THE ASSESSMENT OF READING SPEED AT THE WORD LEVEL IN GERMAN FOR BILINGUAL ARABIC-GERMAN STUDENTS IN GERMANY

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Abstract

Research indicates that the German reading abilities of children with migration backgrounds are generally inferior when compared to their monolingual German counterparts. Previous studies have primarily concentrated on Turkish-German bilingual children, with limited attention given to those who speak other first languages. Notably, the reading skills of bilingual Arabic-German children have yet to be thoroughly explored. This study aims to assess the German reading speed at the word level among bilingual Arabic-German students in Germany. A one-minute reading test was administered to a sample of 66 bilingual Arabic-German children, with a mean age of 9;02 years. One group of 33 children received instruction in both German and Arabic, while the other group of 33 received only German instruction in school, with Arabic being taught outside of school. The results indicated no significant differences between the groups regarding the German tasks, and neither group exhibited signs of difficulties in German literacy.

Keywords: *Arabic, Bilingual Pupils, Germany, Reading Speed*

1. Introduction

Lack of proficiency in literacy increases the likelihood of experiencing low income (Ahamed, 2025; Cree et al., 2012) and may result in challenges related to emotional, economic, health, and social aspects (Ahamed, 2025; Livingston et al., 2018). Furthermore, it adversely affects overall educational outcomes as well as personal and social life issues (Ahamed, 2025; Asrifan et al. 2025; Chall & Jacobs, 2003; Taha-Thomure, 2023; Macdonald et al., 2016). The literacy proficiency among student populations in various countries, including Germany has been a decline (Harju-Luukkainen et al., 2020). A number of languages, the correlation between word predictability and reading behavior or performance has been demonstrated that include Arabic and German (AlJassmi et al. 2022; Kliegl et al, 2004). A rise in the number of students performing at the lowest proficiency level is also seen in primary school in Germany (Harju-Luukkainen et al., 2020). Additionally, German readers' motivation to read is declining steadily. Students from migration background account for approximately 30% of students in Germany, so they often grow up in a multilingual environment with German as a second language (Federal Government Commissioner for Migration, Refugees and Integration, 2014). When compared to their native language peers, students in this group tend to exhibit significantly lower levels Of German literacy achievement, as a result, they have difficulties in reading and vocabulary deficits (Auer et al. 2005; Duzy et al. 2014; Melby-Lervåg & Lervåg ,2014; Schleicher, 2019). Enrolling in an educational setting where the language of instruction is different from their native tongue presents further difficulties for these students (Artelt, 2001; Becker-Mrotzek et al., 2012).

This study builds upon existing knowledge by focusing on the German literacy acquisition of bilingual Arabic-German children in Germany is that recent research has specially indicated deficiencies in the German literacy development of children with migration backgrounds. International comparative studies, including the Progress in International Reading Literacy Study (PIRLS), the Program for International Student Assessment (PISA), and the International Study of Reading Skills of Primary School Children in Germany (IGLU), have revealed that reading abilities of children with immigrant backgrounds are notably inferior to those of their monolingual German peers. Consequently, it is pertinent to explore whether our bilingual Arabic-German children experience challenges in German literacy based on the assessment materials utilized.

2. Review of Literature
Research on German literacy acquisition

The study main section examines reading specifically reading at word level. Due to the high number of studies focusing on the acquisition of German literacy skills with Turkish, Polish or Serbian/Croatian languages (Klieme et al., 2010), and the low number of studies focusing on the children with other first languages which are only rarely been considered. The main aim of this study is to discuss reading in German at a word level. The first puplished study (Naddaf, 2016) concentrated on Arabic Literacy of the monolingual and bilingual Arabic-German children, while in this study the second section addresses only on German literacy of the bilingual Arabic-German children.

German Orthographic Characteristics

German language has no diglossia situation, since the modern High German (*Hochdeutsch*) is spoken and used as an official language and also in the informal daily expression and conversations (Younes, 2015). The German language utilizes an alphabetic system, with written text arranged from left to right. In German orthography, all nouns are capitalized. The spelling conventions in German align closely with the sounds of vowels and consonants. Furthermore, the German orthography exhibits a higher degree of regularity in

letter-phoneme correspondences. The phonological transparency of German is therefore higher than that of, say, Arabic and English (Gangl et al., 2018). Germans' transparent orthography exhibits greater consistency in reading than in spelling.

According to Landerl and Wimmer (2008), word fluency is the only indicator that separates proficient and struggling readers in more transparent orthographies. Additionally, they stress that naming speed has a stronger correlation with the development of reading skills than phonological awareness (Joshi & McCardle, 2018; Landerl & Wimmer, 2000). This transparency facilitates the independent learning of sound-spelling relationships, regardless of the teaching methods employed in schools (Wimmer & Hummer 1990; Klicpera et al. 2010), making it easier than in other less transparent orthographies, such as English and Arabic. This characteristic accounts for the ability of beginning readers in German to acquire reading skills more rapidly (Schabmann et al. 2009; Klicpera et al. 2010; Frith et al. 1998). To successfully engage with the German educational system, it is essential for all children, including those from migrant backgrounds, to achieve proficiency in the German language. German kindergartens provide the initial exposure to the language during the preschool years.

Learning to read in German
Word reading

Across all grade levels, word recognition abilities are a critical component of overall reading proficiency, which includes both fluency and comprehension. According to researches it is clear that pupils who struggle with reading in Grade 1 are likely to still have these problems by Grade 4, which could be linked to a drop in motivation and self-worth (Brasseur-Hock et al., 2011; Chatterji, 2006; OECD, 2015; Park et al., 2015; PIRLS, 2006; Stanley et al., 2018; Taha-Thomure et al., 2022; Zarić et al., 2021). This issue is present among other student groups; students who struggle with word recognition by the third grade are more likely to experience academic difficulties in secondary school, which could result in dropout. A growing number of teenagers are reading below age-appropriate standards, and about 25% of older elementary students currently struggle to read words at their appropriate grade level (Brasseur-Hock et al., 2011; Cirino et al., 2013). As a result, reading comprehension at the word level is still a crucial topic for further study. Problems with text comprehension and general reading proficiency can arise from inadequate reading fluency (Little et al., 2017; OECD, 2015; Rasinski et al., 2017; Taha & Taha., 2019).

According to a longitudinal study on reading development by Landerl and Wimmer, 2008, 70% of 115 German students who were diagnosed as dysfluent in the first grade still had dysfluency by the eighth grade. This result emphasizes how urgent it is to address these problems and reduce the number of students, both young and old, who struggle with reading. When compared to their peers who had typical reading skills, Kochva et al. (2021) observed a widespread deficiency among older German readers who struggled with basic reading skills like word recognition. In view of this understanding, research has highlighted the significance of reading literacy during early childhood.

Rapid Automatized Naming (RAN)

As previously mentioned, according to the research conducted by Landerl and Wimmer (2008), rapid automatized naming (RAN) the ability to quickly name items such as letters and colors serves as a crucial predictor of reading proficiency, especially in the context of German literacy (Cohen et al., 2018). The effectiveness of this approach has been demonstrated in both primary and secondary education (Escarpio & Barbetta, 2016; Stevens et al., 2017; Wu et al., 2020), as well as in second language acquisition, for students who face behavioral and learning difficulties, as well as for those who do not (Grabe, 2010; Jeon, 2009). This skill is a strong indicator of reading capability, as evidenced by various meta-analyses focused on the German language (Huschka et al., 2021; Landerl et al., 2019) and is particularly relevant to oral reading fluency (Conrad & Levy, 2007; Papadopoulos et al.,

2016). The cognitive processes involved in swiftly accessing the mental lexicon and recognizing words share similarities with those engaged during RAN. A meta-analysis performed by Chen et al. (2021) indicated a moderate correlation between rapid automatized naming (RAN) and reading in transparent languages, with a correlation coefficient of $r = 0.44$; this finding is consistent with the results of Araújo et al. (2015), which reported a correlation of $r = 0.43$. Notably, it has been shown that RAN is a significant predictor of word-reading fluency in transparent languages, as evidenced by the work of Papadopoulos et al. (2016). Another study conducted by van Gorp et al. (2017) investigated the impact of reading repeated words and pseudo-words on first-grade readers with varying levels of proficiency. Their findings indicated that a transparent orthography enhanced both the accuracy and speed of reading for both strong and weak readers. Furthermore, a synthesis of research conducted by Steinle et al. (2021) suggests that studies focusing on the effects of repeated reading in struggling adolescent readers are still in the early stages of development, a situation that also applies to the German language.

Research question
1. This study sought to address the following question:
2. How are the German reading speed at the word level among bilingual Arabic-German students in Germany?

3. Methods
Participants
A total of sixty-six primary-school children (mean age 9;02 years, range 8;00-11;00 $SD = 0;08$) participated in the study (see table 1). All subjects had acquired varieties of spoken Arabic as their first language (L1) and utilized these dialects in their home environment. The participants were categorized into two groups, exemplifying the two different possibilities for receiving Arabic literacy instructions in standard Arabic at their school.

1. The first group (henceforth termed *school*) contained 33 pupils, whose first language is Arabic, attended a public primary school in Germany where they received literacy instructions in standard Arabic as part of the school's curriculum. This group of Arabic-German bilingual pupils had a mean age of 9;03 years (range 8;00-11;00 years, *SD* 0;09, 12 males, 21 females). All participants hailed from Arabic-speaking families and had acquired varieties of spoken Arabic as their first language. The average age at which they began learning German was 2;00 years (*SD* 2;03), typically coinciding with their entry into German kindergarten. At the time of assessment, these children were enrolled in grades 2, 3, or 4 at a primary school in Bonn, Germany, where German was the medium of instruction. Their average exposure to the German language amounted to 7;02 years (*SD* 2;03).

All pupils in this group received Arabic literacy instructions as part of the afternoon curriculum. Instructions in standard Arabic commenced in first grade and were conducted daily until the third grade. In the fourth grade, the frequency of literacy instructions was reduced to once a week. On average the pupils in this groups had received 3;06 years (*SD* 1;03) of literacy instruction in standard Arabic.

2. The second group (henceforth called *mosque*) comprised of 33 children (18 male, 15 female) whose first language was Arabic. These children learned to read and write standard Arabic as part of their religious instructions at a mosque. Similar to the school group, all members of this group hailed from Arabic-speaking families and had been exposed to varieties of spoken Arabic from birth. They attend public primary

schools in Bonn and Cologne, specifically in grades two, three, or four. The average age at which they began learning German as ascend language was 2;24 years (SD 2;02). Pupils in this group had a mean age of 9;02 years (range 8;00-10;03 years, *SD* 0;10). On average, they had been learning German for 7;00 years (*SD* 1;10) on average. Instruction in this group was conducted solely in German, with no Arabic literacy instructions provided in school; instead, this instruction occurred at the mosque that during weekend. The duration of these lessons varied from 45 to 120 minutes. On average, the children had received 3;03 years (*SD* 2;02) of literacy instructions in standard Arabic.

The two bilingual groups, namely the school and the mosque, exhibited no significant differences regarding the age of acquisition for the second language German (t(60.09) = -0.47, p = 0.64) nor in the duration of exposure to German (t(61.53) = 0.28, p = 0.78). LSimilary, there was no notable difference in their age of onset for standard Arabic , t(45.49) = -0.77, p = 0.45) or in the time of contact with standard Arabic t(51.72) = 0.59, p = 0.56) did not differ between these two groups.

None of the children participating in the study exhibited any signs of physical or cognitive disabilities. Vision was either normal or corrected to normal levels. All parents of the subjects provided prior written informed consent to their children's involvment in the study. The data were gathered and handled in accordance with the ethical standards outline in the Declaration of Helsinki.

Table 1.   Description of the subjects in the study (n= 66)

Groups	Chronological age Mean (y;m)* (SD)	Grade	Gender *	Age of onset Arabic (y;m)	Experience in standard Arabic	Age of onset German (y;m)	Experience in German (y;m)
chool	9;03 (0;09)	3, 3, 4	21 f 12 m	3;06 (1;03)	3;06 (1;03)	2;00 (2;03)	7;02 (2;03)
osque	9;02 (0;10)	3, 3, 4	15 f 18 m	3;03 (2;02)		2;24 (2;02)	7;00 (1;10)

* (years (y), monthes (m))
*Gender: Female (f), Male (m)

Materials and Methodology

To enable a meaningful comparison of reading acquisition between Arabic and German, the Arabic version of the one-minute reading test was utilized with the bilingual groups participating in a study by Naddaf (2016), which yielded pertinent findings. This study primarily focuses on the results obtained from the German participants. The formats of both the German and Arabic one-minute reading tests are similar.

SLRT II *Lese- und Rechtschreibtest*: Reading and spelling test, the one-minute reading fluency test for words and pseudowords (Moll & Landerl, 2010)

The one-minute reading assessment employed in this study is based on the standardized SLRT II battery, which evaluates both reading and spelling abilities (Moll &

Landerl, 2010). This assessment comprises two components: the one-minute reading fluency test and the spelling test. It is applicable across various educational levels, including adults. The spelling component consists of 24 words suitable for second graders, and 48 words for those in third and fourth grades. In our research, we focused solely on the one-minute reading subtest (Form A) as our primary interest was in reading rather than spelling. Additionally, to ensure a robust comparison between Arabic and German reading acquisition, both the Arabic version of the one-minute reading test and the German version of the SLRT II one-minute reading fluency test were utilized.

The reliability of the test is measured at .94 for words and .90 for pseudowords. It consists of two separate sheets: one for words and another for pseudowords. The tasks were administered consecutively. Each participant underwent the test individually, with instructions to read aloud as many words as possible within a one-minute timeframe, receiving one point for each correctly pronounced word. During the evaluation session, the researcher recorded the responses on each participant's scoring sheet, which remained unseen by the participants. The number of words and the instructions for both tasks (reading the word sheet and the pseudoword sheet) were identical. Each sheet contained 156 words arranged in eight columns. According to the SLRT II test guidelines, the items were distributed as follows: the first four columns each contained 18 items (totaling 72 items), while the remaining columns each contained 21 items (totaling 84 items). Participants were required to read the words aloud from top to bottom, progressing through the columns until the one-minute time limit was reached.

Initially, the vocabulary presented was quite simple, allowing the student to read with ease and fostering their motivation to continue. The reading task began with short syllables (one or two syllables) and included high-frequency word (e.g. House, see, Fish; *Haus, sehen, Fisch*). As the task progressed, the syllables became longer and the words less frequent (e.g. Syringe, sound, force; *Spritze, Klingen, zwängen;* Funfair, Sickroom, Soup Plate; *Jahrmarkt, Krankenzimmer, Suppenteller,* see appendix 9). This indicates an increase in reading difficulty as the syllables lengthened. From the fifth column onward, the font size was reduced. A similar trend of increasing syllable length and decreasing word frequency was observed in the pseudoword reading task. Examples of the pseudowords with two syllables are: *(e.g. Mume, Sesa, Lomi).* Other example of words with more than two syllables are (e.g. *Schwogu, Quaute, Zeinkab; Bentilamps, Naunolepst, Zwolgokun).* As with the real words reading test, the font size was also smaller from the fifth column onward.

The two tasks were administered independently, with each task allowing a strict reading duration of precisely one minute. Participants were interrupted immediately upon the conclusion of this time limit. No feedback was provided during the tasks, and the assessment was conducted subsequently. The entire testing process, as outlined in the SLRT II test, lasted approximately five minutes for each student: one minute for the real words reading assessment, one minute for the pseudowords reading assessment, and about three minutes for practice and explanation. According to the SLRT II guidelines, the test was conducted in the following sequence:
1   Practice for the word reading test (1-1.5 minutes)
2   The one-minute reading test for words (exactly 1 minute)
3   Practice for the nonword reading test (1-1.5 minutes)
4   The one-minute reading test for pseudowords (exactly 1 minute)

To facilitate the participants' comprehension of the procedure, practice items were supplied. These items were incorporated into the test and appeared on the reverse side of the student's scoring sheet. They comprised eight words organized into two columns. Each participant received a practice sheet containing real words (e.g., Fork, Home, Rain; Gabel, Heim, Regen) and another for pseudowords (e.g., Tiful, Sume, Katu). The practice items

were not reintroduced during the test. Participants were permitted to practice until they fully grasped the task. Feedback was provided during the practice phase, but not during the actual test. The two tasks were conducted sequentially. The test was administered on an individual basis. The verbal responses of the pupils were recorded on audiotape to ensure the precision of manual scoring, which was subsequently performed by the researcher.

Instructions

The assessment was conducted on an individual basis, with the researcher providing oral instructions to each student separately. To ensure comprehension of the procedure, practice items for both categories (real words and pseudowords) were administered prior to the commencement of the test. These practice items were not included in the actual test. Each student received two distinct sheets and was instructed to read the items aloud as swiftly as possible while aiming for accuracy. The first sheet contained the real words reading task, while the second sheet focused on the pseudowords reading task. A stopwatch was utilized to track the time, and each student was halted after precisely one minute. The verbal responses of each participant were recorded for later analysis.

Scoring

Each correct pronunciation was awarded one point, while each incorrect pronunciation received a score of zero. Participants had the opportunity to self-correct; in such instances, the response was deemed correct rather than an error. No feedback was provided during the assessment. The researcher conducted the evaluation subsequently, utilizing audio recordings for analysis. Errors were tallied, and any words or pseudowords that were skipped during the reading were classified as omissions. The raw score was determined by the number of correctly read items within a one-minute timeframe. Consequently, each student received two scores: one for the words reading test and another for the pseudowords reading test. The methodology was applied to both the words and pseudowords tasks during the one-minute reading assessment.

According to the scoring criteria established in the SLRT-II *Lese- und Rechtschreibtest* 2010, the calculation for the number of correct items read in a minute was as follows:

Number of correct items = total number of items read minus the number of incorrectly read items (errors) minus the number of omitted items (omissions).

The error percentage was calculated using the following formula:

Error percentage = (number of errors * 100) / total number of read items.

3. Findings and Discussion

The results of the German assessments carried out with 66 bilingual Arabic-German children from both school and mosque groups with the SLRT II (Moll & Landerl, 2010) test are noteworthy. The research question focuses on the German reading speed at the word level among bilingual Arabic-German students in Germany. The hypothesis: there are statistically significant relationships in the German one-minute reading tests SLRT II, (Moll & Landerl, 2010) in both lists (words and pseudowords) between the two bilingual groups (school, mosque). Our experiment leads to a significant conclusion: there is no evidence of German literacy difficulties in either group of bilingual children, as determined by the assessments employed in this study. A more comprehensive discussion of these two principal findings will be provided subsequently.

Means were compared through a T-test for independent samples between both groups (school and mosque), and there were no statistically significant differences in the level of (0.05) between them in both lists (words and pseudowords), respectively: [$F_{(1,64)}=.039$, p> 0.05, part. $\eta^2=.001$] ; [$F_{(1,64)}=.267$, p> 0.05, part. $\eta^2=.004$] (see figure 1).
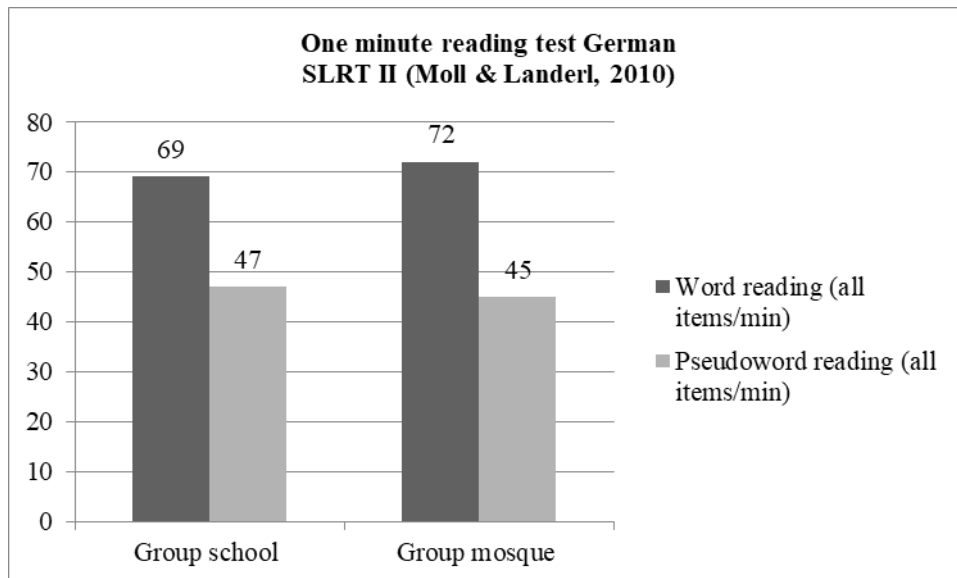
Figure 1. Mean score of all read items in the one-minute reading test SLRT II (Moll & Lander, 2010).

Discussion

This outcome aligns with the findings of Mayer (2018) (refer to table 3 and figure 2), who reported no statistically significant differences between German children in the 3rd and 4th grades across both lists (words and pseudowords). Notably, the correlations between the two lists (words and pseudowords) in our two bilingual groups are detailed in Table 2. Each group exhibited high and robust correlations between the lists. When comparing these correlations in Arabic and German (as assessed by a one-minute reading test), we found strong correlations between the reading of words and pseudowords in both languages. Our findings corroborate those of Mayer (2018), who identified a high correlation between the two lists (words and pseudowords) across his groups (overall r=.90, with varying levels from 1st to 4th grades: r=.67 – r=.93, p< 0.01). Word reading fluency was evaluated by counting the number of correctly read words within a minute, while decoding ability was assessed through pseudoword reading fluency, which indicates the presence of a decoding route to reading (Taouk & Coltheart, 2004; Share, 1995). Our results demonstrated strong reading fluency and decoding ability in German for both groups.

Table 2. Spearman rank correlational analyses for words and pseudowords reading.

Measures / Groups	All word and all pseudoword reading (all items/min)	Correct word and correct pseudoword reading (correct items/min)
Group school	0.70**	0.73**
Group mosque	0.78**	0.77**

It is noteworthy that our findings present a significantly different perspective when compared to earlier research concerning the reading abilities of children from migrant backgrounds. Recent investigations have highlighted challenges in the acquisition of German literacy among these children. International comparative assessments, including PIRLS, PISA, and IGLU, have indicated that the reading proficiency of children with migrant backgrounds in Germany is inferior to that of their German monolingual peers. However, our current study reveals that the German reading skills of children from migrant backgrounds within our bilingual groups do not exhibit deficiencies when evaluated against German monolingual children, contingent upon the specific assessments employed in our research. This outcome contradicts previous studies (IGLU/PIRLS 2006, Bos et al. 2007; Klieme et al., 2010), which represent some of the most significant findings regarding German literacy tests. Additionally, it does not align with the research conducted by Caspar and Leyendecker (2011), which indicated that children with Turkish as their first language and German as their second language demonstrated lower expressive and comprehension abilities in German.

Furthermore, a recent study corroborated this finding (Banfi et al., 2018; see Table 3 and Figure 2), which indicated that the percentile means for 72 typically developing children (TD) whose first language was German and who had a non-verbal IQ of 85 or higher, in the SLRT II across both lists (words and pseudowords), were 51.00 and 54.14, respectively. This suggests that the reading performance of children from migrant backgrounds in our bilingual groups (school and mosque) was comparable to that of German monolingual children, falling within the normal range. Additionally, Mayer (2018) reported that the mean number of correctly read items in both lists (words and pseudowords) for German fourth-grade children was 56.47 and 35.42, further supporting our findings.Contrary to earlier findings, our results suggest that the German reading skills of children with immigrant backgrounds are not deficient among the Arabic-German bilingual participants.

Table 3. Mean scores (M) and Standard Deviations (SD) for the one-minute reading assessment SLRT II (Moll & Landerl, 2010) were recorded in our bilingual groups as well as in the two studies.

One-minute reading (SLRT II)	Group school	Group mosque	(Banfi et al., 2018)	(Mayer, 2018)
	M (SD)	M (SD)	M (SD)	M (SD)
Word reading German (all items/min)	69.3 (17.7)	71.6 (20.1)		
Word reading German (correct items/min)	66.6 (18.4)	67.6 (21.2)		56.47 (27.09)
Words reading (correct items/minute) (PR[1], SLRT II)	53.21 (26.04)	51.97 (29.05)	51.00 (14.90)	33.53 (35.00)
Pseudoword reading German (all items/min)	47.2 (11.5)	45.2 (10.5)		
Pseudoword reading German (correct	42.5 (12.4)	41.0 (10.9)		35.42 (14.37)

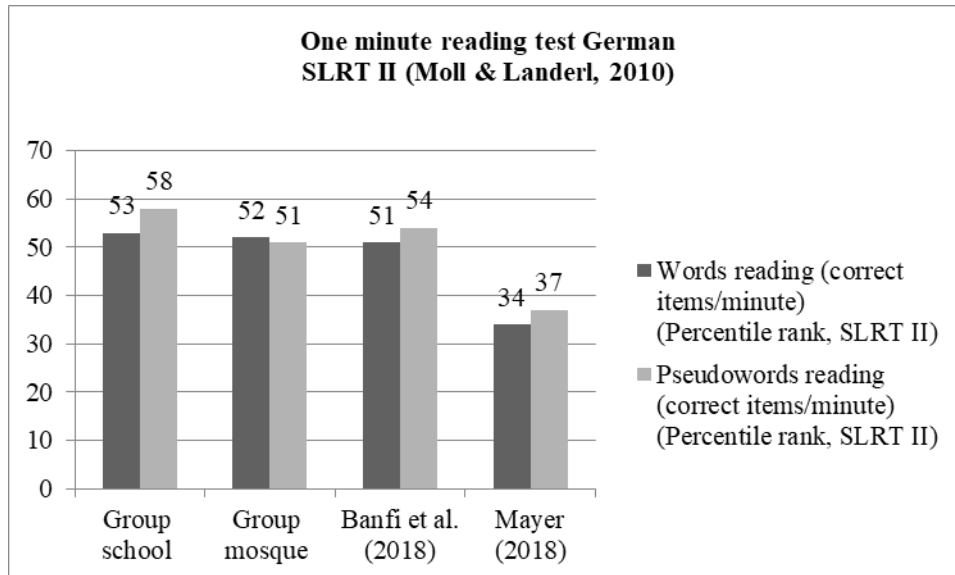|	items/min)			
Pseudowords reading (correct items/minute) (PR[1], SLRT II)	57.73 (28.65)	51.30 (27.63)	54.14 (16.92)	36.74 (33.61)

[1] percentile rank

Figure 2. The average score of the percentile rank in the one-minute reading assessment SLRT II (Moll & Lander , 2010).

5. Conclusion

In summary, research has shown that difficulties in word reading are predictive of future reading comprehension issues (Stanley et al., 2018; Toste et al., 2019; Zarić et al., 2021), potentially leading to significant academic difficulties throughout a student's educational journey (Cirino et al., 2013). Subsequent academic challenges are often observed. Specifically, Landerl and Wimmer (2008) highlight the importance of addressing the tendency for dysfluency in higher grades if German students display such issues in the first grade. Students with lower reading proficiency in both elementary and secondary education are more prone to demonstrate deficiencies in word recognition (Eme et al., 2014; Paige et al., 2013). This further underscores the relevance of our research, which holds practical applications.

The intervention concurrently advanced several essential components of second language acquisition. Considering that vocabulary knowledge is a fundamental element of language learning (Schmitt, 2008), it is particularly promising that both receptive and expressive vocabulary skills were enhanced. The integrated storytelling intervention in English and German as a second language has the potential to enhance vocabulary acquisition.

Moreover, vocabulary is essential for literacy as it facilitates reading (Stæhr, 2009). Furthermore, L2 learners may encounter challenges with word recognition (Grabe & Stoller, 2011). Based on two L2 studies carried out in Germany, the integrated storytelling intervention may enhance the automatic reading of sight words, thereby accelerating the process of word recognition. This aspect is especially important given that German is a transparent language; in which rapid word recognition and naming speed play a vital role (Knoepke et al., 2014; Landerl & Wimmer, 2008).

Future Directions

This research marks the first investigation into the reading abilities of children from immigrant backgrounds, with a particular emphasis on the reading accomplishments of bilingual Arabic-German children. Subsequent studies should broaden their focus to encompass the reading and writing development of both monolingual and bilingual children. Moreover, the present study concentrated on a limited age range, specifically targeting children in Grades 2 to 4. Future research could enhance its findings by including a wider age range that spans both children and adults, allowing for comparisons across different age groups. Additionally, the creation of standardized assessments in Arabic would be beneficial for assessing the literacy skills of bilingual children (Arabic and German), especially considering the growing population of Arabic-speaking students in the German educational system as a result of the recent influx of refugees.

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