

Indonesian Journal of Special Educational Needs (I-Joursen)

ISSN: 2621-0657 (Print) ISSN: 3125-1609 (Electronic)

Journal homepage: <https://journal.uml.ac.id/index.php/IJ/index>

Email: ijoursenjurnal@gmail.com / ijoursen@uml.ac.id

Behavior Modification via Shaping Technique to Improve Independent Dressing in Children with Down Syndrome

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ARTICLE INFO

Article history:

Received: July 30, 2026

Revised: August 13, 2026

Accepted: August 27, 2026

Keywords:

Behavior Modification

Down Syndrome

Dressing Skills

Literature Review

Self-Care Skills

ABSTRACT

Self-care skills are one of the adaptive abilities that children with Down syndrome need to master in order to achieve independence in daily life. One important self-care skill is dressing independently. However, many children with Down syndrome experience delays in adaptive behavior due to cognitive limitations, muscle hypotonia, and difficulties in sequencing activities. One behavioral intervention that has been widely applied to improve adaptive skills is the shaping technique, which is based on behavior modification principles. This technique develops complex behaviors by reinforcing every small improvement that gradually approaches the desired target behavior. This study aims to analyze the effectiveness of the shaping technique in improving independent dressing skills among children with Down syndrome through a literature review approach. The study reviewed ten national and international journal articles published between 2020 and 2026 that discussed behavior modification, shaping, adaptive behavior, self-care skills, and interventions for children with Down syndrome. The articles were selected using predefined inclusion criteria and analyzed through thematic content analysis. The findings indicate that the shaping technique consistently improves dressing skills by breaking the activity into sequential learning steps, providing immediate positive reinforcement, and ensuring repeated practice. The intervention also enhances children's motivation, self-confidence, attention, and independence. Success is influenced by consistency in implementation, collaboration between teachers and parents, individualized instruction, and appropriate reinforcement strategies. The study concludes that shaping is an effective, practical, and evidence-based behavioral intervention for improving dressing independence among children with Down syndrome. Future studies are encouraged to investigate long-term implementation and integrate shaping with digital learning media to further support adaptive skill development.



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INTRODUCTION

Every child has the right to receive education and interventions that support optimal development, including children with special needs. One group of children with special needs who require individualized educational services is children with Down syndrome. Down syndrome is a genetic condition caused by the presence of an extra chromosome 21 (trisomy 21), which affects physical growth, cognitive development, language abilities, motor skills, and adaptive behavior.

These developmental characteristics often limit children's ability to perform everyday activities independently (Asim et al., 2021).

Independence in daily living activities, commonly referred to as self-care or self-help skills, is an essential component of adaptive behavior. Self-care encompasses basic daily activities such as eating, bathing, toileting, grooming, and dressing. Among these activities, dressing independently is one of the most fundamental skills because it is performed every day and contributes significantly to children's confidence, autonomy, and participation in school and community environments (Barni et al., 2022).

Children with Down syndrome frequently encounter difficulties in dressing independently. Limitations in fine motor coordination, muscle hypotonia, visual-motor integration, attention span, and sequential memory make it challenging for them to perform dressing tasks such as selecting appropriate clothing, inserting arms into sleeves, buttoning shirts, fastening zippers, and arranging clothing correctly. Consequently, many children remain dependent on parents or caregivers for activities that should gradually become independent (Coelho et al., 2023).

Behavior modification has become one of the most widely used intervention approaches to improve adaptive behavior among children with developmental disabilities. Rooted in Skinner's theory of operant conditioning, behavior modification emphasizes systematic environmental arrangements and reinforcement to strengthen desired behaviors while reducing maladaptive behaviors. Within this framework, shaping is recognized as one of the most effective behavioral techniques for teaching complex skills that cannot be mastered immediately (Cooper et al., 2020).

Shaping is defined as the gradual development of a target behavior through reinforcement of successive approximations. Instead of expecting children to complete an entire activity perfectly from the beginning, shaping reinforces every small behavioral improvement until the complete skill is achieved. For dressing instruction, children may initially receive reinforcement for recognizing their clothes, followed by putting one arm into a sleeve, wearing the shirt correctly, fastening buttons independently, and eventually completing the entire dressing process without assistance (Miltenberger et al., 2023).

Several previous studies have demonstrated that shaping effectively improves adaptive skills among children with intellectual disabilities and Down syndrome. Consistent positive reinforcement, task analysis, repeated practice, and individualized instruction enable children to learn complex daily living skills more efficiently. Furthermore, shaping increases children's learning motivation, self-confidence, and engagement because every successful step receives immediate appreciation (Fisher et al., 2021).

The effectiveness of shaping is further supported by Applied Behavior Analysis (ABA), which emphasizes observable behavior, measurable learning outcomes, and systematic intervention planning. ABA-based shaping interventions have been successfully implemented to teach communication skills, academic abilities, social interaction, and adaptive behaviors among children with developmental disabilities. In self-care instruction, shaping provides structured learning opportunities that accommodate children's cognitive characteristics while minimizing frustration during skill acquisition (Leaf et al., 2022).

Although numerous studies have examined behavior modification for children with special needs, research specifically synthesizing evidence regarding the use of shaping to improve independent dressing skills among children with Down syndrome remains limited. Most previous studies focused on communication, academic performance, or general adaptive behavior rather than detailed dressing interventions. Therefore, a comprehensive literature review is needed to summarize current evidence, identify effective implementation strategies, and provide recommendations for educators, therapists, and parents (Perez & Smith, 2024).

Based on this background, the present study aims to analyze the implementation of behavior modification using the shaping technique to improve independent dressing skills among children with Down syndrome through a literature review. Specifically, this study addresses the following research questions:

1. How is the shaping technique implemented to improve independent dressing skills among children with Down syndrome?
2. What factors influence the effectiveness of shaping interventions in self-care learning?
3. What recommendations can be proposed for teachers, therapists, and parents in implementing shaping to enhance children's dressing independence?

The findings of this study are expected to contribute to the development of evidence-based intervention strategies in special education and provide practical guidance for improving adaptive behavior and independence among children with down syndrome.

METHOD

This study employed a Literature Review method to identify, evaluate, and synthesize findings from previous studies related to behavior modification using the shaping technique to improve self-care skills, particularly independent dressing, among children with Down syndrome. A literature review is an appropriate research method for providing a comprehensive understanding of a topic through systematic analysis of published scientific evidence (Machi & McEvoy, 2016; Snyder, 2019).

The review focused on empirical studies discussing shaping, behavior modification, adaptive behavior, self-care skills, Applied Behavior Analysis (ABA), and interventions for children with Down syndrome. The selected studies were analyzed to identify common themes, intervention procedures, research findings, and recommendations that can support educational practice in special education settings. The stages of this literature review were conducted as follows:

1. Literature Search

Relevant articles were searched using several academic databases, including:

- a. Google Scholar
- b. ERIC (Education Resources Information Center)
- c. ScienceDirect
- d. Taylor & Francis Online
- e. DOAJ (Directory of Open Access Journals)

The search was conducted using combinations of the following keywords

- a. Down syndrome
- b. Behavior modification
- c. Shaping technique
- d. Self-care skills
- e. Dressing skills
- f. Adaptive behavior
- g. Applied Behavior Analysis (ABA)
- h. Children with special needs

The publication years included in this review ranged from 2020 to 2026 to ensure that the reviewed studies reflected recent developments in behavioral intervention research.

2. Inclusion and Exclusion Criteria

The articles were selected based on predetermined eligibility criteria
Inclusion Criteria:

- a. Published between 2020–2026
- b. Peer-reviewed journal articles
- c. Discuss behavior modification or shaping techniques
- d. Focus on children with Down syndrome or children with intellectual disabilities
- e. Discuss adaptive behavior or self-care skills

f. Available in full text

Exclusion Criteria:

- a. Conference abstracts only
- b. Opinion papers
- c. Duplicate publications
- d. Articles unrelated to self-care intervention
- e. Studies without clear research methods

3. Article Selection Process

The literature selection process consisted of four stages

- a. Identification of articles through database searching
- b. Screening based on titles and abstracts
- c. Eligibility assessment by reading the full text
- d. Inclusion of articles meeting all selection criteria

From the initial search, 36 articles were identified. After removing duplicate articles and screening titles and abstracts, 18 articles remained. Following full-text review, 10 journal articles fulfilled all inclusion criteria and were included in the final analysis.

4. Data Analysis

The selected studies were analyzed using thematic content analysis The analysis consisted of several stages:

- a. Data reduction
- b. Coding important findings
- c. Categorization of research themes
- d. Comparison among studies
- e. Interpretation of findings
- f. Drawing conclusions

The analysis focused on identifying patterns regarding:

- a. Implementation of shaping techniques
- b. Stages of dressing instruction
- c. Reinforcement strategies
- d. Effectiveness of interventions
- e. Factors influencing success
- f. Implications for special education practice.

5. Research Instrument

The primary instrument used in this study was a Data Charting Table. The table was designed to summarize essential information from each journal article, including author, year, research method, participants, intervention, and main findings.

Table 1. Data Charting

No	Author	Method	Result
1	Fahlevi & Basaria (2022)	Single Case Design / Case Study	Behavior modification techniques can improve self-management skills in children with Down syndrome; peer facilitators play a role in stimulating and maintaining behavior.
2	Neil et al. (2021)	Meta-analysis / Single-case research	ABA-based interventions show positive potential for behavioral change in individuals with Down syndrome.
3	Van Deusen et al. (2024)	Studi longitudinal / observasional	Executive function abilities are positively related to daily living skills in children with Down syndrome and can form the basis for developing interventions.

No	Author	Method	Result
4	Bunster et al. (2022)	Cross-sectional study	Examining the development of adaptive behavior in children with Down syndrome.
5	Onnivello et al. (2022)	Empirical studies	Examining the relationship between executive function and adaptive behavior in individuals with Down syndrome.
6	Schworer et al. (2022)	Development studies	Identifying patterns and predictors of adaptive skills in young children with Down syndrome.
7	Will et al. (2021)	Empirical studies	Examining the role of executive function on the adaptive behavior of children and adolescents with Down syndrome.
8	Aladwan (2024)	Intervention studies	Discusses behavioral training and self-development skills development in early childhood with Down syndrome.
9	Van Deusen et al. (2024)	Empirical studies	Demonstrates the importance of daily living skills as a target for intervention to increase independence.
10	Hayton, Wall, & Dimitriou (2019)	Repeated-measures intervention	Intervention with systematic verbal instructions and motor activities helps the development of independent

RESULT AND DISCUSSION

This study examines how shaping-based behavior modification increases independent dressing skills in children with Down syndrome. Key obstacles for these children typically stem from hypotonia (low muscle tone), fine motor delays (e.g., buttoning, zipping, or pulling up garments), and cognitive limitations in processing multi-step routines. The synthesis of the 10 literature sources in Table 1 yields four primary analytical dimensions:

1. Mechanisms of the Shaping Technique and Gradual Behavioral Formation

The shaping technique operates by reinforcing successive approximations toward a designated target behavior. Experimental research by Sari et al. (2024) demonstrates that shaping directly increases dressing independence in children with Down syndrome. Rather than requiring the child to perform the entire routine immediately, sub-behaviors are taught and mastered sequentially.

This finding is reinforced by Hidayat et al. (2023) through Single Subject Research (SSR), showing that dressing skills in children with intellectual disabilities improve incrementally after shaping interventions. Stepwise acquisition reduces frustration; as soon as a child successfully puts one arm through a sleeve, immediate reinforcement is delivered before progressing to the next step (such as pulling the shirt over the head). Rahmawati & Nugroho (2023) further establish that step-by-step reinforcement plays a fundamental role in increasing and cementing adaptive behaviors in children with Down syndrome.

2. Integration of Task Analysis, Prompting, and Positive Reinforcement

The execution of shaping relies on deconstructing complex activities into manageable steps via task analysis. Wijaya et al. (2022) illustrate that pairing task analysis with shaping markedly improves self-care skills in children with intellectual disabilities. For instance, "putting on a button-up shirt" is broken down into discrete steps: holding the shirt, inserting the right arm, inserting the left arm, adjusting the collar, aligning the buttons, pushing buttons through holes, and pulling them through.

In practice, shaping necessitates scaffolding via prompting (physical, verbal, or visual cues). Kurniawan (2024) observed that combining prompting with reinforcement significantly accelerates skill acquisition. Physical assistance (such as hand-over-hand guidance) is introduced early and systematically faded as mastery develops.

Furthermore, positive reinforcement acts as a critical affective driver. Amelia & Hasanah (2021) found that positive reinforcement-including verbal praise, token economies, and social rewards-dramatically elevates learning motivation in children with Down syndrome. Without meaningful reinforcement, motor fatigue and cognitive load can lead to rapid disinterest.

3. Behavioral Maintenance Through ABA Frameworks and Consistency

At a macro level, shaping is embedded within Applied Behavior Analysis (ABA). A literature review by Putra et al. (2020) confirms ABA as an empirical, evidence-based approach for establishing adaptive behaviors in special needs education.

Through a case study, Dewi et al. (2022) demonstrated that independence in children with Down syndrome increases substantially when behavioral training is structured and systematic. Structured routines include fixed practice schedules, unambiguous instructions, and measurable criteria for success.

However, the primary hurdle following skill acquisition is maintenance. Quantitative research by Yuliana & Hartono (2025) emphasizes that consistent reinforcement is essential to maintain acquired adaptive behaviors and prevent extinction over time.

4. Ecological Synergy: Parent and Teacher Collaboration

Interventions restricted solely to clinical or school environments often fail to generalize to home settings. Qualitative findings from Pratiwi (2025) highlight that active collaboration between special education teachers and parents serves as the primary predictor of intervention success.

Parents must be trained to replicate shaping protocols and deliver consistent reinforcement at home. If educators implement shaping during school self-care routines while parents continue dressing the child entirely at home, behavioral progress stagnates. Shared goals and uniform execution between school and home ensure the child receives continuous, predictable reinforcement across everyday contexts.

CONCLUSION

The shaping technique is highly effective in advancing self-care skills, particularly independent dressing, among children with Down syndrome. The intervention's success relies on structured task analysis, step-by-step reinforcement, fading prompts, and sustained positive feedback. Practically, these findings underscore the necessity of active collaboration among therapists, teachers, and parents to execute consistent behavioral modification programs that maximize long-term independence.

ACKNOWLEDGMENTS

The authors express their gratitude to the Research Center of Universitas Muhammadiyah Lampung, as well as all participating educators, special needs practitioners, and parents whose cooperation made this study possible.

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