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# Examining cognitive, motivational and environmental factors that relate to reading performance for children with English as a first or additional language.

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## ABSTRACT



Conflicting findings exist in the literature regarding the reading skills of children learning English as an additional language (EAL). Moreover, little research has considered how related literacy skills, motivation, and environmental factors may differ between EAL children and monolinguals, and how these factors may contribute to reading outcomes. The present study compared 36 children with EAL and 31 monolingual children (mean age 9 years) on measures of reading, literacy-related abilities (phonology, vocabulary), motivation and environmental factors. No group differences were found in word reading and fluency, phonological awareness, expressive vocabulary, reading motivation, time spent reading with a parent and independently, and parental attitudes to reading. However, maternal education was lower in the EAL group and these children had more children's books at home than their monolingual peers. The findings confirm the importance of phonological awareness and expressive vocabulary for reading performance in both groups, as well as suggesting that maternal education may indirectly relate to EAL children's reading abilities through their attitudes towards reading. In contrast, maternal education related to the books in the home for monolingual children. Implications and suggestions for future research are discussed.

## KEYWORDS

Reading; English as an additional language; motivation; home literacy environment

## Introduction

In recent years, increased migration has led to more families raising children exposed to two or more languages: the parents' heritage language and the dominant language of the country they reside in (Office for National Statistics 2016). Statistics reported by the Department for Education (DfE) in 2019 in the United Kingdom (UK) demonstrate that approximately 1 in 5 primary school children in the UK have English as an additional language (EAL). EAL is a broad term used to describe children who are receiving education in English (the country's majority language), which counts as a different language from their home one (Murphy, Kyriacou and Menon 2013). A bilingual advantage, when compared to monolingual individuals, has been demonstrated by researchers that have studied executive (cognitive) skills in children and adults (Bialystok 2009; Calvo and Bialystok 2014). Researchers have also started to consider whether this advantage holds true for specific academic

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outcomes (e.g. reading). Given the complexities of learning an opaque orthography such as English, it is conceivable that EAL children may present with literacy difficulties in comparison to their peers. The existing research to date shows a mixed picture.

Strand, Malmberg and Hall (2015) found an association between the use of English as an additional language and lower performance in reading, writing and math in England at age 5. Notably, the largest difference in achievement between monolinguals and EAL children at the end of primary school (10-11-year olds) was in reading. However, this gap in achievement was reported to reduce steadily over time and almost disappeared by age 16. Government statistics further identify lower reading attainment for EAL children in relation to their monolingual peers at the end of primary school (DfE 2018). In contrast, research in the United States (US) reported no differences between word identification for monolinguals and EAL children in fourth grade (9-10-year olds) (Lesaux, Rupp, and Siegel 2007). Moreover, Bowyer-Crane et al. (2017) found that EAL children (4 and 6 years olds) from UK primary schools in fact demonstrated better word reading skills than their monolingual peers and no differences were observed between the two groups for reading comprehension. Comparisons across samples are restricted given the differing ages and contexts, yet further exploration of skills and factors that contribute to reading abilities of EAL children is clearly warranted.

Gough and Tunmer (1986) proposed the Simple View of Reading (SVR), which identifies reading as a product of decoding and linguistic comprehension. A large body of research identifies letter knowledge and phonological awareness as critical for reading development (Adams 1990; Durgunoglu and Oney 1999; Hatcher, Hulme and Ellis 1994; Muter et al. 1997; National Reading Panel [NRP] 2000) and a reliable predictor of decoding and fluency in a child's first language (Elhassan, Crewther and Bavin 2017; Geva, Yaghoub-Zadeh and Schuster 2000; Gottardo 2002; Muter and Diethelm 2001). Reading fluency – the ability to recognise words quickly and accurately – is also strongly correlated with word reading and reading comprehension (Adams 1990; Baker et al. 2008; Cutting and Scarborough 2006; Fuchs et al. 2001; Wanzek et al. 2010). Moreover, oral language skills, specifically vocabulary, support the development of reading skills: moderate correlations have been reported between expressive vocabulary and decoding (Sénéchal, Oullette and Rodney 2006) and vocabulary advancing reading comprehension (Ricketts, Nation and Bishop 2007).

Comparisons between monolinguals and EAL children in these underpinning skills for reading have been considered and yield mixed findings. Indeed, similarities have been found between monolinguals and EAL beginning readers' performance on tasks assessing phonological awareness (Canadian samples: Chiappe and Siegel 2006; Geva and Zadeh 2006). However, other studies have demonstrated that children using more than one language have a phonological processing advantage compared to their monolingual peers (Kang 2012; Marinova-Todd, Zhao and Bernhardt 2010; McBride-Chang and Kail 2002); while a review by Melby-Lervag and Lervag (2014) identified that such an advantage is not always reported and when it is, it may in fact relate more so to the similarities between the two languages being learned. Conflicting findings are also observed in studies investigating vocabulary. Hutchinson et al. (2003) examined UK school-aged EAL and monolingual children on cognitive-linguistic variables and found that EAL children scored lower in expressive and receptive vocabulary and reading comprehension in comparison to their monolingual peers. The difference between the two groups was of approximately two years developmental lag. Bowyer-Crane et al. (2017) also report that monolinguals in their study outperformed EAL children on expressive vocabulary tasks, but no groups differences were observed in reading comprehension. A number of studies suggest that the reading skills of EAL children are compromised by their weaker oral language skills (see Lesaux et al. 2008). However, Babayigit (2015) found no difference in the association between oral language (including receptive vocabulary) and reading comprehension for monolinguals and EAL children.

To date, the focus in the literature has remained mostly on interrelationships between reading and related skills when comparing monolinguals and EAL children and it is apparent that the nature and extent of the differences in such skills varies across studies. Where there are differences,

a number of factors may to some extent explain the conflicting findings. As an extension of the SVR, Aaron et al. (2008) proposed the Component Model of Reading (CMR). According to the CMR, reading can be influenced through three domains: cognitive (e.g. word recognition, cognition), psychological (e.g. motivation, expectations) and ecological (e.g. home environment, parental involvement). The psychological and ecological domains have been studied widely in monolingual readers. Unsurprisingly, studies have found that children who are motivated (psychological domain) or interested in reading are more likely to have higher levels of reading achievement (Lepola et al. 2005; Park 2011; Wigfield et al. 1996; Wigfield et al. 1997); and it is intrinsic reading motivation (i.e. interest in a topic) that is seen to have a positive effect on reading competence compared to the small or negative influence of extrinsic motivation (i.e. outcomes of reading such as receiving good grades) (see Schiefele et al. 2012 for a review). In line with the ecological domain, the existence of a strong relationship between reading achievement and socio-economic status (SES) has been consistently reported (e.g. Sirin 2005 for a review). Parental education is considered as a proxy for SES and has been associated with children's reading abilities (Arnold et al. 2008; Magnuson 2007; van Bergen et al. 2017). Moreover, how often a parent reads with their child (Saracho 2017; Senechal and LeFevre 2002), the availability of books in the home (Chiu, McBride-Chang and Lin 2012; Park 2008), and parents' attitudes towards reading directly and indirectly affect children's reading outcomes (Baker 2003; Phillips and Lonigan 2009; Sénéchal and Young 2008). Further, an environment rich in books encourages children's reading motivation (Morrow 1983) and the number of books at home has been shown to significantly predict children's intrinsic reading motivation (Zhou and Salili 2008).

Although there are abundant references in the literature to how motivation and family variables influence reading performance, such associations have, to the best of our knowledge, barely been investigated in the context of comparing EAL and monolingual children. Interestingly, a small-scale (N = 6) interview study revealed that, for EAL children, perceived language competence has been shown to relate to their motivation to read, with more confident English speakers reading more often (Protacio 2012). Further research is required to consider the interactions between the cognitive, psychological and ecological domains of reading for EAL children.

Reading motivation is understood as the relatively enduring readiness of a person to initiate reading activities (Schiefele et al. 2012; Wigfield and Guthrie 1997).

## The present study

Mixed findings exist for the reading skills of EAL children and the majority of research has considered only the cognitive skills and how they relate to reading performance. Based on the multi-layered factors highlighted in the CMR, the aims of the present study were two-fold: (1) to provide a comprehensive analysis of how the reading abilities of upper primary-aged EAL children relate to underpinning cognitive skills, motivation and environmental factors, and (2) to determine whether this differs to patterns observed in their monolingual peers. The reading outcomes variables used in the present study were word reading and fluency, an approach also taken by van Bergen et al. (2017) and with the same reasoning that proficient decoding skills are needed for comprehension and a difficulty with decoding is primarily how a reading difficulty (dyslexia) is typically identified. This exploratory study sought to determine if a random sample of EAL children were considered to present with reading difficulties in comparison to their monolingual peers. An assessment of cognitive/literacy-related skills included measuring phonological awareness and expressive vocabulary to add to the existing literature. Further, given that recent findings highlight how English language proficiency at school entry has been shown to be predictive of later academic and psychosocial outcomes for EAL children (Whiteside, Gooch, and Norbury 2017), the measure of expressive vocabulary was deemed necessary to determine whether it may act as a risk or protective factor for the present sample. Intrinsic motivation aligned with the psychological domain of the CMR and was assessed through a modified version of the Motivations for

Reading Questionnaire (Wigfield and Guthrie 1997; detailed in Methods section below), while parental factors (education/SES and parents/carers attitudes to reading) and the home literacy environment were also assessed through questionnaires.

## Methods

### Participants

Seventy-four children (aged 7-10) were initially recruited from mainstream primary schools in London, UK to form the two groups: children that only spoke English (monolinguals) and those that had EAL. Parents/carers identified their child's language status and ethnicity in an initial screening questionnaire, as well as listing both parents' (where possible) level of education. A composite score of parental education was calculated by adding the individual scores of each parent's levels of education and dividing them by two. In cases where one parents' data was missing, the single value was used on its own. Parental education is often used as a proxy for SES (van Bergen et al. 2017) and, therefore, this was followed in the present study.

Exclusion criteria were applied on the basis of nonverbal cognitive abilities, using a matrices subtest, and length of time exposed to the English language. Children who performed poorly ( $M < 35$ ) on the Matrices task of the British Abilities Scales-III (BAS-III, Elliot and Smith 2013) and children who had been recently exposed to English (e.g. one year) were excluded from the sample, resulting in the final sample comprising 67 children (35 boys and 32 girls). Thirty-one children (51.6% boys; mean age, 9.1 years,  $SD = .72$ ) spoke only English in their home environment, therefore were classified as monolingual, while thirty-six children (52.7% boys; mean age, 9.3 years,  $SD = .94$ ) spoke a language different from English at home and were classified as EAL. Table 1 reports group characteristics. Monolingual children were mostly of White/White British (38.7%) and Black/African/Caribbean/Black British (29%) background, while parents of EAL children mostly reported an Asian/Asian British ethnic background (61.1%). Most EAL children spoke Bengali at home (41.7%), followed by Arabic (22.2%) as the second most spoken language.

### Measures

*Nonverbal cognitive ability.* All children completed the Matrices Reasoning task from the British Ability Scales, 3rd edition (BAS-III; Elliot and Smith 2013). This was used as a proxy for IQ. Here, children were presented with a set of pictures and asked to identify the missing figure (out of six options) that would complete the pattern. Raw scores were converted to  $t$ -scores ( $M = 50$ ;  $SD = 10$ ). Inclusion in this study required a  $t$ -score of 35 (1.5 SD) and above, demonstrating age-appropriate skills.

**Table 1.** Participants' background information.

|                                       | EAL ( $n = 36$ ) | Monolingual ( $n = 31$ ) |
|---------------------------------------|------------------|--------------------------|
| Gender (m; f)                         | 19; 17           | 16; 15                   |
| Ethnicity                             |                  |                          |
| White/White British                   | 5 (13.9%)        | 12 (38.7%)               |
| Black/African/Caribbean/Black British | 6 (16.7%)        | 9 (29%)                  |
| Asian/ Asian British                  | 22 (61.1%)       | 7 (22.6%)                |
| Mixed/Multiple Ethnic Group           | 3 (8.3%)         | 3 (9.68%)                |
| Home Language                         |                  |                          |
| English                               | -                | 31 (100%)                |
| Bengali                               | 15 (41.7%)       | -                        |
| Arabic                                | 8 (22.2%)        | -                        |
| Somali                                | 2 (5.6%)         | -                        |
| Chinese                               | 2 (5.6%)         | -                        |
| Albanian                              | 2 (5.6%)         | -                        |
| Other                                 | 7 (19.4%)        | -                        |

*Verbal ability.* The word definition task is an expressive vocabulary task from the BAS-III (Elliott and Smith 2013) that requires children to provide verbal definitions for words that get increasingly difficult. Raw scores were converted to t-scores ( $M = 50$ ,  $SD = 10$ ).

*Phonological Awareness.* The Elision and Blending Words subtests from the Comprehensive Test of Phonological Processing, 2nd edition (CTOPP-2; Wagner et al. 2013) were administered to assess phonological awareness. In the Elision subtest, children were asked to omit one or more sounds in a word presented orally by the examiner, whereas in the Blending Words subtest children were required to blend separate sounds into a full word. Raw scores were converted to standard scores ( $M = 100$ ,  $SD = 15$ ) and for analyses purposes were combined together to form a composite score.

*Word reading.* The BAS-III (Elliott and Smith 2013) reading task required children to read single words aloud, which increased in difficulty. The administration of the task was discontinued when the child read eight consecutive words incorrectly in a block of ten words. Raw scores were calculated based on the number of words read correctly and were then converted into standard scores ( $M = 100$ ,  $SD = 15$ ).

*Reading Fluency.* The Test of Word Reading Efficiency (TOWRE-2; Wagner, Torgesen and Rashotte 2011) was used to examine reading fluency. This standardised assessment comprises two timed tasks: one asking the children to read a set of real words aloud as fast as they can in a given time-frame, and the second asking the children to read a series of non-words aloud again in a set time-frame. The words increase in difficulty as the child reads through the list. The scores for the two tasks were combined to form a 'Total Word Reading Efficiency' composite score ( $M = 100$ ;  $SD = 15$ ).

*Reading motivation.* Children's motivation for reading was measured by using an adapted (shorter) form of the Motivations for Reading Questionnaire (Wigfield and Guthrie 1997) retrieved from Logan, Medford and Hughes (2011). The adapted version of the questionnaire was considered to be more suitable for the target age group and only measured constructs of intrinsic motivation. The questionnaire included 2 practice statements, with the aim of familiarising the children with the nature of the rating scale, and 15 statements related to reading. The children's level of identification with these statements was measured using a 4-point Likert scale (1 = 'very different from me', 2 = 'a little different from me', 3 = 'a little like me', 4 = 'a lot like me'). Examples of the statements included in the questionnaire are: *If a book is interesting, I don't care how difficult it is to read, I like having an easy book to read rather than a difficult one.* etc., Eight items were negatively worded (reverse scoring was applied for these items) and the other 7 positively worded. A composite score was calculated by adding all of the item scores together where the highest possible score was 60 and the lowest one 15.

*Home Literacy Environment (HLE).* A short 3-item questionnaire was used to collect data from parents/carers on their home literacy practices. The questionnaire was adapted from Estabrook (2013). Questions included: *How many children's books do you approximately have in your home?, How often does your child read independently?, How often do you read with your child?* (shared reading).

*Parents' reading attitude.* The Index of Parents' Attitudes Toward Reading (taken from Mullis et al. 2006) was completed by parents/carers. This short questionnaire contained 5 statements and respondents used a 4-point Likert scale (1 = 'Disagree a lot' to 4 = 'Agree a lot'). Statements included: *I read only if I have to; I like to spend my spare time reading.* etc. Three items were positively worded and two items were negatively worded (reverse scoring applied accordingly). A composite score was obtained by adding all the item scores together where the highest possible score was 20.

## **Procedure**

Ethical approval was obtained from the Institute of Education, University College London, research ethics committee. Parents/carers and children were fully informed of the study aims; parents/carers gave written consent, while children gave verbal assent. Testing took place in a quiet room within

the child's school. Standardised tasks were administered according to the procedures identified in the test manuals. Assistance was provided for the questionnaire responses if required.

### Data analysis

Data were analysed using SPSS. Tests of normality were conducted and subsequently informed the selection of statistical tests. One way analysis of variance (ANOVA) were conducted to compare the EAL and monolingual groups on the background measures, psychological (motivation) and ecological variables (home literacy); while a multivariate analysis of variance (MANOVA) was conducted to explore group differences on the reading and related literacy measures given the related nature of these tasks. Correlational analyses were conducted, splitting the two groups, to determine how the literacy, motivation and environmental measures related to reading performance. Finally, based on significant correlations, a regression analysis was used to determine whether environmental factors accounted for additional variance in reading performance after accounting for the literacy variables (phonological awareness and vocabulary) which are already known in the literature to predict word reading.

### Results

Table 2 presents the background measures for the two groups of children. A series of one-way ANOVAs revealed that the two groups were comparable by age,  $F(1, 65) = .56, p = .45$ , cognitive ability,  $F(1, 65) = .06, p = .82$ , and paternal education,  $F(1, 65) = 1.79, p = .19$ . However, significant group differences were found on the measures of maternal education,  $F(1, 65) = 10.05, p = .003$ , and the combined parental education score (SES),  $F(1, 50) = 4.97, p = .03$ . Mothers of monolingual children reported higher levels of education than mothers of EAL children. A similar trend is noticed for the composite parental measure of education (SES).

*Group comparisons on reading and related skills, motivation and environmental factors.* A MANOVA was conducted on the reading and related literacy measures shown in the top half of Table 3, revealing no statistically significant group difference in decoding, fluency, phonological awareness and vocabulary,  $F(4, 62) = 1.66, p = .17$ , Wilks'  $\Lambda = 0.903, \eta^{2p} = .09$ . A cut-off score of 1 standard deviation was explored on the word decoding task ( $<85$ ) to determine how many children in both groups would be considered below age-expectations. In this sample, 5 monolinguals scored below 85 while only 3 EAL children did.

A one-way ANOVA also revealed no differences between the groups for reported reading motivation,  $F(1, 65) = 2.51, p = .12, \eta^{2p} = .04$ . A series of one-way ANOVAs were conducted on the remaining environmental measures in Table 3. A group difference was observed for the number of children's books in the home,  $F(1, 65) = 4.34, p = .04$ , demonstrating that the EAL group had significantly more children's books than their monolingual peers. Specifically, overall, parents reported EAL children as having *more* than 25–50 children's books at home, whereas monolingual children were

**Table 2.** Descriptive statistics (*M* and *SD*) for the background measures.

|  | EAL ( <i>n</i> = 36) | Monolingual ( <i>n</i> = 31) |
|--|----------------------|------------------------------|
| Age in years   | 9.29 (.94)           | 9.14 (.72)                   |
| Non-verbal ability (BAS-3, Matrices) <sup>1</sup>        | 46.92 (10.81)        | 46.35 (8.46)                 |
| Maternal education <sup>2</sup>                          | 2.68 (1.72)          | 4.15 (1.49)                  |
| Paternal education <sup>2</sup> *                        | 3.53 (1.61)          | 4.21 (1.69)                  |
| Parental education <sup>2</sup> (composite score, SES) * | 3.20 (1.47)          | 4.15 (1.58)                  |

Notes

<sup>1</sup>BAS-3, T-score  $M = 50, SD = 10$ .

<sup>2</sup>Coded: 1-some high school; 2-high school qualifications (GCSEs); 3-some college; 4-college degree; 5-graduate degree; 6-post-graduate degree.

\* $p < .05$ .

**Table 3.** Descriptive statistics (*M* and *SD*) on reading/literacy-related abilities, motivation and environmental factors for EAL and monolingual children.

|  | EAL ( <i>n</i> = 36) | Monolingual ( <i>n</i> = 31) |
|--|----------------------|------------------------------|
| Decoding (BAS-3)                               | 116.94 (20.21)       | 112.13 (23.65)               |
| Fluency (TOWRE-2 composite)                    | 112.03 (14.62)       | 106.90 (16.06)               |
| Phonological awareness (CTOPP-2)               | 116.58 (10.23)       | 112.87 (12.98)               |
| Expressive vocabulary (BAS-3)                  | 48.39 (8.52)         | 50.00 (9.47)                 |
| Motivation                                     | 50.44 (5.53)         | 48.32 (5.39)                 |
| No. of children's books at home <sup>1</sup> * | 2.47 (1.23)          | 3.13 (1.38)                  |
| Joint reading <sup>2</sup>                     | 2.67 (.86)           | 2.81 (1.05)                  |
| Independent reading <sup>2</sup>               | 3.56 (.73)           | 3.65 (.49)                   |
| Parents' reading attitudes                     | 14.97 (2.31)         | 16.00 (3.14)                 |

**Notes**

Decoding, fluency and phonological awareness standardisation means: *M* 100, *SD* 15; vocabulary: *M* 50, *SD* 10.

<sup>1</sup>Coded: 1- up to 10 books, 2- 11 to 25 books, 3- 25 to 50 books, 4- 50 to 70 books, 5- more than 70 books.

<sup>2</sup>Coded: 1- never/almost never, 2- once/twice a month, 3- once/twice a week, 4- every day/almost every day.

\**p* < .05.

reported to have approximately 25–50 children's books at home. No differences were found across the two groups on the measures of time spent joint reading,  $F(1, 65) = .36$ ,  $p = .55$ , independent reading,  $F(1, 65) = .34$ ,  $p = .56$ , and parents' reading attitudes,  $F(1, 61) = 2.23$ ,  $p = .14$ .

### **Relationship between reading abilities, cognitive, motivation and environmental factors**

Correlational analyses (split by group) were conducted on the reading, cognitive, motivation and environmental measures (maternal and paternal education were included here with the environmental measures): see Table 4. Correlations with reading ability are discussed.

For both the EAL and monolingual groups, both reading measures (decoding, fluency) were positively correlated with the related literacy measures (phonological awareness and expressive vocabulary), all at  $p < .001$ . Motivation was not found to correlate with the reading measures for either group. However, for both groups, motivation was positively correlated with the number of books in the home (EAL:  $r = .39$ ,  $p = .01$ ; monolingual:  $r = .44$ ,  $p = .01$ ), indicating that children with more children's books at home were more motivated readers.

Considering the home environment variables, parental education did not correlate with monolingual children's reading abilities, yet maternal education was found to positively relate to EAL children's decoding and fluency performance ( $r = .57$ ;  $r = .47$ , respectively). Paternal education did not, however, correlate with reading abilities in the EAL group. Further exploring parents' education, it is noted that maternal education was strongly related to parents' reading attitudes ( $r_s = .61$ ) in the EAL group, but not in the monolingual group. In contrast, maternal education was highly

**Table 4.** Correlations between reading/literacy-related abilities (items 1-4), motivation (item 5) and environmental factors (items 6-11) across language groups.

|                                | 1     | 2     | 3     | 4     | 5     | 6     | 7    | 8     | 9    | 10    | 11    |
|--------------------------------|-------|-------|-------|-------|-------|-------|------|-------|------|-------|-------|
| 1. Decoding                    |       | .91** | .51** | .76** | .26   | .57** | -.06 | .30   | .01  | .44** | .51** |
| 2. Fluency                     | .69** |       | .43** | .62** | .16   | .47*  | -.16 | .08   | .05  | .32   | .33   |
| 3. Phonological Awareness      | .66** | .43*  |       | .63** | .13   | .19   | .34  | .19   | .22  | .38*  | .25   |
| 4. Expressive Vocabulary       | .74** | .48** | .26   |       | .29   | .52*  | .21  | .51** | .09  | .45** | .50** |
| 5. Motivation                  | .32   | .01   | .21   | .41*  |       | -.14  | .13  | .39*  | -.08 | -.09  | .11   |
| 6. Maternal education          | .16   | .05   | .31   | .13   | .23   |       | .33  | .29   | -.17 | .28   | .57** |
| 7. Paternal education          | .16   | -.08  | .05   | .32   | .29   | .59** |      | .25   | .03  | .35   | .11   |
| 8. No. of children's books     | .29   | .06   | .32   | .33   | .44** | .67** | .28  |       | .07  | .30   | .42*  |
| 9. Joint reading               | -.13  | -.08  | -.16  | -.07  | .22   | .12   | .05  | .11   |      | .39*  | .21   |
| 10. Independent reading        | .25   | .18   | .29   | .10   | -.03  | .41*  | .09  | .37*  | .12  |       | .49** |
| 11. Parents' reading attitudes | .30   | .23   | .14   | .36   | .42*  | .29   | .21  | .25   | .34  | .18   |       |

Note. Correlations for EAL children are presented above the diagonal stripe, and those for monolingual children are presented below the diagonal stripe. Correlations are significant at the level. \*  $p < .05$ ; \*\*  $p < .001$ .



correlated ( $r_s = .67$ ) with the number of children's books at home for monolingual children, but not for EAL children. Only independent reading and parents' attitudes towards reading related positively to decoding ability in the EAL group ( $r = .44$ ,  $r = .51$  respectively;  $p < .001$ ), but not with fluency. Maternal education in the EAL group may thus be indirectly contributing to decoding, as a relationship has been discussed between EAL maternal education and their attitude towards reading; and here, parental reading attitudes is related to decoding. These correlations were not observed in the monolingual group. Reported joint reading or the number of books in the home did not correlate with decoding or fluency abilities.

### Regression analyses

Significant correlations discussed above were followed up with a regression analysis, see Table 5. Children's decoding ability was the dependent variable and related literacy (phonological awareness, expressive vocabulary), and home environment characteristics (maternal education and the number of books) were the independent variables (predictors). Of interest was how much variance environmental measures (entered in Step 2 of the model) can explain in child reading after accounting for the the literacy-related measures (Step 1).

The overall model was significant,  $F(2, 59) = 34.62$ ,  $p < .001$ , and predicted 61% of the variance overall. Only phonological awareness and expressive vocabulary were significant predictors (in Step 1) of reading ability. Including the environmental factors at Step 2 did not result in a better model fit overall ( $p = .22$ ).

### Discussion

Reading skills in the primary years are strong indicators of achievement in secondary school and beyond (Cunningham, Stanovich and Zahn-Waxler 1997; Duncan et al. 2007; Entwisle, Alexander and Olson 2003). Building on the Component Model of Reading (CMR; Aaron et al. 2008), the present study investigated differences in literacy-related skills, motivation and environmental factors related to reading and how such skills relate to word decoding and fluency for monolingual and EAL primary-aged children. Both groups were comparable by age, cognitive ability and paternal level of education. However, they differed in language status (one group speaking just one language at home vs the other speaking English as an additional language), and maternal level of education was found to be lower in the EAL group. The most prominent language spoken in the EAL group was Bengali (41.7%), followed by Arabic (22.2%). While these figures reflect what is currently seen in London schools (Office for National Statistics 2013), the challenges of a mixed EAL group will be picked up later in the discussion.

Given the existing statistics suggesting that EAL children encounter difficulties in reading (DFE 2018), it was surprising to find that the present sample performed similarly in both decoding and reading fluency to their monolingual peers. In fact, the findings from the present study demonstrated no significant differences between EAL and monolingual upper-primary children on the

**Table 5.** Regression analysis results predicting reading ability.

|                        | $\beta$ | $t$   | $R^2$ | $\Delta R^2$ | $p$    |
|------------------------|---------|-------|-------|--------------|--------|
| <b>Step 1</b>          |         |       | 0.61  | 0.59         | < .001 |
| Phonological awareness | 0.34    | 3.25  |       |              | .002   |
| Expressive vocabulary  | 0.57    | 5.54  |       |              | <.001  |
| <b>Step 2</b>          |         |       | 0.63  | 0.6          | .22    |
| Phonological awareness | 0.35    | 3.4   |       |              | .001   |
| Expressive vocabulary  | 0.58    | 5.46  |       |              | < .001 |
| Maternal education     | 0.15    | 1.41  |       |              | .17    |
| No. of books           | -0.18   | -1.61 |       |              | .12    |

measures of decoding, fluency, phonological awareness and expressive vocabulary. The reading results support previous research (Babayigit 2015; Chiappe and Siegel 2006; Lesaux and Siegel 2004). However, the comparable expressive vocabulary finding is contrary to previous findings (Bowyer-Crane et al. 2017; Hutchinson et al. 2003). An explanation to why this study's results differ from previous ones could be related to the sample characteristics. Hutchinson et al. (2003) conducted their research with 4–6 year old children, whereas children in the present study were aged 7–10. Hamers and Blanc (2000) argued that increased time in school leads to similar vocabulary scores between bilingual and monolingual children. Another aspect to be considered is the children's proficiency in their native language. It is hard for researchers to assess children's performances in a variety of languages (due to lack of instruments) and to determine whether the EAL child is dominant in their native language or in English. Bialystok et al. (2010) explain that vocabulary differences between bilinguals and monolinguals are probably a reflection of experience rather than ability.

Reading motivation levels were similar across language groups and no difference was observed on the home literacy environment measures (time spent on joint and independent reading; parents' attitudes towards reading), except one: the number of children's books at home, where EAL children were reported to have more books than monolingual children. Sénéchal and LeFevre (2002) found that children's exposure to books was related to vocabulary development, therefore the higher number of books in EAL children's homes could explain the lack of differences in vocabulary skills between EAL and monolingual children; suggesting that larger exposure to books helps EAL children keep up with their monolingual peers'. This suggests that greater exposure to books at home proves to be an interesting result considering the lower SES level of EAL families (parental education used as an SES measure) in comparison to that of the monolingual families. It can be argued that the number of books in the home is not simply an indicator of the family's financial capability, but also serves as an indicator of parents' reading beliefs and attitudes. The correlational analysis shows that the number of books at home is significantly correlated with the parents' reading attitudes for EAL children, but that is not the case for monolinguals. It could be that EAL parents, being aware of the challenges that children face while learning to read an additional language, compensate by supplying their children with more reading material at home. Evans et al. (2010) studied the home literacy environments of families from 27 countries and concluded that a large number of books at home was as beneficial for children's education as having university educated parents. Furthermore, Considine and Zappala (2002) explain that the 'social' and 'economic' factors of the socio-economic status (SES) have different influences on achievement. Therefore, a lower economic status does not necessarily mean lower parental involvement.

The correlational analysis further allowed a better understanding of the nature of the relationships that reading/literacy-related skills have with motivation and environmental factors. For both groups, word reading (decoding) and reading fluency skills were positively correlated with phonological awareness and expressive vocabulary, supporting existing research (Cutting and Scarborough 2006; National Institute for Literacy 2008, Storch and Whitehurst 2002). Surprisingly, motivation was not found to correlate directly with reading abilities for either group. However, EAL and monolingual children differed in terms of correlations between reading and environmental measures. For EAL children, maternal education correlated with their attitudes towards reading, showing those whose mothers had completed more education, also had more positive attitudes towards reading. In addition, parental attitudes were positively correlated with EAL children's word reading abilities, in line with the findings of van Bergen et al. (2017). It can, therefore, be inferred that EAL children's decoding skills may be indirectly affected by maternal education through their mother's attitude to reading. Further, for EAL children, time spent reading independently was positively related to reading ability. Given the lack of a correlation with motivation and reading, it may be suggested that the good decoding skills of EAL children result from their engagement with reading activities, not motivation. In contrast, monolingual children's reading abilities did not correlate with their parental level of education, but their maternal education did positively relate to the number of children's books at home. Referring back to Aaron et al.'s

*Component Model of Reading* (2008), the present results showed that environmental factors may influence EAL children's reading performance differently from monolingual children even though the end result (reading) is comparable. Lastly, maternal education was related to the number of children's books at home for NS children, and with parents' reading attitudes for EAL children. These findings could suggest that EAL and NS mothers might employ different strategies in supporting their children's reading efforts. Higher educated NS mothers seemed to provide material support (books) for their children, whereas the support of higher educated EAL mothers was reflected in their attitude and reading behaviours.

The regression analysis further confirmed the importance of phonological awareness and expressive vocabulary for word reading, supporting a body of existing research (e.g. Muter and Diethelm 2001; Oxley and de Cat 2019) but did not support the additional input of maternal education and the number of books available at home (van Bergen et al. 2017). A possible explanation for this may be because the vast majority of children in the present sample were average or above readers; stronger relationships between the home environment and reading performance may be observed for poorer readers. Nevertheless the correlational findings did emphasise the parents' role in children's reading performance and it is necessary that EAL parents understand the magnitude of the impact they have on their children's achievement. Even if they are not proficient in English themselves, parents can influence their children by setting an example through their reading behaviours and by providing them with children's books to support the independent efforts of the child.

### **Limitations and future research**

Although the present study was the first of its kind to compare EAL and monolingual readers on a range of factors, limitations of the work should be considered. There are challenges with interpreting the findings when the EAL sample home language varies. Melby-Lervag and Lervag (2014) reported that conflicting EAL study findings may be due to participant characteristics such as variations in the similarity between the two languages spoken by the child. While the current sample is representative of schools in the UK, and the majority languages (Bengali and Arabic) are further away from English than some European languages, it is still recognised that further research may consider exploring the same research aims and comparing within EAL profiles. Moreover, it should be considered that EAL status might not be an accurate indicator of language attainment (Demie 2017). EAL status is a broad concept including many typologies of children's additional language profiles and is assigned to children regardless of proficiency levels and exposure time to the English language. Recent migrants, second-generation migrants and refugees are all grouped under the same label of EAL. Therefore, children who were born in English-speaking countries and have been exposed to the English language since birth are considered EAL (the same status as a child who recently arrived in the country) if they speak a different language at home. In the present study, data were not collected on children's dominant language or time of exposure to the English-language (except for requiring that children had been speaking English for more than 1 year) and future research should seek to cover this.

Secondly, motivation scores of children tended to be high, with the majority of them scoring near maximum points. This poses the risk of a ceiling effect which makes it hard to discriminate on the performance among participants. These high scores could indicate that the instrument used to measure motivation might lack sensitivity in capturing the differences between participants, even though this measure is often used in reading research (Logan, Medford and Hughes 2011; Wigfield and Guthrie 1997).

Lastly, the small number of poor readers was not anticipated in this sample. It is recognised that word reading and fluency were assessed here and not comprehension. Future research using the same approach to consider motivation and environmental factors but focusing specifically on EAL poor readers (decoding *and* comprehension) may reveal a different pattern and would add to the

literature. Additional environmental factors on reading performance may also be considered such as school characteristics and support.

## Conclusion

In sum, the present study contributes to the understanding of factors related to reading performance for EAL and monolingual children. No significant group differences were found for the reading or related literacy measures, nor reading motivation, time spent reading with a parent and independently, and parental attitudes to reading, although maternal education was lower in the EAL group and these children had more children's books at home than their monolingual peers. The findings confirm the importance of phonological awareness and expressive vocabulary for reading performance in both groups, as well as suggesting that maternal education may indirectly relate to EAL children's reading abilities through their attitudes towards reading. In contrast maternal education was related to the books in the home for monolingual children. Future research could usefully extend the study approach specifically to poor readers with EAL.

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## References

- Aaron, P. G., R. M. Joshi, R. Gooden and K. E Bentum. 2008. Diagnosis and treatment of reading disabilities based on the component model of reading. *Journal of Learning Disabilities* 41: 67–84.
- Adams, M. J. 1990. *Beginning to Read: Thinking and Learning About Print*. Cambridge, MA: MIT Press.
- Arnold, D. H., A. Zeljo, G. L. Doctoroff and C Ortiz. 2008. Parent involvement in preschool: predictors and the relation of involvement to preliteracy development. *School Psychology Review* 37: 74–90.
- Babayigit, S. 2015. The relations between word reading, oral language, and reading comprehension in children who speak English as a first (L1) and second language (L2): a multigroup structural analysis. *Reading and Writing* 28, no. 4: 527–544. doi:10.1007/s11145-014-9536-x.
- Baker, L. 2003. The role of parents in motivating struggling readers. *Reading and Writing Quarterly* 19: 87–106.
- Baker, S. K., K. Smolkowski, R. Katz, F. Hank, J. R. Seeley, E. J. Kame'enui and C. T Beck. 2008. Reading fluency as a predictor of reading proficiency in low- performing, high-poverty schools. *School Psychology Review* 37: 18–37.
- Bialystok, E. 2009. Bilingualism: The good, the bad, and the indifferent. *Bilingualism: Language and Cognition* 12, no. 1: 3–11.
- Bialystok, E., G Luk, K. Peets and S. Yang. 2010. Receptive vocabulary differences in monolingual and bilingual children. *Language and Cognition* 13, no. 4: 525–531.
- Bowyer-Crane, C., S. Fricke, B. Schaefer, A. Lervåg and C Hulme. 2017. Early literacy and comprehension skills in children learning English as an additional language and monolingual children with language weaknesses. *Reading and Writing* 30, no. 4: 771–790.
- Calvo, A. and E Bialystok. 2014. Independent effects of bilingualism and socioeconomic status on language ability and executive functioning. *Cognition* 130: 278–288.
- Chiappe, P. and L Siegel. 2006. A longitudinal study of reading development of Canadian children from diverse linguistic backgrounds. *The Elementary School Journal* 107, no. 2: 135–152.
- Chiu, M., C. McBride-Chang and D Lin. 2012. Ecological, psychological, and cognitive components of reading difficulties: testing the component model of reading in fourth graders across 38 countries. *Journal of Learning Disabilities* 45, no. 5: 391–405.

- Considine, G. and C Zappala. 2002. The influence of social and economic disadvantage in the academic performance of school students in Australia. *Journal of Sociology* 38: 129–148.
- Cunningham, A., K. Stanovich and C Zahn-Waxler. 1997. Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology* 33, no. 6: 934–945.
- Cutting, L. and H Scarborough. 2006. Prediction of reading comprehension: Relative contributions of word recognition, language proficiency, and other cognitive skills can depend on how comprehension is measured. *Scientific Studies of Reading* 10, no. 3: 277–299.
- Demie, F. 2017. English as an additional language and attainment in primary schools in England: Implications for policy and practice. *Journal of Multilingual and Multicultural Development*. doi:10.1080/01434632.2017.1348508.
- Department for Education. 2018. *National curriculum assessments at key stage 2 in England, 2018*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/774446/KS2\\_Revised\\_2018\\_text\\_MATS\\_20190130.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/774446/KS2_Revised_2018_text_MATS_20190130.pdf).
- Department for Education. 2019. *Schools, pupils and their characteristics: January 2018*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/812539/Schools\\_Pupils\\_and\\_their\\_Characteristics\\_2019\\_Main\\_Text.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/812539/Schools_Pupils_and_their_Characteristics_2019_Main_Text.pdf).
- Duncan, G. J., C. J. Dowsett, A. Claessens, K. Magnuson, A. C. Huston, P. Klebanov and C. Japel. 2007. School readiness and later achievement. *Developmental Psychology* 43, no. 6: 1428–1446. doi:10.1037/0012-1649.43.6.1497.
- Durgunoglu, A. Y. and B Oney. 1999. A cross-linguistic comparison of phonological awareness and word recognition. *Reading and Writing: An Interdisciplinary Journal* 11: 281–299.
- Elhassan, Z., S. Crewther and E Bavin. 2017. The Contribution of phonological awareness to reading fluency and Its individual sub-skills in readers aged 9- to 12-years. *Frontiers in Psychology* 88: 533. doi:10.3389/fpsyg.2017.00533.
- Elliott, C. D. and P Smith. 2013. *British Ability Scales Third Edition (BAS III). Technical Manual*. London: Nelson.
- Entwisle, D. R., K. L. Alexander and L. S Olson. 2003. The first-grade transition in life course perspective. In *Handbook of the Life Course*, ed. J. T. Mortimer and M. J. Shanahan, 229–250. New York: Kluwer Academic/Plenum.
- Estabrook, E. 2013. The relationship between home literacy experiences and preschool emergent writing skills. Master's Thesis, University of Pittsburgh: Pennsylvania. <http://d-scholarship.pitt.edu/18002/>.
- Evans, M. D. R., J. Kelley, J. Sikora and D. J Treiman. 2010. Family scholarly culture and educational success: books and schooling in 27 nations. *Research in Social Stratification and Mobility* 28, no. 2: 171–197.
- Fuchs, L. S., D. Fuchs, M. K. Hosp and J. R Jenkins. 2001. Oral reading fluency an indicator of reading competence: a theoretical, empirical, and historical analysis. *Scientific Studies of Reading* 5: 239–256.
- Geva, E. and Z. Y Zadeh. 2006. Reading efficiency in native English-speaking and English-as-a-second language children: the role of oral proficiency and underlying cognitive-linguistic processes. *Scientific Studies of Reading* 10, no. 1: 31–57. doi:10.1207/s1532799xssr1001\_3.
- Geva, E., Z. Yaghoub-Zadeh and B Schuster. 2000. Understanding differences in word recognition skills of ESL children. *Annals of Dyslexia* 50: 123–154.
- Gottardo, A. 2002. The relationship between language and reading skills in bilingual Spanish-English speakers. *Topics in Language Disorders* 22: 46–70.
- Gough, P. and W Tunmer. 1986. Decoding, reading, and reading disability. *Remedial and Special Education* 7: 6–10.
- Hamers, J. and M Blanc. 2000. *Bilinguality and Bilingualism* (2nd ed). New York, NY: Cambridge University Press.
- Hatcher, P., C. Hulme and A Ellis. 1994. Ameliorating early reading failure by integrating the teaching of reading and phonological skills: the phonological linkage hypothesis. *Child Development* 65, no. 1: 41–57.
- Hutchinson, J., H. Whiteley, C. Smith and L Connors. 2003. The developmental progression of comprehension-related skills in children learning EAL. *Journal of Research in Reading* 26, no. 1: 19–32.
- Kang, J. Y. 2012. Do bilingual children possess better phonological awareness? Investigation of Korean monolingual and Korean-English bilingual children. *Reading and Writing* 25, no. 2: 411–431.
- Lesaux, N. K., E. Geva, K. Koda, L. Siegel and T Shanahan. 2008. Development of literacy in second-language learners. In *Developing Reading and Writing in Second-Language Learners: Lessons from the Report of the National Literacy Panel on Language-Minority Children and Youth*, ed. D. August and T. Shanahan, 27–59. New York: Routledge.
- Lesaux, N. K., A. A. Rupp and L. S Siegel. 2007. Growth in reading skills of children from diverse linguistic backgrounds: findings from a 5-year longitudinal study. *Journal of Educational Psychology* 99, no. 4: 821–834. doi:10.1037/0022-0663.99.4.821.
- Lesaux, N. and L. S. Siegel. 2004. Predictors of reading failure in children from both English and non-English speaking (ESL) backgrounds. Sixth BDA International Conference, University of Warwick, United Kingdom.
- Lepola, J., E. Poskiparta, E. Laakkonen and P Niemi. 2005. Development of and relationship between phonological and motivational processes and naming speed in predicting word recognition in grade 1. *Scientific Studies of Reading* 9, no. 4: 367–399.
- Logan, S., E. Medford and N Hughes. 2011. The importance of intrinsic motivation for high and low ability readers' reading comprehension performance. *Learning and Individual Differences* 21, no. 1: 124–128.
- Magnuson, K. 2007. Maternal education and children's academic achievement during middle childhood. *Developmental Psychology* 43: 1497–1512.

- Marinova-Todd, S. H., J. Zhao and M Bernhardt. 2010. Phonological awareness skills in the two languages of Mandarin-English bilingual children. *Clinical Linguistics & Phonetics* 24, no. 4–5: 387–400. doi:10.3109/02699200903532508.
- McBride-Chang, C. and R. V Kail. 2002. Cross-cultural similarities in the predictors of reading acquisition. *Child Development* 73, no. 5: 1392–1407.
- Melby-Lervåg, M. and A. Lervåg. 2014. Reading comprehension and its underlying components in second-language learners: a meta-analysis of studies comparing first- and second-language learners. *Psychological Bulletin* 140, no. 2: 409–433. doi:10.1037/a0033890.
- Morrow, L. M. 1983. Home and school correlates of early interest in literacy. *Journal of Educational Research* 76: 221–230.
- Mullis, I. V. S., M. O. Martin, A. M. Kennedy and P. Foy. 2006. *PIRLS 2006 International Report*. Boston: TIMSS & PIRLS International Study Center, Lynch School of Education.
- Murphy, V. A., M. Kyriacou and P Menon. 2013. *Profiling Writing Challenges in Children with English as an Additional Language (EAL)*. Oxford: University of Oxford.
- Muter, V. and K Diethelm. 2001. The contribution of phonological skills and letter knowledge to early reading development in a multilingual population. *Language Learning* 51: 187–219.
- Muter, V., C. Hulme, M. Snowling and S Taylor. 1997. Segmentation, not rhyming, predicts early progress in learning to read. *Journal of Experimental Child Psychology* 65, no. 3: 370–396.
- National Institute for Literacy. 2008. *Developing Early Literacy: Report of the Early Literacy Panel: A Scientific Synthesis of Early Literacy Development and Implications for Intervention*. Jessup, MD: Author.
- National Reading Panel (NRP). 2000. *Teaching Children to Read: An Evidence Based Assessment of the Scientific Literature on Reading and its Implications for Reading Instruction*. Bethesda, MD: National Institute of Child Health and Human Development.
- Office for National Statistics. 2013. Language in England and Wales: 2011. Retrieved from <https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/language/articles/languageinenglandandwales/2013-03-04#main-language-across-engish-regions-and-wales>.
- Office for National Statistics. 2016. Long-term international migration into and out of the UK by citizenship, 1964 to 2015. <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/adhocs/006408longterminternationalmigrationintoandoutoftheukbycitizenship1964to2015>.
- Oxley, E. and C. de Cat. 2019. A systematic review of language and literacy interventions in children and adolescents with English as an additional language (EAL). *The Language Learning Journal*. doi:10.1080/09571736.2019.1597146.
- Park, H. 2008. Home literacy environments and children's reading performance: a comparative study of 25 countries. *Educational Research and Evaluation* 14, no. 6: 489–505.
- Park, Y. 2011. How motivational constructs interact to predict elementary students' reading performance: Examples from attitudes and self-concept in reading. *Learning and Individual Differences* 21, no. 4: 347–358.
- Protacio, M. S. 2012. Reading motivation: a focus on English learners. *Reading Teacher* 66, no. 1: 69–77.
- Phillips, B., and C. J. Lonigan. 2009. Variations in the home literacy environment of preschool children: A cluster analytic approach. *Scientific Studies of Reading* 13, no. 2: 146–174.
- Ricketts, J., K. Nation and D. V. M Bishop. 2007. Vocabulary is important for some, but not all reading skills. *Scientific Studies of Reading* 11, no. 3: 235–257.
- Saracho, O. N. 2017. Parents' shared storybook reading – learning to read. *Early Child Development and Care* 187: 554–567.
- Schiefele, U., E. Schaffner, J. Möller and A. Wigfield. 2012. Dimensions of reading motivation and their relation to reading behavior and competence. *Reading Research Quarterly* 47: 427–463.
- Sénéchal, M. and J LeFevre. 2002. Parental involvement in the development of children's reading skill: a five-year longitudinal study. *Child Development* 73, no. 2: 445–460.
- Sénéchal, M., G. Ouellette and D Rodney. 2006. The misunderstood giant: on the predictive role of early vocabulary to future reading. In *Handbook of Early Literacy Research: Vol. 2*, ed. S. B. Neuman and D. Dickinson, 173–182. New York: Guilford Press.
- Sénéchal, M. and L Young. 2008. The effect of family literacy interventions on children's acquisition of reading from kindergarten to grade 3. *Review of Educational Research* 78: 880–907.
- Sirin, S. R. 2005. Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research* 75: 417–453.
- Storch, S. A. and G. J Whitehurst. 2002. Oral language and code-related precursors to reading: evidence from a longitudinal structural model. *Developmental Psychology* 38, no. 6: 934–947.
- Strand, S., L. Malmberg and J. Hall. 2015. English as an Additional Language (EAL) and educational achievement in England: an analysis of the National Pupil Database. University of Oxford, Department of Education. [https://v1.educationendowmentfoundation.org.uk/uploads/pdf/EAL\\_and\\_educational\\_achievement2.pdf](https://v1.educationendowmentfoundation.org.uk/uploads/pdf/EAL_and_educational_achievement2.pdf).
- van Bergen, E., T. van Zuijen, D. Bishop and P. F. De Jong. 2017. Why are home literacy environment and children's reading skills associated? What parental skills reveal. *Reading Research Quarterly* 52: 147–160. doi:10.1002/rrq.160.
- Wagner, R. K., J. K. Torgesen, C. A. Rashotte and N. A Pearson. 2011. *TOWRE 2: test of Word Reading Efficiency*, 2nd ed. Austin, TX: Pro-Ed.

- Wagner, R. K., J. K. Torgesen, C. A. Rashotte and N. A. Pearson. 2013. *Comprehensive Test of Phonological Processing–2nd ed. (CTOPP-2)*. Austin, TX: Pro-Ed.
- Wanzek, J., G. Roberts, S. Linan-Thompson, S. Vaughn, A. L. Woodruff and C. S. Murray. 2010. Differences in the relationship of oral reading fluency and high-stakes measures of reading comprehension. *Assessment for Effective Intervention* 35: 67–77. doi:10.1177/1534508409339917.
- Whiteside, K. E., D. Gooch and C. F. Norbury. 2017. English language proficiency and early school attainment among children learning English as an additional language. *Child Development* 88, no. 3: 812–827.
- Wigfield, A. and J. Guthrie. 1997. Relations of children's motivation for reading to the amount and breadth of their reading. *Journal of Educational Psychology* 89, no. 3: 420–432.
- Wigfield, A., Wilde, K., Baker, L., Fernandez-Fein and Scher, D. 1996. *The Nature of Children's Motivations for Reading: Relations to reading frequency and reading performance (Reading Research Report No. 63)*. Athens, GA: National Reading Research Center.
- Zhou, H. and F. Salili. 2008. Intrinsic reading motivation of Chinese preschoolers and its relationships with home literacy. *International Journal of Psychology* 43, no. 5: 912–916.