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REREAD STRATEGY AND THE COGNITIVE REASONING OF CHILDREN WITH MILD INTELLECTUAL DISORDER IN PUBLIC SPECIAL-NEED SCHOOLS IN OGUN STATE

Osoba, Monisola. A.[1], Aramide, K. A. Ph.D[2], Komolafe, S. F. Ph.D

[1]Gbenga Daniel Library, Tai Solarin University of Education, Ijagun, Ogun State
[2]Department of School Library and Media Technology, University of Ibadan, Oyo State
[3]Department of Special Education, University of Ibadan, Oyo State

Abstract

This study focused on the effect of Reread Strategy (RRS) on cognitive reasoning among children with mild intellectual disorder (CWMID) in public special-need schools in Ogun State, Nigeria. Gender and parental support were also considered as moderating variables. Using a pretest-posttest quasi-experimental design; the study involved 28 participants that met the inclusion criteria out of 31 pupils from two special-need schools in Ogun State. Participants were divided into RRS, and control groups. After an intervention period of six weeks, data analysis revealed a significant effect of the Reread Strategy on improving cognitive reasoning, with the participants in the RRS group scoring higher than those in the control group. Reread strategy proved to be very effective in enhancing cognitive reasoning, and the strategy was rrecommended for use in improving CR in CWMID.

Keywords: Reread Strategy, Cognitive reasoning, Intellectual disorder, Children with mild intellectual disorder, Special-need schools

Introduction

The cognitive reasoning ability of children, particularly those with mild intellectual disorder, plays a critical role in their overall intellectual development and learning capacity. Cognitive reasoning (CR) encompasses various mental processes such as perception, attention, memory, problem-solving, and decision-making, all of which are essential for understanding and interacting with the world. However, Children with mild intellectual disorder (CWMID) often face significant challenges in these areas, leading to difficulties in educational achievement and everyday functioning (American Psychiatric Association, 2013) These challenges make it imperative to explore and implement strategies that can support and enhance their cognitive reasoning abilities, thereby improving their quality of life and educational outcomes.

One such strategy that has gained attention in recent years is the reread strategy (RRS). The RRS involves reading the same material multiple times, which can help reinforce understanding and retention of information. This strategy is particularly beneficial for CWMID, who may struggle with initial comprehension and memory retention. By repeatedly exposing them to the same content, RRS offers these children multiple opportunities to process and internalize the material, thus aiding in the development of their cognitive reasoning skills.

The importance of improving cognitive reasoning in CWMID cannot be overstated. Education is not only a fundamental human right, as recognized by the United Nations,

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but it is also a critical tool for intellectual and social development (UNESCO, 2016). For CWMID, whose cognitive reasoning abilities are often underdeveloped, achieving educational success requires tailored interventions like RRS that address their specific learning needs. The implementation of such strategies is essential for ensuring that these children are not left behind in the education system, particularly in the context of global initiatives like the Sustainable Development Goals (SDGs) and Education for All (EFA).

In Nigeria, the education of CWMID presents unique challenges, particularly in public special-need schools. These schools often lack the resources and trained personnel necessary to effectively support children with intellectual disorder. As a result, there is a pressing need to adopt and implement evidence-based strategies like RRS to enhance the cognitive reasoning abilities of this category of children. This study aims to investigate the effect of RRS on the cognitive reasoning of CWMID in public special-need schools in Ogun State, Nigeria, with the goal of providing empirical evidence to support the widespread adoption of this strategy in special education settings.

This study seeks to contribute to the growing body of research on effective interventions for CWMID, with the ultimate aim of enhancing their educational outcomes and quality of life.

The cognitive reasoning abilities of children with mild intellectual disorder (CWMID) are significantly lower compared to their peers, leading to challenges in reasoning, memory, attention span, and adaptive behaviour. These difficulties are often due to abnormal brain conditions, which may be genetic or developmental in nature. The widespread prevalence of intellectual disorder worldwide suggests that without effective educational strategies, many CWMID may be left uneducated. This underscores the importance of implementing strategies that can enhance the cognitive reasoning abilities of this category of children.

Previous research has explored various methods to improve cognitive reasoning in children with intellectual disorder, including strategies like self-questioning and read-aloud techniques. However, while some scholars have examined the effect of reread strategy (RRS) on its own, no research has comprehensively investigated its effectiveness on the cognitive reasoning of CWMID to the best of the researchers' knowledge. Given the potential of RRS to improve comprehension and retention by encouraging repeated exposure to the same material, this study aims to assess the impact of RRS on the cognitive reasoning abilities of CWMID in public special-need schools in Ogun State, Nigeria.

Objectives of the study

The objectives of the study include determining:

1. the main effect of reread strategy on the cognitive reasoning of children with mild intellectual disorder in public special-need schools in Ogun State, Nigeria;
2. the main effect of gender on the cognitive reasoning (CR) of CWMID in public special-need schools in Ogun State, Nigeria;
3. the main effect of parental support on the cognitive reasoning (CR) of CWMID in public special-need schools in Ogun State, Nigeria;

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Hypotheses

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

1. There is no significant main effect of reread strategy on the cognitive reasoning of children with mild intellectual disorder in public special-need schools, Ogun State, Nigeria.
2. There is no significant main effect of gender on the cognitive reasoning ofchildren with mild intellectual disorder in public special-need schools, Ogun State, Nigeria.
3. There is no significant main effect of parental support on the cognitive reasoning of children with mild intellectual disorder in public special-need schools, Ogun State, Nigeria.

Literature Review

Reading is an essential aspect of education and daily life, serving both practical and pleasure purposes. Historically, reading has been defined by skills such as following directions or answering questions based on a text. However, reading is a complex cognitive activity that involves understanding, interpreting, and evaluating text. To enhance reading comprehension, especially among struggling readers such as those with mild intellectual disorder, various reading strategies have been developed. One such strategy is the reread strategy (RRS), which involves reading the same text multiple times to reinforce understanding and retention.

Reread strategy is particularly effective for improving reading comprehension. It allows students to engage deeply with the material, promoting better vocabulary acquisition, enhanced phonemic awareness, and improved understanding of the text's content. By rereading, students become more familiar with the text, which aids in memorizing vocabulary and recognizing patterns in language use. This familiarity helps in solidifying the connections between words and their meanings, which is crucial for building a strong vocabulary base.

Moreover, reread improves comprehension by giving students multiple opportunities to grasp the underlying themes, plot, or character developments that they might miss on the first reading. This deeper understanding enables them to tackle more complex narratives and make connections between different parts of the text, enhancing their critical thinking skills. The strategy also allows for better retention of information, as repeated exposure to the same content helps reinforce memory, which is particularly beneficial for CWMID who may struggle with memory retention.

In addition to cognitive benefits, the reread strategy also boosts students' confidence in their reading abilities. As they become more familiar with the text, they are more likely to read it fluently without hesitation, which in turn builds their confidence and encourages them to take on new reading challenges. This increase in confidence is crucial, as it can foster a lifelong love of reading, which is essential for continuous learning and intellectual growth.

Overall, the reread strategy is a powerful tool in the educational toolkit, particularly for students who face challenges in reading comprehension. By allowing students to engage

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Online ISSN: 2992-4987

with texts repeatedly, it not only enhances their understanding and retention of the material but also builds their confidence and encourages a deeper appreciation for reading. As such, it plays a vital role in improving the cognitive reasoning skills of CWMID, making it an indispensable strategy in special education settings.

Cognitive Reasoning and Intellectual Disorder

Cognitive reasoning is an essential part of human intellectual functioning, encompassing the ability to understand, process, and adapt to various situations. It is closely linked to general intelligence, emotional state, and experiences. Each child exhibits a unique level of cognitive reasoning, which can vary significantly due to genetic and environmental factors. Traditionally, cognitive reasoning has been assessed through standardized tests measuring memory, comprehension, and logical thinking, but modern perspectives recognize it as a complex, multidimensional concept, where measurement is more of an approximation than a definitive metric.

Intellectual disorder, often used interchangeably with intellectual disability in literature, refers to significant limitations in both cognitive reasoning and adaptive behavior. This condition can arise from genetic abnormalities, environmental influences, or a combination of both. Children with intellectual disorder have difficulties in basic functions like reading, writing, and problem-solving and may also face severe challenges in social functioning. Intellectual disorder can range from mild to severe, with each level requiring different types of support. Children with mild intellectual disorder may learn at a slower pace but can often live independently, while those with severe disorder may require constant assistance.

The presence of intellectual disorder is also associated with various psychological and social challenges, including poor memory, difficulty with abstract thinking, and challenges in social interactions. Historically, individuals with intellectual disorder have faced negative stereotypes and discrimination, leading to social exclusion. In Nigeria, these challenges are compounded by environmental factors like environmental pollution and inadequate healthcare, which can worsen their condition. Many families and communities in Nigeria still struggle with misconceptions about intellectual disorder and face a lack of support, leading to a cycle of low expectations and poor resource allocation for individuals with this condition. This hinders their ability to participate fully in the society.

In the educational system, children with intellectual disorder face significant challenges. They often struggle with academic tasks, have difficulty maintaining focus, and may exhibit behavioural issues, leading to social isolation and emotional problems. These challenges are particularly acute as they become aware of their differences compared to their peers. Effective education for children with intellectual disorder requires a tailored approach that considers their unique needs. Special education programs often focus on teaching basic life skills and providing the necessary support to help these children succeed.

Despite the advancements in understanding and addressing intellectual disorder, there is still a need for greater awareness and resources to support these efforts, particularly in

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Online ISSN: 2992-4987

low-income countries like Nigeria. Cognitive reasoning is a fundamental aspect of human development, and its impairment in children with intellectual disorder presents significant challenges. While strategies like reread mayhave a potential of improving cognitive reasoning, comprehensive support systems that address both the educational and social needs of individuals with intellectual disorder are essential. The societal perception of intellectual disorder must continue to evolve, with greater emphasis on inclusivity and support to help these individuals lead fulfilling lives.

Reread Strategy and Cognitive Reasoning in Children with Mild Intellectual Disorder

The effectiveness of various reading methods has been thoroughly studied, with findings showing that these methods enhance readers' abilities for critical reflection (Wright & Brown, 2006). Motivation to read and the application of specific reading strategies are strongly interconnected. In a study by Alfassi, Weiss, and Lifshitz (2009), the impact of strategy instruction on reading literacy was examined, particularly focusing on comprehension monitoring among adolescents aged 15 to 21 with mild to moderate intellectual disorder. The study demonstrated that employing reading strategies for individuals with intellectual disorder yields significantly better results compared to traditional methods.

Similarly, Lundberg and Reichenberg (2011) conducted an intervention study aimed at improving reading comprehension among 40 students with mild intellectual disorder. The training involved 16 sessions, with pre-test and post-test assessments to measure the strategy's effectiveness. The post-test results indicated substantial improvement, confirming the benefits of the intervention. In Nigeria, the inadequate use of effective reading strategies might contribute to the slow academic progress of many children with intellectual disorder.

A related study in India found that 46% of children with intellectual disorder aged 8 to 10 who received basic skills training from community teachers for half of each school day outperformed the remaining 54% who did not receive such support after one year (Rose & Alcott, 2015). This highlights the importance of teaching students with intellectual disorder using specific techniques that enable them to fully grasp individual words in connected texts and extract meaning effectively.

The reread strategy (RRS), as the name suggests, involves reading a section or an entire text multiple times to enhance comprehension. Teaching children with intellectual disorder how to monitor their reading comprehension using RRS can help them recognize when they lose meaning. Skilled readers naturally slow down, reread, and clarify any ambiguities before continuing, whereas less experienced readers, such as those with intellectual disorder, often struggle to address reading challenges (Harvey & Goudvis, 2000). This reading method could be particularly beneficial for improving their reading skills.

For instance, Stevenson et al. (2007) found that students' reading comprehension improves significantly when they are familiar with effective reading strategies. Antoniou and Souvignier (2007) also explored this in a study involving 73 fifth graders, divided into control and experimental groups. The experimental group received explicit instruction in

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Online ISSN: 2992-4987

various reading strategies, while the control group followed standard reading practices. Post-test assessments revealed that the experimental group showed greater improvements in reading comprehension, reading knowledge, and reading self-efficacy, demonstrating the positive impact of targeted reading strategies on students with reading difficulties.

Gender and Cognitive Reasoning in Children with Mild Intellectual Disorder

Gender differences in cognitive reasoning (CR) have been widely studied, with research suggesting that gender may serve as a moderating variable. According to Nancollis, Lawrie, and Dodd (2005), 32% of girls starting school were able to associate letters with sounds compared to 26% of boys, and 70% of girls could identify letters compared to 62% of boys. Wheldall and Limbrick (2010) also noted that boys tend to have more reading difficulties than girls. Furthermore, Miles, Haslum, and Wheeler (1998) though old, but very relevant literature highlighted that reading impairments, often caused by cerebral disorders, are more common in boys than girls, with a gender disparity ratio as high as 3:1. The study also pointed out that while girls with the disorder may go unnoticed due to their quieter demeanour, boys, being more active and impulsive, are more likely to be identified through traditional school procedures.

Ganiyu (2015) examined the effect of gender on cognitive reasoning ability across different categories. Among children with low cognitive reasoning ability, males outperformed females (9.96% vs. 6%). Similarly, in the average cognitive reasoning category, males again scored higher than females (31.87% vs. 27.33%). However, in the good and very good cognitive reasoning categories, females outperformed males (57.70% vs. 49.00%) and (9.20% vs. 9.00%), respectively. The study concluded that females generally performed better in cognitive reasoning tests, possibly due to their diligent test-taking behaviour and superior eye-hand motor coordination.

Tariq, Qualter, Roberts. Appleby and Barnes (2013) explored the role of gender, emotional self-efficacy, and cognitive reasoning in mathematical literacy. The study involved 82 men and 93 women, with males outperforming females on most mathematical tasks and achieving higher average test scores. Despite this, both males and females were more confident in their math abilities than proficient. Syzmanowicz and Furnham (2011) conducted four meta-analyses examining gender differences in self-estimates of general cognitive reasoning, mathematical, spatial, and verbal abilities. They found that males gave significantly higher self-estimates than females in all areas except verbal ability, with the effect sizes favouring males.

Additionally, Schwenck et al. (2013) investigated gender's role in emotional empathy and perspective-taking among children aged 7 to 17. Their findings indicated that gender and cognitive reasoning influenced various aspects of cognitive empathy, accounting for 3% to 5% of the variation. This study supports the inclusion of gender as a moderating factor in understanding cognitive reasoning in children with mild intellectual disorder, despite conflicting results in other studies.

Parental Support and Cognitive Reasoning in Children with Mild Intellectual Disorder

Desforges and Aboucharr (2003) emphasized the critical role of parents in enhancing school performance and promoting their children's achievements. Mardiawati (2019) also

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Print ISSN: 2992-4979
Online ISSN: 2992-4987

underscored the need for collaboration between parents and teachers in helping children with intellectual disorder develop self-care skills both at home and in school.

Aremu, Tella, and Tella (2006) conducted a study among 500 secondary school students in Ibadan, Oyo State, to examine the relationship between emotional cognitive reasoning, parental involvement, and academic achievement. The study found a significant positive correlation between parental involvement and academic success, suggesting that parents' problem-solving skills and active participation in their children's lives are vital for the educational development of children with intellectual disabilities. Similarly, Zhang et al. (2011) reported that parental communication and aspirations for their children's education are strong predictors of academic success, even for children with disabilities.

Szumski and Karwowski (2012) pointed out that modern educational approaches for children with disabilities increasingly recognize the importance of parental involvement. Heward (2009) and Turnbull et al. (2010) similarly advocated for greater collaboration between schools and parents, arguing that such partnerships can enhance educational outcomes and foster stronger relationships between families and schools. This collaboration is essential for improving special education systems for children with intellectual disorder. Noah, Aromolaran, and Odunaro (2015) further supported the positive impact of parental involvement and support on children's academic performance in Nigeria, including those with intellectual disorder.

Methodology

The study employs a pretest-posttest control group quasi-experimental design. Participants are chosen through purposive sampling from two public special-need schools in Ogun State, Nigeria. The study consists of two groups: the RRS group and the control group. The RRS group participated in a pretest, followed by a six weeks (bi-weekly) intervention, after which they participated in a posttest. On the other hand, the control group, although participated in both the pretest and posttest, received a placebo (non-intervention) treatment.

The study involves 28 children with mild intellectual disorder, aged 6-16 years, from two special-need schools in Ogun State namely: School for children with special-needs, Adigbe and School for children with special-needs, Ijebu-Ode. The participants were divided into two groups: RRS (17), and control (11). The gender distribution is 46.4% female.

The Cognitive Reasoning Assessment Test (CRAT) was developed by the researchers to evaluate the cognitive reasoning abilities and parental support levels for children with mild intellectual disorder (CWMID). The test is designed to assess memory, comprehension, and logical reasoning, as well as the extent of parental support each child receives.

The CRAT is divided into three sections. Section A gathers demographic information, including the name of the school, class, age, and gender of the respondents. Section B consists of ten multiple-choice questions that cover three cognitive domains: knowledge, comprehension, and application. These questions are based on indicators of memory, comprehension, and logical reasoning.

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Section C, titled the Self-report Measure on Parental Support Scale, was also developed by the researcher. This section contains ten items, each reflecting one of five key indicators: acceptance, understanding, intimacy, encouragement, and monitoring. Each indicator is represented by two items, and responses are measured on a four-point Likert scale ranging from Strongly Agree (4) to Strongly Disagree (1).

The Reread Strategy (RRS) group participated in bi-weekly reread sessions, lasting 90 minutes each, designed to match the memory capacity of children with mild intellectual disorder (CWMID). This frequency was preferred because these children have shorter memory retention, and longer intervals between sessions could lead to forgetting the material being taught. In public special-need schools in Ogun State, where students often engage in simple tasks, this intervention provided meaningful engagement. The strategy involved repeatedly reading selected passages from their recommended English comprehension textbook (Macmillan New Primary English Book 1, UBE Edition) to improve attention span, memory, and comprehension. The first and last sessions were dedicated to pretest and posttest evaluations, respectively.

Control group

This package involved the regular or usual method of reading that is usually adopted as the participants' classroom reading style; this type of reading is non-therapeutic, and was adopted for the control group. The recommended English comprehension textbook (Macmillan New Primary English Book 1, UBE Edition) was utilized for this package. It was necessary to engage the control group in order to keep them occupied, and not left behind to cause distraction.

Results

Hypothesis one: Main Effect of RRS treatment

The analysis shows a significant main effect of reread strategy on cognitive reasoning among children with mild intellectual disorder ($F = 21.800$, $p < .05$, $\eta^2 = .618$). Participants in the RRS group have the highest posttest mean score (9.78) and the control group (6.51). This suggests that the strategy is potent for the enhancement of cognitive reasoning for CWMID. As a result, hypothesis one is rejected.

Table showing the estimated marginal means of RRS on the Cognitive Reasoning of CWMID in public special-need schools in Ogun State.

Estimates

Dependent Variable: Post-Reasoning

Groups	Mean	Std. Error	95% Confidence Interval Lower Bound	Upper Bound
Reread Strategy	9.778[a]	.274	9.216	10.339
Control group	6.510[a,b]	.305	5.884	7.135

a. Covariates appearing in the model are evaluated at the following values: Pre-Reasoning = 6.8947.

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b. Based on modified population marginal mean.

Table showing Bonferonni Post-hoc test showing multiple pair-wise analyses of the treatment groups

Pairwise Comparisons

Dependent Variable: Post-Reasoning

(I) Treatment group	(J) Treatment group	Mean Difference (I-J)	Std. Error
Reread Strategy	Control group	3.268*,b	.411
Control group	Reread Strategy	-3.268*,c	.411

Using calculated marginal means

*. At the 0.05 level, the mean difference is significant.

b, An estimate of the modified population marginal mean (J).

c. An adjusted estimate of the population's marginal mean (I).

d. Adjusting for multiple comparisons: Least Significant Difference (which means no modifications).

Hypothesis two: Gender and Cognitive Reasoning

There is a significant main effect of gender on cognitive reasoning of CWMID (F= 5.44, Partial η2 = 0.17), with male participants outperforming females. The mean score for males is 9.04, while females have a mean score of 8.17. The male participants performed better in the posttest scores after receiving the intervention. This suggests that the male participants were more disposed to the RRS strategy. As a result, hypothesis two is rejected.

Table showing posttest cognitive reasoning estimated marginal means according to gender

Estimates

Dependent Variable: Post-Reasoning

GENDER	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
MALE	9.043a,b	.231	8.569	9.517
FEMALE	8.166a,b	.295	7.561	8.770

a. Covariates appearing in the model are evaluated at the following values: Pre-Reasoning = 6.8947.

b. Based on modified population marginal mean.

Hypothesis three: Parental support and Cognitive Reasoning

Parental support did not have a significant impact on the cognitive reasoning of children with mild intellectual disorder (CWMID) in public special-need schools in Ogun State (F = 0.018; p>05). Despite many CWMID receiving high levels of parental support, it did

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Print ISSN: 2992-4979
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not affect their pretest and posttest performances. Children with low parental support performed just as well as those with high parental support in the posttest. Therefore, hypothesis three is not rejected, indicating that parental support did not significantly influence the cognitive reasoning of CWMID in this study.

The findings revealed a significant improvement in cognitive reasoning among children in the reread strategy group compared to the control group. The posttest mean score for the RRS group was 9.78, indicating enhanced cognitive skills. The study also found that the strategy was more effective for male participants.

Discussion

The findings in this study aligns with some previous research. For instance, Lunderberg and Reichenberg (2011) found that a 16-session training program improved reading comprehension in students with mild intellectual disorder, as evidenced by pretest and posttest results. This has further been butressed by the findings of this research

Similarly, Rose and Alcott (2015) in India observed that 46% of children with intellectual disorder who received reading aid outperformed the other 54% who did not. Additionally, the findings of this study has confirmed this observation.

Van den Bos, Nakken, and Nicolay (2007) discovered that while there was no significant difference between group and individual instruction settings, the reread intervention program effectively improved reading and comprehension abilities in adults with mild intellectual disorder. In the same vein, the findings of this study confirmed that it is also the case for children with mild intellectual disorder.

Conclusion

The participants in the reread strategy performed better than those in the control group, as repetitive reading enhanced their understanding and comprehension of the text. Unlike conventional method of reading, which quickly bored them, the reread strategy maintained their attention, helping them to refocus. Presenting short, illustrated passages kept their attention, as they preferred visual aids and activities they could relate to their surroundings. Although they retained small amounts of information at a time, this information stayed with them for a long period. Despite most children receiving parental support, it did not influence the study's findings. Additionally, the study revealed that male children performed better on cognitive reasoning assessments than female children.

Recommendations

The following recommendations are suggested based on the findings of the present study:

1. Children with intellectual disorder should be supported with effective strategies, such as the reread strategy, to enhance their cognitive reasoning ability.

2. The reread strategy should be specifically promoted as a reading method for children with intellectual disorder; lessons should be repeated multiple times to reinforce understanding and retention.

http://www.lijassed.org
Print ISSN: 2992-4979
Online ISSN: 2992-4987

3. Teachers and school library media specialists in special education settings should be fully qualified and receive on-going training to effectively support these children with strategy like RRS.

4. The government, school administrators, and librarians should take responsibility for providing sufficient resources, managing them efficiently, and applying suitable strategies especially the reread strategy to improve the cognitive reasoning of children with mild intellectual disorder.

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