



The Effectiveness of Shaping and Token Economy in Improving Sitting Endurance in a Child Preparing for Elementary School

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ABSTRACT

This study investigated the effectiveness of integrating shaping and a token economy to enhance sitting endurance in a child transitioning to elementary school. A single-subject A-B-A' design was applied with a 6-year-7-month-old child who experienced difficulty sustaining seated behavior during academic tasks. Sitting endurance was operationalized as the length of time the child remained seated while completing structured pre-academic activities and was assessed across three baseline sessions, five intervention sessions, and three follow-up sessions. The findings indicated a progressive increase in sitting duration during the intervention, with gains partially sustained during the follow-up phase. Overall, the results support the use of combined shaping and token economy strategies to improve sitting endurance in children exhibiting similar challenges.

INTRODUCTION

School readiness is a crucial aspect for children who are about to enter primary school. School readiness refers to a set of abilities and skills that children must possess in order to successfully adapt to structural changes in learning and to participate effectively in all learning activities at school (Deliviana, 2017). School readiness encompasses a child's capacity to enter a formal educational environment with adequate physical, cognitive, socio-emotional, and behavioral preparedness. One of the most widely used frameworks for school readiness is that proposed by UNICEF and the World Health Organization (2012), which conceptualizes school readiness as a holistic construct. Children who are considered ready to enter primary school are those who have acquired a range of basic abilities and foundational knowledge across multiple developmental domains that enable them to engage effectively in the learning process.

Kagan, Moore, and Bredekamp (1993) identified five domains of school readiness: (1) physical health and motor development, (2) social and emotional development, (3) approaches to learning, (4) language development, and (5) general knowledge and cognition. One key indicator, physical and behavioral readiness, includes children's ability to maintain a seated posture, sustain attention during table-top activities, and follow instructions. This aspect is closely related to developmental maturity, particularly gross and fine motor development, as well as children's endurance to remain seated for a specified period of time. Consistent with this perspective, the *Nurturing Care Framework* (WHO, UNICEF, & World Bank, 2018) emphasizes that physical and behavioral readiness serves as a foundational prerequisite for children to participate optimally in learning activities in primary school.

The client was referred by a daycare teacher for a psychological assessment to evaluate school readiness in preparation for the transition to elementary school. Overall, the client demonstrated adequate functioning across several domains relevant to school readiness. The client was able to follow instructions, understand classroom rules, and showed age-appropriate emerging academic skills, including basic recognition of numbers and letters. In the social domain, the client was able to interact appropriately with peers and establish peer relationships. These findings suggest that the client possessed sufficient foundational cognitive, behavioral, and social skills necessary for adaptation to an elementary school setting.

Despite these strengths, the teacher reported notable difficulties in behavioral regulation, particularly with respect to sitting endurance during classroom activities. The client exhibited difficulty remaining seated for an age-appropriate duration, frequently changed positions, and showed a preference for completing tasks on the floor rather than at a desk. When required to work while seated at a table, the client was able to maintain the seated position only briefly before disengaging. These behavioral patterns raised concerns regarding the client's readiness to meet the increased instructional demands of elementary school, which require sustained sitting, adherence to classroom rules, and engagement in structured learning activities.

Sitting endurance is one of the most critical skills for children at this developmental stage, as it is essential for enabling them to participate effectively in classroom learning activities. This study aims to examine the effectiveness of a combined shaping and token economy intervention in increasing the duration of sitting endurance in children who are preparing to enter primary school.

THEORETICAL REVIEW

Shaping

The intervention will be conducted using a behavioral approach, specifically behavior modification. Behavior modification is a method used to establish, eliminate, or alter specific behaviors in children (Miltenberger, 2012). The behavior modification technique employed in this study is shaping. Shaping is a procedure used to develop new behaviors by gradually reinforcing responses that increasingly approximate the target behavior. One behavioral dimension that can be effectively enhanced through shaping is duration, defined as the amount of time a behavior is maintained (Martin & Pear, 2015).

In the shaping process, prompts are delivered according to each child's individual needs as they acquire a particular skill (Nasa, Pudjianti, & Tjakrawiralaksana, 2017). Prompts function as tools or stimuli that increase the likelihood of the desired behavior occurring (Martin & Pear, 2015). Once the child demonstrates mastery at a given stage, positive reinforcement—such as enjoyable activities or verbal praise—is provided. The prompts are then gradually faded so that the child is ultimately able to perform the required skill independently (Nasa, Pudjianti, & Tjakrawiralaksana, 2017).

Token economy

Token economy is frequently applied with children whose intrinsic motivation for achievement has not yet fully developed, as they tend to be more engaged and focused on enjoyable play activities than on completing school-related tasks and learning materials, which may be perceived as monotonous (Nasa, Pudjianti, & Tjakrawiralaksana, 2017). Considering the client's characteristics, which indicate a strong preference for play activities over task completion, a token economy system was employed to facilitate the intervention process and to support the child's engagement and participation across all intervention sessions.

Miltenberger (2012) defines a token economy as a form of behavior modification aimed at maintaining desired behaviors. In this system, points earned each time an individual displays the target behavior function as tokens. These tokens are delivered contingent upon the occurrence of the desired behavior and can later be exchanged for backup reinforcers or more substantial rewards. Backup reinforcers are selected because they serve as effective behavioral reinforcers within the client's environment, thereby motivating the client to engage in the expected behaviors and to reduce the occurrence of undesired behaviors.

METHODOLOGY

This study used a single-subject A-B-A' experimental design consisting of baseline, intervention, and follow-up phases. The participant was one preschool-aged child preparing to enter elementary school who showed low sitting endurance during structured learning activities.

The target behavior was sitting endurance, defined as the duration the child remained seated while completing pre-academic tasks. Baseline data were collected across three sessions. The intervention phase consisted of five sessions using shaping combined with a token economy, in which star stickers were delivered contingent on increased sitting duration and later exchanged for backup reinforcers. Follow-up data were collected in three sessions one week after the intervention.

Sitting duration was measured through direct observation using a stopwatch and analysed using duration comparison across phases. This approach allowed for objective and quantifiable measurement of sitting endurance across sessions. Summary of behavioral intervention design explained in Table 1 below:

Tabel 1. Summary of the Behavioral Intervention Design

Component	Description
Behavioral Approach	The intervention employed a behavioral approach using behavior modification techniques to increase sitting endurance during learning-related activities.
Target Behavior	Sitting endurance, operationally defined as the duration for which the child remained seated while engaging in structured learning tasks.
Intervention Phases	Baseline phase (3 sessions), intervention phase (5 sessions), and post-intervention phase (3 sessions).
Learning Tasks	Pre-academic (<i>pre-calistung</i>) activities involving early reading, writing, and numeracy tasks. These tasks were selected based on prior observations indicating limited sitting endurance during pencil-and-paper activities.
Token Economy System	A token economy system using star stickers as tokens was implemented. Tokens were delivered contingent upon meeting predefined sitting duration criteria and could be exchanged for agreed-upon rewards determined collaboratively by the child and parents.
Token Reinforcement Schedule	Sitting for 5 minutes: 1 star; 6-10 minutes: 3 stars; 11-20 minutes: 6 stars; 21-30 minutes: 9 stars.
Token Exchange	Accumulated tokens were exchanged for backup reinforcers after completion of the intervention phase.

RESULTS AND DISCUSSION

Baseline phase

Baseline measurement was conducted over a period of three days to obtain initial data on the client's sitting endurance. The client was assigned tasks

involving worksheets related to basic reading, writing, and arithmetic skills, and the examiner measured the duration of the client's sitting endurance while completing these tasks. The results of the measurements are presented in the following table:

Table 2. Client's Baseline

Day	Duration
Day 1	3 minutes
Day 2	5 minutes
Day 3	5 minutes

Intervention phase

Following baseline assessment, the intervention was implemented according to the schedule agreed upon with the client's parents. During each intervention session, the client's sitting endurance was measured while engaging in structured pre-academic reading-related tasks. Overall, the results indicated a gradual increase in sitting duration across sessions, accompanied by reduced restlessness and improved task engagement. The sitting endurance data obtained throughout the intervention phase are presented in Table 3.

Table 3. Sitting Endurance During Intervention Sessions

Session	Session Duration	Main Activities	Sitting Endurance	Tokens Earned
1	16:00-16:45	Vowel-consonant discrimination; C-V-C-V reading	6 minutes	3 stars
2	16:00-16:45	Word construction; word-picture matching	8 minutes	3 stars
3	16:00-16:45	Word construction; C-V-C-V reading	7 minutes	3 stars
4	15:00-15:20	Completing missing letters; word construction	10 minutes	3 stars
5	14:30-15:00	Word list reading; completing missing syllables	10 minutes	3 stars

Note: Sitting endurance refers to the duration (in minutes) the client remained seated while engaging in structured learning tasks. Tokens (star stickers) were delivered contingent upon meeting predefined sitting duration criteria and were exchanged for backup reinforcers after completion of the intervention phase.

Follow up phase

Following the completion of the intervention, a follow-up evaluation was conducted during the subsequent week to assess the maintenance of the client's sitting endurance. The results indicated that the child was able to maintain seated behavior for durations ranging from 7 to 8 minutes during the follow-up sessions, suggesting partial maintenance of the gains achieved during the intervention phase. The results of the measurements are presented in the following Table 4:

Table 4. Follow-Up Evaluation of Sitting Endurance

Day	Duration
Day 6	7 minutes
Day 7	8 minutes
Day 8	8 minutes

Comparison between phases

Measurement data from the baseline, intervention, and follow-up phases were analyzed and are presented in Figure 1 to illustrate changes in sitting endurance across sessions.

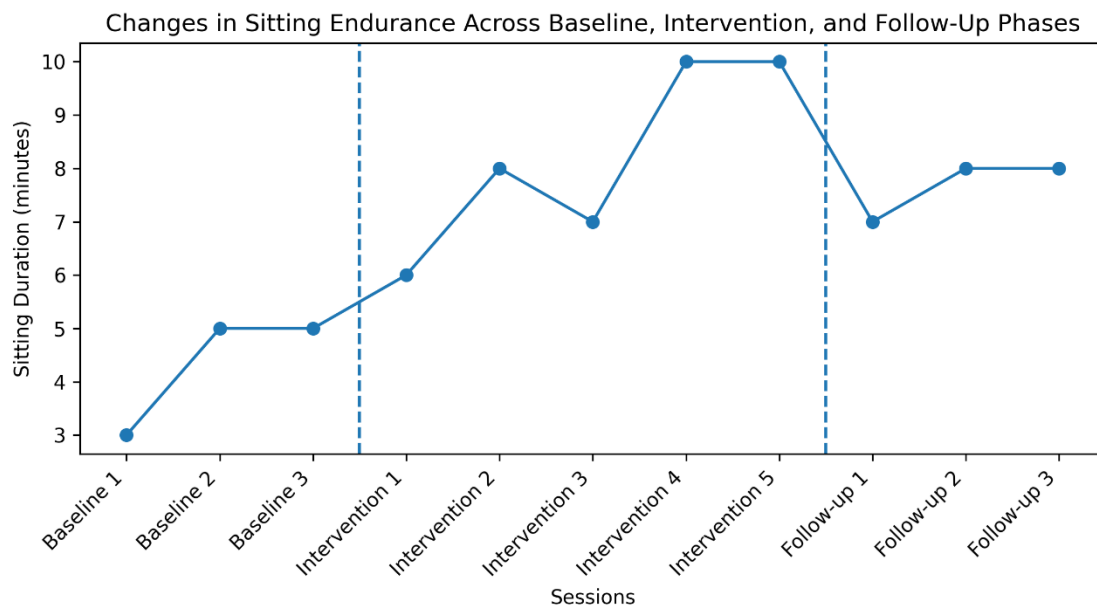


Figure 1. Changes in Sitting Endurance

The graph shows changes in the child’s sitting endurance across three phases: baseline, intervention, and follow-up. During the baseline phase, the child’s sitting duration was relatively short, ranging from 3 to 5 minutes. This indicates that before the intervention, the child had difficulty remaining seated for a sustained period during learning activities. In the intervention phase, sitting endurance gradually increased. Although there were small fluctuations, the overall trend was upward, with the child reaching a maximum sitting duration of 10 minutes in the later sessions. This suggests that the intervention helped the child stay seated for longer periods while completing learning tasks.

In the follow-up phase, the sitting duration slightly decreased compared to the peak intervention sessions but remained higher than the baseline level, ranging from 7 to 8 minutes. This indicates that most of the improvement was maintained even after the intervention ended. Overall, the graph demonstrates that the intervention was effective in increasing the child’s sitting endurance, and the positive effects were still present during the follow-up period.

This study investigated the effectiveness of a combined shaping and token economy intervention in increasing sitting endurance in a child preparing to enter primary school. The results demonstrated a clear improvement in the child’s

ability to remain seated during structured learning activities following the intervention.

Baseline findings showed low sitting endurance, indicating difficulty maintaining seated behavior during pre-academic tasks. During the intervention phase, sitting duration increased gradually and reached up to 10 minutes, suggesting that shaping was effective in extending the duration of the target behavior. The token economy system likely supported this improvement by increasing the child's motivation through immediate reinforcement.

During the follow-up phase, sitting endurance slightly decreased but remained higher than baseline levels, indicating partial maintenance of the intervention effects. Overall, these findings suggest that a combination of shaping and token economy can effectively improve sitting endurance, an important component of school readiness.

CONCLUSIONS AND RECOMMENDATIONS

The findings of this study indicate that a combined shaping and token economy intervention was effective in increasing sitting endurance in a child preparing to enter primary school, with improvements maintained to some extent during the follow-up phase. This approach may be useful for supporting children who experience difficulty remaining seated during learning activities. It is recommended that future research involve a larger number of participants, longer follow-up periods, and implementation across different settings to strengthen the evidence base and examine the long-term effectiveness of this intervention.

FURTHER STUDY

This research still has limitations so further research on this topic is still needed "The Effectiveness of Shaping and Token Economy in Improving Sitting Endurance in a Child Preparing for Elementary School".

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Magdalena, Dewi

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