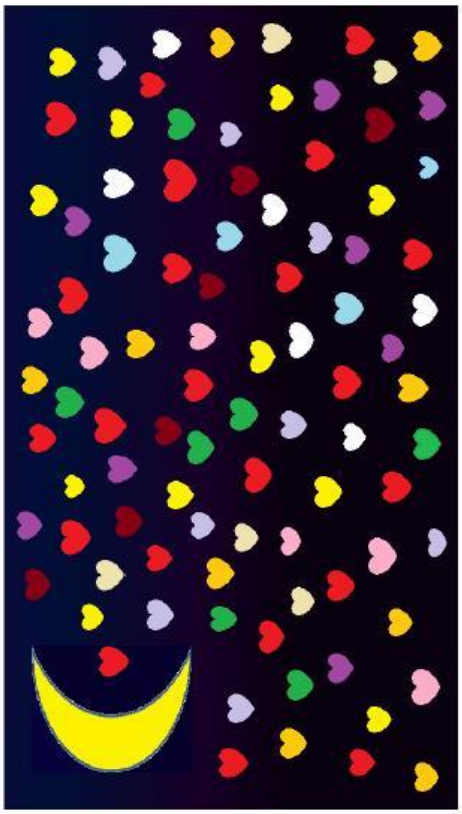
	Zidentyfikowane	Opuszczone	Fałszywy alarm/błędnie zidentyfikowane
Rzeczowniki			
Czasowniki			
Przymiotniki/ przysłówki			

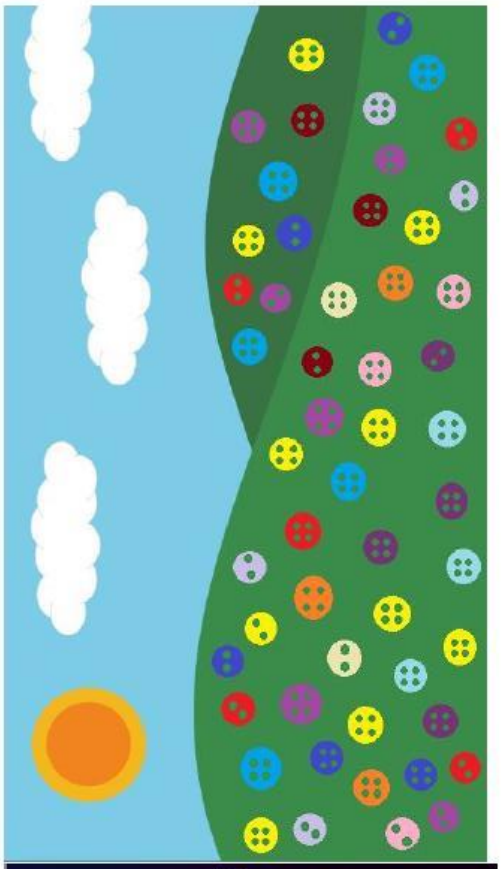
Appendix 11: Polish inference task: picture task, answer sheet and episodes with answer key

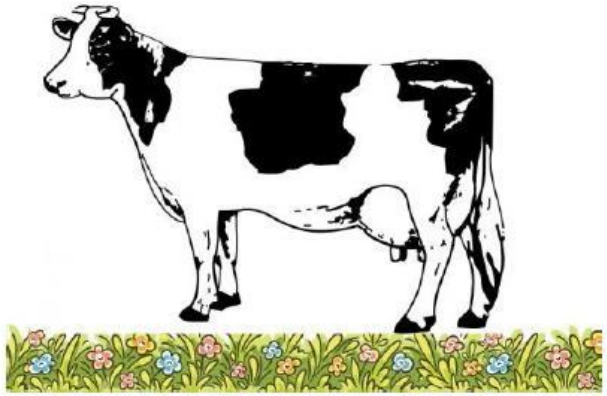


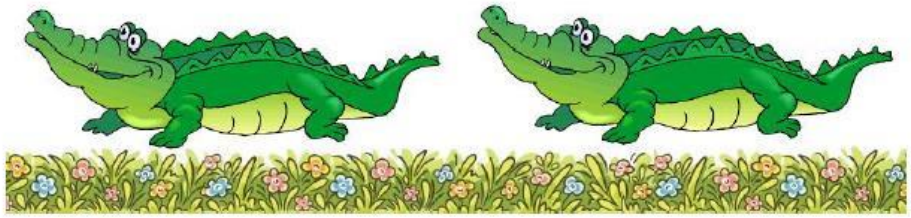


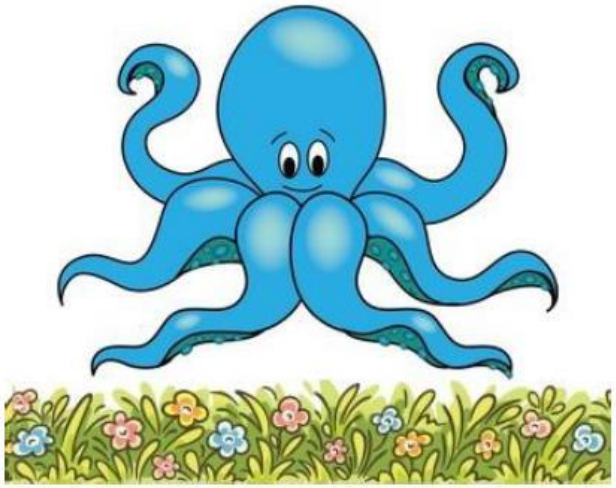


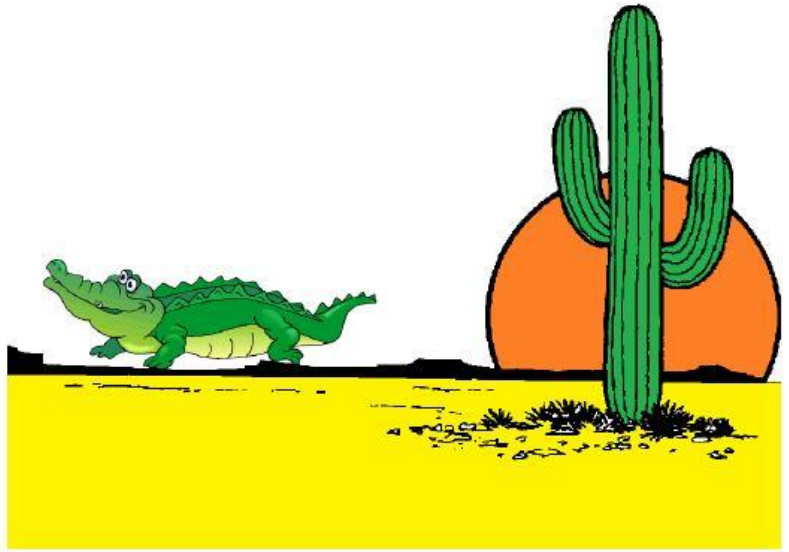


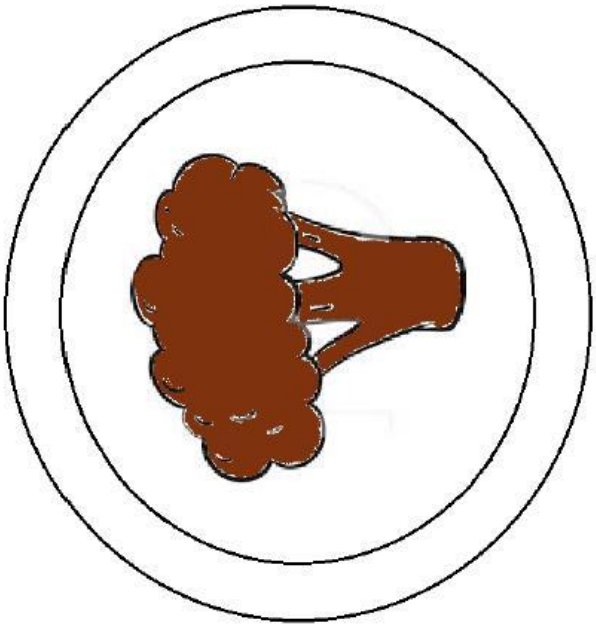


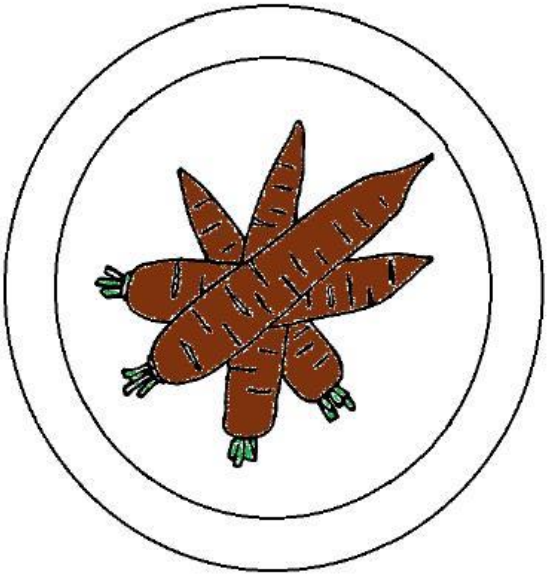


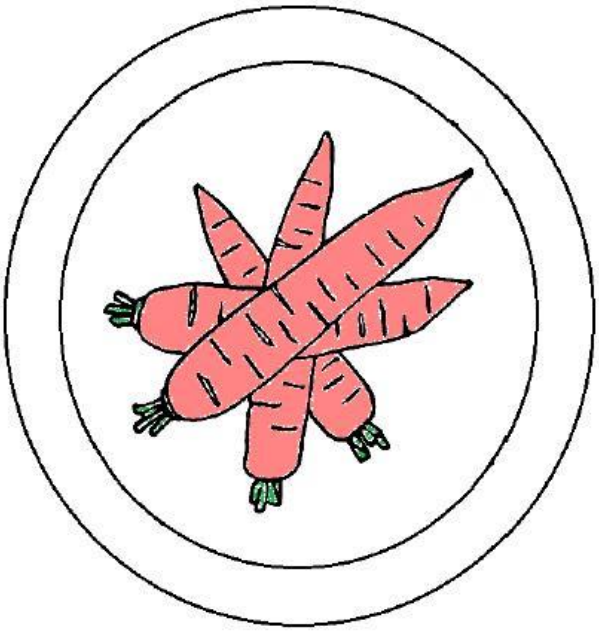


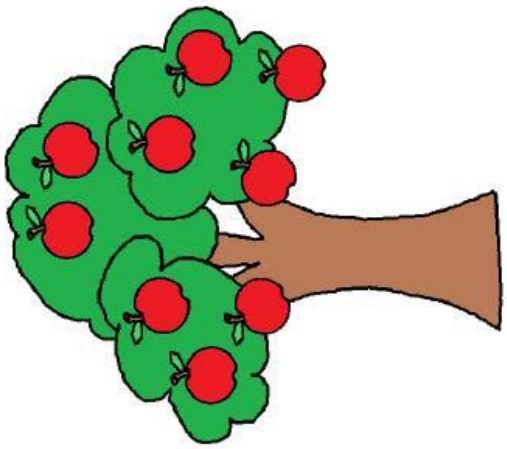


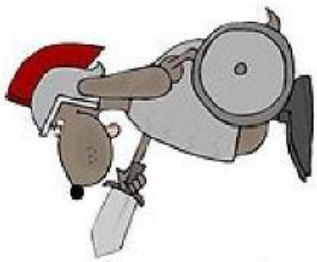


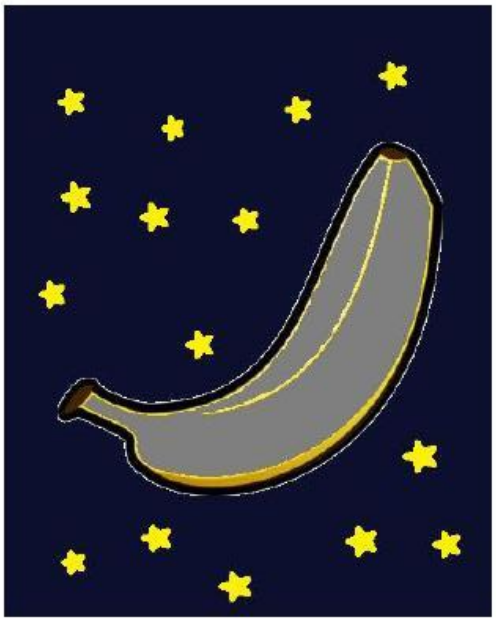


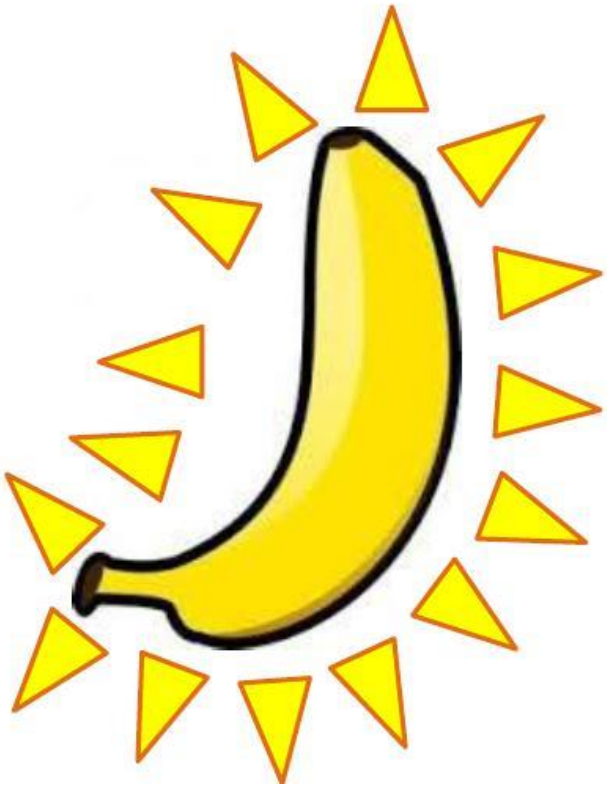


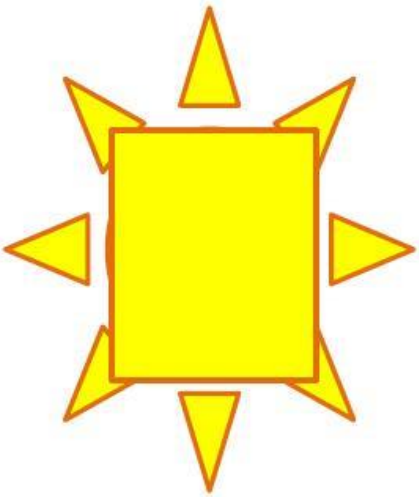








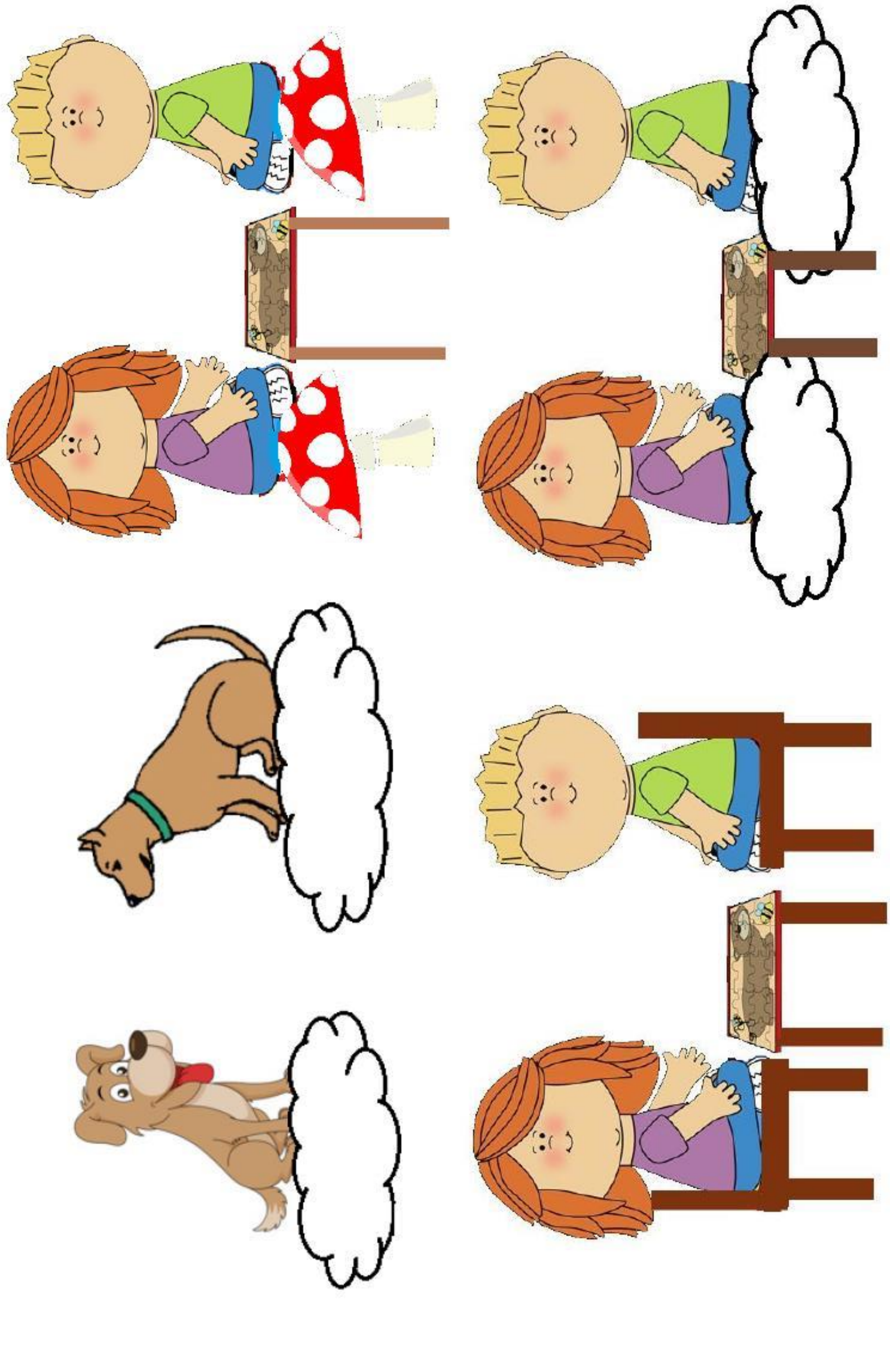





STOP
SCHOOL BUS


STOP
SCHOOL BUS


STOP
SCHOOL BUS



ANSWER SHEET

PODTEST OBRAZKI

Nr obrazka	Poprawna odpowiedź	Próba 1	Próba 2	Punkty
1	2			
2	1			
3	1			
4	3			
5	2			
6	4			
7	2			
8	1			
9	1			
10	4			
11	3			
12	4			

PYTANIA PRZED CZYTANIEM ROZDZIAŁÓW

Pytanie	Odp 1	Odp 2	Punkty
Co noszą na nogach stonogi w Mep?			
Co dzieci w Mep jedzą na śniadanie w domu?			
Jakiego koloru jest piasek na plaży w Mep?			
Co świeci na niebie w nocy w Mep?			
Co pasie się na łąkach w Mep?			
Co dzieci w Mep jedzą na drugie śniadanie?			
Co rośnie na drzewach w Mep?			
Na czym siedzą w szkole dzieci w Mep?			
Co robią psy w Mep?			
Jakiego kształtu jest słońce w Mep?			
Co robią autobusy w Mep?			
Z czego są kwiaty w Mep?			

PYTANIA DO ROZDZIAŁÓW

Rozdział 1

Dlaczego Fip poganiał Hoka?	L	2 1 0	
Dlaczego dzieci czekały na Ekę?	C	1 0	
O co kłócili się bracia?	E	1 0	

Rozdział 2

Czego uczyła dzieci pani nauczycielka w autobusie?	L	2 1 0	
Dlaczego Hok spadł z chmury?	C	1 0	
Co minął autobus po drodze nad morze?	E	1 0	

Rozdział 3

Którędy muszą iść dzieci, by dostać się na plażę?	L	2 1 0	
Co zrobił Fip, kiedy Eka zgubiła kalosz?	C	1 0	
Co zrobiły dzieci, kiedy wbiegły na plażę?	E	1 0	

Rozdział 4

Co budowały dzieci?	L	2 1 0	
Czym podzieliły się dzieci na plaży?	C	1 0	
Co odbijało się w morzu?	E	1 0	

Rozdział 5

Co Eka zobaczyła na ścieżce?	L	2 1 0	
Dlaczego Fip powiedział przyjaciołom, by uważali na kwiaty?	C	1 0	
Jakie zwierzęta pasły się na polanie?	E	1 0	

Rozdział 6

Co stało na parkingu?	L	2 1 0	
Co liczyły dzieci w autobusie?	C	1 0	
Kogo spotkały dzieci na ścieżce?	E	1 0	

PYTANIA PO PRZECZYTANIU ROZDZIAŁÓW

Pytanie	Odpowiedź	Punkty
Co noszą na nogach stonogi w Mep?		
Co dzieci w Mep jedzą na śniadanie w domu?		
Jakiego koloru jest piasek na plaży w Mep?		
Co świeci na niebie w nocy w Mep?		
Co pasie się na łąkach w Mep?		
Co dzieci w Mep jedzą na drugie śniadanie?		
Co rośnie na drzewach w Mep?		
Na czym siedzą w szkole dzieci w Mep?		
Co robią psy w Mep?		
Jakiego kształtu jest słońce w Mep?		
Co robią autobusy w Mep?		
Z czego są kwiaty w Mep?		

POST-HOC INFERENCE

Pytanie	Typ	Pkt	Odpowiedź dziecka
Dlaczego na ganku Eki były przygotowane kalosze?	C		
O co kłócili się bracia podczas śniadania?	C		
Jakiego koloru były dzieci kiedy tarzały się w piasku na plaży?	E		
Gdzie były guziki, które dzieci liczyły?	E		
Dlaczego dzieci się przestraszyły kiedy weszły na łąkę?	C		
Co wypadło z plecaka Hoka na piasek?	E		
Skąd Fip wziął lody, które dał Ece?	E		
Na czym siedziały dzieci w szkole?	E		
Kto walczył na miecze w lesie?	C		
Jaki kształt odbijał się w morzu?	E		
Dlaczego dzieci widziały z góry plac zabaw?	C		
Dlaczego niebezpiecznie jest nadepnąć na kwiaty w Mep?	C		

EPISODES WITH ANSWER KEY

Dzisiaj chciałabym, byśmy wyobrazili sobie, że istnieje wymyślone miejsce, które nazywa się Mep. To miejsce różni się od miejsca, gdzie żyjemy. Niektóre rzeczy na Mep, na przykład zwierzęta lub ludzie, są bardzo dziwne. Opowiem ci o tym i będziemy mogli pooglądać obrazki. Jak już zobaczysz te obrazki, przeczytam Ci opowiadanie o dwóch braciach, którzy nazywali się Hok i Fip oraz o ich przyjaciółce i sąsiadce – stonodze o imieniu Eka. Fip, Hok i Eka mieszkają na Mep. Przeczytam Ci opowieść o przygodach, które spotkały ich pewnego dnia na wycieczce szkolnej na Mep.

Wymyślona kraina MEP Dwaj chłopcy – bracia FIP i HOK oraz ich koleżanka, stonoga EKA

1. Stonogi noszą kalosze.

2. Dzieci jedzą kolorowe żelki na śniadanie.

3. W MEP na plaży jest zielony piasek.

4. W nocy na niebie świecą guziki.

5. Na łąkach pasą się krokodyle.

6. Na drugie śniadanie dzieci dostają czekoladowe marchewki.

7. Na drzewach w MEP rosną lody.

8. W szkole dzieci siedzą na chmurach.

9. Psy w MEP chodzą na dwóch łapach.

10. Słońce w MEP ma kształt banana.

11. Autobusy na MEP latają w powietrzu.

12. Kwiaty w MEP są ze szkła.

Rozdział 1

Rano HOK i FIP kończyli jeść śniadanie i sprzeczali się, których kolorów nie chcą jeść. Bracia kłócili się o to, któremu z nich należy się dzisiaj ostatnia czerwona żelka. FIP poganiał HOKa – dzisiaj jechali na wycieczkę nad morze i chłopiec nie chciał się spóźnić. Przez okna zobaczyli, że ich sąsiadka EKA wyszła na ganek, gdzie równiutko ustawione były wszystkie kalosze. EKA usiadła na schodach i powoli zaczęła zakładać kalosze na wszystkie nóżki. FIP i HOK założyli plecaki i pożegnali się z mamą. Wyszli z domu. EKA dalej zakładała kalosze. „Pospiesz się! Nie możemy się dzisiaj spóźnić!" – marudził FIP. „Jestem gotowa" – odpowiedziała obrażona EKA, wstając ze schodów. HOK popatrzył na niebo – na szczęście świeciło dziś słońce. „Świetny dzień na wycieczkę nad morze" – powiedział. Dzieci pobiegły razem do szkoły.

Dlaczego Fip poganiał Hoka?	L	Bo jechali na wycieczkę szkolną nad morze. (2)	Bo wyjeżdżali. (1) (D) Bo jechali nad morze. (1) (D)	Bo lubił jak świeciło słońce. (0)
Dlaczego Fip musiał pogonić Ekę?	C	Bo zakładała kalosze na wszystkie nóżki. (1)	Bo nie chciał się spóźnić. (0) (D)	Bo nie była gotowa. (0)
O co kłócili się bracia?	E	O to, który z nich może zjeść ostatnią czerwoną żelkę na śniadanie. (1)	O żelkę. (0) (D) O śniadanie. (0) (D)	O plecaki. (0) O to, że się spóźnią. (0)

Rozdział 2

Chłopcy i EKA weszli do klasy, FIP i EKA usiedli razem w ławce. „Jak wszyscy wiecie, dzisiaj jedziemy na wycieczkę nad morze" – powiedziała nauczycielka i rozpisała na tablicy plan wycieczki. HOK nie słuchał z uwagą tylko rozglądał się po klasie i w pewnym momencie spadł z chmury. Pani zdecydowała, że to czas, by iść do autobusu. Klasa ustawiła się w rzędzie przy drzwiach do autobusu. Powoli po kolei weszli do środka i zajęli swoje miejsca. Autobus szybko wzbił się w powietrze. Lecieli nad parkiem i boiskiem, oglądali jak dzieci grają w piłkę. Gdy autobus przeleciał nad domem FIPa i HOKa, chłopcy pomachali mamie, która opalała się w ogródku. Pani uczyła dzieci piosenki o tym, jakie piękne jest słońce. Gdy dzieci zaczęły ją śpiewać, pan kierowca wesoło pogwizdywał pod nosem.

Czego uczyła dzieci pani nauczycielka w autobusie?	L	Piosenki o tym, jakie piękne jest słońce. (2)	Piosenki o słońcu. (1) (D) Piosenki. (1) (D)	Wierszyka. (0)
Dlaczego Hok spadł z chmury?	C	Bo rozglądał się po klasie i nie słuchał z uwagą. (1)	Bo rozglądał się po klasie. (0) (D) Bo nie słuchał z uwagą. (0) (D)	Bo zasnął. (0)
Co minął autobus po drodze nad morze?	E	Leciał nad parkiem i boiskiem. (1)	Leciał nad parkiem. (0) (D) Leciał nad boiskiem. (0) (D) Park i boisko (brak zaznaczenia, że leciał). (0) (D)	Nad szkołą. (0) Jechał obok domu. (0)

Rozdział 3

Gdy grupa dojechała na miejsce, wszyscy szybko wyskoczyli z autobusu. Wszyscy marzyli, by być już na plaży i pływać w morzu. Aby dostać się na plażę, musieli przejść przez mały las. Pani nauczycielka poprosiła, by ustawili się parami i ruszyli ścieżką w stronę lasu. EKA i FIP szli w ostatniej parze. Gdy zostali trochę w tyle, pani poprosiła całą klasę, by się zatrzymali i zaczekali na nich. EKA próbowała

iść trochę szybciej. Przebierała wszystkimi nóżkami i nie zauważyła, że zgubiła jeden kalosz. W końcu cała grupa wbiegła na plażę. Wszyscy zaczęli turlać się w piasku. EKA popatrzyła na swoje stopy i zaczęła liczyć. „O nie! Brakuje mi mojego ulubionego kalosza!" – zauważyła zasmucona. FIP zerwał loda i dał go Ece na poprawę humoru.

Gdzie muszą iść dzieci, by dostać się na plażę?	L	Muszą przejść przez mały las. (2)	Muszą iść ścieżką. (1) (D)	Daleko. (0)
Co zrobił Fip, kiedy Eka zgubiła kalosz?	C	Zerwał dla niej loda z drzewa. (1)	Dał jej loda. (0) (D)	Zaczekał na nią. (0)
Co zrobiły dzieci, kiedy wbiegły na plażę?	E	Zaczęły turlać się w zielonym piasku. (1)	Zaczęły się turlać w piasku /turlały się w piasku /bawiły się w piasku. (0) (D)	Wskoczyły do morza. (0)

Rozdział 4

Na plaży było bardzo ciepło, słońce świeciło wysoko na niebie, jego kształt odbijał się w morzu. Dzieci chciały iść pływać, ale pani nauczycielka poprosiła, by nie wchodzili do wody, bo była bardzo zimna. FIP, EKA i HOK postanowili zbudować zamek z piasku. Wyjęli z plecaków wiaderka i łopatki. „O nie! Moje drugie śniadanie! A taką miałem na nie ochotę" – z plecaka HOKa przypadkowo wypadło na piasek jego drugie śniadanie. Chłopiec zmartwił się, że będzie głodny. FIP i EKA obiecali, że podzielą się z nim swoim drugim śniadaniem. „Może po prostu zjemy je teraz" – zasugerowała Eka. Zaraz potem dzieci zabrały się za budowanie zamku. Gdy byli zajęci budowaniem, na niebie pojawiły się ciemne chmury, które zupełnie zasłoniły słońce. Pani nauczycielka nawoływała dzieci, by ustawiły się w pary, bo trzeba było wracać do autobusu. HOK, FIP i EKA byli tak zajęci budowaniem, że nic nie usłyszeli.

Co budowały dzieci?	L	Zamek z piasku. (2)	Budowały w piasku. (1) (D) Bawiły się w piasku. (1) (D)	Bałwana. (0)
Czym podzieliły się dzieci na plaży?	C	Czekoladowymi marchewkami, które dostali na drugie śniadanie. (1)	Drugim śniadaniem. (0) (D) Marchewkami. (0) (D) Czekoladą. (0) (D)	Kanapkami. (0)
Co odbijało się w morzu?	E	Słońce w kształcie banana. (1)	Słońce. (0) (D) Banan. (0) (D)	Księżyc. (0)

Rozdział 5

HOK zauważył krople deszczu spadające na ich zamek. Zaczął rozglądać się po plaży i spostrzegł, że nikogo już na niej nie ma. Chłopcy i EKA szybko założyli plecaki i pobiegli w stronę lasu. Po chwili wbiegli na polanę, której wcześniej nie widzieli. Dostrzegli pasące się na polanie ogromne zwierzęta. Przestraszeni przyjaciele po cichutku wycofali się z powrotem do lasu. „Uważajcie na kwiaty" – szepnął Fip. Za późno! EKA nadepnęła na kwiat jedną z nóżek. Na szczęście nic się nie stało. EKA nie zrobiła sobie krzywdy, a krokodyle ich nie zauważyły. Dzieci zaczęły się martwić. Nie umieli znaleźć

drogi powrotnej, robiło się coraz ciemniej, a oni byli coraz bardziej głodni. Szli dalej ścieżką, kiedy EKA nagle zobaczyła swój kalosz.

Co Eka zobaczyła na ścieżce?	L	Swój ulubiony kalosz. (2)	Kalosz. (1) (D)	Kwiaty. (0)
Dlaczego Fip powiedział przyjaciołom, by uważali na kwiaty?	C	Bo kwiaty na Mep są ze szkła. (1)	By ich nie zdeptać .(0) (D) By się nie zranić (0) (D)	Bo bał się krokodyli. (0)
Jakie zwierzęta pasły się na polanie?	E	Ogromne krokodyle. (1)	Krokodyle. (0) (D) Aligatory. (0) (D)	Dziecko podaje inne zwierzęta. (0)

Rozdział 6

Uradowane dzieci maszerowały drogą, gdy spotkały dwa psy trzymające się za ręce. Zapytały je, czy idą w dobrą stronę. Psy powiedziały im, że są niedaleko parkingu, na którym stoi szkolny autobus. Szli ścieżką przez las, gdy usłyszeli znajomą melodię. To pan kierowca gwizdał piosenkę, której uczyli się dziś rano. Po chwili zobaczyli autobus. Cała klasa machała do nich przez okna, a pani nauczycielka wybiegła im na powitanie. W drodze powrotnej w autobusie było bardzo cicho. Ponieważ za oknami było już ciemno, niektóre dzieci zasnęły. FIP, HOK i EKA liczyli kolorowe guziki. Kiedy dojechali do szkoły, mama czekała na nich na przystanku. W drodze do domu opowiedzieli jej o swoich przygodach.

Co stało na parkingu?	L	Szkolny autobus. (2)	Autobus. (1) (D)	Mama. (0) Samochody. (0)
Co liczyły dzieci w autobusie?	C	Guziki świecące na niebie. (1)	Guziki. (0) (D)	Gwiazdy. (0)
Kogo spotkały dzieci na ścieżce?	E	Psy idące na dwóch łapach i trzymające się za ręce. (1)	Psy. (0) (D) Psy trzymające się za ręce. (0) (D)	Pana kierowcę. (0) Nauczycielkę. (0)

Appendix 12: Parental questionnaire in Polish for the EAL group

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Kwestionariusz dla rodziców/opiekunów

Chcieli byśmy poprosić Państwo o pomoc w zebraniu danych dotyczących historii nabywania języka u dziecka. Wypełnienie kwestionariusza powinno zająć tylko kilka minut. Jeśli mają państwo jakieś pytania, prosimy o kontakt mailowy z osobą prowadzącą badanie: mw700@york.ac.uk.

Płeć dziecka: ☐ Chłopiec ☐ Dziewczynka

1. W jakim wieku było państwa dziecko kiedy wypowiedziało pierwsze słowo?			
☐ 6-12 miesięcy	☐ 13-18 miesięcy	☐ 19-24 miesięcy	☐ 24 miesięcy lub później
2. Czy martwią się Państwo tym jak dziecko używa języka ojczystego?			
☐ Wcale	☐ Czasami	☐ Często	☐ Ciągle
3. Czy rodzinie i znajomym łatwo zrozumieć co mówi dziecko?			
☐ Bardzo łatwo	☐ Dość łatwo	☐ Czasami nie jest łatwo	☐ Wcale nie jest łatwo
4. Czy dziecko uczęszczało do żłobka lub przedszkola przed pójściem do szkoły?			
☐ Tak		☐ Nie	
5. Jeśli Tak, w jakim wieku było Państwa dziecko kiedy zaczęło uczęszczać do żłobka lub przedszkola?			
☐ od urodzenia do 6 miesięcy	☐ 6 miesięcy do 1 roczku	☐ 1 roczek do 1½ roczku	☐ 1½ roczku do 2 lat
☐ 2 lata do 2½ lat	☐ 2½ lat do 3 lat	☐ 3 lata to 3½ lat	☐ 3½ lat do 4 lat
6. Czy w rodzinie dziecka (rodzice, dziadkowie, rodzeństwo, itd.) istnieją przypadki poniższych problemów (prosimy o zaznaczenie właściwych odpowiedzi)? Jeśli tak, to kto? _____			
☐ Trudności w uczeniu się	☐ Trudności z poprawnym wypowiadaniem słów	☐ Trudności w czytaniu i/lub pisaniu	☐ Problemy językowe
☐ Trudności w postępowaniu zgodnie z instrukcją oraz zrozumieniu pytań	☐ Inne problemy: _____	☐ Żadne z powyższych	
7. Najwyższy poziom edukacji uzyskany przez matkę/opiekunkę dziecka?			
☐ Szkoła podstawowa	☐ Szkoła średnia	☐ Szkoła zawodowa/Technikum	☐ Uniwersytet (Licencjat)
☐ Uniwerytet (Magister)	☐ Inne (Prosimy określić)		
8. Najwyższy poziom edukacji uzyskany przez ojca/opiekuna dziecka?			
☐ Szkoła podstawowa	☐ Szkoła średnia	☐ Szkoła zawodowa/Technikum	☐ Uniwersytet (Licencjat)
☐ Uniwersytet (Magister)	☐ Inne (Prosimy określić)		
Czy dziecko wzrasta w środowisku, w którym używa się więcej niż jednego języka?			
☐ Tak		☐ Nie	
Jeśli zaznaczyli Państwo odpowiedź Tak – prosimy o przejście do następnej sekcji.			
Pytania dla rodzin, w których dzieci mówią językiem innym niż polski			
9. Jakimi językami (poza językiem polskim) mówi dziecko?			
1. _____	2. _____	3. _____	4. _____
10. Jaki język dziecko słyszy najczęściej poza szkołą? _____			
11. Jakim językiem dziecko posługuje się najczęściej poza szkołą? _____			
12. Czy dziecko urodziło się w Anglii? ☐ Tak ☐ Nie			
13. Jeśli Nie, w jakim kraju urodziło się dziecko? _____			
14. Jeśli Nie, w jakim wieku było dziecko kiedy przeprowadziło się do Anglii?			
☐ 0-½ roku ☐ ½-1 roku ☐ 1-1½ roku ☐ 1½-2 lat ☐ 2-2½ lat ☐ 2½-3 lat ☐ 3-3½ lat ☐ 4-4½ lat ☐ 4½-5 lat			
15. Jaki jest Państwa język ojczysty (oboje rodzice/opiekunowie są proszeni o odpowiedź)?			
Ojciec/opiekun: _____		Matka/opiekunka: _____	
16. Czy rodzice umieją czytać i pisać w języku angielskim?			
Ojciec/opiekun: ☐ Tak ☐ Nie		Matka/opiekunka: ☐ Tak ☐ Nie	
17. Jakimi językami mówią do dziecka następujące osoby (proszę o wypisanie wszystkich języków):			
a) Matka/opiekunka _____			
b) Ojciec/opiekun _____			

c) Inni członkowie rodziny (na przykład dziadkowie) _____

d) Sąsiedzi _____

e) Koledzy dziecka _____

18. Jak często następujące osoby mówią do dziecka w języku innym niż język polski?

a) Matka/opiekunka: □ Zawsze □ Zazwyczaj □ Często □ Czasami □ Rzadko □ Nigdy

b) Ojciec/opiekun: □ Zawsze □ Zazwyczaj □ Często □ Czasami □ Rzadko □ Nigdy

c) Inni członkowie rodziny □ Zawsze □ Zazwyczaj □ Często □ Czasami □ Rzadko □ Nigdy

d) Sąsiedzi □ Zawsze □ Zazwyczaj □ Często □ Czasami □ Rzadko □ Nigdy

e) Koledzy dziecka □ Zawsze □ Zazwyczaj □ Często □ Czasami □ Rzadko □ Nigdy

19. Czy dziecko ma rodzeństwo (bracia lub siostry)? □ Tak □ Nie

20. Jeśli Tak, jakimi językami rodzeństwo posługuje się kiedy rozmawiają między sobą (proszę wypisać wszystkie języki)?

1. _____	2. _____	3. _____

21. Jeśli Tak, jak często rodzeństwo posługuje się językiem innym niż polski w rozmowach między sobą?

□ Zawsze □ Zazwyczaj □ Często □ Czasami □ Rzadko □ Nigdy

22. Jak często dziecko uczęszcza na zajęcia pozalekcyjne podczas których mówi po angielsku (np. zajęcia sportowe, muzyczne, kluby itp.)?

□ Codziennie □ Przynajmniej raz w tygodniu □ Czasami □ Nigdy

23. Jak często dziecko uczęszcza na zajęcia pozalekcyjne podczas których mówi w języku innym niż angielski (np. zajęcia sportowe, muzyczne, kluby itp.)?

□ Codziennie □ Przynajmniej raz w tygodniu □ Czasami □ Nigdy

24. Jak często dziecko uczone jest w języku innym niż angielski (lekcje języka obcego, praca z podręcznikiem w języku obcym)?

□ Codziennie □ Przynajmniej raz w tygodniu □ Czasami □ Nigdy

25. W tygodniu, jak często Państwa dziecko prosi was o czytanie z nim?

□ Nigdy	□ Raz w tygodniu	□ 2-3 razy w tygodniu	□ 4-5 razy w tygodniu	□ Codziennie

26. Kiedy dziecko prosi was o czytanie z nim, w jakich językach są książki, które wybiera (prosimy o wypisanie wszystkich)?

1. _____	2. _____	3. _____	4. _____

27. Jak często w miesiącu chodzicie państwo z dzieckiem do biblioteki?

□ Nigdy	□ Raz w miesiącu	□ 2-3 razy w miesiącu	4-5 razy w miesiącu	□ Przynajmniej raz w tygodniu

28. Jak często w tygodniu bawicie się państwo z dzieckiem w głoskowanie i nazywanie liter?

□ Nigdy	□ Raz w tygodniu	□ 2-3 razy w tygodniu	□ 4-5 razy w tygodniu	□ Codziennie

29. Ile książek dla dzieci znajduje się aktualnie w państwa domu?

□ 1-5 książek	□ 6-10 książek	□ 10-15 książek	□ ponad 15 książek

30. Czy bawicie się państwo z dzieckiem w udawanie (piknik, zabawa w pocztę, itp.)? □ Tak □ Nie

31. Jeśli Tak, ile razy w tygodniu?

□ Raz w tygodniu	□ 2-3 razy w tygodniu	□ 4-5 razy w tygodniu	□ Codziennie

Appendix 13: Parental questionnaire for English native speakers

UNIVERSITY of York

Parent/Carer Questionnaire

We would like to ask you to help us by answering a few questions about your and your child's language background.
We would be very grateful if you could answer the questions below – it should only take a few minutes.
If you have any questions – please contact the researcher at mw700@york.ac.uk.

Child's gender: ☐ Male ☐ Female

1. How old was your child when he/she spoke his/her first word?			
☐ 6-12 months	☐ 13-18 months	☐ 19-24 months	☐ 24 months or later
2. Have you ever been concerned about your child's use of their home language?			
☐ Not at all	☐ Sometimes	☐ Often	☐ Always
3. Is it easy for your family and friends to understand what your child is saying?			
☐ Very easy	☐ Fairly easy	☐ Not always easy	☐ Not at all easy
4. Did your child attend nursery before he/she started school?			
☐ Yes		☐ No	
5. If Yes, how old was your child when he/she started attending nursery?			
☐ birth to 6 months	☐ 6 months to 1 year old	☐ 1 year old to 1½ year old	☐ 1½ year old to 2 years old
☐ 2 years old to 2½ years old	☐ 2½ to 3 years old	☐ 3 years old to 3½ years old	☐ 3½ to 4 years old
6. Is there any history in your child's family (i.e. parents, grandparents and siblings) of problems in the following (please tick as appropriate)? If so, who? _____			
☐ Difficulties with learning	☐ Problems with saying words correctly	☐ Problems with reading and/or writing	☐ Language problems
☐ Problems with following directions or understanding questions	☐ Other: _____	☐ None of the above	
7. What is the highest level of education of the child's mother/female carer			
☐ Primary school	☐ Secondary school	☐ Further education/College	☐ University (Undergraduate)
☐ University (Postgraduate)	☐ Other (Please specify)		
8. What is the highest level of education of the child's father/male carer?			
☐ Primary school	☐ Secondary school	☐ Further education/College	☐ University (Undergraduate)
☐ University (Postgraduate)	☐ Other (Please specify)		

9. How often do you visit the library (per month?)				
☐ Never	☐ Once a month	☐ 2-3 times per month	4-5 times per month	☐ At least once a week
10. During a typical week how often do you play sounding out letters with your child?				
☐ Never	☐ Once a week	☐ 2-3 times a week	☐ 4-5 times a week	☐ Every day
11. At the moment how many children's books are there in your home?				
☐ 1-5 books	☐ 6-10 books	☐ 10-15 books	☐ over 15 books	
12. Do you and your child engage in pretend play (picnics, post office, etc.)? If yes, how often (per week) ☐ Yes ☐ No				
☐ Once a week	☐ 2-3 times a week	☐ 4-5 times a week	☐ Every day	

THANK YOU

Appendix 14: Children's Authors Checklist (Polish)

Kwestionariusz autorów popularnych książek dla dzieci
Poniższa lista składa się z imion i nazwisk autorów książek dla dzieci oraz imion i nazwisk autorów innych publikacji. Proszę o zaznaczenie pól obok nazwisk autorów książek dla dzieci, które Państwo rozpoznają. Prosimy nie zgadywać.

☐ Norbert Młynarski	☐ Boris Danshov	☐ Wanda Markowska
☐ Alicja Woźniak	☐ Åsa Lind	☐ Stanisław Broll
☐ Wojciech Widłak	☐ Zofia Śmiglewska	☐ Czesław Janczarski
☐ Grant MacAllistair	☐ Barbara Gawryluk	☐ Beata Ostrowicka
☐ Agnieszka Bąk	☐ Ada Klimek	☐ Emil Potočnik
☐ Eliza Piotrowska	☐ Hall Goodman	☐ Alan A. Milne
☐ Leon Urbaniak	☐ Paulette Bourgeois	☐ Adam Chojniak
☐ Anne Cath. Vestly	☐ Maria Sekuła	☐ Dorota Gellner
☐ Piotr Kryza	☐ Danuta Wawiłow	☐ Astrid Lindgren
☐ Jan Brzechwa	☐ Aurelio Rossi	☐ Maria Musiał
☐ Roman Krosny	☐ Małgorzata Musierowicz	☐ Dennis Newson
☐ Joanna Papuzińska	☐ Urszula Kujawa	☐ Grażyna Bąkiewicz
☐ Tomasz Cieśla	☐ Beata Majchrzak	☐ Waclaw Ćtvrtek
☐ Małgorzata Strzałkowska	☐ Carlo Collodi	☐ Wisława Hanysz
☐ Åke Holm	☐ Felicja Niedźwiedzka	☐ Hans Christian Andersen
☐ Max Velthuijs	☐ Dávid Kováč	☐ Marta Bogdanowicz
☐ Sam McBratney	☐ Anna Onichimowska	☐ Emma Scott
☐ Wojciech Burczyński	☐ Julian Tuwim	☐ Dimiter Inkiow
☐ Brenda Clark	☐ Kåre Jespersen	☐ Kornel Makuszyński
☐ Hugh Lofting	☐ Wanda Chotomska	☐ Mariusz Mateja
☐ Ludwik Wiecha	☐ Barbara Tylicka	☐ Anita Głowińska
☐ Gilbert Delahaye	☐ Holger Lund	☐ Katarzyna Słowińska
☐ Ludwik Jerzy Kern	☐ Danuta Gellnerowa	☐ Pija Lindenbaum
☐ Ewa Junge	☐ Renata Piątkowska	☐ Martin R. Wheetley

Appendix 15: Children's Titles Checklist (Polish)

Kwestionariusz popularnych tytułów książek dla dzieci. Poniższa lista składa się z tytułów książek dla dzieci oraz tytułów innych publikacji. Proszę o zaznaczenie pól obok nazw książek, które Państwo rozpoznają. Prosimy nie zgadywać.

☐ Detektyw Pozytywka	☐ Zaczarowane drzewo	☐ Ale ja tak chcę!
☐ Dzielny słoń Andy	☐ Bajki z mchu i paproci	☐ Przedszkolaki i zwierzaki kasztaniaki
☐ Pan Pimpek i przyjaciele	☐ Maleńkie królestwo królewny Aurelki	☐ Penelopa, mała czarodziejka
☐ Dżok, legenda o psiej wierności	☐ Szukamy wróżek w parku	☐ Kiedy mały Findus się zgubił
☐ Gdybym był dorosły	☐ Bajka o drzewie	☐ Bal pingwinków
☐ Wyliczanki pani Janki	☐ Kosmiczni odkrywcy - Franio i jego babcia	☐ Kicia Kocia w kosmosie
☐ Pięciopsiaczki	☐ Przygoda nad morzem	☐ Wiersze do poduch
☐ Miś z krainy pluszaków	☐ Opowiadania z piaskownicy	☐ Bajka o leśnym stworku
☐ Wyliczanki z pustej szklanki	☐ Żabka i obcy	☐ Biuro zagubionych zabawek
☐ Nie ma nudnych dni	☐ Myszka, która bała się ciemności	☐ Na wszystko jest sposób
☐ O królewnie zamienionej w motyla	☐ Lulaki, Pan Czekoladka i przedszkole	☐ Opowieść o błękitnym psie, czyli o rzeczach trudnych dla dzieci
☐ Ja i moja siostra Klara	☐ Lenka i rozbójnik z lipowego lasu	☐ Zuzia na lodowisku
☐ Klasowa wycieczka do zoo	☐ Zielony, żółty, rudy, brązowy	☐ Misiostwo świata
☐ Pan Kuleczka	☐ Gdzie jest moja ciuchcia?	☐ Leśne głupki
☐ Dzień dobry koziołku!	☐ O gajowym Chrobotku	☐ Statek kosmiczny na placu zabaw
☐ Martynka jest chora	☐ Zaczarowana czapka Polly	☐ Sznurkowa historia
☐ Szelmostwa Lisa Witalisa	☐ Piaskowy Wilk	☐ Zaczarowany budzik
☐ W królestwie okularników	☐ Historia o zajączku Kłapouszku	☐ Wielkie czyny szympansa Bajbuna Mądrego
☐ Wszystko moje; Co wolno, a czego nie wolno	☐ Kotek, który wskoczył na płotek i inne rymowanki	☐ Ni pies, ni wydra
☐ Pierwszy dzień w szkole	☐ Julek i Julka	☐ Biedronka Gosia i przyjaciele
☐ Cukrowe miasteczko	☐ Przygody smoka Karola	☐ Wierszyki łamiące języki
☐ Ach, jak cudowna jest Panama	☐ Rymowanki - przytulanki	☐ Jeżyk idzie do przedszkola
☐ Magiczna walizka babci Józi	☐ Nusia i bracia łosie	☐ Bajeczki z innej beczki

Appendix 16: Child Author Checklist (English)

Children's Author Checklist

This list contains some names children's authors and some unrelated names. Put a tick in the box beside the name of any children's author that you recognise, but please do not guess!

Rod Campbell ☐	Natalie Peacey ☐	Hayley Clutterbuck ☐
Neil Greenfield ☐	Jez Alborough ☐	Sarah Easdown ☐
Janet Ahlberg ☐	Raymond Briggs ☐	Jan Fearnley ☐
Margaret Mayo ☐	Judith Kerr ☐	Eric Hill ☐
Pat Hutchins ☐	Lorna Pockett ☐	Ian Falconer ☐
Angus Cook ☐	Beatrix Potter ☐	Lee O'Connor ☐
Ashley Fruin ☐	Steve Leadbeater ☐	Shirley Hughes ☐
Maurice Sendak ☐	Joanne Birch ☐	Annette Howe ☐
Dav Pilkey ☐	A. A. Milne ☐	Rosslyn Elliott ☐
Christopher Holpin ☐	Jenny Gleed ☐	Cressida Cowell ☐
Lynsey Bull ☐	Debi Gliori ☐	Sean Mowatt ☐
Julia Donaldson ☐	Sam Meyrick ☐	Juliet Morefield ☐
Emma Williams ☐	Ian Whybrow ☐	Georgina Tudor ☐
Martin Waddell ☐	Nick Butterworth ☐	Michael Bond ☐
Charlie Coulbourn ☐	Michelle Tilling ☐	Lucy Cousins ☐
Graham Cramp ☐	Dr Seuss ☐	Alison Pack ☐
Laura Dalley ☐	Giles Andreae ☐	Roger Hargreaves ☐
Lauren Child ☐	A. J. Bodenham ☐	Sam McBratney ☐
Katharine Holabird ☐	Eric Carle ☐	Alan Hazlewood ☐
Russell Hide ☐	Denise Ireland ☐	Hilary Mitton ☐
Jill Tomlinson ☐	Helen Nicoll ☐	Martin Dalton ☐
David McKee ☐	Rachel Smale ☐	Robert Wathan ☐
Miranda Cullen ☐	Spencer Davis ☐	Louisa Dimmock ☐
Michael Rosen ☐	Tracy Pratt ☐	Rev W Awdry ☐
Emma Mulligan ☐	Lynley Dodd ☐	Fiona Milne ☐
Luke Pitman ☐	Sandra Boynton ☐	Helen Cooper ☐
John Burningham ☐	Mick Inkpen ☐	

Appendix 17: Children's Title Checklist (English)

Children's Title Checklist

This list contains some names of children's storybooks and some unrelated titles. Put a tick in the box beside the name of any children's book that you recognise, but please do not guess!

No Matter What ☐	Dogger ☐	Rodney and the Big Blue Bubble ☐
One Snowy Night ☐	Polly's Pink Pyjamas ☐	Peace at Last ☐
Green Greta ☐	Pumpkin Soup ☐	The Kiss that Missed ☐
Six Dinner Sid ☐	Goodnight Moon ☐	Kabam Kaboom! ☐
Owl Babies ☐	There's Treasure in the Attic ☐	Splish Splosh Sunday ☐
Marmalade Muffins for Breakfast ☐	Letty Spaghetti ☐	Little Grey Duckling and the Egg ☐
The Very Quiet Cricket ☐	The Jolly Postman ☐	Hairy Maclary from Donaldson's Dairy ☐
How do you Climb a Rainbow? ☐	Crackers and Fluff ☐	My Mum Knows ☐
Daisy's Magic Day ☐	Handa's Surprise ☐	The Tiger who Came to Tea ☐
Bedtime Balloons ☐	Is it Bedtime, Wibbly Pig? ☐	Chimney Pot Cha Cha ☐
The Snail and the Whale ☐	Ding Dong Doodle Doo ☐	The Great Toy Hunt ☐
A Flute, a Trumpet and a Big Bass Drum ☐	The Lazy Koala ☐	Say Hello, Clemmie ☐
Mr Gumpy's Outing ☐	Each Peach, Pear, Plum ☐	Mr Wolf's Pancakes ☐
Giraffes Can't Dance ☐	The Owl who was Afraid of the Dark ☐	Reindeer's Recipe ☐
Dear Zoo ☐	Fox and Mr Boot ☐	Watch Out, Octopus! ☐
The Little Lifeboat ☐	Spring in the Meadow ☐	The Lighthouse Keeper's Lunch ☐
We're going on a Bear Hunt ☐	The Floppy Broomstick ☐	The Lion Rider ☐
Round and Round the Windmill ☐	Guess How Much I Love You ☐	Stop that Steamroller! ☐
Rosie's Walk ☐	Where's My Teddy? ☐	Meg and Mog ☐
Billy's Fantastic Book ☐	Mog the Forgetful Cat ☐	Not Now, Bernard ☐

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