

Literacy Success for Adult Learners

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OVERVIEW

This study sheds light on the prevalence and consequences of dyslexia in the United States, emphasizing the critical need for early identification and intervention. Undiagnosed dyslexia can have dire consequences, as demonstrated by a high proportion of inmates exhibiting dyslexic traits and the strong correlation between reading difficulties and incarceration or welfare reliance. A significant lack of research exists concerning reading interventions for adult learners with dyslexia, despite its profound impact on educational attainment and mental health. Moreover, the economic ramifications of adults lacking functional literacy are substantial, with a societal loss of \$2.2 trillion due to missed earnings. This study aims to address these issues by examining the impact of a comprehensive, structured literacy intervention for adult learners with reading difficulties, particularly dyslexia, highlighting the urgency of finding effective solutions for the most vulnerable learners.



It is estimated that between 5-17% of the United States population has dyslexia (Gibbs & Elliott, 2020; Katusic et al., 2001; Ozernov-Palchick & Gaab, 2018; Wagner et al., 2020); however, as of 2022, the rate of identification for the largest cities in Texas were 2.9%, 3.9%, and 4.7%, respectively (TEA, 2022). Dyslexia is a specific learning disability that manifests as difficulty with word reading and spelling. It is often unexpected when compared to other skills, such as verbal comprehension (Lyon et al., 2003). Because of this, an individual with dyslexia can end up misdiagnosed with an intellectual disability or demonstrate symptoms attributed to “laziness” or “just not trying.” On the contrary, individuals with dyslexia have tremendous potential (i.e., entrepreneurs); however, in a society where literacy is necessary for success, without proper identification and intervention, the consequences of undiagnosed dyslexia can be dire.

A study of Texas prison inmates found 47.8% demonstrated characteristics of dyslexia (Moody et al., 2000), while an even more recent study from Louisiana found 47% of inmates to have dyslexia (Cassidy et al., 2021). Furthermore, the National Assessment of Adult Literacy (2003) states that two-thirds of students who have difficulty with reading in fourth grade will have a higher chance of being incarcerated or receiving welfare. With nearly seventy percent of America’s incarcerated population experiencing reading difficulties, it is essential that literacy intervention is made accessible to adults in ways that increase their odds of being productive citizens.

There is a lack of research regarding reading interventions for adult learners with dyslexia in the United States (Galuschka et al., 2020). One of the most predictive life outcomes, not finishing secondary school (Grigorenko, 2006) and/or not continuing with post-secondary schooling (Donato et al., 2022; Moll et al., 2022), indicating the importance of accurate diagnosis and intervention. In addition, undiagnosed and/or untreated dyslexia has also been connected to higher rates of incarceration (Asbjørnsenet et al., 2021; Grigorenko et al., 2015; Morken et al., 2021), anxiety and depression (Gibby-Leversuch et al., 2021; Hossain et al., 2021; Long et al., 2007; McArthur et al., 2022).

Most notably, studies have estimated that adults lacking functional literacy contribute to a societal loss of missed earnings upwards of \$2.2 trillion, resulting from their inability to perform in jobs that require basic levels of literacy (Moll et al., 2022; Rothwell, 2020). Clearly, understanding what works for the most vulnerable learners is imperative. The present study examines the impact of a comprehensive, structured literacy intervention for adult Learners with reading difficulties, such as dyslexia.

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THE PRESENT STUDY

Neuhaus Education Center (NEC) is a non-profit organization that provides professional learning to educators, family support for struggling readers, and free adult literacy classes. NEC currently enrolls approximately 100 adult literacy students with classes available twice a week either virtually or in person. Instruction is delivered to students by a Certified Academic Language Therapist and Licensed Dyslexia Therapist, which requires a Master's degree in addition to 200 hours of class training and 700 hours of supervised teaching. The participating instructor has seven years of extensive experience working with adults with reading difficulties. In addition to completing 10 hours of yearly professional development, the instructor was observed by another Licensed Dyslexia Therapist monthly to ensure fidelity to the components of the intervention program.

NEC's *Basic Language Skills* program, which includes systematic and explicit structured literacy concepts (i.e., phonemic awareness, phonics, syllable instruction) that move from simple to more complex, was used as the intervention for the students. Other curricula were sourced to pull information relevant to adult audiences, but all approaches employed elements of evidence-based instructional delivery such as systematic, cumulative, explicit, diagnostic, and prescriptive.

Prior to enrollment in the program, a screening was conducted using the Woodcock Johnson-IV (Schrank & Wendling, 2018), a norm-referenced set of tests commonly used to aid in the diagnosis of reading difficulties, such as dyslexia. Screening data were collected for twelve participants; however, four participants were excluded due to English learner status, which was beyond the scope of this review. Of the eight remaining, seven were female and one was male. One participant identified as Asian American (Vietnamese) and seven identified as African American. Interestingly, four of the female African American students were relatives with a mother and daughter participating along with two of the mother's sisters. The mean age at time of pre-screener to begin the program was 45.8 years (range = 32.4-56.5).

The average time each participant spent in the program was four years (range = 3.2-6.3). The mean age at post-screener was 50 years (range = 36-59.11). The same assessment was delivered after the intervention to examine the participants growth over time as a result of the intervention.

RESULTS

Descriptive statistics for the pre- and post-tests of achievement cluster and subtest standard scores can be found in Table 1. Paired sample t-tests were used to analyze the pre- and post-screener data on the cluster and subtest scores in order to evaluate the impact of the structured literacy reading intervention on the literacy skills of the participating students. Statistically significant differences ($p < .05$) were found for Broad Reading Cluster ($p = .0027$), Basic Reading Cluster ($p = .0044$), Spelling ($p = .0015$), Word Attack ($p = .0004$), and Sentence Reading Fluency ($p = .0168$), with Word Attack showing the most significant gains. Differences were not statistically significant for the Reading Cluster ($p = .08$), nor the subtests of Letter Word Identification ($p = .07$), Passage Comprehension ($p = .3126$), and Reading Vocabulary ($p = .1651$).

Table 1.

Summary of reading measures at the pre- and post-screener

WJ-IV Test of Achievement	Before the Program		After the Program		Growth		
	Mean	SD	Mean	SD	Mean	SD	p-value
Reading Cluster	68.5	11.45	72.13	7.02	3.63	5.01	.08
Broad Reading Cluster	66.75	13.77	71.5	11.26	4.75	2.96	.0027
Basic Reading Cluster	61.75	14.61	74	8.38	12.25	8.38	.0044
Letter Word ID	68	14.65	72.25	10.61	4.25	5.65	.0709
Spelling	72.88	15.12	78.38	15.42	5.5	3.07	.0015
Passage Comprehension	70.38	8.40	72.63	5.66	2.25	5.85	.3126
Word Attack	59.38	13.82	77.5	7.95	18.13	8.15	.0004

CORRELATION ANALYSES

The relationship between participant characteristics and gains in literacy was also evaluated through this study using Pearson's r . An analysis related to growth in each individual subtest related to attendance, age, time in the program, and oral language cluster and picture vocabulary subtest scores yielded no statistically significant results, except for growth in sentence reading fluency.

This analysis demonstrated a significant positive correlation with the number of semesters attended ($r=0.7952$, $p=0.0183$) and the number of months between the pre- and post-screener ($r=0.7362$, $p=0.0373$) related to sentence reading fluency growth. Another strong correlation was between growth in the basic reading cluster score and growth in the word attack subtest score ($r=0.71$, $p=0.0472$). A robust negative correlation was found between certain subtests, including between growth in word attack scores and pre-word attack scores ($r=-0.86$, $p=0.006$), growth in letter word identification and pre-letter word identification scores ($r=-0.81$, $p=0.149$), and growth in passage comprehension and pre-passage comprehension scores ($r=-0.74$, $p=0.0355$).

In most cases, a student whose initial standard score was extremely low in those domains yielded a higher gain on the post-screener. No similar correlation was found between growth in Sentence Reading Fluency ($r=0.0691$, $p=0.8708$), Reading Vocabulary ($r=-0.5361$, $p=0.1708$), nor Spelling ($r=-0.0015$, $p=0.9971$).

DISCUSSION

The focus of this study was evaluating the impact of a structured literacy program on literacy skills for struggling adult readers who demonstrated characteristics of dyslexia. While vocabulary is not a preliminary consequence of dyslexia, the Matthew Effect (Stanovich, 1986) indicates that students who continue their educational journey without remediation of their reading difficulties may end up with greater negative impacts on their overall comprehension and vocabulary due to lack of exposure caused by lessened or non-existent reading.

While the results of the paired sample t-test did indicate statistically significant improvements in several literacy measures, including the Broad Reading Cluster, Basic Reading Cluster, Word Attack, and Sentence Reading Fluency, no significant differences were observed in the Reading Cluster, Letter Word Identification, Passage Comprehension, and Reading Vocabulary. These findings support the effectiveness of the structured literacy approach in building basic reading skills. The marked improvement in Word Attack, which measures decoding and phonological skills, suggests that participants benefited from the program's focus on explicit instruction in phonemic awareness and phonics. Furthermore, the explicit instruction possibly aided their reading of short sentences, as found in the significant growth on the Sentence Reading Fluency subtest.



Nevertheless, the absence of discernible gains pertaining to passage comprehension is perplexing, considering that a core objective is for adult learners to attain, at a minimum, a functional literacy level. One plausible explanation could be attributed to the mediating impact of vocabulary. Even if students made strides in decoding words, the absence of an accompanying increase in their vocabulary, as evidenced by the lack of significant growth in the Reading Vocabulary scores, would still hinder comprehension of the text. The correlation analyses provided further insight into the relationship between participant characteristics and literacy gains. Interestingly, age, length of time in program, and attendance did not show strong correlations with the individual subtest gains. However, the one exception was a positive correlation between the growth in Sentence Reading Fluency and the number of semesters attended, indicating that longer program engagement could be associated with greater improvement in reading fluency. Of course, all findings should be interpreted with caution due to the small sample size.

The strong negative correlations observed between the growth in certain subtests and their corresponding pre-test scores, specifically Word Attack, Letter Word Identification, and Passage Comprehension, suggested that for those domains, the students with very low baseline performance had more room for immediate improvement, resulting in larger gains. This was also supported by the mean post-test scores, which were all in the lower 70s, which would be qualitatively described as “Low” instead of “Very Low.” This trend was not found with Sentence Reading Fluency nor Reading Vocabulary although those post-tests mean scores also ended up in the lower 70s. Because Sentence Reading Fluency is the only timed subtest, it is possible that a student’s individual processing speed could play a larger role, but that is impossible to ascertain from this study. No cluster nor subtest score moved up to the 80s for a mean score, which would have indicated growth into the low average range. This indicates that the group still struggles with functional literacy skills.

DISCUSSION

One limitation of this study is that the adult education center did not track the distribution of elements across the two hours of instruction (i.e., minutes spent on phonics v. reading comprehension). This will be important to include in future studies to determine whether time spent on decoding skills vs. time spent on vocabulary and comprehension are contributing to these outcomes.

Future studies with this population should also incorporate a specific, regular routine for oral language, vocabulary, and comprehension in comparison to the current protocol to examine differences in participant outcomes as a result. In addition, elementary students receiving the same intervention tend to make greater gains over time due to increased time in the intervention (i.e., daily in a school setting). Increasing the number of opportunities that are available to participants (e.g., 3 times a week vs. 2) could be a viable option for increasing the dosage these adults receive, allowing them to make greater gains in a shorter amount of time.

CONCLUSION

Research on reading interventions is lacking for adults. The results from this study, even with its limited sample size, are practically significant in that they showed gains for decoding skills and sentence reading fluency in adult participants as a result of a comprehensive structured literacy intervention. This study can also be used to inform the structure of the intervention to ensure adults receive the specific types of reading intervention that best support their growth in becoming functionally literate.



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Neuhaus Education Center is a nationally recognized provider of research-based literacy solutions dedicated to promoting reading success for all. By laying the groundwork for sustainable change, Neuhaus equips teachers to be diagnostic and prescriptive in recognizing students' literacy needs and how best to utilize the resources made available to them by their district.

