



Token Economies and Behavioural Change: An Evaluation of Their Effectiveness on Male Children in Sri Lankan Child Development Centers

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Abstract

Children residing in Sri Lankan Child Development Centers often confront a multitude of emotional and behavioural challenges, due to traumatic experiences such as abuse, neglect, and loss and the socioeconomic problems such as poverty. These difficulties are exacerbated by the institutionalized environment, leading to heightened vulnerability and an increased risk of developing long-term mental health issues. This study investigated the impact of a token economy intervention (star-chart) on conduct problems, emotional difficulties, and prosocial behaviours among male children residing in two Sri Lankan Child Development Centers. Employing a repeated measures design, 27 children aged 6-14 years were assessed using the Sinhala version of the Strengths and Difficulties Questionnaire (SDQ) before and after one-month token economy implementation. Results demonstrated the efficacy of the token economy system in reducing behavioural issues and fostering prosocial behaviours. The findings underscore the potential of this intervention within childcare settings and advocate for longitudinal research to evaluate long-term effects.

Keywords: token economy; star-chart; conduct problems; prosocial behaviours; Child Development Centers.

Introduction

The Convention on the Rights of the Child stipulates that children should remain with their families unless it harms their well-being (Child Rights Convention, 1989). However, numerous children reside in institutional settings due to factors such as poverty, abuse, and conflict (Bilson & Cox, 2005). Research indicates that institutionalized children often experience physical, psychological, behavioural, and emotional difficulties (Tadesse, Dereje, & Belay, 2014). These challenges include impaired self-concept, diminished life purpose (Karunanayake et al., 2020), and strained relationships (Tadesse, Dereje, and Belay, 2014). To manage behavioural issues, children's home staff frequently employ ineffective methods like physical punishment and verbal reprimands (Bilson & Cox, 2005). Such punishments can lead to depression and a propensity for violence (De Zoysa, Rajapakse & Newcombe, 2008).

Sri Lanka's child development centers (CDCs) house nearly 8,400 children, despite being designed primarily for orphans. Research by Rocella (2007) shows that surprisingly, 80% of these children have at least one living parent. This imbalance suggests poverty, child abuse, and child labour are bigger drivers of institutionalization than orphanhood (Bilson & Cox, 2007).

While the Ministry of Women and Children's Affairs introduced guidelines in 2022 on minimum standards (NCPA & MOWCA, 2022) to ensure basic infrastructure and sanitation in CDCs (NCPA, 2023), a crucial area, psychosocial well-being, remains neglected. The current ratio of caregivers to children is 1:18 (Rocella, 2007), far exceeding the recommended standards in developed countries (e.g., 1:12 for 9–12-year-olds) (Childcare.gov). This lack of qualified caregivers, coupled with insufficient focus on psychosocial well-being, creates significant challenges for children in Sri Lankan CDCs (Karunanayake et al., 2020). The next section delves deeper into these specific issues impacting the well-being of children in these institutions. Rutter, and Liddle (1984) and Provence & Lipton (1962) found that early institutionalization is associated with increased risks of poverty, psychiatric disorders, interpersonal difficulties, and parenting challenges in adulthood. Institutionalization has been criticized as a form of social exclusion rather than care (Hanrath, 2009).

Children in alternative care facilities (ACFs) are at significantly higher risk for psychological and behavioural issues, including attachment problems (Tarren-Sweeney, 2008). These challenges are exacerbated in least-developed countries (World Bank, 2021) and worsened by the COVID-19 pandemic (Moussié, 2021). While infrastructure in Sri Lankan Special Development Centers (SDCs) has improved (Karunanayake, 2020; NCPA, 2023; NISD, 2013), concerns remain about human rights violations and mental health (Ariyadasa, 2013; Karunanayake et al., 2020). Children in these institutions often experience psychological difficulties, including personality development issues and behavioural problems (Wijethunga, 1991).

Childcare facilities have been implementing various strategies to enhance their quality, including staff development and educational interventions (Sparling et al., 2005; Groark et al., 2005). Behaviour modification techniques, such as token economy systems, based on operant conditioning principles, have been widely used to address children's

behavioural problems (Goodman & Scott, 2005; Honig & Pollack, 1990; McGoey & DuPaul, 2000). While these methods have shown positive outcomes in improving behaviour and learning environments (Chen, 2023), concerns about reward addiction and the need for more descriptive procedural elements have been raised (Chen, 2023; Ivy et al., 2017). Despite limited research on token economy systems in residential care, existing studies suggest potential benefits for children in these settings (Bippes et al., 1986). This study aims to evaluate the effectiveness of token economy systems in improving the psychological well-being of institutionalized Sri Lankan children with the following objectives.

Objective

The general objective of the current study was to assess the effectiveness of the token economy system in reducing emotional and behavioural problems among male children in two selected children's homes in Sri Lanka.

Specific Objectives

1. To implement a token economy system in Child Development Centers (CDCs) to positively modify target behaviours among children.
2. To assess the behavioural and emotional problems in children who live in CDCs in Sri Lanka.

Materials and Methods

3.1. Design

The study employed a within-subjects experimental design to assess the efficacy of a token economy system in mitigating conduct and emotional problems among children residing in select homes. The intervention served as the independent variable, while changes in conduct, emotional, and pro-social behaviours constituted dependent variables.

Study Setting

Galle district houses 33 Child Development Centers (CDCs). While the Probation Office and several NGOs are working to reunite children with their biological or foster families, the majority of children residing in Galle's children's homes lack parental care and lack viable family reunification options.

Study Population

The study focuses on male children aged 6-12 in Galle district, Sri Lanka, who are at a higher risk for developing behavioural issues like conduct problems, ADHD, and oppositional defiant disorders (Carr, 1999; Perera, 2004).

Study Sample

The study involved 28 children aged 5-14 (Mean=9.86 years /SD=2.87 years) from two selected children's homes in Balapitiya and Mahaladoowa. The repeated measure design allowed for fewer subjects, as per Gravetter & Wallnau (2009). A sample size of 28 boys allows for sufficient statistical power to detect meaningful effects of the intervention, given the potential variability in outcomes among individuals within orphanages (Kline, 2013).

Measures

Strengths and Difficulties Questionnaire (4-16 Years)

The Strengths and Difficulties Questionnaire (SDQ) is a widely used behavioural screening tool designed for children aged 4-16 years (Goodman, 1997). It assesses a range of emotional and behavioural difficulties, including hyperactivity, conduct problems, emotional symptoms, peer relationships, and prosocial behaviours. The SDQ is completed by parents or teachers, who rate the frequency of 25 specific behaviours on a three-point Likert scale. Total difficulties scores, as well as subscale scores, can be calculated to provide a comprehensive profile of a child's emotional and behavioural well-being.

Test of Nonverbal Intelligence (3rd Edition)

To account for potential confounding variables, the study controlled for child IQ, age, and family contact. IQ was assessed using the TONI-3, a reliable instrument demonstrated to possess strong content validity and reliability (reliability coefficient > 0.90) across various age groups (Brown, Sherbenou and Johnson (1997).

Intervention

A program was conducted for CDC staff to raise awareness about emotional and behavioural problems and their management strategies. Staff were educated on conduct, hyperactivity, defiant, and emotional issues, developmental delays, speech and communication delays, attention deficit hyperactivity. Behaviours in three areas were targeted for improvement - conduct problems, pro-social behaviour, and emotional problems. Children were asked to record all the positive behaviours they have engaged in during the day with CDC staff members. Children received a blue star each day for each positive behaviour. Once a child received 10 blue stars, he would be awarded a red star. Five red stars were awarded with a gold star.

A Star-Chart was maintained for each child in the children's homes, and these were displayed prominently in the main hall of the home used by children for their activities, so that all children could see them clearly. This intervention was designed using specific guidelines recommended by Carr (1999) and by asking children and home mothers to decide what behaviours they wanted to improve. All participants received the star chart intervention.

Results and Discussion

Descriptive Statistics

Table 1. Total Difficulties (Preintervention)

SDQ Range	Description	Percentage
0-13	Normal	28.6
14-16	Borderline	25
17+	Abnormal	47.6

The mean of the total difficult behaviours scores was 16.10(SD=5.09) prior to intervention and

13.57(SD=6.01) post –intervention, indicating a decrease in the total difficult behaviours among

participants. This observation is in line with the Tarren-Sweeney (2008) as most of the children in CDCs (47.6%) are showing behavioural, emotional and peer problems. As mentioned above, CDCs are not actively addressing the emotional and behavioural issues of the children (Karunanayake et al., 2020).

Table 2. Conduct Problems (Preintervention)

SDQ Range	Description	Percentage
0-3	Normal	35.6
4	Borderline	7.1
5+	Abnormal	57.1

Table 2 illustrate the occurrence of the behavioural problems. 57.1% of children have shown behavioural problems which is in line with the previous observations by Tadesse et al. (2014).

Table 3. Emotional Problems (Preintervention)

SDQ Range	Description	Percentage
0-6	Normal	92.9
7	Borderline	7.1
8+	Abnormal	0

Table 3 outlines the emotional difficulties experienced by the children in this study. These findings diverge from previous research, such as Karunanayake et al. (2020) and Tadesse et al. (2014). This discrepancy is likely due to several factors: the SDQ's limited capacity to capture complex emotional issues, reliance on caregiver and teacher perspectives, and the cultural reluctance of Sri Lankan males to disclose emotional vulnerabilities. Consequently, alternative measures for screening emotional problems might have yielded different results. However, due to the absence of a validated screening tool at the time of the study, the SDQ was utilized.

Table 4 Prosocial Behaviours (Preintervention)

SDQ Range	Description	Percentage
0-4	Abnormal	28.6
5	Borderline	67.5
6+	Normal	3.6

Table 4 reveals a high prevalence of prosocial behaviour difficulties among the children prior to the intervention. A substantial majority (67.5%) exhibited borderline levels, while nearly one-third (28.6%) displayed abnormal prosocial behaviours. These findings align with previous research by Goodman & Scott (2005) and Wijetunga (1991), suggesting that early childhood deprivation can hinder the development of positive social interactions and often leads to aggressive behaviours.

Table 5. Inferential Statistics (Pre-Post interventions)

Targeted Behaviours	Pre Mean	SD	Mean	Post SD	SD SD Difference	t	p
Overall Difficulties	16.11	5.09	13.57	6.01	2.53	3.07	0.005**
Conduct Problems	4.50	1.9	2.96	2.23	1.53	4.75	0.001***
Emotional Problems	2.07	2.24	2.10	1.59	0.35	0.11	0.915
Prosocial Behaviours	4.67	0.86	7.10	2.13	2.57	7.42	0.001***

**Statistically Significant at 0.01

***Statistically Significant at 0.001

Table 5 provides a comparison of behavioural differences before and after the intervention, analyzed using a repeated measures t-test. Results indicate a significant reduction in overall behavioural difficulties post-intervention ($p < 0.05$), aligning with Kim et al.'s (2022) meta-analysis on the efficacy of token economies. Specifically, conduct problems decreased significantly ($p < 0.001$), consistent with McGoey & DuPaul's (2000) findings that token economies effectively reduce disruptive behaviours through reward-based systems.

The intervention significantly increased the frequency of pro-social behaviours among participants. Post-intervention pro-social behaviour scores were notably higher than pre-intervention scores. These findings align with previous research by Bippes et al. (1986) and Anhalt et al. (1998), which demonstrated that token economy interventions can effectively enhance social behaviours in similar populations.

While there was an increase in the overall frequency of emotional problems among participants from the pre- to post-intervention stages, this difference was statistically insignificant. However, it's crucial to note that intrinsic reinforcers like praise, demonstrated to enhance desired behaviours (Pérez et al., 2023), could potentially promote children's emotional well-being.

Limitations

The study's findings are limited by several factors. A smaller-than-ideal sample size due to infrastructural challenges at most of the CDCs, in the district coupled with the lack of control over home environments, weakens the causal link between the intervention and observed outcomes. Additionally, the influence of external factors, such as religious and community activities, remains unaccounted for, potentially affecting the results. The repeated-measures design might also have inflated prosocial behaviour ratings due to participant awareness of the study (demand characteristics) (Gravetter & Wallnau, 2009). Finally, the potential bias introduced by home staff attitudes poses a threat to the validity of the SDQ ratings. This could have been avoided if the study adopted Dysfunctional Attitude Scale (DAS) to assess the home staff.

Recommendations

The study's findings indicate that the employed behavioural technique effectively managed behavioural issues and promoted positive behaviours in children. To maximize its impact, the authors recommend widespread dissemination of the study's results to key stakeholders such as the Department of Probation and Childcare and the District Child Development Committee. Integrating the technique into daily routines of children's homes, such as token for completing their morning routine, tokens for completing daily homework and showing effort in their studies or learning new skills and Tokens are awarded when boys participate in maintaining the CDC's grounds or in group responsibilities,

are suggested, along with exploring cost-effective alternatives to the reward system.

Moreover, the authors emphasize the value of conducting a longitudinal study to accurately assess the technique's long-term effects and gain deeper insights into individual behavioural changes over time.

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