



A comparative analysis of eight treatments for Selective Mutism: Evidence for behavioral, cognitive-behavioral, pharmacological, and multidisciplinary approaches

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Abstract

Selective mutism (SM) is an anxiety-related childhood condition for which an individual has a chronic failure to speak in certain social situations despite being able to talk in more comfortable environments. While some interventions have been developed, the effectiveness of these treatment approaches remains very much unknown. This review will compare behavioral therapy (BT), cognitive-behavioral therapy (CBT), intensive behavioral treatment (IBT), parent- and school-based interventions, multidisciplinary approaches, pharmacotherapy, and emerging technology-assisted interventions for SM. The author undertook a narrative literature review with recent peer-reviewed literature published between 2019 and 2025. The systematic reviews, meta-analyses, randomized controlled trials, and intervention studies are the most important. The evidence is clear that behavioral and psychological treatments have been linked to a change in the behavior of the individual with speaking difficulties and anxiety symptoms. Behavioral treatment with graded exposure, fading of the stimulus, shaping, reinforcement, and contingency management has the greatest empirical support. CBT can work well alongside behavioral exposure, and parent-teacher collaboration allows for generalization across settings. Intensive behavioral programs can be effective for a small group of children. Pharmacological therapy, such as selective serotonin reuptake inhibitors, may be helpful treatments for severe or treatment-resistant children, but evidence-based approaches are scarce. Virtual reality exposure is also an emerging approach that is still under development. Overall, one individualized, developmentally appropriate, multidisciplinary, and exposure-based approach seems to be the most consistent with existing evidence.

Keywords: Anxiety, behavioral therapy (BT), child intervention, cognitive behavioral therapy (CBT), Selective Mutism (SM)

Introduction

Selective mutism (SM) refers to a persistent inability or failure to speak in social situations (also when someone speaks in other places) even if the individual is able to speak in other social contexts (Byrne & Kirschner, 2018; Farooq, 2026) ^[6, 13]. It is classified as an anxiety disorder (Driessen *et al.*, 2020) ^[12] and is most common in school (Bergman *et al.*, 2002) or other socially demanding situations (Poole *et al.*, 2021) ^[25]. It can impair learning, social interaction, relationships, social functioning, and emotion. SM is increasingly considered to be heterogeneous, with anxiety, social communication features, development, family and environmental factors being taken into account (Kearney & Rede, 2021) ^[17]. Therefore, SM treatment should never be limited to the absence of speech but rather to the child's development and social skills, anxiety, communication ability, environmental demands, and functional consequences.

The literature for SM treatment is extensive, but the evidence base is still smaller than for more common childhood anxiety disorders. A systematic review of diagnostic measures highlighted considerable variability in assessment practices and recommended the use of standardized measures, such as the Selective Mutism Questionnaire (SMQ; Bergman *et al.*, 2008; Oerbeck *et al.*, 2020) ^[4, 24] and School Speech Questionnaire (SSQ; Bergman *et al.*, 2002) ^[5], to record treatment-related changes (Rodrigues Pereira *et al.*, 2023) ^[26]. More recently, systematic reviews and meta-analyses have shown that psychological and behavioral interventions can improve speaking behavior, but differences in intervention components, study designs, and outcome measures still

prevent direct comparisons between treatments (Hipolito *et al.*, 2023; Iimura *et al.*, 2025; Steains *et al.*, 2021) ^[14, 15, 32].

The purpose of this review is to compare the major treatments for SM from the perspective of theoretical basis, therapeutic aspects, empirical support, advantages, limitations, and clinical applications. The review also considers the implications of existing evidence for multidisciplinary and educational-therapy practice.

Research Methodology

This study used a narrative comparative literature-review approach (Sukhera, 2022) ^[33]. Recent peer-reviewed publications involving treatment of children and adolescents with SM were searched through major biomedical, psychological and multidisciplinary databases, including PubMed/MEDLINE, PsycINFO, Scopus, Web of Science and other journals. Search was done using combinations of selective mutism, treatment, behavioral therapy (BT), cognitive behavioral therapy (CBT), exposure therapy (ExT), parent-mediated intervention (PMI), school-based intervention, intensive treatment, pharmacotherapy, selective serotonin reuptake inhibitor (SSRI) treatment, and virtual reality-based intervention. Priority was placed on systematic reviews, meta-analyses, randomized controlled trials and intervention studies published from 2019 to 2025. Studies were considered relevant if they looked at an intervention that could reduce SM symptoms, increase functional speaking behavior, reduce associated anxiety or enhance school or social behavior. Studies that were primarily diagnostic oriented were only used if they helped in the understanding of treatment outcome measurement. Older seminal literature was excluded from the evidence

synthesis to meet the requirements of recent citations. The resulting literature was synthesized thematically and comparatively instead of a new quantitative meta-analysis. The literature is diverse in terms of participants' characteristics, duration of intervention and outcome measurement and study design (Hipolito *et al.*, 2023; Iimura *et al.*, 2025)^[14, 15].

Literature Review

1. Behavioral Therapy

Behavioral therapy (BT) is currently one of the most popular strategies in SM (Iimura *et al.*, 2025)^[15]. The main assumption is that failure to speak is maintained at least in part because of anxiety and avoidance; and carefully structured exposure leads to the child experiencing a higher degree of success in situations where it would have previously produced mutism (Vogel & Schwenck, 2021)^[37]. Common strategies include fading the stimulus, shaping it, graded exposure, contingency management, prompting and positive reinforcement. Rather than requiring immediate speech, treatment is based on a hierarchy of more difficult and easier communication scenarios. Hence, a child with SM is encouraged to progress from a warm and familiar environment of communication to a stranger's place, and eventually into a natural school and community setting.

There is a lot of evidence for behavioral treatment (BT). Iimura *et al.* (2025)^[15] conducted a meta-analysis of 12 studies involving 472 participants and found a large overall effect on the SMQ (Bergman *et al.*, 2008; Oerbeck *et al.*, 2020)^[4, 24] and an adjusted Hedges' *g* of 1.00. The SSQ also showed significant improvements, suggesting that behavioral intervention is able to improve speech-related functioning in school. In their study, face-to-face interventions also showed better performance than web-based interventions (Iimura *et al.*, 2025)^[15] in supporting behavioral intervention as a first-line treatment for children with SM.

2. Cognitive-Behavioral Therapy

Cognitive-behavioral therapy (CBT) combines behavioral exposure and strategies to manage anxiety, avoidance and maladaptive cognitions (Traeger & Wright, 2020)^[35]. Treatment may involve psychoeducation involving parents (Loi & Chia, 2025)^[21], identifying anxiety-provoking situations that trigger SM (Schwenck *et al.*, 2022)^[28], cognitive restructuring (Chatzinikolaou & Iliopoulou, 2021)^[9], relaxing strategies, behavioral experiments and graded exposure (Johnson & Wintgens, 2016)^[16]. In younger children, the cognitive component might need to be simplified, since treatment is more based on behavioral methods than sophisticated cognitive restructuring. Thus, contemporary CBT for SM is often best described as a combination of behavioral and anxiety-management treatments (Chatzinikolaou & Iliopoulou, 2021)^[9].

A meta-analysis of five randomized controlled trials involving 233 participants found that psychological interventions were significantly more effective than no treatment, with a large overall effect size $g = 0.87$ (Steains *et al.*, 2021)^[32]. The findings support psychological treatment generally, but they do not indicate that traditional cognitive restructuring is better than behavioral exposure (Steains *et al.*, 2021)^[32]. Similarly, Hipolito *et al.* (2023)^[14] found promising results for interventions that have behavioral and systems-based components.

3. Intensive Behavioral Treatment

Intensive behavioral treatment offers a more concentrated approach to the weekly therapy (Calteaux *et al.*, 2024)^[7]. Rather than spreading exposure over many weeks, treatment may involve several consecutive days of structured behavioral intervention. This format may be useful for children who require relatively rapid improvement or for families who have difficulty attending long-term weekly sessions.

A randomized clinical trial of intensive group behavioral treatment indicated that the intervention resulted in improvements in social anxiety, verbal behavior and global functioning in comparison to a wait-list condition (Cornacchio *et al.*, 2019)^[10]. At follow-up, the improvements were also observed in the next school year, suggesting the expansion beyond the treatment setting (Cornacchio *et al.*, 2019)^[10]. Intensive treatment has also been developed, including caregiver coaching and graded speaking exposure (Lorenzo *et al.*, 2021)^[22]. Early-stage and older children and adolescents have also been studied by intensive treatment and the impact is also seen to be possible beyond the preschool and early-primary age groups (Kupferberg *et al.*, 2026)^[20].

4. Parent-, Teacher-, and School-Mediated Interventions

Since SM is very context dependent, interventions with parents and teachers are especially critical (Adamson *et al.*, 2025)^[1]. A child may speak with confidence at home but remain mute while in school, so improvement in the therapist's office does not necessarily mean functional recovery. Parent and teacher-led interventions aim to reduce the pressure of communication, alter adult behavior in the face of mutism, reinforce communication and then transfer successful communication behavior to more naturalistic environments.

The 2023^[29] systematic review conducted by Hipolito *et al.* found promising outcomes for combined systems and behavioral interventions, particularly among younger children. The review also highlighted caregivers and educational environments as important to treatment (Hipolito *et al.*, 2023)^[14]. This supports an ecological or ecosystemic approach in which the child, family, school and therapist are integrated into the treatment rather than separate treatment environments (Slobodin *et al.*, 2024)^[31].

5. Multidisciplinary and Integrated Behavioral Treatment

Integrated behavioral treatment (Bergman *et al.*, 2013; Siroky *et al.*, 2023)^[3, 30] combines behavioral exposure with awareness of anxiety, social functioning, parent accommodation and environmental factors. It may involve psychologists, educational professionals, speech-language therapists, teachers and parents. The advantage is that intervention can address both the child's communication behavior and the environmental conditions that may inadvertently keep avoidance.

As evidence from naturalistic studies suggests, integrated behavioral treatment can be feasible and acceptable and can reduce both SM and social anxiety symptoms (Bergman, 2026; Shorer *et al.*, 2023)^[2, 29]. This approach may therefore be particularly relevant to children whose mutism impacts several environments or who present with co-occurring developmental, educational or communication difficulties.

6. Speech-Language Intervention

Speech-language therapy has an important but more specialized role in SM (Doll, 2022) ^[11]. SM should not be treated as a classic speech or language disorder in its entirety because many children with SM are able to communicate with others and do so well in a comfortable environment. Yet there are children who may have co-occurring language, speech sound, pragmatic language or even broader communication issues. Therefore, a standardized assessment done by a speech-language professional is helpful when communication problems do not only pose anxiety-provoking problems.

The role of speech-language intervention is complementary, not replacement. If a communication disorder is present in combination with SM, we can intervene to address the communication problem and psychological or behavioral therapy for anxiety-related avoidance. This distinction is crucial, since treating the communication issue alone cannot solve anxiety-mediated mutism if the child is able to communicate with a sufficient level of speech-language ability.

7. Pharmacological Treatment

Pharmacological treatment (e.g., Carlson *et al.*, 2008; Manassis *et al.*, 2016) ^[8, 23], especially SSRIs, is another treatment option, whereas the evidence base is not as good as behavioral and psychological treatments. Medication is generally considered when SM is severe, persistent, associated with considerable anxiety or comorbidity, or insufficiently responsive to appropriate psychological treatment (Sachs *et al.*, 2026) ^[27]. Its main reason is to reduce anxiety enough to enable participation in exposure and other psychosocial interventions. However, the most recent literature has produced relatively little evidence for medication compared with behavioral approaches. The

strongest recent reviews have continued to highlight a lack of high-quality comparative pharmacological trials in SM (Hipolito *et al.*, 2023) ^[14]. Consequently, medication should be considered an adjunctive or specialist intervention rather than the default first-line treatment. Medication should be decided by a qualified medical practitioner as the risk-benefit profile varies in children and adolescents.

8. Technology-Assisted and Virtual-Reality Treatment

Technology-assisted and virtual reality treatment is an emerging area (Tan *et al.*, 2022 ^[34]; Van Vlerken *et al.*, 2026 ^[36]). Virtual reality exposure therapy could allow for controlled simulations of socially difficult situations and may provide gradual exposure to the child in the real world. A feasibility study with children aged 6-12 years showed that therapist-guided virtual reality exposure was feasible and acceptable, although the study was only concerned with feasibility and not with comparative effectiveness (Tan *et al.*, 2022) ^[34].

Despite its potential, technology-assisted treatment should be considered an adjunctive rather than a first-line intervention. The behavioral meta-analysis done by Iimura *et al.* (2025) ^[15] found better results for face-to-face treatment than web-based treatment and further indicated that digital delivery should not be considered equivalent to direct therapeutic intervention.

9. A Summary of the SM Treatment Approaches

This author has identified eight main treatment approaches for selective mutism (SM). Table 1 below shows the comparison of these approaches in treating SM and synthesizes the benefits and limitations expressed in the paper. In addition, it also distinguishes first-line, adjunctive, or specialist / emerging approaches.

Table 1: Comparison of the Eight Main Treatment Approaches for Children with SM

Treatment approach	Main therapeutic components	Key benefits	Key limitations	Position in the paper
Behavioral Therapy (BT)	Graded exposure, stimulus fading, shaping, prompting, positive reinforcement and contingency management	Strongest empirical support in the review; directly targets avoidance and speaking behavior; can progressively generalize communication from comfortable to difficult settings; 2025 meta-analysis of 12 studies/472 participants showed a large effect on SMQ outcomes ($g = 1.00$); improvements also found on school speech functioning.	The exposure hierarchy needs to be individualized; behavioral studies often combine several methods and it is difficult to know which one is more beneficial; face-to-face treatment is preferred over web-based treatment.	Preferred first-line approach
Cognitive-Behavioral Therapy (CBT)	Behavioral exposure with psychoeducation, anxiety management, relaxation, cognitive restructuring and behavioral experiments	Addresses anxiety and avoidance; psychological interventions have great benefits compared to no treatment; can complement behavioral exposure; especially useful where anxiety-related cognitions contribute to mutism.	Traditional cognitive restructuring can be difficult for younger children, and it is not clear that cognitive restructuring is better than behavioral exposure; therefore, CBT should be seen as closely integrated with, not competing with, behavioral treatment.	Strong adjunct/combined approach
Intensive Behavioral Treatment	High-dose, concentrated graded exposure, behavioral techniques and sometimes caregiver coaching delivered over several consecutive days	Can produce fairly rapid improvements in social anxiety, verbal behavior and global functioning; may suit children who require rapid intervention or families that cannot afford long-term weekly therapy; some gains have been maintained into the next school year.	Resource-intensive; suitability depends on developmental level, anxiety severity, family circumstances and access to services; the paper cautions that intensive treatment should not automatically be	Promising specialist/alternative format

			considered superior to weekly treatment.	
Parent-, Teacher- and School-Mediated Intervention	Parent/teacher training, reducing communication pressure, modifying adult responses, reinforcing communication and transferring gains into natural environments	Addresses the context-dependent nature of SM; promotes generalization from clinic to home and school; involves adults who interact with the child daily; particularly promising when combined with behavioral/system-based interventions.	There needs to be consistent work between parents, teachers and professionals; progress in therapy does not seem to apply to school; effectiveness might depend on the quality and consistency of environmental implementation.	Essential for generalization
Multidisciplinary / Integrated Behavioral Treatment	Behavioral exposure integrated with anxiety management, social functioning, parent accommodation and environmental modification; may involve psychologists, educational professionals, SLPs, teachers and parents	Treats the child in an ecological / systemic context rather than focusing only on speech; can address communication, anxiety and environmental factors simultaneously; may be useful when SM co-occurs with developmental, educational or communication difficulties.	More complex to coordinate; requires collaboration among professionals and settings; evidence is promising but the review notes that the overall SM literature contains relatively few fully powered RCTs and limited direct head-to-head comparisons.	Preferred overall model for complex presentations
Speech-language Intervention	Assessment and treatment of co-occurring speech, language, pragmatic-language or broader communication difficulties	Important when genuine communication difficulties coexist with SM; allows clinicians to distinguish anxiety-induced speech inhibition from an underlying communication disorder; can complement psychological / behavioral treatment.	Does not address anxiety-mediated mutism by itself when the child's underlying speech-language capacity is sufficient; should not replace behavioral or psychological treatment.	Complementary / specialized approach
Pharmacological treatment (particularly SSRIs)	Medication to reduce anxiety and facilitate participation in exposure and psychosocial treatment	Could be useful for severe, persistent or treatment-resistant SM, particularly when significant anxiety or comorbidity interferes with psychological treatment; may reduce anxiety enough to allow for exposure.	Much weaker evidence base than behavioral / psychological interventions; few high-quality comparative pharmacological trials; potential pediatric risk–benefit considerations; requires medical supervision.	Adjunct / specialist treatment; not first-line
Technology-Assisted / Virtual-Reality (VR) Treatment	Therapist-guided VR exposure and digitally simulated socially difficult situations	Provides a controlled and potentially gradual exposure environment; feasibility research in children aged 6-12 found therapist-guided VR exposure feasible and acceptable.	The evidence is still preliminary; feasibility does not show comparative effectiveness; in 2025, the evidence shows better outcomes for face-to-face than online treatment so digital delivery is not equivalent to direct treatment.	Emerging adjunctive approach

In the overall comparison, the evidence hierarchy of the paper is therefore roughly given in the following: Behavioral exposure-based treatment → CBT integrated with behavioral exposure → Parent–teacher/school generalization → Multidisciplinary ecological integration → Intensive behavioral treatment for selected children → Speech-language intervention when communication difficulties coexist → Pharmacotherapy for severe/treatment-resistant presentations → VR / technology-assisted treatment as an emerging adjunct

Importantly, the author does not conclude that these are mutually exclusive alternatives. Rather, the main finding from this review is that the strongest contemporary model is an individualized, developmentally appropriate, exposure-based and multidisciplinary intervention, with parents and schools actively involved in generalizing communication beyond the therapy setting.

A particularly important distinction is between “speech in therapy” and “functional recovery.” A child who speaks with the therapist but cannot communicate at school has demonstrated treatment progress, but not necessarily functional generalization. This is why this paper gives

substantial importance to parent-teacher collaboration and ecological intervention.

Findings and Discussion

The comparison results indicate that behavioral treatment is currently the strongest empirical position in terms of systematic exposure, shaping, stimulus fading and reinforcement. The 2025 meta-analysis is particularly important since it considered 12 studies with 472 participants and showed a large treatment effect on validated SMQ results (Iimura *et al.*, 2025) ^[15]. This conclusion is consistent with the Steains *et al.* (2021) ^[32] meta-analysis of psychological interventions that also showed a large overall treatment effect.

CBT should be viewed as closely related to behavioral treatment, not as a competing treatment category. In practice, effective CBT for SM is often based on behavioral exposure as its main mechanism of change. The fundamental contribution of CBT is therefore the integration of anxiety management and cognitive behavioral practice in the exposure process. For younger children, cognitive

restructuring may be less important than appropriate behavioral procedures.

The evidence also shows the importance of treatment context. SM is not limited to the individual child but is the interaction of individual children with specific people, places and social expectations. Hence, parent-teacher collaboration and school-based generalization is crucial. A child who speaks during therapy but is silent at school has made therapeutic progress but not functional recovery. This distinction supports an ecological and systems-based approach to outcome measurement.

Intensive behavioral programs appear promising because they can provide a high dose of exposure over a relatively short period. But their suitability will depend on the child's development and anxiety level, family and access to services. Intensive treatment should not be considered to be better than weekly treatment. Rather, treatment intensity should be personalized.

Pharmacotherapy plays a different role. Whereas behavioral and CBT methods directly affect avoidance and communication, medication is aimed at anxiety. So, it could be useful when anxiety is so severe that it cannot be treated. But the lack of evidence means medication should not compete with behavioral treatment when both are effective.

All in all, evidence supports a step-by-step and individualized treatment approach as well. The first intervention should include behavioral exposure and environmental change with CBT strategies adapted to developmental level and anxiety profile. Early parental and school involvement should be included in the approach. Speech-language assessment should be conducted when communication problems are suspected and pharmacotherapy may be considered for severe or treatment-resistant patients under medical supervision. Technology-assisted exposure may be more useful as the evidence base expands.

Limitations Of The Study

This review paper has some limitations. For one thing, it is a narrative comparative review, not a systematic review or meta-analysis conducted by the present author. Therefore, it is possible to interpret comparative efficacy conclusions with caution. The SM literature is limited by a small sample size, heterogeneous treatment methods, different outcome measures and relatively few fully powered randomized controlled trials (Hipolito *et al.*, 2023; Iimura *et al.*, 2025)^[14, 15]. And behavioral interventions often include several techniques, and it is hard to identify which of the treatments is responsible for improvement. Fourth, many studies rely heavily on parent- or teacher-reported results, so they have the potential for informant bias. Fifth, studies have focused mostly on younger children and there is far less evidence of adolescents and culturally diverse populations in the study. Finally, there is a lack of direct head-to-head comparisons between behavioral therapy, CBT, medication and multidisciplinary treatment that provide a clear classification and hierarchy for treatment.

Implications Of The Study

The results have important implications for clinical, educational and educational therapy practice. First of all, intervention should be functional, not speech-demand driven (Kern *et al.*, 2007; Kuntz *et al.*, 2020)^[18, 19]. The goal is to decrease anxiety and increase voluntary communication

rather than repeatedly telling a child to speak. Second, treatment should involve graduated exposure so that communication demands increase progressively depending on the child's tolerance. Third, parents and teachers must be trained to minimize inadvertent reinforcement of avoidance and positively reinforce communication efforts and approximations.

For educational therapists, SM provides a particularly strong rationale for integrating behavioral, cognitive, sensory-regulatory, social and educational strategies within an ecological framework. Intervention should be organized across home, clinic and school settings with clear communication goals and regular monitoring of generalization. Standardized measures such as the SMQ and SSQ can complement direct behavioral observation and provide evidence of changes across different contexts (Rodrigues Pereira *et al.*, 2023; Iimura *et al.*, 2025)^[15, 26].

A multidisciplinary approach is appropriate when SM occurs alongside developmental language difficulties, autism, social anxiety, learning difficulties or any other neurodevelopmental complications. In such cases, treatment must differentiate the effects of anxiety-mediated speech inhibition from genuine communication impairment. This distinction is needed because all non-speaking behavior is not necessarily the same mechanism.

Conclusion

The evidence from this narrative review study suggests selective mutism (SM) needs to be treated through a personalized, developmentally sensitive and contextually tailored intervention rather than a universal treatment. Graded exposure, shaping, stimulus fading and reinforcement are some of the best evidence-based behavioral treatments to address anxiety and avoidance, and cognitive-behavioral therapy (CBT) is a good treatment approach to overcome it. Parent- and teacher-based interventions are key to the generalization of therapeutic gains into normal life, and behavioral therapy is also a promising option in certain children. Speech-language intervention is another good alternative when communication is compromised or difficult. As for pharmacological treatment, it should be reserved for severe, persistent or treatment-resistant cases and treated medically. Technology-based interventions are promising but need further investigation. The most evidence-based approach is, in the end, a multidisciplinary, exposure-based and ecosystemically coordinated treatment model that sees not just speech increase in therapy but functional, spontaneous and generalized communication across everyday life.

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