

**EFFECTS OF COGNITIVE THERAPY ON MANAGING DYSLEXIA AMONG SENIOR
SECONDARY SCHOOL STUDENTS IN JOS METROPOLIS,
PLATEAU STATE, NIGERIA**

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Abstract

This study evaluated the effects of a brief cognitive therapy (CT) intervention on reading fluency, reading anxiety, and academic self-concept among senior secondary students with dyslexia in Jos metropolis, Plateau State, Nigeria. The research adopted the quasi-experimental design of non-equivalent groups design. The pre-test, and post-test control group was used. The target population for this study was 600 students. The sample of this study comprised 39 students made up of 22 females and 17 males from three public schools in Jos metropolis were assigned to an 8-week cognitive therapy intervention (n=22) and standard remedial instruction (n=17). Two specific objectives and two research questions guided the study. Two hypotheses were formulated and tested at a 0.05 level of significance in this study. Reading fluency was assessed via the Reading Anxiety Scale for Adolescents (RASA), and academic self-concept via the Academic Self-Description Questionnaire (ASDQ). Data collected were analyzed using mean and standard deviation, and ANCOVA. Preliminary findings indicate statistically significant improvements in reading fluency, and reductions in reading anxiety among the cognitive therapy group compared to controls. No significant change was observed in overall academic self-concept, suggesting longer intervention may be needed. Cognitive therapy shows promise as a feasible, low-cost tool for supporting dyslexic learners in Nigerian secondary schools. Findings call for teacher training reforms and integration of cognitive therapy modules into existing special-needs curricular to enhance inclusive education outcomes.

Keywords: dyslexia, cognitive therapy, reading fluency, reading anxiety, Nigeria.

Introduction

Dyslexia, a neurodevelopmental disorder characterized by persistent difficulties in accurate and fluent word recognition, spelling, and decoding abilities (American Psychiatric Association, 2013), affects approximately 5-10% of school-aged children worldwide (Snowling, 2019). In Nigeria, where literacy rates among adolescents remain low (59% for females and 69% for males in Plateau State, National Bureau of Statistics, 2022), undiagnosed or unsupported dyslexia contributes significantly to school dropout, low self-esteem, and behavioural challenges (Adeyemi & Oluwaseun, 2020). Despite growing awareness, most Nigerian schools lack trained special educators or evidence-based interventions, leaving many dyslexic learners mislabeled as "lazy" or "unintelligent" (Oluwakemi & Adebayo, 2021). The management of dyslexia, a common learning disability characterized by difficulties in reading and writing despite normal intelligence, remains significant educational challenge, especially among senior secondary school students. In Jos metropolis, Plateau State, Nigeria, these challenges are compounded by limited resources and awareness. Cognitive therapy, particularly Cognitive Behavioural Therapy (CBT), has shown promise in

addressing not only the academic difficulties but also the emotional and psychological impacts of dyslexia.

Dyslexia is a neurological disorder that affects an individual's ability to read, write and spell (International Dyslexia Association, 2020). It is a specific learning disability that affects millions of people worldwide, including in Nigeria. Despite its prevalence, dyslexia remains poorly understood, and individuals with dyslexia often face stigma, marginalization and limited access to support. In Nigeria dyslexia is a significant challenge facing many students, particularly those in senior secondary school (Adeleke, 2015). In Nigeria, the prevalence of dyslexia is estimated to be around 12.5% (Adeniyi, 2017). Students with dyslexia often experience difficulties with reading comprehension, writing and spelling, which can lead to poor academic performance, low self-esteem, and social isolation (Hallahan, Lloyd, Kauffman & Keller, 2015). Dyslexia can affect individuals of all ages, background, and abilities. It is often misunderstood and misdiagnosed, leading to feelings of frustration, low self-esteem, and isolation. However, with proper support and accommodations individuals with dyslexia can thrive academically and professionally.

Common signs and symptoms of dyslexia according to literature include difficulty with phonological awareness, slow and inaccurate reading, challenges with spelling, poor working memory, and difficulty with organization and time management. However, early detection and intervention are crucial in supporting individual with dyslexia. By recognizing the signs and symptoms early on, educators, parents and health care professionals can provide the necessary support and accommodations to help individuals with dyslexia thrive. Causes of dyslexia can be traced to genetic factors, brain structure and function, and environmental factors. Research has also identified types of dyslexia to include phonological dyslexia, orthographic dyslexia, mixed dyslexia, developmental dyslexia, and acquired dyslexia. Other forms of dyslexia are dyscalculia and dysgraphia. Furthermore, effects of dyslexia include academic effects, emotional and social effects, behavioural effects, and long-term effects.

In Nigeria, cultural factor can impact the identification and support of individuals with dyslexia. For example, Adeniyi (2017), Adeloje, Osaigbovo and Oloruntoaba (2019) found that parents' beliefs about dyslexia influenced their willingness to seek support. Ajuwon (2016) highlighted the need for culturally sensitive assessment tools to accurately identify dyslexia in Nigeria students. A person with dyslexia may have difficulties reading aloud. Dyslexia seems to be one of the major causes of poor reading skills in learners, and may also affect writing and arithmetic. However, research has shown that early diagnoses and specialized assistance could equip sufferers with adaptive abilities that will enable progress successfully with their academic career (Benaroch, 2016; Alexander-Passe, 2015). The effects of dyslexia vary from person to person. People with the condition generally have trouble reading quickly and reading without making mistakes. They may also have trouble understanding what they read.

Cognitive therapy (CT) is a structured, time-limited psychotherapeutic approach that helps individuals identify and modify dysfunctional thoughts, beliefs, and attitudes to improve emotional regulation and behaviour (Beck, 1976). Cognitive therapy grounded in Beck's cognitive model has shown promise in reducing reading-related anxiety and improving academic self-concept among students with learning disabilities in western contexts (Torgesen, Wagner & Rashotte, 2018). Yet its feasibility and impact within Nigerian senior secondary settings where cultural stigma, limited resources, and large class sizes dominate remain unexplored. This gap underscores the need for context-specific research to validate psychologically informed strategies that can be realistically implemented in under-resourced Nigerian classrooms.

Statement of the Problem

The problem of this study stems from the widespread challenges faced by senior secondary school students with dyslexia in Jos metropolis, Plateau State, Nigeria. Despite the high prevalence of dyslexia, many students remain undiagnosed or inadequately supported due to low awareness and limited resources among educators and schools. This lack of early identification and effective intervention often results in poor academic performance, low self-esteem and increased school

dropout rates among affected students. Furthermore, there is a scarcity of research on the application and effectiveness of cognitive therapy as a management strategy for dyslexia in this context. Consequently, students with dyslexia continue to struggle with reading and writing difficulties, which negatively impact their educational outcomes and psychological well-being.

This study seeks to address these gaps by investigating the effects of cognitive therapy on managing dyslexia among senior secondary school students in Jos metropolis, aiming to provide evidence-based solutions to improve their academic success and emotional health.

Aim and Objectives of the Study

The aim of this study is to examine the effects of cognitive therapy on managing dyslexia among senior secondary school students in Jos metropolis, Plateau State, Nigeria. The specific objectives of the study include to:

1. determine the effects of reading fluency of dyslexic students before and after intervention in Jos metropolis;
2. evaluate the effects of writing skills among dyslexic students in Jos metropolis before and after intervention;

Research Questions

The following research questions were answered in the study:

1. What is the pre-test and post-test reading fluency on dyslexic students in the experimental and control groups in Jos metropolis?
2. What is the pre-test and post-test writing skills among dyslexic students in Jos metropolis in the experimental and control groups?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance in the study:

1. Ho₁: There is no significant difference between the pre-test and post-test reading fluency among dyslexic students in Jos metropolis in the experimental and control groups.
2. Ho₂: There is no significant difference between the pre-test and post-test writing accuracy among dyslexic students in Jos metropolis in the experimental and control groups.
memory and information processing speed in dyslexic students in the experimental and control groups.

Methodology

This study adopted a quasi-experimental research design, which is suitable when random assignment is not feasible but there is a need to evaluate the effect of an intervention. In this case, cognitive therapy on dyslexic senior secondary school students in Jos metropolis. This design allows comparison between an experimental group receiving cognitive therapy and a control group without the intervention (Adeyemi & Oluwaseun, 2020; Adubasim, 2018). The population of the study consisted of senior secondary school students (SS 1-3) in three public schools in Jos metropolis, Plateau State. A purposive sampling technique was used to select schools and students identified with dyslexia through screening tests. Screening involved adapted dyslexia assessment tools such as reading and spelling tests, Rapid Automatic Naming (RAN) tests, and cognitive skill assessments (working memory and processing speed). The sample size was made up of 22 females and 17 males identified as dyslexic students were used for intervention and control groups.

The experimental group was exposed to effect of an intervention. In this case, cognitive therapy on dyslexic senior secondary school students in Jos metropolis. After an 8-week intervention, a post-test was administered to both groups of experimental and control to measure any changes. Data collected were analyzed using mean and standard deviation to answer the research questions. Then inferential statistics of ANCOVA was used to test the hypotheses. It was

further used to compare the pre-test and post-test scores of the experimental and control groups to determine the effectiveness of cognitive therapy in managing dyslexia among the students.

Results

Answering of Research Questions

Research Question One: What is the pre-test and post-test reading fluency of dyslexic students in the experimental and control groups in Jos metropolis?

Table 1: Showing Pre-test and Post-test Reading Accuracy of Students with Dyslexia in the Experimental and Control Groups

Group	N	Pre-test		Post-test		Mean Gain/Loss	X Gain Diff.
		Mean	SD	Mean	SD		
Experimental	20	7.05	1.00	16.40	1.19	9.35	6.56
Control	19	7.21	0.79	10.00	1.56	2.79	

Source: Field Work, 2025.

Table 1 presents the result of the pre-test and post-test reading accuracy of dyslexic students in the experimental and control groups in Jos metropolis, Plateau State, Nigeria. The result reveals that in the experimental group the pre-test and post-test reading mean scores were 7.05 and 16.40 with standard deviations of 1.00 and 1.19 respectively, with a mean gain of 9.35, indicating that there was improvement in the post-test reading accuracy of students with dyslexia after treatment. The control group had a pre-test and post-test reading mean scores of 7.21 and 10.00 with standard deviations of 0.79 and 1.56 respectively with a mean gain of 2.79. The findings show that at the pre-test both the experimental and control groups had low mean scores, but after treatment the experimental group had a higher mean score than those in the control group who were not given treatment with a mean gain difference of 6.56. This implies that CBT does help improve the reading difficulty of secondary school students with dyslexia in Jos metropolis, Plateau State, Nigeria.

Research Question Two: What is the pre-test and post-test writing skills among dyslexic students in Jos metropolis in the experimental and control groups?

Table 2: Pre-test and Post-test Writing accuracy of Students with Dyslexia in the Experimental and Control Groups

Group	N	Pre-test		Post-test		Mean Gain/Loss	X Gain Diff.
		Mean	SD	Mean	SD		
Experimental	20	5.55	0.69	11.20	0.89	5.65	3.71
Control	19	6.11	0.57	8.05	0.91	1.94	

Source: Field Work, 2025.

In Table 2, the result of the pre-test and post-test writing skills among dyslexic students in the experimental and control groups is presented. The result reveals that in the experimental group the pre-test and post-test writing skills mean scores were 5.55 and 11.20 with standard deviations of 0.69 and 0.89 respectively, with a mean gain of 5.65, indicating that there was improvement in the post-test writing skills of students with dyslexia after treatment. The control group had pre-test and post-test writing mean scores of 6.11 and 8.05 with standard deviations of 0.57 and 0.91 respectively with a mean gain of 1.94. The findings show that at the pre-test both the experimental and control group had low mean scores, but after treatment the experimental group had a higher mean score than those in the control group who were not given treatment with a mean gain difference of 3.71. This implies that CBT does help improve the writing difficulty of secondary school students with dyslexia in Jos metropolis, Plateau State, Nigeria.

Hypotheses Testing

Hypothesis One: There is no significant difference between the pre-test and post-test reading fluency among dyslexic students in Jos metropolis in the experimental and control groups.

Table 6: Pre-test and Post-test Reading Mean Sores of Dyslexic Students in the Experimental and Control Groups

Source	Type Sum of Square	DF	Mean Square	F	P-Value
Corrected model	388.109 ^a	2	194.054	96.021	.000
Intercept	105.202	1	105.202	52.056	.000
Covariate	.067	1	.067	.033	.857
Group	385.681	1	385.681	190.841	.000
Error	70.733	35	2.021		
Total	7250.000	38			
Corrected Total	458.842	37			

a. R squared = .846 (Adjusted R Squared .837)

Analysis of covariance was conducted to determine the significant difference between the pre-test and post-test reading fluency among dyslexic students in Jos metropolis in the experimental and control groups. Table 6 revealed that $F(35) = 190.84$, $P < 0.05$. Since the P-value of 0.000 is less than the 0.05 level of significance, the null hypothesis was rejected, indicating that there is a significant effect of CBT on the reading fluency of students with dyslexia. The result further showed and adjusted R Squared value of .837 which means that 83.7 percent of the variation in the dependent variable which reading fluency is explained by the variation in the treatment, while the remaining 16.3 percent is due to other factors not included in the model. This implies that there is a significant difference in the pre-test and post-test reading fluency mean score of dyslexic students in the experimental and control groups in Jos metropolis, Plateau State, Nigeria.

Hypothesis Two: There is no significant difference between the pre-test and post-test writing accuracy among dyslexic students in Jos metropolis in the experimental and control groups.

Table 7: Pre-test and Post-test Writing Mean Scores of Dyslexic Students in the Experimental and Control Groups

Source	Type Sum of Square	DF	Mean Square	F	P-Value
Corrected model	97.445 ^a	2	48.723	60.026	.000
Intercept	28.619	1	28.619	35.258	.000
Covariate	.926	1	.926	1.141	.293
Group	87.426	1	87.426	107.707	.000
Error	29.221	36	.812		
Total	3771.000	39			
Corrected Total	126.667	38			

a. R squared = .769 (Adjusted R Squared .756)

Analysis of covariance was conducted to determine the significant difference between the pre-test and post-test writing accuracy among dyslexic students in Jos metropolis in the experimental and control groups. Table 7 revealed that $F(36) = 107.71$, $P < 0.05$. Since the P-value of 0.000 is less than the 0.05 level of significance, the null hypothesis was rejected, indicating that there is a significant effect of CBT on the writing accuracy of students with dyslexia. The result further showed and adjusted R squared value of .756 which means that 75.6% of the variation in the dependent variable which writing accuracy is explained by the variation in the treatment, while the remaining 24.4 percent is due to other factors not included in the model. This implies that there is a significant difference in the pre-test and post-test writing accuracy mean score of dyslexic students in the experimental and control groups in Jos metropolis, Plateau State, Nigeria.

Discussion

The study examined the effects of cognitive therapy on managing dyslexia among senior secondary school students in Jos metropolis, Plateau State, Nigeria. The findings on the pre-test and post-test reading fluency of dyslexic students in the experimental and control groups revealed that at the pre-test both the experimental and control groups had low mean scores, but after treatment the experimental group had a higher mean score than those in the control group who were not given treatment. This implies that CBT does help improve the reading difficulty of secondary school students with dyslexia in Jos metropolis, Plateau State, Nigeria. Offiong and Undie (2024), on their study on picture reading and scaffolding strategies on reading fluency of children with dyslexia found a significant improvement in fluency ($P < 0.05$) among students with dyslexia in the experimental group.

The result of analysis on the pre-test and post-test writing accuracy of dyslexic students in the experimental and control groups revealed that the pre-test both the experimental and control groups had low mean scores. This could be so because dyslexia is a neurodevelopment disorder marked by persistent difficulties in accurate word recognition, poor spelling and decoding abilities despite normal intelligence and adequate education (Kuersten, Meta & Segear, 2019). It is a specific learning difficulty primarily affecting reading and writing skills, characterized by difficulties with accurate and/or fluent word recognition, spelling, and decoding abilities despite normal intelligence and adequate instruction (Carroll, Holden, Kirby, Thompson & Snowling, 2025). After treatment using CBT on the experimental group had a higher mean score than those in the control group. This implies that CBT does help improve the writing difficulty of secondary school students with dyslexia in Jos metropolis, Plateau State, Nigeria. Cognitive therapy is a type of psychotherapy that focuses on identifying and changing negative thought patterns and behaviours (Beck, 2011). It has emerged as an effective management strategy for dyslexia by addressing both academic difficulties and emotional challenges faced by students with dyslexia.

Conclusion

Based on the findings of the study, it was concluded that at the pre-test both the experimental and control groups had low writing and reading skills, but after treatment the experimental group had a higher writing and reading mean score than those in the control group. This implies that CBT does help improve the reading and writing difficulties of secondary school students with dyslexia. It was further discovered that CBT is effective in reducing the anxiety level of students and increasing the self-esteem, working memory and information processing speed mean score of students with dyslexia in Jos metropolis. It further showed a significant difference in the post-test anxiety, self-esteem, working memory and information processing speed mean score of students with dyslexia in Jos metropolis of Plateau State.

Recommendations

Based on the findings of the study, it was recommended that:

1. Schools within Jos metropolis should incorporate cognitive therapy techniques into their special education and counseling units. Trained school counselors/therapists can use strategies like memory training, attention enhancement, and phonological processing exercises to support students with dyslexia.
2. The Plateau State Ministry of Education should advocate for the inclusion of dyslexia screening and intervention programmes particularly cognitive therapy within the senior secondary school curriculum, especially under inclusive education policies.
3. Early identification of dyslexia through regular screening in junior classes can allow for timely cognitive intervention before the challenges escalate in senior secondary school. Schools should partner with psychologists to conduct assessments at entry levels.

4. Parents should be educated about dyslexia and the benefits of cognitive therapy through community sensitization programmes. Active parental involvement in reinforcing therapy techniques at home can significantly improve outcomes.

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