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Research Paper

INVESTIGATING WORD BLENDING SKILLS IN MALTESE CHILDREN

Jessica Mifsud, Rachael Agius

Department of Communication Therapy, Faculty of Health Sciences, University of Malta, Msida, Malta.

Abstract. This study aimed to investigate the word blending skills of six to seven year old Maltese children whose home language is either Maltese/English (monolinguals) or Maltese-English (bilinguals). Typically developing children and children with reading difficulties from different school systems (State, Church, Private) were selected. Parents were asked to complete a language and literacy questionnaire prior to test administration. The participants' word blending skills were assessed in English using the 'Blending Words' subtest of the 2nd edition of the Comprehensive Test of Phonological Processing. They were also tested in Maltese using a word blending test developed for the purpose of this research. The main findings show overall better performance in Maltese word blending tasks. Girls performed better than boys and State school performance was the highest for Maltese, while Private school performance was superior in English. Results also showed that bilinguals outperformed monolinguals in both language versions of the test. Typically developing children achieved higher scores in word blending than children with reading difficulties and children who were reported to have difficulties with learning the alphabet gave a significantly lower performance. Lastly, questionnaire findings show that frequent reading, reading enjoyment and good alphabet knowledge all result in better word blending abilities. Recommendations include encouraging children to read more frequently in both languages in order to enhance phonological awareness abilities.

Keywords: word blending, phonological awareness, bilingual, Maltese

1 Introduction

1.1 Literacy

Literacy skills are essential to the academic and personal success of those who live in a literate society (Daniel & Reynolds, 2007). Literacy skills include phonological

awareness skills, written language awareness (alphabet knowledge and print concepts), literate features of oral language, memory, speed of processing and comprehension (Justice & Purcell, 2003). The aim of this research was to test the word blending performance, a subset of phonological awareness, of Maltese children aged 6-7 years.

In this bilingual community, children are faced with learning literacy in both Maltese and English. These two languages have orthographies of differing depth. Orthographic depth, the degree of spelling-to-sound consistency in each language, has been hypothesized to affect the ease and effectiveness with which children learn to read (Everatt & Ocampo, 2001; Frost, Katz, & Bentin, 1987). Whilst English is said to be a 'deep' or 'opaque' language, Maltese is more transparent in terms of its phoneme-grapheme correspondences (Agius, 2012; Xuereb, 2009). Katz and Frost (1992) explain that in shallow orthographies (like Maltese), phonology is more readily available whilst in opaque orthographies like English; the child has to recognize words through morphology.

1.2 Alphabet Knowledge

Emergent literacy skills include alphabet knowledge which is the ability to name letters, distinguish letter shapes, and identify letter sounds. A child needs to recognise letters, understand that they have corresponding sounds and blend the sounds together to form a word for reading and writing (Drouin, Horner & Sondergeld, 2012) in order to access print. Learning that there are predictable relationships between sounds and letters allows children to apply these relationships to both familiar and unfamiliar words and to begin to read with fluency. Alphabet knowledge is important for children, because it introduces them to the issue of orthographic knowledge, which in turn, is essential for spelling (Phillips, Piasta, Anthony, Lonigan & Francis, 2012; Puranik, Petscher & Lonigan, 2012). Children's knowledge of letter names and shapes is a strong predictor of their success in learning to read. Knowing letter names is strongly related to children's ability to remember the forms of written words and their ability to treat words as sequences of letters. The relationship between alphabet knowledge and future reading ability are positively linked to each other (Moats, 2014), so much so, that a child's inability to recognize the alphabet may result in later reading problems (Phillips et al., 2012).

Correspondence to Jessica Mifsud
 (jessica.mifsud.11@um.edu.mt)

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1.3 What is phonological awareness (PA) and word blending (WB)?

Phonological awareness (PA) is the area of oral language that relates to the ability to think about the sounds in a word (the word's phonological structure) rather than just the meaning of the word (semantics). It is an understanding of the structure of spoken language – that it is made up of words and words consist of syllables, rhymes, and sounds (Konza, 2011). Longitudinal studies of reading development show that PA is a main predictor of success when learning to read English and a significant constituent of spelling skills (Fawcett, 2013; McGeown & Medford, 2014; McGeown, Johnston & Medford, 2012; Tahan, Cline & Messaoud-Galusi, 2011; Elbeheri & Everatt, 2007; Weinrich & Fay, 2007; Celek, Pershey & Fox, 2002). In the case of the Maltese language, speed of processing and phonological memory are better predictors of reading ability than phonological awareness. This is because of the difference in orthographic depth between the two languages (Agius, 2012; Xuereb, 2009). PA lets children understand how language can be separated into smaller parts and how these parts can be manipulated (Daniel & Reynolds, 2007). When blending a word, the child is required to listen to a sequence of sounds and combine these together to make up a word e.g. /c/-/a/-/t/ to make the word /cat/ (Fawcett, 2013). The words are heard in small parts (or individual sounds) and the person blending these parts joins them together, forming the word (Weinrich & Fay, 2007). The skills needed for word blending include letter-sound knowledge, memory (auditory if sounds are being heard, visual if sounds are being read) and phonological awareness. There is also an element of automaticity involved.

1.4 The ability to blend a word also allows the reader to access print

Accessing print entails converting graphemes to phonemes and then blending these (decoding) – allowing children to read (Iacono & Cupples, 2004). In order to decode, the child needs to have adequate comprehension skills, the ability to recognise each letter and each sound as well as blend (Drouin, Horner & Sondergeld, 2012; Turnbull, Bowles, Skibbe, Justice & Wiggins, 2010).

In this research, the English word blending test (CTOPP-2, Wagner, Torgesen, Rashotte & Pearson, 2013) was used and a Maltese test was developed by the researcher for the purpose of research following specific guidelines (Agius, 2012). The

Maltese words selected were analysed so as to parallel the English test. Both tests comprised 33 items and the Maltese items were written according to the International Phonetic Alphabet (IPA) to eliminate any discrepancies in pronunciation (See Table 1 for examples of test items).

1.5 Gender and phonological awareness (PA)

The literature reports a higher incidence of males with reading problems. Hawke, Olson, Willcut, Wadsworth and DeFries (2009) investigated reading recognition, reading comprehension and spelling and found that “*the greater variance of their composite measure of reading performance for males is due to gender differences in phenotypic variances and covariances of the tests*” (p.3). Local research on gender difference and PA is ambivalent. Mifsud, Grech, Hutchison, Morrison, Rudd and Hanson, (2004) conclude that girls perform significantly better than boys in PA activities in both Maltese and English. Cilia (2010) found that boys were faster and more accurate than girls when reading. A more recent study on PA skills in Maltese children found no significant difference between the two genders (Formosa, 2014).

1.6 School system and language used in relation to phonological awareness (PA)

Local research has shown that the interrelation between school language and school type has an effect upon literacy performance (Agius, 2012; c.f. Cilia, 2010). Mifsud et al., (2004) note that children attending Church and Private schools achieve significantly higher scores in PA skills in English than children attending State schools. With regard to ability, significant differences are noted between typically developing (TD) children and children with reading difficulties (RD) where TD children performed better. Results showed that literacy skills in one language can be anticipated by “*parallel reading and writing skills in the other language*” (Agius, 2012).

Rosal, Cordeiro and Queiroga (2013) investigate phonological awareness in children from public and private schools in Brazil where the performance of both groups was compared. The analysis revealed no statistically significant differences in PA skills between schools and inferred that a specific school system did not assure a better PA development for children.

Table 1. Examples of English and Maltese Test Items

Test Item Number	English Test Item	Maltese Test Item	Maltese Test Item in IPA	Number of syllables
2.	Sea-shell	Maġenb	mɛ-ʤɛnp	2
9.	S-un	Ġiet	ʤ-i:t	1
14.	T-oy	Bir	b-ir	1
23.	G-r-a-ss-h-o-pp-cr	Laringa	l-ɐ-r-i-n-ʤ-ɐ	3
29.	M-ath-c-m-a-t-i-c-s	Ġenituri	ʤ-ɛ-n-i-t-u-r-i	4

1.7 Language dominance and phonological awareness (PA)

According to Formosa (2014), Agius (2012) and Mifsud and colleagues (2004), children perform best when tests were presented in their first (or home) language. Agius (2012) also found that bilingual children outperformed monolingual children in tests of phonological awareness and literacy. Xuereb (2009) examined the reading and PA skills in 8 – 10 year old Maltese-speaking children and found that reading performance was better in Maltese than in English. According to Xuereb (2009), this finding can be explained by the fact that the tests were presented in the same language as their home language, or to the fact that the Maltese test items (the language with the more regular orthography) were easier to access (and decode) than the parallel English test items.

Overseas research has reported inconsistent findings. Reyes and Azuara (2008) studied the association between language dominance and literacy skills in Mexican immigrant children who spoke Spanish and English. Like local research, they too found that biliteracy skills are dependent upon the children's home language. Gutierrez-Clellen and Kreiter (2003) and Tahan, Cline and Messaoud-Galusi, (2011) however did not find a significant association between PA and the child's first language.

1.8 Reading interest, frequency and literacy environment

Logan and Johnston (2009) state that the attitude the child has towards reading, has an impact on the frequency of reading and reading ability itself. Reading (dis)ability may be affected by length of words, frequency of words and the age-of-acquisition of certain words (Davies, Cuetos & Glez-Seijas, 2007). Children who are interested and engaged during literacy activities are likely to have more opportunities to learn and practice early reading skills (Baroody & Diamond, 2014). The home environment also affects children's reading abilities. Manolitsis, Georgiou and Tziraki (2013) found that when children are exposed to more literacy activities in the home, they show increased reading performance. Consequently, when a child shows an interest in literacy activities, parents and teachers are more ready to provide such activities (Martini & Senechal, 2012).

1.9 Importance of this study

This study is important because in Malta there is limited research on reading and phonological awareness and how these abilities function within a bilingual environment. Findings would also shed light on reading abilities, specifically word blending skills, in the context of differing school types, gender, ability, home and school language of children with varying ability. This information is useful to professionals, educators and researchers alike.

2 Methods

Ethical approval for this research study was obtained from the University of Malta Research Ethics Committee (approval reference number 107/2014). All relevant permissions and consent to carry out the research study were processed. Codes were generated and used throughout the study to ensure anonymity of participants. The research question begged a quantitative research design, involving the collection of data for analyses through statistical inferences (McLeod, 2008).

2.1 Participant selection

Schools were randomly selected and permission was obtained from heads of school to carry out the research study. Thirty (30) children from a State school, 33 from two Church schools, and 37 from a Private school participated in the study (total – 100 children). Two different Church schools were selected because these are not coeducational and both males and females in each school system were required. A meeting took place with the year 2 class teachers of the classes participating in the study. The aim of the study as well as the selection criteria were explained carefully so that the teachers could make an informed decision when selecting children to participate in the study. The participants selected (6-7 years old) attended year 2.

Typically developing participants had to be Maltese citizens, aged between 6 and 7 years, attending year 2, their first language Maltese and/or English, have a satisfactory school performance, with no sensory, behavioural or emotional difficulties and no positive family history of reading and/or spelling difficulties. Satisfactory school performance was gauged by the teacher and based on the child's academic progress throughout the scholastic year. This might be considered as a limitation as no standardized assessment was used to test the children's ability e.g. Ravens Coloured Progressive Matrices and neither was a reading test.

The same selection criteria were applied to children with reading difficulties. However, these children were not expected to have satisfactory school performance. They were included in the study with a report of average or poor school performance, with possible behavioural or emotional difficulties and a possible positive family history of reading difficulties. Meetings were scheduled with the principals of each school to explain the purpose of the study and what it would entail. Once the children were selected, a second meeting was scheduled, in which the teachers were provided with a letter of information, parental consent form and questionnaire to be sent home.

2.2 Research tools and administration

The 'Blending Words' subtest of the 2nd edition of Comprehensive Test of Phonological Processing (CTOPP-2; Wagner, Torgesen, Rashotte & Pearson, 2013) was used to assess blending skills in English. Permission was obtained to use the 2nd edition of Comprehensive Test of Phonological

Processing (CTOPP-2) (Wagner, Torgesen, Rashotte & Pearson, 2013). The word blending subtest was used. This is a 33-item subtest measuring an individual's ability to combine sounds to form words. The examinee listens to a series of separate sounds and then is asked to put the separate sounds together to make a whole word.

A Maltese-equivalent test was compiled by choosing words from the children's reading books used in the three school systems. The selected words were analysed according to word characteristics such as frequency, imageability and concreteness. The words chosen varied in high/low frequency, high/low imageability and high/low concreteness and were chosen to parallel the English test. The criteria used to select the Maltese test items were based on those by Xuereb, Grech and Dodd (2011). Following pilot data collection, it was noted that the test lasted approximately three to eleven minutes.

One Hundred (100) children were tested on English and Maltese word blending in the main study. Assessments were carried out in a classroom or common room and administered by the researcher to each child individually. To avoid the possibility of practice and order effects the researcher alternated between starting with the English test and the Maltese test. The tests were also timed by using a digital stopwatch to calculate the duration of administration of the tests.

A language and literacy questionnaire was developed for the purpose of this research project and given to the participants' parents. The questionnaire consisted of 10 questions which addressed: the home language spoken by the child's family members, the language the child uses at school, whether or not the child enjoys to read and if so, how often s/he reads and in which language s/he prefers to read. The questionnaire also asked about the possible presence of family history of reading difficulties, the method in which s/he was taught to read (e.g. via the phonics approach) and if s/he had previous difficulties in learning the alphabet. The questionnaire was distributed and collected through the school with the help of class teachers.

2.3 Data analysis

The scores of each test were converted to percentage correct (%) scores for comparative purposes. These were analysed using the Statistical Package for the Social Sciences (SPSS) version 22.0 software package. Information regarding the gender, school system, home language, school language and ability (independent variables) and the questionnaire responses were also inputted into SPSS. Descriptive statistics were obtained for the test scores and analysis of variance (ANOVA) was used together with the non-parametric test Kruskal-Wallis to develop a statistical measure to compare between the variables. The nonparametric test was used following tests of normality which indicated that the distribution of both the Maltese and English test data were skewed.

3 Results

3.1 Normality testing

The Shapiro-Wilk's test (Table 2) was used to assess the normality assumption of the score distribution for Maltese and English word blending tests as well as the total time taken to complete both tests.

Table 2. Shapiro-Wilk's test of normality

	Shapiro-Wilk		
	Statistic	df	p-value
Maltese word blending	0.953	100	0.001
English word blending	0.968	100	0.015
Total time taken	0.969	100	0.019

Results showed that the p-values (0.001, 0.015, and 0.019) for both tests and their duration were <0.05 level of significance, thereby indicating a non-normal distribution. For this reason, the nonparametric Kruskal-Wallis H test was used. This is a rank-based nonparametric test that can help determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable (Lund & Lund, 2013). Since this test generates ranks, Analysis of Variance (ANOVA) was also used to compare mean scores.

3.2 Overall findings

Descriptive statistics show that overall: children obtained an average score of 71% in Maltese word blending (MWB) and an average of 67% in English word blending (EWB) (see Table 3).

Table 3. General performance of participants

	Minimum	Maximum	Mean	Standard Deviation
Maltese Word Blending	30	97	71.01	16.49
English Word Blending	39	88	66.61	11.60
Total time taken	234	431	331.28	51.89

3.3 Gender

Findings show that on average girls performed better than boys, however not significantly, in both Maltese (73% mean score) and English (67% mean score) word blending tests (see Table 4). Boys obtained 69% mean score and 65% mean score respectively. There was no significant difference between the two groups for either test (MWB, $p=0.25$; EWB $p=0.38$).

Table 4. Results for word blending according to gender

		Parametric ANOVA				Non-Parametric K-W ⁱ		
		N ⁱⁱ	Mean (%)	SD ⁱⁱⁱ	df ^v	F ^v	Chi-square	p-value
MWB	Male	42	69	16.81			1.31	0.25
	Female	58	73	16.12				
	Between groups				1	1.51		
	Within groups				98			
EWB	Male	42	65	12.13			0.84	0.38
	Female	58	67	11.24				
	Between groups				1	0.73		
	Within groups				98			
Total time (secs)	Male	42	329	47.81				
	Female	58	333	55.02			0.14	0.82
	Between groups				1	0.10		
	Within groups				98			

ⁱKruskal WallisⁱⁱPopulation sizeⁱⁱⁱStandard deviation^{iv}Degrees of freedom^vF-distribution**Table 5.** Results for word blending according to school system

		Parametric ANOVA					Non-Parametric K-W ⁱ	
		N ⁱⁱ	Mean (%)	SD ⁱⁱⁱ	df ^{iv}	F ^v	Chi-square	p-value
MWB	Private	37	71	16.14			6.81	.031
	Church	33	68	10.73				
	State	30	74	21.38				
	Between groups				2	1.12		
	Within groups				97			
EWB	Private	37	70	9.47			4.32	0.11
	Church	33	64	9.64				
	State	30	65	15.01				
	Between groups				2	2.21		
	Within groups				97			
Total time (secs)	Private	37	340	41.2			3.21	0.20
	Church	33	331	48.3				
	State	30	321	65.1				
	Between groups				2	1.27		
	Within groups				97			

ⁱKruskal WallisⁱⁱPopulation sizeⁱⁱⁱStandard deviation^{iv}Degrees of freedom^vF-distribution

3.4 School system

Table 5 displays both parametric and nonparametric findings. The nonparametric test results for Maltese word blending are significant ($p=0.03$); its parametric equivalent however is not ($F=1.12$, $df\ 2,97$, $p=0.31$). Year 2 children attending

State schools obtained the highest score (74%) in Maltese word blending followed by children attending Private schools (71%). Children from Church schools obtained the lowest average score (68%). In English word blending, children from Private schools obtained the highest score (70%) followed by children attending State schools (65%) and then Church

schools (64%) ($F=2.21$, $df\ 2,97$, $p=0.11$). Findings from both parametric and nonparametric tests were not significant.

3.5 Ability

Typically developing (TD) children achieved higher scores in both Maltese (77%) and English word blending (70%) with a significant difference (MWB $p=0.00$; EWB $p=0.000$) when compared to children with reading difficulties (RD). The RD group obtained 57% in MWB and 58% in EWB.

3.6 Home Language

Children who speak both Maltese and English at home obtained higher scores in both MWB (73%) and in EWB (70%) when compared to monolingual children. The monolingual Maltese group obtained a mean of 71% and the monolingual English speakers obtained a mean score of 68% in *Maltese* word blending. For the English blending task, Maltese monolinguals obtained 64% and English monolingual speakers achieved a score of 67%. In all cases, these differences were not significant (MWB $p=0.37$; EWB, $p=0.14$).

3.7 School language

Children in bilingual classroom environments obtained a higher score in *Maltese* word blending (72%) followed by children who speak mostly English at school (71%) and those who speak mostly Maltese in class (64%). In *English* word blending, children who speak more English in school obtained a score of 68%, followed by children who speak both languages (67%) and children who speak mostly Maltese (59%). These differences between school language were not significant (MWB $p=0.61$; EWB $p=0.21$).

3.8 Questionnaire findings

Questionnaire items were grouped into two main categories: (1) 'reading enjoyment, frequency, language preference' and (2) 'Teaching method and alphabet knowledge'. The test scores were analyzed in relation to these two broad categories.

3.8.1 Reading enjoyment, reading frequency and reading language preference

The children whose parents reported that they enjoy spending time reading at home obtained the highest mean scores in both MWB and EWB. Children who spent more time reading also obtained higher scores in the tests. The children who read less than once a week obtained the lowest mean scores (MWB=48%; EWB=53%). The differences of reading frequency are significant as the p -value < 0.05 criterion in both Maltese (p -value=0.01) and English (p -value=0.1). Children who enjoy reading in both languages obtained highest mean scores in both tests (MWB=78%; EWB=70%).

The difference in scores in English are significant as the p -value is 0.03

3.8.2 Phonics approach and Alphabet knowledge

Children who learnt to read using the phonics approach obtained higher mean scores (MWB=72%; EWB=67%) than the children who learnt to read through another approach (for e.g. sight word approach). Both differences are significant because the p -values are < 0.05 criterion (p -value=0.04, and 0.02 respectively). The children who had difficulties learning the alphabet obtained a lower mean score (MWB=58%; EWB=59%) when compared to those who learnt the alphabet well and with no difficulties (MWB=74%; EWB=68%). Both Maltese and English WB differences are significant, the p -value being 0.00 for Maltese and 0.02 for English.

4 Discussion

The following is an interpretation of the findings in word blending performance of Maltese 6 to 7 year old children. Overall, the children obtained higher scores in the Maltese test. This finding could be explained by the fact that Maltese is 'easier' to read given its transparent orthography and more direct spelling-to-sound correspondences, when compared to English, the more opaque writing system (Agius, 2012; Davies, Cueto & Glez-Seijas, 2007; Seymour, Aro & Erskine, 2003; Xuereb, 2009).

4.1 Gender differences in word blending performance

Although there were no significant differences in word blending between boys and girls, girls obtained higher scores than boys. Most literature agrees that girls tend to give a better performance, and have a more positive attitude to literacy. The current findings are consistent with Cilia (2010) who also did not find significant differences between girls and boys in reading ability. In her study, in fact, boys performed slightly better. In the older group, girls performed better. Gender differences are reported by Mifsud and colleagues (2004), whereby girls performed better in phonological awareness tasks. It is also believed that girls are less affected by environmental aspects e.g. teaching method (Hawke, Olson, Willcutt, Wadsworth & DeFries, 2009; Logan & Johnston, 2009).

4.2 School type and word blending performance

Similar to Cilia's (2010) findings in Maltese word reading, children from State schools obtained the highest score in Maltese word blending. The Maltese language is the favoured language of instruction by most teachers working in State schools and English is the preferred language of instruction in private schools (Agius, 2012; Formosa, 2014).

Agius (2012) also found that superior performance in literacy was obtained when the test language was the same as their first language. This finding (children attending State schools performing better in Maltese, whilst children attending Private schools performing better in English) was replicated in this research. This indicates that school language does in fact play a role in the children's performance on the tests, depending on the language of the tests.

4.3 The effect of home language on word blending

Children who speak Maltese and English at home acquired the highest scores in both Maltese and English blending tasks. Although the difference between bilingual and monolingual speakers was not significant, the indication is that bilingual children process phonological units better than monolingual children as the languages have the same processing system, allowing transfer between languages (Tahan, et al., 2011). Xuereb (2009) found that children speaking Maltese at home performed better in Maltese, when compared to English. Similar findings were reported by Cilia (2010) who noted that performance in Maltese word and non-word reading tasks was associated with the child's first language. Agius (2012) found that bilinguals displayed superior performance in some of the literacy tests administered in her research (writing speed, spelling accuracy, word accuracy and fluency, rapid letter naming) when compared to monolinguals.

4.4 The effect of school language on word blending

Findings (albeit not significant) show that children who speak both languages at school perform better in Maltese word blending. Agius (2012) reports that although Maltese is mainly used in State and Church schools, their use of spoken English is increasing, whilst Private schools continue to use English as the preferred language of instruction. Similar to the current findings, Formosa (2014) also reported that children attending private schools obtained higher scores in English than children exposed to Maltese in the classroom. Agius (2012) observed a '*bilingual enhancement effect*' (which happens when the skills in one language are transferred to the other language) in reading ability and in phonological awareness.

4.5 The effect of ability on word blending performance

In this study, significant differences between TD and RD children were observed on both Maltese and English tasks. This shows that a reading difficulty affects word blending performance, and weak word blending performance may be partly the cause of a reading difficulty. This finding concurs

with those by Agius (2012) and Apel and Lawrence (2011). The latter authors reported that children with speech sound disorders obtained lower scores on blending tasks when compared to typically developing children. Loeb, Gillam, Hoffman, Brandel, and Marquis (2009) found significant correlations between difficulties in PA and reading difficulties (c.f. Suggate et al., 2014). This finding strengthens the abundant literature on the link between phonological awareness and literacy (Daniel & Reynolds, 2007; Everatt & Ocampo, 2001; Frost, Katz, & Bentin, 1987). Remedial programs currently focus their efforts on improving the literacy abilities of RD children through facilitating phonological awareness skills and phonics instruction. These programs can be revised in view of the orthographic depth(s) of the language pair the child is exposed to as well as the importance of other factors (e.g. rapid naming and receptive vocabulary) that are more pertinent to the literacy development of children learning to read transparent orthographies (Xuereb, 2009; Agius, 2012).

4.6 Interpretation of questionnaire findings

4.6.1 Reading enjoyment, frequency and language preference in reading

Baroody and Diamond (2014) conclude that when a child is interested and engaged in literacy activities there would be more opportunities for the child to develop literacy skills, and increase vocabulary. The authors also link together the child's level of enjoyment with frequency. Similarly, this study found that children who enjoyed reading more at home and read more often, tended to perform better in word blending than those who did not. In fact, average scores lessened in line with the frequency with which the children read. When parents and teachers positively reinforce a child, the child will foster a more positive attitude towards reading. Manolitsis, Georgiou and Tziraki (2013) state that the home literacy environment affects children's abilities, depending on whether there is an involvement of literacy activities. It would be beneficial for children to see their family engaging in literacy activities as this would act as an incentive for them to imitate and engage in such activities.

With reference to reading language preference, results showed that children who liked to read in both Maltese and English achieved higher scores in word blending in both languages. By reading in both languages, children are able to strengthen their overall PA and literacy skills (Logan & Johnston, 2009). The authors point out that it is a cycle, starting from the child's attitude to reading, how often and how much they enjoy reading activities and how much praise they receive. The children's parents and teachers act as role models to the children. It is therefore important for the children to see them give importance to literacy activities and to be encouraged to read books in both languages.

4.6.2 Method of literacy instruction and alphabet knowledge

Not all the children were reported to make use of the phonics approach in schools. Findings show that children who learned to read using the phonics approach obtained higher scores (MWB=72%; EWB=67%). This indicates that the phonics approach aids word blending skills. Since the children performed better in MWB, phonics approach may work better with languages with transparent orthographies. McGeown, Johnston, and Medford, (2012) predict that if children are taught to read using the phonics approach the most important skills for the child would be: letter knowledge, phoneme awareness and memory whilst vocabulary knowledge was only associated with reading development when children were taught to read using sight word reading. This statement is highly pertinent when considering the orthographic depths of the languages the child is faced with. In transparent languages such as Maltese, there is a higher consistency between spelling to sound correspondences than there is in English, the deeper orthography. In deep or opaque languages, with highly irregular spelling forms, the reader cannot rely on a '*sounding out*' strategy to access the word and subsequently its meaning. The child who is faced with both Maltese and English orthographies will benefit from a phonics instruction approach when learning how to read Maltese and regular English words (Agius, 2012). Sight words reading is a method of instruction that would be more beneficial to the child when faced with highly irregular spelling formats.

Children reported to have difficulties learning the alphabet, obtained a lower average score. Researchers note the link between alphabet knowledge and reading ability. Alphabet knowledge is important for children, because it introduces them to the issue of orthographic knowledge, which in turn, is essential for spelling and writing in beginners (Phillips, Piasta, Anthony, Lonigan, & Francis, 2012; Puranik, Petscher, & Lonigan, 2012). Phillips, Piasta, Anthony, Lonigan and Francis, (2012) agree that alphabet knowledge is an important skill needed for reading. If children are noted to experience difficulties with learning the alphabet extra support should be given to these children both in the home and at school. A child should have the opportunity to develop a decent foundation in alphabet knowledge in both Maltese and English so as to progress further in both language and literacy.

5 Conclusions

The aim of the current study was to investigate the word blending performance of Maltese 6 to 7 year-olds. One hundred (100) children attending State, Church and Private Schools were administered two word blending tests: (1) Blending Words subtest of the 2nd edition of the Comprehensive Test of Phonological Processing (CTOPP-2; Wagner, Torgesen, Rashotte & Pearson, 2013) and (2) Maltese Word Blending test developed for the purpose of this research. Performance was measured according to various independent variables including school type, school

language, home language, gender and ability. Parents were asked to complete a questionnaire related to language and literacy practices in the home. The main findings are:

1. Overall better performance in Maltese word blending tasks, when compared to English word blending tasks.
2. Girls performed better than boys.
3. State school performance was the highest in Maltese word blending, while Private school performance was the highest in English word blending. Church school children obtained the lowest mean scores in both Maltese and English word blending.
4. Typically developing children performed significantly better than children with reading difficulties.
5. Bilingual children performed better overall, than their monolingual counterparts.
6. Children who were reported to enjoy reading at home and who read more frequently obtained higher scores when compared to children who do not enjoy reading and who read less often.
7. Higher mean scores were obtained by children who liked to read in both Maltese and English, as opposed to reading in just one language.
8. Children who were taught how to read via the phonics approach performed significantly better than other children in both tests.
9. Children who were reported to have difficulties with learning the alphabet obtained significantly lower results in both tests when compared to children who had no difficulties with alphabet knowledge.

6 Limitations of the study

The limitations include:

Demography

The schools in which the study was conducted are all located in the central region of Malta. For this reason, results cannot be generalised to the performance of children attending schools located in other parts of Malta. The solution would be to include schools from different areas of Malta, for generalization to be possible.

Participant selection

Even though participant selection criteria were explained to the teachers, some of the children chosen to partake in the study were in fact not eligible (e.g. foreign children who did speak Maltese). For this reason, the sample size was slightly diminished. The participants were chosen following teachers' reports on the children's academic performance. Teachers may have been subjective in their choice. The solution here would be to be more specific in participant selection criteria and to use a standardised assessment to clearly identify the children's level of ability and to refer to academic scores and performance when selecting participants.

Sample size

Since some parents did not give consent for their children to be included in the study, the sample size was reduced. In future studies the researcher should ask more participants to partake in the study.

Duration of testing

The total time it took the children to complete both Maltese and English tests was measured. In future studies it would be of better value to measure the duration of each language version of the test individually so as to compare the duration of the Maltese test to that of the English test. This would lead to a better comparison of test duration between languages.

Questionnaire

There could have been more questions added to the parents' questionnaire in order to gain more information about the children participating in the study. A questionnaire could have been given to the respective teachers. Questions could have tackled areas such as: language of instruction and teaching methods used e.g. whether analytic or synthetic phonics approach is used. More detailed questions for the parents to answer should be given as well as a questionnaire given to the class teachers. The questionnaire was not piloted in the current study, therefore one would pilot the questionnaire in future studies to get an indication as to whether any changes need to be done.

Maltese assessment

The lack of a standardised Maltese assessment to test children's Maltese word blending skills is a limitation. The assessment used had no reliability or validity measures. When conducting future research, the researcher should see whether any new standardised Maltese assessments are developed and work on validation and standardisation.

7 Recommendations from research

Recommendations drawn out from the data include:

1. Children should be encouraged to read in both languages as this supports better performance in word blending and reading.
2. Children are to be encouraged to read more frequently at home, where family members should include literacy activities in their own daily life, in order to stimulate the children to partake in such activities too.
3. Language stimulation for children in State, Church and Private schools should include both languages. The use of both Maltese and English should enrich the children's oral and written language skills.
4. All schools should ensure that children in the younger years have an adequate grasp of alphabet knowledge so that literacy skills would have a good basis to develop on.

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10 Conflicts of interest

The authors report no conflicts of interest.

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