Theory and Practice in Language Studies

Contents

Are Poor Readers Also Poor Spellers: An Investigation Into the Malay and English Languages Among Young Multilingual Malaysians

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Abstract—**Children with reading difficulties typically experience difficulties in both reading and spelling. Little is known about the use of spelling for identifying reading difficulties across languages that possess different orthographic depths, among multilingual readers. In the current study, we investigated whether multilingual Primary 1 poor readers were also poor spellers in two different orthographies, namely Malay and English. The sample comprised 866 Primary 1 Malaysian public school students from diverse backgrounds. A cut-off point of 25th percentile and below was used to operationalise students with deficits in word reading accuracy and spelling across both languages. A majority of the students who were poor readers in Malay and English, correspondingly, were also poor spellers in both languages. Spelling and word reading accuracy were highly correlated and considered as good indicators for identifying struggling young multilingual readers. These results indicate the importance of assessing spelling in both Malay and English for identifying reading difficulties, especially among young multilingual Malaysian learners. Implications for practice and future directions are addressed.**

Index Terms—**multilingual, reading difficulties, spelling, word reading accuracy**

I. INTRODUCTION

Adequate proficiency in reading crucially establishes the foundation for learning and excellence in school and at the workplace (McCloskey & Rapp, 2017). However, reading difficulties (RD) affect approximately 5% to 15% of students (American Psychiatric Association, 2013). Individuals with RD typically have difficulties in linking the letter to its respective sound during word decoding (reading) and difficulties in linking the sound to the letter(s) during encoding (spelling), which leads to word recognition problems (Hudson et al., 2007; Snowling et al., 2019). RD occurs in all types of written languages, which vary in orthographic depth (Borleffs et al., 2019). Children from minority ethnic groups and children whose first language is not the language of instruction may struggle in learning to read (J. A. C. Lee et al., 2020). Those who grow up in a multilingual context may face challenges as they learn additional languages and scripts that possess unrelated and distinctive characteristics to their first language, thus limiting the transferability of reading-related skills (Winskel, 2020).

In a post-colonial and multi-ethnic nation like Malaysia, learning to speak more than one language is a norm for the people. One may speak one's native language at home, and the national language at school as well as acquire at least a foreign language such as English, Korean, and French (Duka & Aziz, 2019). The heart of the issue of learning multiple languages lies in the worrisome prevalence rates of Malaysian children with RD. A recent empirical finding reported that 24% to 35% of Primary 1 students from Malaysian public schools were at risk of RD (J. A. C. Lee et al., 2020). Other studies have reported that 10% to 15% of Malaysian primary students were affected by dyslexia, which is comparable to the international prevalence rate of 10% to 15% (Yuzaidey et al., 2018). These estimated prevalence rates suggest that the early detection of RD in early primary schools is an important agenda.

Various reading assessment batteries have been introduced to identify early RD throughout the decades, but most of these batteries are usually administered to monolingual English-speaking learners (e.g., American Psychiatric Association, 2013; Good & Kaminski, 2002; Wagner et al., 1999). To date, there are limited reading assessment batteries that are used in RD identification in the Malaysian context where children are expected to learn both Malay and English simultaneously in government primary schools (Ministry of Education Malaysia, 2013). Given the

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emphasis on bilingual proficiency in both Malay and English, researchers have developed a reading assessment battery to determine the reading ability and difficulties in both languages among young children (J. A. C. Lee et al., 2020).

Although there is substantial support that reading and spelling are strongly related but dissociable skills (Kim & Petscher, 2023), there is limited empirical evidence on using spelling as a suitable approach to identify RD in the Malaysian multilingual context where Malay and English are learned at a young age. As spelling is one of the skills that can be conveniently assessed via children's work, determining the spelling errors made by children allows teachers and parents to have an instant initial identification of children who are at risk of RD. Drawn from a larger study (see J. A. C. Lee et al., 2020), the current study aimed to investigate whether poor readers are also poor spellers across two different orthographies, namely the Malay and English languages, among multilingual Primary 1 students. Specifically, the current study sought to answer two research questions:
1. Are poor readers in Malay also poor spellers in Malay?
2. Are poor readers in English also poor spellers in English?

A. Word-Level Reading Acquisition in the Early Grades and Reading Difficulties

The early reading acquisition process requires both phonological awareness and phonics, which are crucial for fostering word recognition skills (National Reading Panel, 2000). During reading, graphemes (symbols or letters in print) are decoded into phonemes (smallest unit of sounds) in alphabetic orthographies. Subsequently, after learning to decode rapidly, the goal of learning to read shifts to reading comprehension (Lohvansuu et al., 2021). In the Simple View of Reading, Gough and Tunmer (1986) suggested that both decoding and (listening) comprehension are necessary for reading success. The ability to decode is emphasised during early reading intervention because decoding exerts a larger influence on comprehension at lower grades where the text demand is still relatively simple compared to later grades (Vaughn et al., 2019). According to Nation (2019), decoding needs to be operationalised and measured as the fluency and expertise of a skilled reader. However, this operationalisation is inappropriate for children who are still learning to read, for whom word recognition and word reading are far from fluent and still lack expertise. Thus, word reading accuracy was used in the current study to measure the reading skill (decoding), where the appropriate developmental time-point is reflected, and the words used in reading are familiar to the children (Nation, 2019).

In learning to read, some children may encounter reading difficulties (RD), which are typically characterised by one's inability to decode and spell fluently (Snowling et al., 2019). RD is also operationalised as an unexpected disability in learning to read because the difficulties in reading and writing manifest despite adequate cognitive capacity and instructional or environmental opportunities, and are not prompted by impaired sensory, lack of motivation, emotional instabilities, or any other possible extraneous factors (Shaywitz & Shaywitz, 2020). A highly intelligent person may unexpectedly read at a below-average level even though he/she is expected to read well or above-average level if his/her education, intelligence, or professional status were taken into consideration.

B. Reading and Spelling Across Different Orthographic Depths

Reading and spelling are described as "two sides of a coin" because both rely on alphabetic knowledge and working memory that develop concurrently (Ehri, 2000, p. 19). The grapheme-phoneme correspondences between reading and spelling are closely related, involving the mapping of letters to sounds for reading and vice versa for spelling (van Witteloostuijn et al., 2021). As one of the earliest indicators of literacy skills (Ritchey et al., 2010), spelling serves as a window to observe the development of phonological knowledge and language orthography of children whose word-decoding skills are still rudimentary and the analysis of their reading performance reveals limited information (J. A. C. Lee & Al Otaiba, 2017; Stage & Wagner, 1992). Subsequently, early identification and early intervention relating to children's reading and spelling could be carried out with the help of spelling error analysis (J. A. C. Lee & Al Otaiba, 2017).

Nevertheless, despite being consistently correlated, it is possible for the grapheme-phoneme correspondences between reading and spelling to be affected by the orthographic depth of the spoken alphabetical languages and are therefore not identical skills (Kim & Petscher, 2023). A person's understanding of the sound structure of a language is greatly influenced by the variability in the orthographic depth of the language (Borleffs et al., 2019). Orthographic depth is positioned on a continuum from shallow to deep, depending on the grapheme-phoneme mapping consistency (Dixon et al., 2010). A shallow orthography (e.g., Malay, Finnish, and Serbo-Croatian) indicates a clear and predictable mapping between grapheme and phoneme (one-to-one grapheme-phoneme correspondence); a deep orthography (e.g., English, German, and French) demonstrates a more complex grapheme-phoneme correspondence where the same graphemes can represent different sounds across different contexts (Yap et al., 2010).

C. The Orthographic Depths of Malay and English

Malay and English possess distinct writing systems and orthographic depths (Aziz et al., 2020; Borleffs et al., 2019; L. W. Lee & Wheldall, 2011). The Malay language has a shallow orthography with simple syllable structures and transparent affixation (Yap et al., 2010). There are 34 graphemes in the Malay orthography, which comprise 26 letters of the alphabet, three diphthongs (*au*, *ai*, and *oi*) and five diagraphs (*gh*, *kh*, *ng*, *ny* and *sy*), except for the letter 'e' that carries two vowel sounds (/e/ in *ekor* [tail] and /ə/ in *emak* [mother]) (L. W. Lee & Wheldall, 2011). Malay words also have simple syllable structures, but different degrees of phonic structures (Aziz et al., 2020). For instance, *bapa* (father)

has both simple syllables and phonic structure (CV + CV); *perangai* (behaviour) has a simple syllable structure, but a more multifaceted phonic structure (CV + CV + CV with digraph and diphthong). Additionally, longer words with more complex syllable structures have CVC or VC syllables such as *mesyuarat* (meeting; CVC+CV+V+CVC) and *berlian* (diamond; CVC+CV+VC). There are also loanwords with phonic structures like CCV such as *graf* (graph) and *teleskop* (telescope).

Conversely, English is a deep orthography with a complex grapheme-phoneme correspondence (Borleffs et al., 2019; Larsen et al., 2020). The English orthography has evolved into a highly inconsistent writing system due to the changes in pronunciation, affected by various features such as derivations and inflections, the addition of suffixes, and changes in stress due to affixation (Frost, 2012). As a result, some graphemes can represent different phonemes during reading (i.e., 'oo' is pronounced as /ʊ/ in 'nook,' but /u:/ in 'noon'); while some phonemes can be represented by different graphemes during spelling, for example, /i/ in 'see' and 'sea' (Larsen et al., 2020).

Overall, Malay is a more consistent language compared to English due to its close-to-perfect grapheme-phoneme correspondences (Ng & Yeo, 2013; Yap et al., 2010). A deep orthography like English often hinders accurate pronunciation and subsequently correct spelling, unless the word is registered in the reader's vocabulary (Borleffs et al., 2019).

D. Bilingual Proficiency in Malay and English in Malaysia

In a multicultural country like Malaysia, Malay (the Standard Malay, known as *Bahasa Melayu*) and English are the two main spoken and written languages besides Mandarin, Tamil, and other local dialects, making Malaysia a multilingual nation (J. A. C. Lee et al., 2020). The aspiration for Malaysia is for every child to be proficient in both Malay and English at the end of secondary school education (Ministry of Education Malaysia, 2013). Hence, both languages are taught in school. For instance, a student's first language may be Mandarin, but he/she would simultaneously receive formal instruction in Malay (the national language) and English in school.

Given the emphasis on bilingual proficiency among Malaysian students in both Malay and English, examining both languages simultaneously in this study is an important research focus. To date, most studies on literacy development and specific learning difficulties among monolingual speakers (e.g., J. A. C. Lee & Al Otaiba, 2017; Lonigan et al., 2013; Shaywitz & Shaywitz, 2020; Snowling et al., 2019). However, there has been a surge of interest in reading acquisition and language development in Malay and English respectively, as well as other languages among young multilingual learners (e.g., Jamaludin et al., 2015; Lim et al., 2015; L. W. Lee et al., 2019; L. W. Lee & Wheldall, 2011; Wang & Lee, 2020; Winskel, 2020).

II. METHOD

A. Participants

The sample, which comprised 866 Primary 1 students (47% females, 53% males; age range = 6.61-7.82, *M* age = 7.13, *SD* = 0.29) was drawn from a larger study on the development of an early reading assessment battery for multilingual learners in the Malay language (J. A. C. Lee et al., 2020; also see J. A. C. Lee, 2021) for the norms of the Malay and English assessment). The participants were randomly selected from 11 public primary schools in Kuching, Sarawak, Malaysia. There were 67.1% Malays, 13.9% Ibans, 8.3% Bidayuhs, 3.1% Chinese, and 5.9% other indigenous peoples of Sarawak. Missing data was 1.7%. Only children whose parents provided informed consent participated in the study.

In the larger study, data on the first, second, and third languages used by the participants to understand their multilingual profiles were collected. The most spoken first language was Sarawak Malay (*n* = 563) of which Malay participants were the major users. Sarawak Malay is a dominant local dialect that serves as Sarawak's major lingua franca (McLellan, 2014). The first languages of other participants comprised Iban (*n* = 119), Malay language (*n* = 69), Bidayuh (*n* = 51), and Chinese (*n* = 18) (J. A. C Lee et al., 2020). Besides that, the most spoken second language was the Malay language (*n* = 748), followed by English (*n* = 81) and Sarawak Malay (*n* = 15). Lastly, the most widely spoken third language was English (*n* = 745), followed by the Malay language (*n* = 34) and Sarawak Malay (*n* = 15).

B. Measures

The students were individually assessed at the school premises during the second half of the school year in Primary 1 (J. A. C. Lee et al., 2020). Students' reading and spelling skills were assessed using word reading accuracy (WRA) and spelling tests, respectively.

(a). Spelling

The spelling proficiency for each word was measured using a 7-point scale, which is the phonological coding (PC) system developed by Tangel and Blachman (1992); see also J. A. C. Lee and Al Otaiba (2017) and Tang et al. (2018). The PC system was used in the spelling error coding procedure due to its high correlation with phonological awareness abilities and high sensitivity toward learners' spelling development over time (Ritchey et al., 2010; Tang et al., 2018).

There was a list of 10 words, each in Malay and English. The Malay words were selected from the Primary 1 Malay textbook (Abdul Hadi et al., 2010, 2012): *susu* (milk), *gula* (sugar), *kerusi* (chair), *epal* (apple), *penyu* (turtle), *Isnin*

(Monday), *menyiram* (watering), *terjatuh* (fell), *berhati*-hati (be careful), and *buah-buahan* (fruits); whereas the English words were selected from the Primary 1 English textbook (Zainuddin & Ahamad, 2011): *pretty*, *sick*, *thick*, *your*, *shark*, *shoulder*, *elephant*, *name*, *them*, and *want*. The spelling test was administered before the WRA test because the same words were used in both measures. The spelling outcomes were then coded using the PC system. PC determines students' phonological representations in spelling. The score for each word ranges between 0 and 6. Table 1 shows the description of PC rubrics, with an example each for Malay and English words (see also Tang et al., 2018).

TABLE 1
DESCRIPTION OF PHONOLOGICAL CODING RUBRICS

Description	Malay word: <terjatuh>	English word: <pretty>
0 = No relation between the letters or random strings of letters	<n>	<F>
1 = A phonologically related letter (initial sound or another sound in the word)	<pepato>	<Ros>
2 = Initial sound represented by the correct letter, with and without any other letters.	<Te>	<Ph>
3 = Initial sound spelt correctly and there are more than one phonemes spelt correctly.	<trJtoh>	<periti>
4 = All phonemes are represented with phonetically related letters	<teHatul>	<preti>
5 = All phonemes are represented with conventional letters	<terJato>	<prety>
6 = Correct spelling	<terjatuh>	<pretty>

(b). Word Reading Accuracy

The word reading accuracy (WRA) test assessed the students' ability to read 10 single real words with no time limit. In the respective languages, students scored 1 for each word read correctly and 0 for words read incorrectly.

C. Validity and Reliability

The correlation coefficients between WRA and spelling tests for Malay and English were significant, with *r* values of .90 and .71, respectively. The strongest correlation was found between Malay WRA and Malay spelling, $r = .90$. Furthermore, by using Kuder-Richardson Formula 20, the Cronbach's Alpha value exceeded 0.9 between the interraters for all the spelling items in Malay and English. The test-retest reliability was high in both Malay WRA ($r = .98$; J. A. C. Lee et al., 2020) and English WRA ($r = .86$).

D. Operationalisation of Deficits in Reading and Spelling

A standard cut-off point was introduced to operationalise deficits in reading skills, which enabled efficient screening of participants who fulfilled the at-risk criteria. Numerous studies have applied a cut-off point of below the 25th percentile to determine the presence of deficits across measures (Germano et al., 2017; J. A. C. Lee et al., 2020; Macaruso & Rodman, 2011; Snellings et al., 2009; Stanovich & Siegel, 1994). The terms "good" and "poor" were used for categorisation (Catts et al., 2003; J. A. C. Lee & Al Otaiba, 2017; Russak & Kahn-Horwitz, 2015). Students who were categorised as at risk of difficulties in reading were coded as "0" (poor) and those who were not at-risk were coded as "1" (good).

III. RESULTS

A. Descriptive Statistics and Bivariate Correlations

All statistical analyses were run on SPSS Statistics 26. The means and standard deviations of all the measures are shown in Table 2. The values of skewness and kurtosis signify that the measures were all normally distributed. The Pearson correlations of all measures are presented in Table 3. All the correlations were significant and moderately to highly correlated, $r = .65$ to $r = .90$, $p < .01$. The highest correlation was found between Malay WRA and Malay spelling ($r = .90$), whereas the lowest correlation was found between Malay and English WRA ($r = .65$).

TABLE 2
DESCRIPTION STATISTICS OF THE TOTAL DATASET ($N = 866$)

Measures	Mean (*SD*)	Minimum – Maximum	Skewness (SE)	Kurtosis (SE)
Malay WRA[a]	7.34 (3.61)	0.00 – 10.00	-1.0 (.08)	-.64 (.17)
Malay spelling[b]	40.83 (18.77)	0.00 – 60.00	-.85 (.08)	-.63 (.17)
English WRA[a]	3.69 (3.68)	0.00 – 10.00	.51 (.08)	-1.25 (.17)
English spelling[c]	24.60 (16.44)	0.00 – 60.00	-.10 (.08)	-1.15 (.17)

Note. As a result of missing data, [a]$n = 865$; [b]$n = 864$; [c]$n = 862$; WRA = word reading accuracy; *SD* = standard deviation; SE = standard error.

TABLE 3
CORRELATIONS OF MEASURES ($N = 866$)

Measures	Malay WRA	Malay spelling	English WRA	English spelling
Malay WRA	1			
Malay spelling	.90[**]	1		
English WRA	.65[**]	.70[**]	1	
English spelling	.71[**]	.80[**]	.76[**]	1

Note. WRA = word reading accuracy.
**. Correlation is significant at the 0.01 level (2-tailed).

B. Categorisation of Students With Poor Reading and Spelling Skills

The students were classified according to the cut-off point at the 25th percentile for the at-risk criterion (see Table 4). Based on this criterion, there were approximately 25% to 34% students who were categorised as having poor performance in reading and spelling across both languages. This study only focused on students who were at the 25th percentile and below in Malay WRA (scores ranging from 0 to 4) and English WRA (score is 0). On the other hand, the scores at the 25th percentile for Malay spelling (scores ranging from 0 to 27) and English spelling (scores ranging from 0 to 9) of the overall population ($N = 866$) were used to determine the outcome of poor spelling performance among students who are poor in Malay WRA ($n = 223$) and English WRA ($n = 292$) respectively. Students who were poor in Malay spelling ($n = 220$) and English spelling ($n = 227$) were excluded from the inferential analysis.

TABLE 4
POOR AND GOOD OUTCOMES BASED ON THE 25TH PERCENTILE CUT-OFF CRITERION

Measures	Poor		Good		Scores at the 25th percentile
	n	%	*n*	%	
Malay WRA[a]	223	25.8	642	74.2	4
Malay spelling[b]	220	25.5	644	74.5	27
English WRA[a]	292	33.8	573	66.2	0
English spelling[c]	227	26.3	635	73.7	9

Note. As a result of missing data, [a]$n = 865$; [b]$n = 864$; [c]$n = 862$; WRA = word reading accuracy;
Poor = 25th percentile and below; Good = above the 25th percentile.

C. Inferential Analysis

For the inferential analysis crosstabulations with McNemar's test were conducted because the scores for WRA and spelling tests for Malay and English had been recoded into dichotomous values based on the scores at the 25th percentile to categorise poor and good readers/spellers (see Table 4). McNemar's test is more appropriate for analysing paired dichotomous data compared to chi-square (Pembury Smith & Ruxton, 2020) and it tests the significance of change in related proportions (Adedokun & Burgess, 2012).

(a). Are Poor Readers in Malay Also Poor Spellers in Malay?

An asymptotic McNemar's test determined that there was no statistically significant difference between Malay WRA and Malay spelling, $p = .81$. There were 83.8% of poor readers in Malay were also poor spellers in Malay; a smaller percentage of poor readers (16.2%) were good spellers. The following are the proportions of poor readers who could not read and spell the words (scored "0" in WRA and PC): *buah-buahan* (67.9%), *berhati-hati* (66.1%), *menyiram* (65.6%), *Isnin* (56.1%), *terjatuh* (62.9%), *penyu* (52.9%), *gula* (38.5%), *epal* (36.2%), *kerusi* (35.3%), and *susu* (12.2%; see Figure 1).

Although categorised as poor readers, there was a small percentage of poor readers in Malay who could read the Malay words but could not spell them (scored "1" in WRA but "0" in PC). The proportions are as follows: *kerusi* (6.8%), *gula* (5%), *susu* (4.5%), *epal* (3.6%), *penyu* (2.3%), *Isnin* (1.8%), *terjatuh* (0.5%), and *buah-buahan* (0.5%; see Figure 2). There were also poor readers in Malay who could read and spell Malay words correctly. The words that were read and spelt correctly (scored "1" in WRA and "6" in PC) by the poor readers were *susu* (53.4%), *gula* (9.5%) and *kerusi* (4.5%) *Isnin* (2.7%), *epal* (0.9%), and *penyu* (0.5%; see Figure 2). See Table 5 for the examples of Malay spelling errors of poor readers in Malay.
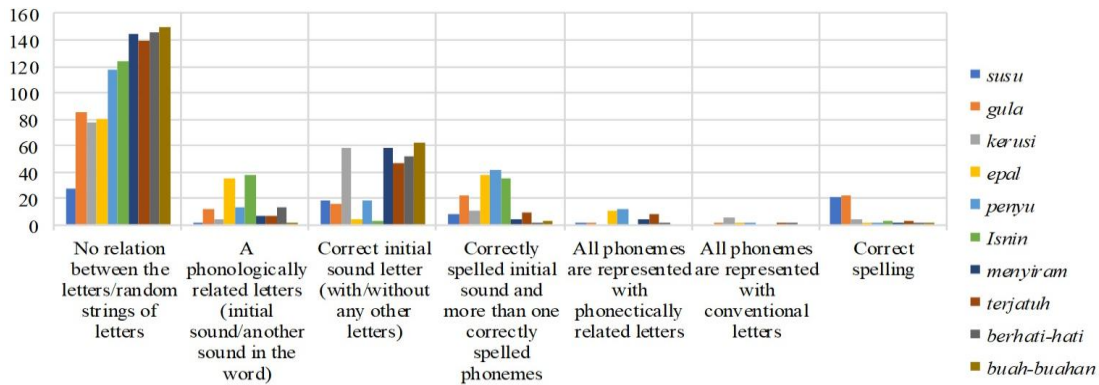
Figure 1. Spelling Performance Poor Readers in Malay Who Could Not Read the Malay Words
Note. As a result of missing data, *n* = 221.
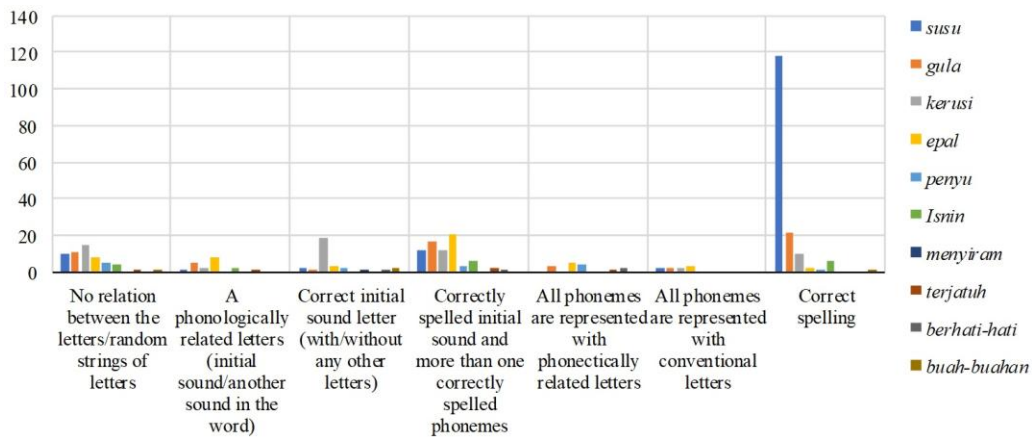
Figure 2. Spelling Performance of Poor Readers in Malay Who Could Read the Malay Words
Note. As a result of missing data, *n* = 221.

TABLE 5
EXAMPLES OF MALAY SPELLING ERRORS OF POOR READERS IN MALAY

Phonological coding descriptions	Examples									
	susu	*gula*	*kerusi*	*epal*	*penyu*	*Isnin*	*terjatuh*	*menyiram*	*berhati-hati*	*buah-buahan*
No relation between the letters or random strings of letters.	*TmT, p, J*	*P*	*ecghe, Aa*	*qla, BuBu*	*Aasw, baa*	*A, w*	*n, fam*	*baik, B*	*A, d*	*up, F, susu*
A phonologically related letter (initial sound or another sound in the word).	*Sata*	*k, jg, uknu*	*si, s, kuSi*	*A, Aha, pp*	*ua, uun, bune*	*S, SaSa, Selsn,*	*pepato*	*Ber, rila, r, N*	*B, at, mati, Pehaha,*	*uaua, n*
Initial sound represented by the correct letter, with and without any other letters.	*say, saya, sata*	*g, gia, gak, gigi*	*k, kuci, kere*	*e, ep, eak*	*p, pun, pg*	*Igaram, ia*	*t, Te, J, tit, tai, jatu*	*m, mene, Neria*	*B, berti berti, hati*	*baba, buha buha.*
Initial sound spelt correctly and there are more than one phonemes spelt correctly.	*usu, sus, sas, usas*	*ula, guia, gala, gual, Gla*	*kernsi, Keuc, kurusi*	*epa, eppl, Aple, Epla, pal*	*Pe, Panu, peru,*	*Isnis, sinin, seni, Isnii,*	*TeGaTo, trJtoh, tejtuh*	*Menira, merirun, melilan*	*behati-behati, bett hati-hata*	*duah-duah han, buha-buhahan*
All phonemes are represented with phonetically related letters.	*suss u*	*guna, gura*	-	*apel, apal, eapaL*	*penu, pegu, peneu*	-	*teHatul, tejatos*	*meniram, meneram*	*behati hati*	-
All phonemes are represented with conventional letters.	-	*gola*	*Keresi, kerasi*	*epel*	*penyi*	-	*terJato, terjatoh*	-	*Berhati hati*	-

(b). Are Poor Readers in English Also Poor Spellers in English?

An asymptotic McNemar's test determined that there was a statistically significant difference between English WRA and English spelling, *p* <.01. All the poor readers in English could not read the English words as they all scored "0" in WRA at the 25th percentile. There were 57.7% of poor readers in English were also poor spellers in English; a slightly smaller percentage of poor readers (42.3%) were good spellers. Figure 3 illustrates the spelling performance of poor readers in English. The following are the proportions of poor readers who could not spell the words (scored "0" in PC): *want* (76.2%), *shoulder* (70.1%), *shark* (65.3%), *name* (65.3%), *your* (63.2%), *them* (60.8%), *elephant* (60.5%), *thick* (56.4%), *pretty* (50.9%), and *sick* (46.4%). Notably, a small percentage of poor readers in English could spell words like *sick* (1%), *name* (1%), *your* (0.7%), and *pretty* (0.3%). See Table 6 for the examples of English spelling errors of poor readers in English.
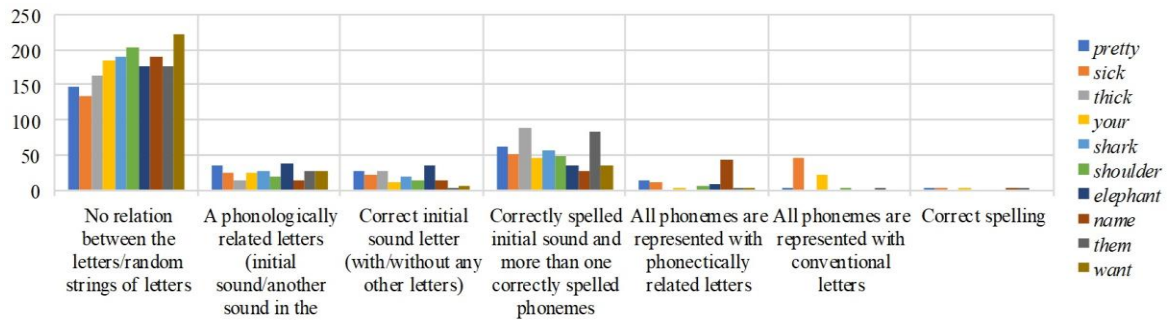

Figure 3. Spelling Performance of Poor Readers in English
Note. As a result of missing data, *n* = 291.

TABLE 6
EXAMPLES OF ENGLISH SPELLING ERRORS OF POOR READERS IN ENGLISH

Phonological coding descriptions	Examples									
	pretty	*sick*	*thick*	*your*	*shark*	*shoulder*	*elephant*	*name*	*them*	*want*
No relation between the letters or random strings of letters.	*F*	*db*	*lb, Mal*	*r, gah*	*Fi, na*	*b, Kr,*	*ka*	*Kurn, tul, ai*	*bi*	*i, in, una*
A phonologically related letter (initial sound or another sound in the word).	*t, Ros*	*c, Knus*	*ke, wat*	*ro, O, ran, u*	*r, ca, h, aa, c*	*ros, L, O*	*l, al*	*m*	*maia, D, bm*	*one, tan,*
Initial sound represented by the correct letter, with and without any other letters.	*p, Ph*	*s, ss, sat*	*t, tb, tn*	*Ya, y*	*s, sot, smis*	*Sa, SAduh*	*ala, e, aley*	*n, nc*	*tiaa*	*w, way*
Initial sound spelt correctly and there are more than one phonemes spelt correctly.	*pit, periti, perti*	*Sit, syx, sis*	*tik, titi, tip, tig*	*yo, yous, jor, yr, yay*	*sat, Shyk, sar, shek, Sharr*	*holde, sobo, hoho*	*aLifen, LaliFe*	*nim, nin, nat*	*dem, Dam, den, tam*	*wan, wat, wane*
All phonemes are represented with phonetically related letters.	*peti, piti, preti*	*cik, seKe*		*yaar, uor*		*SoDer, Shodr,*	*EliFen, leafan*	*nam, nem, mene*	*Ytnim K*	*weant*
All phonemes are represented with conventional letters.	*prety, priti, pritty*	*six, sik*		*yor, you, your, yoir*		*SholDer*				

IV. DISCUSSION

The current study aimed to investigate whether poor readers are also poor spellers across two different orthographies, namely the Malay and English languages, among multilingual Primary 1 struggling readers.

Our first and second research questions addressed the performance of poor readers in spelling in Malay and English, respectively. The results show that a majority of the poor readers in Malay/English also performed poorly in spelling.

Most of the poor readers in Malay could not read/spell hyphened doubled-word with diphthong 'ua' and suffix 'an' such as *buah-buahan*. Students who spelt it as <buha buha> or <bubu> might have captured some phonemes but did not blend the diphthong, thus could not produce a phonetically related word. Similarly, students would spell *menyiram* as <melilan> or <meniram>. They were unable to capture the base word – *siram*, and the changes in spelling when prefixes were added.

On the other hand, a high percentage of poor readers in English could not read/spell high-frequency words such as *want*. Some spelt it as <wan>, which was phonetically related and would be more acceptable in comparison to <one>, which was orthographically incorrect. Most English words used in this study are either with diagraphs or diphthongs, and students had a hard time in reading or spelling these words out. For instance, they were unable to read/spell multisyllabic words like *shoulder* (with diphthong 'ou') and *elephant* (with digraph 'ph'). Some students spelt them as <holde>, <soder> or <sholder>; <alifen> or <elifen>. The partially correct spellings (orthographically inappropriate but phonologically acceptable, Samuddin & Krish, 2018) may indicate a lack of awareness in both languages, therefore demanding explicit and individualised spelling instruction (J. A. C. Lee & Al Otaiba, 2017).

It is also worth mentioning that a small percentage of poor readers in this study were relatively good spellers. This could be due to high frequency and easily memorised words that they might have used at home or in school (e.g., *your*, *sick*, *susu*, and *gula*). This suggests that reading and spelling are not always a one-to-one grapheme-phoneme correspondence, as opposed to Ehri's (2000) "two sides of a coin". Even though most of the research that examines "two sides of a coin" was in the English-speaking context, it seems that Ehri's theory is more applicable towards transparent orthography (i.e., Malay) than deep orthography (i.e., English). Hence, some underlying factors may be present in this matter and warrant a future investigation.

A previous study that examined the English orthographic depth among primary school Malay learners revealed that they were prone to orthographic errors in English, specifically consonant and vowel errors, primarily due to the complexity of English orthography and the influence of the first language and secondarily the inadequate exposure to print (Samuddin & Krish, 2018). However, despite its shallow orthography, when Malay words become multisyllabic, poor readers may still be unable to recognise syllable structures accurately (L. W. Lee & Wheldall, 2011). Even so, since most students in this study spoke Sarawak Malay as their first language, it was apparent that their reading/spelling abilities might be greatly influenced by their first language.

Our findings suggest that students performed better in Malay compared to English because the reading and spelling scores in Malay were higher than that in English at the 25th percentile (see Table 3). Besides, the high correlation between WRA and spelling in Malay also indicates that there is a high chance that students who have poor/good spelling skills in Malay also have poor/good reading skills in Malay. Therefore, Malay might be a more reliable medium to indicate the presence of reading deficits in the context of multilingual learners whose primary language is not English but Malay or the Malay dialect.

V. Conclusion

In conclusion, research on reading assessment in a multilingual context, especially in Malaysia is scarce. Thus, the present study offers valuable insights regarding the usage of spelling as an early indicator to identify at-risk struggling readers in a multilingual setting as well as the performance of poor readers/spellers across different orthographies. With the mounting prevalence rates of RD among Malaysian students, it is uncertain if the aspiration of being bilingually proficient in the Malaysian Education Blueprint (2013-2025) can be accomplished by 2025.

A. Implications for Policy and Practice

Early identification of RD is important for appropriate early interventions to take place. The findings bear crucial implications on how spelling can be used to detect RD in Malay and English among young multilingual learners and how orthographic depths can influence reading and spelling performances. Spelling as a good indicator for RD in Malay and English is evident. Nonetheless, our findings suggest that not every poor reader is a poor speller, and not every poor speller is a poor reader, irrespective of the language assessed. The responses in the assessments may also indicate students' inadequate exposure to print in both languages, thus there is an urgency to foster explicit and systematic classroom instructions, which are promising for improving foundational reading skills (Al Otaiba et al., 2021). Integrated spelling can also be implemented to improve systematic phonics or the letter-sound associations of children at risk of early RD (Møller et al., 2021). It is therefore important for teachers to fully understand the linguistics component of the language taught so that the most suitable literacy pedagogy can be practised in classrooms.

Additionally, teachers, parents and practitioners should be proficient in the knowledge of RD and its assessments, so that appropriate early intervention can take place and suitable instructions can be specifically designed for children with RD. The escalating prevalence rates of RD in mainstream Malaysian schools also signal a need for inclusive practice in Malaysian classrooms. In general, teachers should acquire the knowledge of special needs to enable them to meet the needs of students with any special needs in inclusive classrooms at the optimum level (Zegeye, 2022).

B. Limitations and Recommendations

Several limitations of the current study are noteworthy. First, our samples cannot be generalised to all multilingual Primary 1 students in Malaysia because there was a high number of Malay students in the public schools in the larger study, which resulted in an oversampling of Malay-speaking students. The multilingual profiles and literacy development of the participants could have been more comprehensive if the impact of different first languages had been investigated. Second, the reading process was not video-recorded. Therefore, any presence of partial accuracy could not be observed. Third, the dichotomous rubrics in WRA did not permit partial correctness. Fourth, the current study only used the 25th percentile as the cut-off criterion. A wider range of performance across reading and spelling measures could have been observed if different percentile ranks were incorporated. Lastly, working memory assessments such as digit and visual span tests (Cabbage et al., 2017) that were not included in the current study should be investigated for a comprehensive understanding of the cognitive profile of children with RD. Other fundamental components in literacy such as phonological awareness and rapid automatised naming, which are powerful predictors of reading achievement (Vander Stappen & Van Reybroeck, 2018), should also be incorporated for better insights into the literacy profiles of the students.

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