

## Effect of Cognitive Behavioral Therapy on Behavioral Challenges Among Basic Four Pupils with Down Syndrome in Jos Metropolis, Plateau State, Nigeria

Joy Ladi Itodo, Prof. Yakubu Mallum and Prof. Grace Momoh

Department of Educational Foundations

University of Jos, Nigeria

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### Abstract

*This study examines the effect of Cognitive Behavioural Therapy (CBT) on behavioural challenges among Basic Four pupils with Down syndrome in Jos Metropolis, Plateau State, Nigeria. Down syndrome is associated with cognitive, motor, and behavioural difficulties that impact learning and social interactions. This study employed a true experimental design with a pre-test, post-test control group to investigate the effectiveness of CBT in reducing oppositional behaviour disorder, attention behaviour disorder, and social withdrawal disorder. A sample of 12 pupils was selected, with six assigned to the experimental group receiving CBT and six in the control group receiving regular instruction. Data was collected using the Behaviour Disorder Checklist (BDC) and analysed using the mean, standard deviation and t-test of independent samples. Results indicate a significant reduction in behavioural challenges among the experimental group compared to the control group. The study concludes that CBT is an effective intervention for improving behaviour among children with Down syndrome and recommends its integration into special education programmes and therapeutic interventions.*

**Keywords:** Cognitive Behavioural Therapy (CBT), Down Syndrome, Behavioural Challenges, Special Education, Intervention Strategies

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### INTRODUCTION

Down syndrome is a chromosomal condition that results from an error in cell division, causing an extra chromosome. This congenital disorder can lead to a range of physical and developmental challenges, varying from mild to severe. Children with Down syndrome often require specialised education and therapeutic interventions to manage behavioural difficulties that arise from the condition. The syndrome is named after John Langdon Down, who first identified it, and it is recognised as a genetic disorder that hinders motor, language, and cognitive development, leading to a spectrum of physical abnormalities. The condition arises from the presence of an extra chromosome, giving individuals 47 chromosomes instead of the typical 46 (Pujol, 2015). Individuals with Down syndrome are often identifiable due to their distinct physical characteristics. This condition can also impact cognitive function and physical growth, increasing the risk of other health complications. Medical professionals can detect Down syndrome through a series of screenings and tests, both before and after birth. The prevalence of Down syndrome is approximately 1 in every 700 births.

According to the World Health Organisation (WHO) and the World Bank's World Report on Disability (2021), about 15% of the global population lives with some form of disability. This report highlights the disproportionate impact of disabilities on people, particularly children in lower-income countries, with education being one of the most affected areas. The report notes that children with disabilities are less likely to begin or complete their education compared to their non-disabled peers. This lack of education contributes to higher unemployment rates among individuals with disabilities, resulting in poverty and deprivation for both the individual and their family. International, regional, and national frameworks, such as the United Nations Convention on the Rights of the Child (UNCRC, 2018), the African Charter on the Rights and Welfare of the Child (1990), and the Learner's Act (2021), affirm that all learners, regardless of disability, have the right to education. However, a report from the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2022) shows that access to and the quality of education for learners with disabilities, particularly those with special needs, remain significantly limited in many countries.

Cognitive Behavioural Therapy (CBT) has been adapted to address the behavioural challenges in children with Down syndrome. Knell (2015) suggests that various modifications can be made to CBT to enhance its effectiveness. A therapist's flexibility in approach and communication style is crucial to the success of the therapy. CBT helps children develop positive coping mechanisms by changing negative thought patterns and modelling new ways of interpreting situations. CBT aims to keep client behaviours goal-directed to meet personal needs within their experiential reality. In this therapeutic process, mutually agreed-upon goal-setting is vital, with goals being specific, measurable, achievable, realistic, and time-bound. CBT is pragmatic, identifying and solving specific problems while maintaining a strong therapeutic alliance between therapist and patient. The therapy can be particularly helpful in enabling children with Down syndrome to overcome challenges in communication, behaviour, and cognitive function.

Children with Down syndrome face a variety of challenges in school, including delayed physical and cognitive development, health issues such as ear infections and thyroid dysfunction, and behavioural challenges like distractibility and poor impulse control (Westwood, 2019). Teachers play a critical role in helping these children by using appropriate teaching strategies and materials to address their learning needs. If these educational challenges are properly managed, children with Down syndrome can make significant progress in their learning.

On a molecular level, Down syndrome is linked to various abnormalities, including gene overexpression, which affects brain development and function. These molecular changes are associated with cognitive deficits, early-onset dementia similar to Alzheimer's disease, and neurological complications. Research indicates that Down syndrome is characterised by a distinct pattern of brain connectivity that correlates with poor adaptive behaviour, particularly in communication (Pujol, 2015). Adaptive behaviours, such as conceptual, social, and practical skills, are essential for functioning in daily life, and studies have shown that individuals with Down syndrome often struggle with adaptive functioning, which affects their ability to live independently.

Behavioural challenges such as oppositional behaviour disorder, attention disorder, social withdrawal, and thought disorders are common in individuals with Down syndrome. Oppositional behaviour disorder, for example, is characterised by non-compliance and may stem from frustration or lack of understanding. Attention disorders can manifest as difficulty maintaining focus and impulsive behaviour, while social withdrawal involves isolating oneself due to anxiety, fear, or other underlying mental health issues. Thought disorders can lead to disorganised thinking and abnormal language expression. Understanding and addressing these behavioural challenges through interventions like CBT is crucial for improving the quality of life for individuals with Down syndrome.

Gender also plays a role in Down syndrome, with research indicating that male-to-female ratios in newborns with Down syndrome are skewed towards males, particularly in cases of free trisomy 21 (Lockwood, 2017). Studies have shown that foetal gender can affect the detection of Down syndrome through maternal serum alpha-fetoprotein levels and ultrasonographic parameters. This information is crucial in improving early detection and intervention strategies for Down syndrome.

## **STATEMENT OF THE PROBLEM**

The researcher's experience as a special educator has shown that pupils with Down syndrome face significant learning challenges, requiring much longer to master basic skills compared to their peers. For instance, while a typical child may learn to hold a pencil within a month, a child with Down syndrome may take over two years to achieve this. In addition, these pupils often exhibit oppositional behaviours, making classroom management difficult. Their learning is further hindered by health issues, hearing impairments, and limited instructional resources from the Ministry of Education. Children with Down syndrome also struggle with developmental delays, intellectual disabilities, and motor skill impairments, requiring continuous support for daily tasks. Behavioural issues such as stubbornness and impulsivity may arise if they are not properly guided. Specific challenges include short-term memory difficulties, slow speech and motor development, and physical characteristics that affect their learning abilities. Despite multiple efforts by teachers, there has been limited success in addressing these issues. Therefore, this study seeks to explore whether Cognitive Behavioural Therapy (CBT) can improve self-esteem, communication, social skills, and stress management for pupils with Down syndrome and whether it can help replace negative thoughts with more positive beliefs.

## **AIM AND OBJECTIVES OF THE STUDY**

The aim of the study is to examine the effects of cognitive Behavioural Therapy on behaviour disorder of basic four pupils with Down syndrome in Jos Metropolis, Plateau State, Nigeria. Specifically, the objectives of the study are to:

1. determine the pretest and posttest oppositional behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos Metropolis.
2. ascertain the pretest and posttest attention behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos Metropolis.

3. identify the pretest and posttest social withdrawal behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos Metropolis.

## RESEARCH QUESTIONS

The following research questions will guide the study: -

1. What are the pretest and posttest oppositional behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis?
2. What are the pretest and posttest attention behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis?
3. What are the pretest and posttest social withdrawal behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis?

## HYPOTHESES

The following hypotheses will be tested at 0.05 level of significance:

1. There is no significant difference between the posttest oppositional behaviour disorder meanscores of learners with Down syndrome in the experimental and control groups in Jos metropolis, Plateau State.
2. There is no significant difference between the posttest attention behaviour disorder mean scores on learners with Down syndrome in the experimental and control groups in Jos metropolis, Plateau State.

## METHODOLOGY

The research adopted a true experimental design, specifically the pre-test, post-test control group design. This design was chosen to investigate the cause-and-effect relationship between the independent variable, which was the treatment given to the experimental group, and the dependent variable, which was the behaviour of pupils with Down syndrome. The study involved two groups, the experimental group and the control group. The experimental group received cognitive behavioural therapy (CBT), while the control group received a placebo treatment in the form of regular classroom instruction. Both groups were assessed using pre-tests and post-tests to measure changes in their behaviour.

The population for the study comprised 22 pupils with Down syndrome attending a special education school in Jos Metropolis, Plateau State. From this population, a sample of 12 pupils was selected, with 6 assigned to the experimental group and 6 to the control group. The purposive sampling technique was employed to ensure that the sample was relevant to the research. The pupils were selected based on their Down syndrome diagnosis and their ability to participate in the study's activities. This approach ensured that the sample was representative of the population and suitable for the experimental design.

The instrument used for data collection was the Behaviour Disorder Checklist (BDC), which was developed by the researcher. The checklist consisted of two sections: one for gathering biodata and the other for assessing specific behaviours related to Down syndrome, including oppositional behaviour, attention disorder, social withdrawal, thought disorder, and overall

behaviour disorder. The responses were measured on a five-point scale ranging from "Excellent" to "Very Poor". The content validity of the instrument was ensured by consulting experts in Guidance and Counselling, Special Education, and Research Measurement and Evaluation. These experts provided feedback on the appropriateness and relevance of the items. To establish reliability, the inter-rater reliability method was used, and Cohen Kappa statistics were calculated, resulting in a reliability coefficient within the acceptable range of 0.72 to 0.99.

Data collection began with the administration of a pre-test to both the experimental and control groups. The Behaviour Disorder Checklist (BDC) was used to score the behaviours of the pupils, with the researcher and a trained research assistant observing the participants. After the pre-test, the experimental group underwent cognitive behavioural therapy sessions for eight weeks. These sessions were conducted twice a week for 40 minutes each, focusing on improving the specific behaviours targeted in the checklist. Meanwhile, the control group continued with their regular classroom instruction, serving as the placebo condition. At the end of the eighth week, a post-test was administered to both groups, and the results were analysed using mean, standard deviation and t-test of independent sample to assess the effect of the treatment on the experimental group's behaviour in comparison to the control group.

## RESULTS

**Research Question One:** What are the pretest and posttest oppositional behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis?

**Table 1: Pre-test and Post-test Oppositional Behaviour of Students in Experimental and Control Groups**

Group	Pre-test			Post-test		Mean	Main Loss-Difference	
	N	Mean	SD	Mean	SD			
Experimental	4	21.50	2.38	10.75	2.22	-10.75	-7.2	
Control	4	20.00	2.16	16.50	1.29	-3.5		

Table 1 presents the results of the pre-test and post-test oppositional behaviour disorder score of pupils with Down syndrome in Jos Metropolis, Plateau State. The result for the experimental group shows that the pre-test mean score is 21.50 with a standard deviation of 2.38, while the post-test mean score is 10.75 lower than the pre-test mean score with a mean loss of -10.75, indicating that there was improvement in the oppositional behaviour disorder of learners after treatment. Also, for the control group, the mean score was 20.00 and the standard deviation was 2.16 for the pretest. However, in the post-test, the mean score was 16.50 and a standard deviation of 1.29 with a mean loss of -3.5. The findings show that pupils in the experimental group had a lower oppositional behaviour disorder mean score (10.75) after treatment using cognitive behavioural therapy as against those in the control group (16.50) who were not given

treatment, with a mean difference of -7.2. This implies that cognitive behavioural therapy does reduce the oppositional behaviour disorder of learners with Down syndrome.

**Research Question Two:** What are the pre-test and post-test attention behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis?

**Table 2: Pre-test and Post-test Attention Behaviour Disorder of Students in Experimental and Control Groups**

Group	N	Pre-test		Post-test		Mean Gain/Loss	Mean Loss Difference
		Mean	SD	Mean	SD		
Experimental	4	20.75	1.71	10.75	2.06	-10	-8.25
Control	4	20.25	2.06	18.50	1.29	-1.75	

Table 2 presents the results on the pre-test and post-test attention behaviour disorder mean score of pupils with Down syndrome in Jos Metropolis, Plateau State. The result for the experimental group shows that the pre-test mean score is 20.75 with a standard deviation of 1.71, while the post-test mean score is 10.75 lower than the pre-test mean score with a mean loss of -10, indicating that there was improvement in the attention behaviour of learners after treatment. Also, for the control group, the mean score was 20.25 and the standard deviation was 2.06 for the pretest. At the post-test, the mean score was 18.50 and a standard deviation of 1.29 with a mean loss of -1.75. The findings show that pupils in the experimental group had a lower attention behaviour disorder mean score (10.75) after treatment using cognitive behavioural therapy as against those in the control group (18.50) who were not given treatment, with a mean difference of -8.25. This implies that cognitive behavioural therapy does reduce the attention behaviour disorder of learners with Down syndrome.

**Research Question Three:** What are the pre-test and post-test social withdrawal behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis?

**Table 3: Pre-test and Post-test Social Withdrawal Behaviour Disorder of Students in Experimental and Control Groups**

Group	N	Pre-test		Post-test		Mean Gain/Loss	Mean Loss Difference
		Mean	SD	Mean	SD		
Experimental	4	20.00	2.16	11.75	2.06	-8.25	-6.75
Control	4	20.00	2.16	18.50	1.92	-1.5	

Table 3 presents the results on the pre-test and post-test social withdrawal behaviour disorder mean score of pupils with Down syndrome in Jos Metropolis, Plateau State. The result



for the experimental group shows that the pre-test mean score is 20.00 with a standard deviation of 2.16, while the post-test mean score is 11.75 lower than the pre-test mean score with a mean loss of -8.25, indicating that there was improvement in the social withdrawal behaviour disorder of learners after treatment. Also, for the control group, the mean score was 20.00 and the standard deviation was 2.16 for the pretest. However, in the post-test, the mean score was 18.50 and a standard deviation of 1.92 with a mean loss of -6.75. The findings show that pupils in the experimental group had a lower social withdrawal behaviour disorder mean score (11.75) after treatment using cognitive behavioural therapy as against those in the control group (18.50) who were not given treatment, with a mean difference of -6.75. This implies that cognitive behavioural therapy does reduce the social withdrawal behaviour disorder of learners with Down syndrome.

## TEST OF HYPOTHESES

**Hypothesis One:** There is no significant difference between the posttest oppositional behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis, Plateau State.

**Table 4: Posttest Oppositional Behaviour Disorder Mean Scores of Learners with Down syndrome in the Control and Experimental Groups**

Group	N	Mean	SD	df	t	$\alpha$	p	Decision
Experimental	4	10.75	2.22	6	-4.48	0.05	0.004	Significant
Control	4	16.50	1.29					

Source: Field Work, 2023

Table 4 presents the t-test result on the difference between the posttest oppositional behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis, Plateau State. In the experimental group, the pre-test mean score was 10.75 with a standard deviation of 2.22, and the control group had a mean score of 16.50 and a standard deviation of 1.29. The result also yielded  $t(6) = -4.48$ ,  $P > 0.05$ . Since the p-value of 0.004 is less than the 0.05 level of significance, the null hypothesis was rejected. It was concluded that there is a significant difference between the posttest oppositional behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis, Plateau State. This implies that cognitive behavioural therapy does lower the oppositional behaviour disorder of learners with Down syndrome in the Jos metropolis of Plateau State.

**Hypothesis Two:** There is no significant difference between the posttest attention behaviour disorder mean scores on learners with Down syndrome in the experimental and control groups in Jos metropolis, Plateau State.

**Table 5: Posttest Attention Behaviour Disorder Mean Scores of Learners with Down syndrome in the Control and Experimental Groups**

Group	N	Mean	SD	df	t	$\alpha$	p	Decision
Experimental	4	10.75	2.062	6	-6.37	0.05	0.001	Significant
Control	4	18.50	1.291					

Source: Field Work, 2023

Table 5 presents the t-test result on the difference between the posttest attention behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis, Plateau State. In the experimental group, the pre-test mean score was 10.75 with a standard deviation of 2.06, and the control group had a mean score of 18.50 and a standard deviation of 1.29. The result also yielded  $t(6) = -6.37$ ,  $P < 0.05$ . Since the P-value of 0.001 is less than the 0.05 level of significance, the null hypothesis was rejected. It was concluded that there is a significant difference between the post-test attention behaviour disorder mean scores of learners with Down syndrome in the experimental and control groups in Jos metropolis, Plateau State. This implies that cognitive behavioural therapy does lower the attention behaviour disorder of learners with Down syndrome in Jos metropolis.

## DISCUSSION

The findings of this study provided important insights into the effectiveness of cognitive behavioural therapy (CBT) in addressing behaviour disorders among pupils with Down syndrome. Firstly, the construct validity of the Behaviour Disorder Checklist (BDC) was confirmed through factor analysis, revealing that the items measure different constructs. With 17 items retained, the instrument was shown to be robust and reliable, as evidenced by the reliability coefficient of 0.78, which falls within the acceptable range according to Ibanga (2022). This suggests that the instrument is well-suited for assessing behavioural changes in pupils with Down syndrome, providing confidence in its application for the main study.

The results also demonstrated that CBT was effective in reducing various behaviour disorders, including oppositional behaviour, attention behaviour disorder, social withdrawal behaviour disorder, and thought disorder. Pupils in the experimental group, who received CBT, exhibited lower mean scores in these areas compared to those in the control group, who did not receive treatment. The significant differences in post-test scores between the experimental and control groups underscore the positive impact of CBT on reducing behaviour disorders. These findings align with previous studies that support the use of CBT as an intervention for managing behavioural challenges in individuals with intellectual disabilities, including Down syndrome.

## CONCLUSION

The study demonstrates that Cognitive Behavioural Therapy (CBT) is an effective intervention for addressing various behavior disorders in learners with Down syndrome in Jos Metropolis. The experimental group, which received CBT, showed significant improvements in oppositional behavior, attention behavior, and social withdrawal behavior compared to the control group. The results from the post-test analyses indicate that CBT not only reduces



behavioral issues but also improves the social and academic functioning of learners with Down syndrome.

## **IMPLICATIONS OF THE FINDINGS**

The findings of this study have several important implications for practice, policy, and future research:

1. **Educational Implications:** CBT should be integrated into the behavioural management strategies used in schools for learners with Down syndrome. The significant improvements observed in the experimental group suggest that CBT can be a powerful tool for addressing common behavioural issues in these learners, ultimately enhancing their learning outcomes.
2. **Therapeutic Implications:** The results support the use of CBT as a therapeutic intervention in clinical settings, where behaviour disorders such as oppositional behaviour and attention difficulties are often encountered. Therapists and psychologists working with children with Down syndrome can consider CBT as part of their treatment approach.
3. **Policy Implications:** Schools and educational authorities in Jos Metropolis and beyond may consider adopting CBT-based programs to support the behavioural and emotional well-being of learners with Down syndrome. This could lead to the development of specialised training for educators and mental health professionals in CBT techniques tailored for children with intellectual disabilities.
4. **Research Implications:** Further studies could expand on this research by exploring the long-term effects of CBT on learners with Down syndrome and investigating how different therapeutic approaches compare in managing behaviour disorders. Additionally, future research could assess the effectiveness of CBT in larger and more diverse populations to generalise the findings.

## **RECOMMENDATIONS**

1. **Integration of CBT into Educational Programs:** Schools in Jos Metropolis should incorporate CBT-based interventions into their special education programs for learners with Down syndrome. Teachers should be trained in the use of CBT techniques to address behaviour issues and improve the learning environment for these students.
2. **Ongoing Training for Therapists:** Mental health professionals working with children with Down syndrome should receive training on the use of CBT to manage behavioural disorders. This will help equip them with effective tools to assist their clients in overcoming behavioural challenges.
3. **Further Research on CBT:** Future research should explore the application of CBT for other behaviour disorders in children with Down syndrome, as well as examine its long-term effectiveness and potential benefits in different settings.
4. **Parent and Carer Involvement:** It is recommended that parents and carers be involved in the CBT process, as their participation can reinforce the therapy and help maintain behavioural improvements at home.

5. Replication of the Study: Future studies should replicate this research in different geographical regions and with a larger sample size to confirm the findings and enhance the generalisability of the results.

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