



EFFECT OF TOKEN REINFORCEMENT STRATEGY IN ENHANCING SOCIAL SKILLS OF CHILDREN WITH INTELLECTUAL DISABILITY IN IBADAN, OYO STATE

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Abstract

This study investigated the impact of token reinforcement and socioeconomic status (SES) on the social skills of 30 primary four and five pupils with intellectual disability in Ibadan, Oyo State, utilizing a pretest-posttest control-group quasi-experimental design of 2x2 factorial matrix. Participants from two special schools were assessed using the Slosson Intelligence Test ($\alpha=0.86$), a Socio-Economic Status Scale ($\alpha=0.87$), and a Modified Social Skills Scale. The treatment group received token reinforcement for positive social behaviors for seven weeks, while the control group received no intervention. Analysis of Covariance (ANCOVA) revealed a significant main effect of token reinforcement on social skills [$F(1,28)=37.146, p<.001, \eta^2=.570$], indicating a 57% improvement. However, the study found no significant main effect of SES [$F(1,28)=4.010, p=.055, \eta^2=.125$] or significant interaction effect of SES and token reinforcement [$F(1,26)=3.666, p=.067, \eta^2=.124$] on social skills. These findings suggest that token reinforcement is a good and effective intervention for enhancing social skills in children with intellectual disability.

Key Words: Token reinforcement, Socio-economic background, Social skills, Children with intellectual disability

Introduction

Children with intellectual disability are persons with special needs who need specific intervention for them to learn and associate with their peers. They often experience challenges in developing age-appropriate social skills, which are critical for effective interpersonal relationships,

integration into society, and successful functioning in educational and community settings (Jacob, Edozie & Pillay, 2022). Intellectual disability, as defined by the American Association on Intellectual and Developmental Disability (AAIDD), is characterized by significant limitations in both intellectual functioning and adaptive behaviour, encompassing conceptual, social,

and practical adaptive skills, and manifesting before the age of 18 (Kashani-Vahid, Mohajeri, Moradi & Irani, 2018). Among these categories, difficulties in social skills like issues with communication, working with others, understanding feelings, and controlling behavior make it hard for children with ID to participate in regular social activities (Okonkwo, Fajonyomi, Omotosho, Esere & Olawuyi, 2017).

In the Nigerian environment, particularly in Ibadan, the capital of Oyo State and a metropolitan hub in southern Nigeria, children with intellectual disability confront compounded challenges. These include limited access to specialized services, stigma, and poor instructional resources, which impede the development of their social abilities (Okonkwo *et al.*, 2017). Social skills training for young children are thus a major therapeutic area. Token reinforcement, a behavioural method built on operant conditioning principles, has emerged as an evidence-based approach in changing behaviours and boosting skill acquisition among children with ID (Jacob *et al.*, 2022).

Token reinforcement systems incorporate the use of tokens - such as stars, stickers, or points that are provided depending upon the manifestation of desirable behaviours. These tokens function as conditioned reinforcers that can later be traded for a backup reinforcer, such as a favoured activity, toy, or tasty item (Jacob *et al.*, 2022). This method operates on the principle of positive reinforcement, where the frequency of target behaviours, including socially appropriate conduct like initiating conversations, sharing, or turn-taking,

increases over time through systematic reinforcement (Ezeani, Ukwoma, Gani, Igwe & Agunwamba, 2017). For children with ID, whose cognitive and adaptive limitations may make abstract rewards less effective, token systems give quick and real feedback that promotes motivation and engagement. Empirical research such as Okonkwo *et al.* (2017) has validated the usefulness of token reinforcement in special education settings. Noviyanti *et al.* (2020) demonstrated that token economies effectively promoted adaptive behaviours in children with intellectual disability while Ogunwole (2017) reported that even in schools with limited resources, token reinforcement still showed efficacy in enhancing social skills of children with developmental disabilities.

For instance, a study conducted by Mirzamani, Ashoori & Sereshki (2017) found that a structured token economy dramatically improved social interaction and compliance behaviours among children with moderate intellectual disability. In addition, Mirzamani *et al.* (2017) observed that the implementation of token reinforcement in inclusive classrooms led to enhanced classroom participation and peer interactions among children with developmental delays. These findings emphasize the promise of token reinforcement as a low-cost, simply implementable, and culturally adaptable method ideal for application in resource-constrained educational situations like Ibadan.

Socioeconomic status (SES) plays a substantial moderating influence on the treatment outcomes of children with intellectual disability, particularly when

token reinforcement procedures are utilized to increase social skills. Families with higher SES are frequently better positioned to acquire excellent education, professional behavioural therapies, and consistent reinforcement techniques, such as personalized token systems, which lead to more effective implementation and outcomes. Conversely, lower SES may limit access to specialist services, resulting in uneven application of behavioural methods and less exposure to organized reinforcement programs (Smith *et al.*, 2020).

Research by Neumann (2024) and Smith *et al.* (2020) suggest that the success of token reinforcement is largely dependent on the availability of supportive surroundings, trained staff, and resources all of which are more accessible in high-SES circumstances. Children from higher SES homes are also more likely to experience enriched social contexts that spontaneously reinforce interpersonal skills, complementing organized treatments. In contrast, low-SES families may struggle with insufficient educational resources and time constraints, impeding continuous reinforcement and follow-up (Anderson & Hart, 2019). Therefore, SES is potent in influencing consistency, quality, and reinforcement context, making it a significant component in the success of token reinforcement schemes for children with intellectual disability.

Despite global evidence supporting token reinforcement, limited empirical studies have studied its application within Nigerian special education contexts. The cultural, sociological, and educational idiosyncrasies of Nigeria, including teacher

attitudes, classroom sizes, and resource restrictions, demand context-specific investigations to establish the usefulness and sustainability of token systems in teaching social skills (Oladele *et al.*, 2023). Ibadan, with its relatively large number of special education facilities and a history of educational innovation, provides a suitable site for such a study. Understanding how token reinforcement affects social skills in this environment can provide insights into effective methods for behaviour management and skill development in children with intellectual disability across Nigeria. Furthermore, developing social skills through token reinforcement contributes not only to greater interpersonal functioning but also to the broader goal of inclusive education. The Sustainable Development Goal 4 promotes inclusive and equitable quality education for all, including children with disability (United Nations, 2022). Equipping young children with basic social competences through evidence-based interventions aligns with national policies and global goals for inclusive development.

Given the increased emphasis on evidence-based educational treatments, this study attempts to examine the role of token reinforcement in strengthening social skills of children with intellectual disability in Ibadan. It investigated the effectiveness of the method in promoting behaviours such as cooperation, communication, and positive peer interactions. The study investigates the effect of token reinforcement on social skills of children with intellectual disabilities with particular focus on socio-economic background as a moderating variable. By bridging the gap between global research

and local practice, this study intends to contribute to the development of culturally sensitive therapies for children with special needs in Nigeria.

Statement of the Problem

Children with intellectual disability (ID) frequently find it very difficult to acquire suitable social skills, which are vital for effective interpersonal relationships, emotional control, and community integration. These difficulties are made worse in Nigeria, especially in cities like Ibadan, Oyo State, by restricted access to efficient behavioural therapies and social support systems. Token reinforcement is behavioural modification tools that promote excellent behaviours by a system of tokens exchangeable for desired items or privileges. It is an encouraging approach to help children with IDs develops social skills. But, especially in Nigeria, the degree to which token reinforcement can by itself improve social skills among this group remains underexplored.

While children from lower SES families may confront environmental stresses and inadequate reinforcement, which can impede progress, children from higher SES households may have more access to resources, organized settings, and social possibilities that promote social development. This indicates that development of social skills may be significantly influenced by socioeconomic position (SES). Though important, the influence of SES on the social skills of Nigerian children with intellectual disability has not been sufficiently investigated. Moreover, the possible interplay between

token reinforcement and socioeconomic level in determining social skills results has not been looked at. It is imperative to ascertain the efficacy of token reinforcement on social skills of children with ID. This can help to provide tailored intervention for children with IDs. Filling in these gaps is crucial for creating fair, evidence-based policies that assist the social development of children with intellectual disability in Ibadan across all socio-economic classes.

Hypotheses

The following three hypotheses were formulated and tested at 0.05 level of significance:

1. There is no significant main effect of token reinforcement on social skills of children with intellectual disability in Ibadan, Oyo State.
2. There is no significant main effect of socioeconomic status on social skills of children with intellectual disability in Ibadan, Oyo State.
3. There is no significant interaction effect of socioeconomic status and token reinforcement on social skills of children with intellectual disability in Ibadan, Oyo State.

Methodology

The study adopted a pretest-posttest control-group quasi-experimental design. The independent variable was treatment strategy manipulated at two levels token reinforcement and a control group (without treatment). Socioeconomic status (high and low) is the moderating variable while the dependent variable is social skills. The sample population consisted of 30 primary

four and five pupils with intellectual disability from two purposively selected special schools in Ibadan, Oyo State. Participants were selected using the Slosson Intelligence Test (SIT), teachers' academic records, and willingness to participate. Three validated instruments were used: Slosson Intelligence Test (to identify pupils with intellectual disability), Socio-Economic Status Scale (developed by Salami, 2000 and adapted by Adekanmi, 2011), and the Modified Social Skills Scale (Van Staden, 2004) assessing social-emotional development, emotional regulation, and communication skills. The SIT showed a reliability of 0.86, SES Scale 0.87 (Cronbach Alpha), and the Modified Social Skills Scale (MSSS) involved computation

of behavioural frequency by percentage. The reliability coefficient of MSSS is 0.81.

The treatment groups were exposed to 5 contact classes during which social skills concepts such as interpersonal relation and communication were taught to the pupils. The treatment period spanned seven weeks. The control group received no treatment. Both the treatment group and control group underwent pre- and post-test assessments using the designated instruments. Data was analyzed using descriptive statistics and Analysis of Covariance (ANCOVA), with pre-test scores serving as covariates to determine treatment effects and interaction among variables.

Results

Table 1: Socio-demographic Information of the Participants

Variable	N	%	Mean	SD
Home for the Handicapped Children, Ijokodo, Ibadan	22	73.3		
School for the Handicapped, Ring Road, Ibadan	8	26.7	1.27	.450
Total	30	100.0		
Class				
Basic 4	19	36.7		
Basic 5	11	63.3	1.41	.495
Total	30	100.0		
Socioeconomic Status				
High	12	40.0		
Low	18	60.0	1.60	.498
Total	30	1		

Table 1 shows the socio-demographic information of 30 participants across the schools and classes they attended and their socioeconomic status (SES). The table shows that 73.3% of the participants attended Home for the Handicapped Children, Ijokodo Ibadan while 36.6% of the participants attended School for the Handicapped, Ring Road, Ibadan. It also shows that 63.3% of the participants were in Basic 4 while 34.6% represents those who were in Basic 5. Finally, the table shows that 60.0% of the participants were from low socioeconomic background while 40.0% were from high socioeconomic background with mean and standard deviation or 1.60 and .498 respectively.

Table 2

Main Effect of the Treatment on Social Skills of the Participants

Tests of Between-Subjects Effects

Dependent Variable: Social Skills

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Squared	Eta
Corrected Model	1555.200 ^a	1	1555.200	37.146	.000	.570	
Intercept	31622.533	1	31622.533	755.315	.000	.964	
Treatment	1555.200	1	1555.200	37.146	.000	.570	
Error	1172.267	28	41.867				
Total	34350.000	30					
Corrected Total	2727.467	29					

a. R Squared = .570 (Adjusted R Squared = .555)

Table 2 is the ANCOVA showing the main effect of the treatment on social skills of the participants. as shows on the table, the effect of the treatment on social skills of the participants is statistically significant [F (1, 28) = 37.146; p = .000 < .050]. The partial eta squared .570 is a testament to this significance as it implies

that the treatment accounted for 57% improvement in the social skills of the participants. Consequently, Hypothesis 1 is rejected as there is a significant main effect of token reinforcement on social skills of children with intellectual disability in Ibadan, Oyo State.

Table 3

Main Effect of SES on Social Skills of the Participants

Tests of Between-Subjects Effects

Dependent Variable: Social Skills

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Squared	Eta
Corrected Model	341.689 ^a	1	341.689	4.010	.055	.125	

Intercept	29083.022	1	29083.022	341.325	.000	.924
SES	341.689	1	341.689	4.010	.055	.125
Error	2385.778	28	85.206			
Total	34350.000	30				
Corrected Total	2727.467	29				

a. R Squared = .125 (Adjusted R Squared = .094)

Table 3 is the ANCOVA showing the main effect of SES on social skills of the participants. as shows on the table, the effect of the treatment on social skills of the participants is not statistically significant [F (1, 28) = 4.010; p = .055 > .050]. The partial eta squared .125 is an evidence of this non-
Table 4

significance as it implies that SES accounted for 12.5% improvement in the social skills of the participants. Therefore, Hypothesis 2 is not rejected as no significant main effect of socioeconomic status on social skills of children with intellectual disability in Ibadan, Oyo State.

Interaction Effect of SES and Treatment on Social Skills of the Participants

Tests of Between-Subjects Effects

Dependent Variable: Social Skills

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Squared	Eta Squared
Corrected Model	1853.738 ^a	3	617.913	18.388	.000	.680	
Intercept	28253.305	1	28253.305	840.748	.000	.970	
Treatment	1166.362	1	1166.362	34.708	.000	.572	
SES	191.781	1	191.781	5.707	.024	.180	
Treatment * SES	123.202	1	123.202	3.666	.067	.124	
Error	873.729	26	33.605				
Total	34350.000	30					
Corrected Total	2727.467	29					

a. R Squared = .680 (Adjusted R Squared = .643)

Table 3 is the ANCOVA showing interaction effect of SES and treatment on social skills of the participants. As shows on the table, the effect of the treatment on social skills of the participants is not statistically significant [F (2, 27) = 3.666; p = .067 > .050]. The partial eta squared .124 is further lend credence to this non-significance as it implies that SES and the treatment, when combined together accounted for 12.4% improvement in the

social skills of the participants. Therefore, Hypothesis 3 is not rejected as no significant interaction effect of socioeconomic status and token reinforcement on social skills of children with intellectual disability in Ibadan, Oyo State.

Discussion of Findings

The researcher found significant main effect of token reinforcement on social skills of children with intellectual disability in Ibadan, Oyo State. This finding aligns

with growing empirical evidence supporting the method's effectiveness. Token reinforcement systems, which utilize tangible symbols like stickers or points as conditioned reinforcers, have been proven to systematically increase socially appropriate behaviours such as turn-taking, sharing, and initiating interactions (Jacob *et al.*, 2022). This approach is particularly beneficial for children with ID, as it provides immediate and concrete feedback, which enhances motivation and engagement despite cognitive challenges that might limit understanding of delayed or abstract rewards (Ezeani *et al.*, 2017).

Similar findings comes from studies like that of Mirzamani *et al.* (2017), who demonstrated that token economies significantly improved social interaction and compliance among children with moderate ID. They also noted improved classroom participation and peer interaction when token systems were applied in inclusive settings. These outcomes underline how token reinforcement can bridge gaps in social learning for children with ID by structuring the environment in a predictable, motivating way. In the context of Ibadan - a resource-limited setting - this method's simplicity and cost-effectiveness make it an ideal intervention. Its adaptability to local cultural and educational contexts reinforces its practical utility.

No significant main effect of socioeconomic status was on social skills of children with intellectual disability in Ibadan, Oyo State. This implies that token reinforcement is efficacious for children from all socioeconomic background. And that SES did not directly influence the

observed social skills. This result is in contrasts with previous research suggesting SES significantly moderates access to quality intervention and its implementation (Smith *et al.*, 2020; Neumann, 2024).

Several factors may explain this discrepancy. First, local variables such as government or NGO support may have equalized access to interventions, reducing SES disparities in treatment exposure. Additionally, the implementation of token reinforcement strategies in the study setting was standardized across SES groups, perhaps through school-based delivery with uniform access to trained personnel and materials. This aligns with Anderson & Hart (2019), who noted that the influence of SES is minimized when institutional supports compensate for resource gaps. Moreover, the study's finding does not negate the possibility of SES acting as a moderator rather than a direct predictor its influence may become more apparent in interaction with other variables like parental involvement or school infrastructure.

No significant interaction effect of token reinforcement and socioeconomic status was on social skills of children with intellectual disability in Ibadan, Oyo State. This finding suggests that the effectiveness of token reinforcement strategies in enhancing social skills operated independently of children's socioeconomic backgrounds. This contrasts with empirical expectations, as studies like Smith *et al.* (2020) and Neumann (2024) suggest that SES typically moderates treatment outcomes by influencing access to resources, professional support, and consistency of implementation.

However, the effectiveness of token reinforcement as a standalone behavioural strategy has been widely supported across various contexts. Noviyanti *et al.* (2020) demonstrated that token economies effectively promoted adaptive behaviours in children with intellectual disability (ID), while Mirzamani *et al.* (2017) found significant improvements in social interactions through token economies, even in inclusive settings. These outcomes underline token reinforcement's intrinsic value as a low-cost, structured, and culturally adaptable technique that delivers immediate reinforcement, which is especially suitable for children with ID (Jacob *et al.*, 2022; Ezeani *et al.*, 2017).

The lack of interaction effect in the Ibadan study may reflect successful standardization and equitable delivery of token systems across SES strata. School-based interventions might have ensured equal access to trained facilitators and reinforcement materials, thereby mitigating SES-related disparities. This aligns with Ogunwole's (2017) findings in Nigeria, where token systems showed efficacy even in resource-limited schools. Thus, while SES often mediates intervention success, its impact may be neutralized when interventions like token reinforcement are uniformly implemented and supported in educational settings. This finding reinforces the notion that context-sensitive, well-structured behavioural strategies can bridge SES gaps, ensuring equitable social skills development among children with intellectual disability.

Conclusion

The findings of this study present important insights into the development of social skills among children with intellectual disability in Ibadan, Oyo State. The significant main effect of token reinforcement indicates that the intervention independently enhanced the social skills of these children, reinforcing the effectiveness of behaviourist principles in special education settings. This supports a growing body of empirical evidence suggesting that structured token economies provide immediate, tangible rewards that increase motivation and reinforce positive social behaviours such as cooperation, sharing, and communication.

On the other hand, the absence of a significant main effect of socioeconomic status (SES) implies that children's social skills outcomes did not differ substantially across SES groups. This suggests that the benefits of token reinforcement were consistent regardless of parental income, education level, or access to external resources. Such a finding may point to the equitable implementation of the intervention in school settings, where standardized resources and professional guidance could mitigate SES disparities.

Furthermore, the lack of a significant interaction effect between token reinforcement and SES suggests that SES neither enhanced nor hindered the effectiveness of the intervention. This underscores the robustness and adaptability of token reinforcement strategies, which may be effectively deployed in diverse socioeconomic contexts when supported institutionally.

Recommendations

Based on the findings, the following recommendations were made

1. Schools and special education centers in Ibadan and similar contexts should adopt token economy systems as a structured behavioural intervention.
2. The absence of a significant SES effect implies that token reinforcement can be effective regardless of a child's economic background. Therefore, educational policymakers should ensure that token reinforcement strategies are equitably accessible across all public and private special education settings, eliminating barriers related to family income or resource availability.
3. It is recommended that behavioural interventions be centrally administered within schools where trained personnel and standardized procedures can provide consistent reinforcement, reducing dependence on SES-sensitive home environments for success.

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