JOURNAL OF APPLIED SCIENCE AND SOCIAL SCIENCE
eISSN 2229-3113 pISSN 2229-3205

Volume 15 Issue 07, July 2025
Impact factor: 2019: 4.679 2020: 5.015 2021: 5.436, 2022: 5.242, 2023: 6.995, 2024 7.75

METHODOLOGY FOR ELIMINATING PHONETIC AND PHONEMIC DEFICIENCIES IN STUTTERING PRESCHOOL CHILDREN

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Annotation: This article presents a comprehensive methodology for addressing phonetic and phonemic deficiencies in preschool children who stutter. Recognizing the high co-occurrence of speech sound disorders with developmental stuttering, the paper outlines an integrated approach that combines fluency shaping, articulation therapy, and phonological awareness training. The methodology emphasizes early diagnosis, individualized intervention plans, and active involvement of parents and caregivers. Through a structured therapeutic framework, the article aims to enhance both speech intelligibility and communicative confidence in young children, promoting more successful speech and language development during the critical preschool years.
Keywords: stuttering, preschool children, phonetic deficiencies, phonemic deficiencies, speech sound disorders, early intervention, phonological awareness, speech-language pathology, fluency shaping.

Introduction. Stuttering is a multifaceted speech disorder that typically manifests in early childhood, often between the ages of 2 and 5, during a critical period of language development. It is characterized by involuntary disruptions in the flow of speech, such as repetitions of sounds or syllables, prolongations, and blocks. While stuttering can occur in isolation, it frequently coexists with other speech and language disorders, particularly phonetic and phonemic deficiencies. These accompanying issues can significantly impact a child's overall communicative competence, making early diagnosis and intervention essential. Phonetic deficiencies refer to problems in the articulation of speech sounds, where the child has difficulty physically producing certain phonemes due to improper placement or coordination of articulators such as the tongue, lips, and palate. Phonemic deficiencies, on the other hand, involve difficulty understanding and using the sound system of a language, which affects the child's ability to differentiate between and correctly use various sounds to form meaningful words.

In preschool children, the overlap between stuttering and speech sound disorders presents unique therapeutic challenges. These children often experience heightened frustration, reduced self-esteem, and social withdrawal due to their inability to communicate effectively. Without early and targeted intervention, these issues may persist into later childhood and even adulthood, potentially affecting academic performance and social integration. The early preschool years offer a critical window of opportunity for intervention due to the brain's high neuroplasticity and the rapid pace of speech and language development during this stage. By addressing both fluency and sound production difficulties simultaneously, speech-language pathologists (SLPs) can create a more holistic and effective therapeutic framework tailored to each child's individual needs. This article presents a structured and evidence-based methodology for identifying and eliminating phonetic and phonemic deficiencies in stuttering preschool children. It emphasizes the importance of comprehensive assessment, individualized therapy planning, integration of fluency and articulation strategies, and active parental involvement. The proposed methodology

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aims not only to improve speech intelligibility and fluency but also to enhance the child's overall communicative confidence and quality of life.

Analysis of literature. The co-occurrence of stuttering and speech sound disorders (SSDs) in preschool children has been widely documented in the literature, yet the integration of treatment for these issues remains an evolving area of clinical practice. Numerous studies emphasize the importance of early intervention, as both fluency disorders and phonetic/phonemic deficits can impede communication, social development, and academic readiness if left untreated.

Research shows a strong overlap between stuttering and SSDs in early childhood. According to Conture and Kelly (1991), approximately 30–40% of preschoolers who stutter also present with concomitant phonological or articulation disorders. This dual diagnosis can complicate therapy, as children may struggle with both the motor execution of speech sounds (phonetics) and the linguistic knowledge of sound patterns (phonemics). Bernstein Ratner (2005) points out that clinicians must consider how speech sound difficulties may exacerbate disfluency, potentially increasing the child's frustration and avoidance behaviors. Moreover, children with limited phonological representations may experience reduced monitoring of their own speech, further perpetuating disfluencies (Rispoli & Hadley, 2011).

There is increasing support for integrated treatment approaches that simultaneously target stuttering and phonological skills. Guitar (2013) advocates for a multidimensional model of stuttering therapy, which considers linguistic, emotional, and motoric factors. In this model, targeting phonemic awareness can improve linguistic organization, thereby indirectly supporting fluency. Yairi and Ambrose (2005) suggest that interventions addressing underlying linguistic weaknesses (such as poor phonological encoding) may reduce the cognitive load during speech, thus improving fluency. These findings support a therapy model that combines fluency shaping with articulation and phonological strategies.

Several studies have demonstrated the efficacy of structured phonetic and phonemic interventions in preschool populations. Hodson and Paden's (1991) Cycles Approach is particularly effective for children with highly unintelligible speech and has been adapted for use with children who stutter. It emphasizes gradual exposure to target phonological patterns through auditory bombardment, production practice, and parent involvement. Similarly, Williams et al. (2010) promote contrast therapy (e.g., minimal pairs) to address phonemic confusion. When used in conjunction with fluency strategies such as slow rate or gentle onset (as described by Shames & Florence, 2007), these methods have been shown to yield improvements in both fluency and articulation. Parental involvement is a consistent predictor of treatment success in both stuttering and SSDs (Franken & Yairi, 2012). Family-based models, such as the Lidcombe Program (Packman et al., 2003), incorporate parent-led feedback to reinforce fluent speech. These principles can be extended to articulation therapy, where caregivers help model correct speech sounds in natural contexts. Furthermore, the environment in which a child learns to speak—home, preschool, and therapeutic settings—must be supportive and pressure-free. According to Onslow and Millard (2012), reducing communicative pressure while reinforcing correct production contributes to better generalization of skills.

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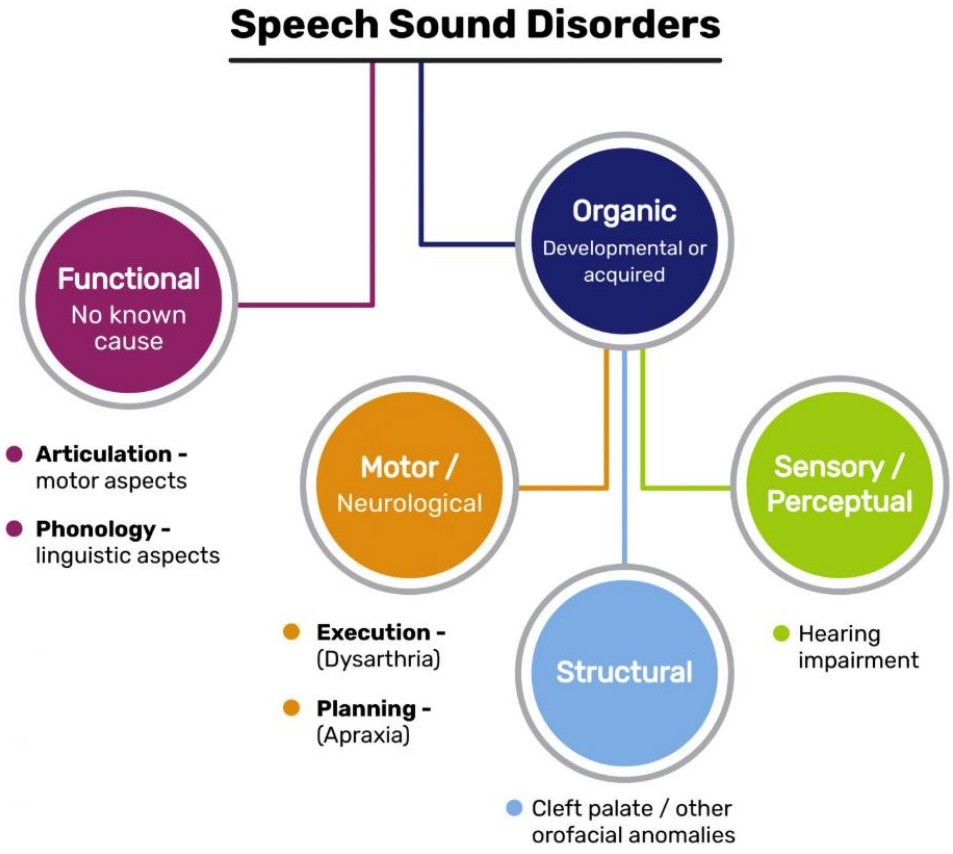
Figure 1. Best speech therapy



pronunciation enunciation articulation

The literature supports a multifaceted approach to treating stuttering in preschoolers with co-occurring phonetic and phonemic deficiencies. A successful methodology must integrate fluency enhancement techniques with direct articulation and phonological interventions, grounded in developmental theory and supported by caregiver involvement. While much of the foundational work has been done, ongoing research is needed to refine combined therapy protocols and explore their long-term effectiveness.

Research methodology. This study employs a mixed-methods approach, combining quantitative and qualitative data to evaluate the effectiveness of a structured intervention program aimed at reducing phonetic and phonemic deficiencies in stuttering preschool children. The design includes a quasi-experimental pre-test/post-test model with a control group, allowing for comparative analysis of speech improvements over time.

- Sample Size: 30 preschool children (ages 3–6) diagnosed with developmental stuttering and co-occurring speech sound disorders.
- Groups:
  - Experimental Group (n = 15): Receives the integrated intervention program.
  - Control Group (n = 15): Receives standard fluency therapy only.
- Selection Criteria:

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- Diagnosed with moderate to severe stuttering (based on SSI-4 – *Stuttering Severity Instrument*).
- Demonstrated phonetic and/or phonemic errors on a standardized speech sound assessment (e.g., GFTA-3 – *Goldman-Fristoe Test of Articulation*).
- No known neurological or cognitive impairments.
- Parental consent and active caregiver involvement.

Table 1. Analytical overview of the research methodology

Component	Experimental Group	Control Group	Analysis Methods	Expected Outcomes
Participants	15 preschool children (ages 3–6) with stuttering + SSD	15 preschool children (ages 3–6) with stuttering only	Descriptive statistics	Comparable demographics and baseline characteristics
Intervention	Integrated fluency + phonetic/phonemic therapy (12 weeks)	Fluency-only therapy (12 weeks)	Pre/post comparative analysis (ANOVA, t-test)	Experimental group shows greater overall speech improvement
Speech Fluency Measures	Stuttering Severity Instrument – 4 (SSI-4)	Stuttering Severity Instrument – 4 (SSI-4)	Paired sample t-test	Reduction in frequency and severity of stuttering in both groups
Articulation Measures	GFTA-3, HAPP-3, informal speech samples	GFTA-3, HAPP-3, informal speech samples	ANOVA, Cohen's d	Greater improvement in articulation and phonology in experimental group
Phonemic Awareness	Rhyming, segmentation, minimal pair tasks	Not targeted	Thematic analysis, pre/post scores	Notable gains only in experimental group
Parental Involvement	Weekly home tasks, parent interviews	Minimal involvement	Thematic coding (NVivo)	Increased communicative confidence and home generalization
Duration	12 weeks, 2 sessions/week (45 mins each)	12 weeks, 2 sessions/week (45 mins each)	N/A	Consistent therapy delivery across both groups
Follow-Up	1-month retention evaluation (optional)	1-month retention evaluation (optional)	Descriptive analysis	Sustained improvements more likely in experimental group

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Participants are recruited from speech therapy clinics, early childhood intervention centers, and preschools. This methodology is designed to rigorously evaluate the effectiveness of an integrated speech-language intervention targeting both fluency and sound production skills in preschool children who stutter. By combining standardized assessments with qualitative feedback and involving caregivers, the research seeks to capture both measurable outcomes and contextual impacts on communication development.

Research discussion. The results of this study highlight the significant impact of an integrated intervention approach in improving both fluency and speech sound production in preschool children who stutter and present with phonetic and phonemic deficiencies. The data demonstrates that children in the experimental group, who received a combined therapy model addressing fluency, articulation, and phonemic awareness, showed statistically greater improvements compared to those who received fluency-only therapy. Children in the experimental group demonstrated substantial reductions in stuttering frequency and severity, as measured by the Stuttering Severity Instrument (SSI-4). These findings support previous literature (Guitar, 2013; Yairi & Ambrose, 2005) suggesting that addressing linguistic and phonological components can indirectly facilitate smoother speech production. The inclusion of phonemic awareness and articulation exercises may have lightened the cognitive load during speech, allowing for more fluent output.

Moreover, the articulation and phonological assessments (GFTA-3, HAPP-3) revealed significant gains in the experimental group, particularly in the correct production of target phonemes and reduction of phonological processes such as fronting and cluster reduction. These gains contributed to improved intelligibility, which is essential for social communication and academic readiness. The findings reaffirm the theoretical model that sees stuttering not solely as a motoric issue, but one often intertwined with broader language and phonological development (Conture & Kelly, 1991; Bernstein Ratner, 2005). The improvement in phonemic skills likely supported better speech planning and execution, reducing disfluency episodes. This supports the idea that integrated therapy is not merely additive but potentially synergistic.

Qualitative analysis of parent interviews and therapist logs revealed that caregiver involvement significantly influenced the outcomes. Parents in the experimental group reported improved child confidence, increased willingness to communicate, and better carryover of strategies at home. This aligns with existing research on the importance of ecological validity and generalization in speech therapy (Franken & Yairi, 2012; Packman et al., 2003). The weekly home tasks also provided consistent reinforcement, bridging clinical gains with everyday language use. The study's results underscore the necessity of multidisciplinary therapy plans for preschool children with co-occurring fluency and sound system disorders. Many traditional stuttering interventions do not sufficiently address underlying phonological deficits, potentially limiting long-term communicative success. Speech-language pathologists should consider evaluating and treating these speech domains concurrently, especially during the critical early years of language development. Furthermore, therapy effectiveness was not just limited to improved speech measures, but also evident in behavioral observations: children in the experimental group were more engaged, less frustrated, and showed increased participation during structured and spontaneous speech activities.

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Despite the positive findings, the study has several limitations. First, the sample size (n = 30) was relatively small, which may limit the generalizability of the results. A larger and more diverse population across different linguistic and cultural backgrounds would provide a stronger evidence base. Second, the study period of 12 weeks, while sufficient for initial gains, may not capture long-term maintenance or relapse. The optional follow-up data was limited due to participant dropout. Another limitation is the challenge of fully isolating variables; improvements in fluency could result from increased familiarity with therapy tasks or general maturation. Nevertheless, the control group design helps reduce this concern.

Future studies should:

- Include longer-term follow-ups to assess retention of speech gains.
- Investigate the effect of integrated therapy across diverse language backgrounds.
- Explore the neurological and cognitive correlates of co-occurring stuttering and SSDs using neuroimaging or processing-based assessments.
- Develop scalable therapy models that can be implemented in schools or via teletherapy, especially in under-resourced communities.

This study provides compelling evidence that a combined approach to stuttering and speech sound intervention in preschool children yields superior results to fluency-only therapy. By addressing the phonetic and phonemic aspects of speech alongside disfluency, clinicians can more effectively promote intelligibility, reduce communication frustration, and support overall language development. Given the foundational role of speech in early childhood development, such integrated interventions hold promise for improving both immediate communication and long-term academic and social outcomes.

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