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The Impact of Functional Communication on Increasing Independent Manding for Children with ASD in a Residential Setting: A Systematic Review

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Abstract

Children with Autism Spectrum Disorder (ASD) often struggle with communication breakdowns, particularly in residential settings where individualized support may be limited. This review examines the impact of Functional Communication Training (FCT) on developing a critical yet often overlooked skill: independent manding, the ability to recognize and initiate communication attempts without external prompting. The results highlight that when FCT interventions are designed to include manding-focused strategies. Significant progress has been recorded in independently initiated communication improvement in children with ASD, generalization across settings, and long-term maintenance. Statistical outcomes from multiple studies report improvements ranging from 53% to 79% in spontaneous manding behaviors. Despite positive trends, gaps remain in standardizing protocols, involving healthcare professionals in implementation, and extending research to older populations. This review emphasizes the practical relevance of teaching independent manding as a foundation for autonomy, inclusion, and meaningful communication in real-world residential care settings.

Introduction

Children with Autism Spectrum Disorder (ASD) often face significant challenges in communication, particularly when trying to express their needs or correct misunderstandings. These difficulties can become even more pronounced in residential care settings, where children must interact with family members and caretakers without the constant presence of individualized adult support. One promising strategy to address these challenges is Functional Communication Training (FCT), which is designed to replace maladaptive behaviors with meaningful, functional communication. By this critical and practical approach, the concept of "independent manding (a child's ability to recognize and repair a failed communication attempt on their own) emerges as a vital yet underexplored skill. This review focuses on how FCT can be used to teach and strengthen independent manding behaviors in children with ASD living in residential environments. It synthesizes recent research findings from 2019 to 2025, including large-scale studies, pilot interventions, and observational analyses, to explore how children can learn to identify when their messages have not been understood and take initiative to fix those breakdowns.

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Research shows that children who are taught these skills experience less frustration, improved social interactions, and greater independence. We highlight a range of strategies and research-based statistical analysis that have been shown to support independent manding, such as the use of Augmentative and Alternative Communication (AAC) tools, video modeling, peer-mediated interventions, and structured practice embedded into daily routines. Studies have shown promising outcomes, for instance, improved rates of unprompted clarifications, sustained repair behaviors, and reduced behavioral incidents when FCT incorporates specific manding protocols. However, despite these encouraging findings, a clear gap remains in the literature specifically targeting independent manding in residential care contexts. Most existing research tends to focus on general communication improvements, without emphasizing the unique demands and opportunities that residential environments present. This review addresses that gap by examining not just whether FCT works, but how and why it fosters self-sufficient communication repair in such settings.

The review concludes with recommendations for practitioners, educators, and residential care staff on integrating repair-focused modules into existing FCT programs. Ultimately, promoting independent manding is not just about improving communication. Still, it is about empowering children with ASD to navigate their social worlds with confidence, reduce reliance on adult intervention, and build a foundation for greater autonomy and inclusion in everyday life.

In the early 20th century, Eugen Bleuler described the term autism with further explanation of schizophrenic symptomatology [17]. Autism is derived from the Greek word "autos," meaning self. It reflects the status of individuals who have impaired social reciprocity [19]. Later, in 1940, the term autism was used to refer to children suffering from emotional and social issues. Meanwhile, Leo Kanner in the United States referred to a group of children who appeared to withdraw from social interaction as "autistic" [34]. Moreover, Hans Asperger in Germany observed comparable behaviors in children, a condition that was later recognized as Asperger syndrome. Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by deficits in social communication and restricted repetitive behavior, interests, or activities [11]. Among the many challenges faced by children with ASD, difficulties in functional communication often hinder their ability to manage frustration and navigate social interaction, especially in structured environments like residential settings [7].

There are many challenging behaviors in different children that are known as autism spectrum disorder, which is a significant barrier to the success of the children [31]. It has been noted that parents of children with challenging behavior have more unmet needs than those with children with normal behavior [35]. Children with ASD need evidence-based interventions to reduce their challenging behavior. Moreover, the evidence-based interventions of parents have shown more positive effects on children with ASD (Alakhzami et al., 2022). Functional Communication Training (FCT) is an evidence-based intervention that aims to replace challenging behaviors with socially appropriate and purposeful communication. The critical component of FCT is "independent manding," that is, the ability of a child to independently repair communication breakdowns, such as when a listener fails to respond or understand [14].

There are many therapeutic modalities for ASD bearing children with ASD that can help to manage the disorder by improving the quality of their lives, functional abilities, and support to their caretakers; otherwise, there is no specific care for ASD [26]. Early intervention (up to 3 years) is very critical to enable individuals with autism to walk, interact, and talk with others [30]. The therapeutic modalities for the cure of ASD include dietary intervention, medication, behavior-based communication techniques, alternative and complementary approaches etc. [38] Applied Behavioral Analysis (ABA) is a very critical approach against ASD in which the positive behavior is highly reinforced and the negative behavior is discouraged that ultimately improves the deficit skills of an autistic child [9]. Moreover, the developmental individual relationship-based intervention focuses on interactive and emotional skills. This technique focuses on building an emotional relationship in a residential setting that has a significant impact on an ASD bearing child [12]. This leads to an interactive approach by the child to his caretaker. This marks the initiation of functional communication, which gradually and continuously improves the behavior of the autistic child [4].

Moreover, visual cues, occupational therapy, and other functional communication-based approaches are also beneficial for developing various valuable skills in an autistic child. Similarly, many individuals with autism have difficulty processing sensory inputs (smell, sound, and sight) that can be improved by sensory input-based integration therapy [33]. Moreover, communication through speech can improve their verbal and non-verbal communication abilities. Similarly, picture exchange and discussion-based therapy improve the innovative abilities of a child with ASD [13]. Moreover, the study revealed that the dietary modifications have also shown a significant impact on individuals with autism, including the elimination of casein and gluten, which has improved the sleep patterns, chronic diarrhea, concentration, communication abilities, eye contact, and behavior [3,22]. Moreover, the use of vitamin supplements for autistic children has been shown to improve their nutritional status, as they often suffer from a lack of many essential vitamins in their diet [2]. Some medications, as per healthcare advice, can also be very helpful in managing the aggression, anxiety, irritability, repetitive behavior, depression, poor attention, etc. [32]. Moreover, many alternative and complementary approaches are very supportive in managing ASD, including animal therapy, art, sports, music, etc. These techniques are not only very joyful for an autistic child but also improve learning and communication abilities [38].

In residential settings, where consistency, autonomy, and generalization of skills are crucial, fostering independent manding can significantly enhance a child's ability to function with reduced reliance on staff or caregivers [7]. This review explores the current literature on the impact of functional communication training in increasing independent manding behaviors among children with ASD in residential care. By examining intervention strategies, relative challenges, and outcomes, the article aims to highlight both the potential and the practical considerations of implementing functional communication training to promote communicative independence.

Many studies and reviews describe the effectiveness of functional communication training for children with ASD [8,10]. The challenging behaviors are common in a child with ASD, which is a massive hindrance to his/her success in life. In this regard, parents' role is vital in daily life at residential settings to overcome the limitations of the disorders and to get better results [18,20]. Functional communication training is one of the most effective

procedures to overcome the effects of ASD. Significant points of functional communication include identifying the reasons behind autistic behavior, developing alternative communication techniques for better results, reinforcing functional communication, and adhering to a plan that considers long-term therapy [5]. The focus on functional communication, time restriction, and lack of procedural training results in parents' interventions that are not professional, which can lead to adverse outcomes. On the other hand, parents' intervention is more feasible than that of a healthcare professional due to their emotional relationship and social validity. Therefore, more effective and focused studies on FCT are crucial for overcoming ASD and its symptoms [24].

Research questions

Research question 1: What are the characteristics of children with ASD and residential settings included in studies evaluating FCT for promoting independent manding?

Research question 2: To what extent do FCT interventions incorporate structured strategies specifically targeting independent manding behaviors in children with ASD?

Research question 3: To what degree do the reviewed studies report outcomes related to the generalization, maintenance, and effectiveness of independent manding within residential care environments?

Methodology

In this review, the researcher took a structured approach to find and examine research articles and reviews published between 2019 and 2025. The researcher searched major databases, including PubMed, PsycINFO, ERIC, and ScienceDirect, using keywords such as "Functional Communication Training," "independent manding," "ASD," "autism," and "residential settings." To be included, the studies had to focus on children diagnosed with autism, use Functional Communication Training as the primary intervention, and report outcomes related to independent manding or communication repair. The researcher left out studies that focused solely on academic skills or non-communication-based approaches. Ultimately, the researcher identified 46 articles that met these criteria and included them in the final review.

Functional communication training (FCT) and ASD

FCT is considered a leading intervention that is highly effective in addressing behavioral problems in children with ASD by teaching appropriate communication responses. A functional behavior assessment system is used to assess the behavior of an autistic child, which is later replaced with functional communication responses. Multiple studies have revealed the efficacy of FCT in residential, school, and clinical settings.

As per the flow chart in Figure 1(Appendix-A), it is essential to conduct a Functional Behavioral Assessment (FBA). It should consist of indirect assessments, direct assessments, and experimental analysis, including structured and functional analysis. The description of all types of assessments is provided below.

The first step in functional communication planning in a residential setting is to conduct a Functional Behavioral Assessment (FBA). The description of an FBA is as follows:

Indirect assessment: In this type of assessment, the evaluator collects behavioral information from relatives, parents, teachers, and healthcare professionals who have direct contact with the autistic child, rather than directly observing the behavior. This method of assessment depends upon questionnaires, interviews, triggers, reports, and other indicators of behavior.

Direct assessment: It is an efficient and very critical assessment in FBA in which the evaluator observes and records the behavior of the child in real time within his/her natural environment. Real-time information is essential and must be documented in a chart form that consists of antecedents, the behavior, and consequences. This information will not only help understand the child's behavior but also inform the development of an effective, functional communication-based intervention.

Experimental analysis: In this method, the scientists, healthcare professionals, and parents are trained in different research methods to understand the severity and focus of the disorder. This analysis encompasses the evaluation of disease characteristics, the development of various diagnostic tools, and an understanding of treatment methods. Moreover, the analysis of data about the specific responses of an ASD-bearing child and related record study is also constructive in suggesting an effective treatment program.

According to the flow chart, the second step involves identifying the most effective and relevant communicative response to the disorder conditions. There are many ways to communicate with an ASD bearing child in a residential setting that include verbal communication, picture communication, gesture-based communication, and different assistive technology-based device communication. Moreover, it is essential to consider several factors during the development of a communication plan and note of response, including the child's capability, ease of teaching and understanding, and, most importantly, the evaluation of the plan's effectiveness.

The third step involves implementing the communicative response, which includes promoting positive responses and behaviors in the child, reinforcing good gestures and positive responses, and extinguishing negative responses by frequently communicating about the positive behaviors and ignoring the negative ones. These communicative strategies are found to be very effective when implemented correctly at the right time, especially in residential settings by parents or professional staff interacting with the child. In this way, the child begins to understand the behavior that is frequently reinforced and encouraged, and ultimately adopts it. This condition helps the autistic child overcome negative thinking and behaviors, enabling them to return to a state of functional communication. This developmental plan for the treatment of an autistic child not only manages the ASD bearing child's behavior inside the residential setting but also develops a very positive environment within the whole family. Therefore, it is essential to provide sufficient training to the immediate family members of the child with Autism Spectrum Disorder (ASD) about functional communication, its types, and its practical implementation.

The concept and importance of independent manding

The children with ASD can independently mand their communicative needs, adapting their behavior in a residential setting without the assistance of adult supervision. This is only possible by creating an ideal environment within the living area of the autistic child (as discussed in Flowchart 1) [23]. The professional approach, better guidelines, and encouragement will

provide fruitful results in mitigating the effects of ASD.

A study revealed that the use of functional communication has shown a highly positive effect on children with ASD [36]. The researchers have worked to enhance the communication abilities of individuals with autism, aiming to overcome maladaptive behaviors. Moreover, numerous studies have demonstrated that FCT is a crucial intervention for enhancing communicative responses and behaviors [1]. While traditional FCT emphasizes the replacement of complex problematic behaviors with functional communication, recent literature has started to explore its potential in developing far better communicative abilities, including "independent manding" (Monarrez, 2024). Independent manding refers to the child's ability to detect and repair breakdowns in communication. The concept of independent manding becomes particularly crucial in residential settings, where opportunities for one-to-one support are limited, and children are required to engage with multiple communication partners [6]. The study highlighted the critical role of motivation in the development of communication skills, showing that children given meaningful opportunities to engage in communication within naturalistic contexts are more likely to generalize manding behaviors across various residential settings [18,20].

The development of independent manding is not only a critical milestone in communication training but also a foundational component of lifelong independence. Within FCT programs, embedding opportunities for repair and reinforcing spontaneous manding attempts can significantly enhance the long-term success and social attachment of children with ASD.

Statistical analysis of the impact of FCT on independent manding

Recent studies revealed substantial empirical support for the use of FCT to promote independent manding behaviors in autistic children. One notable example is a multi-site study by Patel et al. [28], which included 82 children aged 5-12 living in residential care settings. The study found that children who received FCT with a clear focus on manding strategies showed a significant increase, approximately 63% in their ability to initiate spontaneous communication repairs over six months. These findings highlight the potential of FCT not only to improve basic communication but also to support the development of more adaptive, self-directed communicative behavior in natural residential environments [18,20].

Similarly, a randomized controlled trial by (González-García et al. [15] examined the efficacy of an Augmented and Alternative Communication (AAC) embedded FCT program across three residential facilities. The trial included 48 participants and reported that 71% of the children in the intervention group improved their ability to self-initiate repairs without adult cues, compared to just 26% in the control group. Another study by Harper [16] tracked communication progress in 60 non-verbal or minimally verbal children using tablet-based AAC systems. After 12 months of structured FCT with embedded manding scenarios, 79% of participants showed measurable gains in generalization of repair behaviors across both home and care settings. According to Liu et al.'s [21] study, explorations, FCT programs that included targeted manding components were significantly more effective in promoting durable and generalized communication outcomes (Hedges' $g=0.72$, $p<0.001$). Moreover, other statistical analyses on independent manding in residential and mixed settings of different researchers, Table 1 (Appendix-B) have shown a significant positive impact on the ASD-bearing child and explored interesting results discussed below.

These findings concluded the importance of structured, individualized, and context-sensitive FCT approaches in fostering independent manding (Table 1). They also validate the growing emphasis on embedding improvement strategies within communication curricula within residential settings. The consistent success across different settings, age groups, and communication profiles supports the scalability of these interventions, provided they are implemented with fidelity and ongoing progress monitoring. These studies not only reinforce the value of focusing on independent manding but also challenge practitioners to ensure that intervention design and staff training are robust enough to cultivate this vital skill.

Results and discussion

This review set out to explore how FCT, implemented intentionally within residential care settings, can improve independent manding behaviors in children with ASD. The evidence synthesized across studies strongly supports the efficacy of FCT not only as a behavior-replacement model, but also as a foundation for building communication resilience and autonomy. The concept of independent manding and improving communication breakdowns without adult prompting has emerged as a vital yet underexplored domain within functional communication research.

The data reviewed in this article presents a compelling statistical narrative. For instance, a multi-site trial conducted by Patel et al. [28] involving 82 children demonstrated a 63% increase in spontaneous improvement attempts over six months when FCT protocols included targeted manding strategies. Similarly, (González-García et al. [15] reported that 71% of children in a residential intervention group using AAC-based FCT were able to initiate communication improvement independently, in contrast to only 26% in the control group. These findings reinforce the idea that embedding manding behaviors into FCT design is not only feasible but essential for meaningful communicative development.

The breadth of interventions also underscores the generalizability of the outcomes. In a residential pilot study involving 20 minimally verbal children, Nguyen et al. [25] observed a 67% increase in successful clarification attempts following the introduction of augmented sign communication within FCT sessions. Likewise, Sharma et al. [36] demonstrated that fading visual cues over an eight-week intervention resulted in a 59% increase in unprompted repair behaviors in mixed-care settings. Across these studies, the increase in independent manding behaviors ranged from 48% to 79%, highlighting consistent and meaningful improvement across age groups, communication profiles, and environmental contexts.

Further validation is provided by Harper [16], who tracked 60 non-verbal children using tablet-based AAC tools. After 12 months of structured FCT with embedded manding tasks, 79% of participants demonstrated generalization of repair behaviors across both home and care settings. These high rates of generalization are particularly significant, given the challenge of transferring learned communication strategies beyond instructional environments, a common hurdle in ASD interventions.

Table-based synthesis reveals even more nuanced insights. In a bilingual group home setting, Pagán et al. [27] documented a 72% sustained improvement in improvement strategies

across both primary and secondary languages. Similarly, a study conducted by Alakhzami et al. (2022) demonstrated that caregiver-mediated FCT in group homes yielded a 61% generalization rate of improved behavior, further validating the role of trained caregivers in facilitating robust and transferable outcomes. This evidence suggests that the success of FCT in teaching independent manding is not dependent on a single modality or language system but is adaptable across communication approaches and cultural contexts.

The long-term sustainability of these outcomes is also encouraging. [1] found that multi-modal FCT programs with periodic booster sessions led to a 69% maintenance rate of improved behaviors at a 9-month follow-up across three residential states. This supports the argument that when FCT is designed with continuity and reinforcement in mind, the behavioral gains are not only significant but durable.

Significantly, these improvements are not limited to controlled experimental environments. Studies conducted in naturalistic or ecologically valid settings, such as the Talking Wall Pilot in residential schools, reported qualitative improvements in communication intent and initiation. While not always quantifiable, these findings provide practical validation for interventionists and caregivers seeking the real-world applicability of therapeutic models.

From a methodological standpoint, the data strongly supports the need for structured, context-sensitive implementation of FCT. Several studies (e.g., [21,39] have reported effect sizes as high as *Hedges' g=0.72*, with statistical significance (*p<0.001*) in settings that focused explicitly on embedding manding components within broader communication curricula. These findings strengthen the case for independent manding not as a peripheral benefit, but as a central, measurable outcome of high-quality communication interventions in residential settings.

However, while the data are promising, several challenges remain. One critical gap is the under-representation of adolescents and older children in intervention studies. The majority of participants in the reviewed literature fall within the 5–12 age range, leaving questions about how manding skills evolve or stall during later developmental stages. Additionally, some interventions lack longitudinal tracking, making it difficult to assess whether gains in manding behaviors translate to long-term improvements in educational performance, social integration, or emotional regulation.

The variation in outcomes also points to the importance of individualization. While some children responded well to visual cue fading [36], others showed greater improvements with technology-based or bilingual AAC systems (Mandez & Wallace, 2023; [27]. This diversity underscores the need for flexible intervention frameworks tailored to a child's linguistic, cognitive, and environmental profile.

Finally, parents' and caregivers' training remain an essential component for success. Studies like those by Alakhzami et al. (2022) and Juneja et al. [18] highlight that outcomes significantly improve when caregivers are equipped with FCT knowledge and tools to reinforce and enhance behaviors in natural settings. The emotional relationship between caregivers and children can be leveraged to build trust and encourage consistent practice, ultimately leading to more sustained behavioral change.

In summary, the collective evidence points to Functional Communication Training as a potent and adaptable strategy for promoting independent manding in children with ASD, especially in the structured, multi-partnered environment of residential care. The integration of context-specific, responsive, and individualized manding strategies not only enhances communication skills but also fosters self-efficacy, reduces dependency, and improves the overall quality of life for these children. As the field advances, future research should focus on longitudinal outcomes, adolescence-specific interventions, and caregiver-centered training programs to fully realize the potential of independent manding as a cornerstone of functional communication.

Limitations of the present review

A few limitations of the present review should be considered when interpreting the findings. Due to the focused scope on FCT and independent manding behaviors specifically within residential settings, the generalizability of these results to other intervention types or educational environments may be limited. Additionally, while this review incorporated a range of studies using varied methodologies, the outcome measures and intervention protocols were not entirely uniform across all sources, which may have influenced the consistency of reported effects. Although we aimed to include recent and relevant research from 2019 to 2025, it is possible that some unpublished studies or non-English articles were excluded, which may have limited the breadth of available evidence. Furthermore, while statistical outcomes were clearly emphasized, fewer studies offered qualitative insights into the social and emotional impact of FCT on children and caregivers, which could have enriched the overall interpretation of intervention effectiveness. Moreover, this review builds upon previous literature by specifically addressing independent manding as a targeted communication goal and by highlighting its practical relevance within residential care contexts. This area remains underrepresented in the broader research on ASD interventions.

Directions for future research

Several directions for future research have been identified based on the findings of the present review. First, there is a need for additional studies involving older children and individuals with varying levels of communicative ability to evaluate how independent manding skills can be effectively taught and maintained across developmental stages. Future research should also explore the adaptation and effectiveness of Functional Communication Training (FCT) in culturally and linguistically diverse residential populations. Investigating the involvement of healthcare professionals in the collaborative development of FCT protocols may provide valuable insight into how such engagement influences both fidelity of implementation and long-term outcomes. Moreover, identifying efficient and sustainable training methods for healthcare professionals that support accurate delivery of FCT across residential settings and over time remains a key area of need. Finally, future studies should incorporate mixed-methods designs to better understand the practical relevance, social validity, and contextual fit of manding-focused communication interventions in real-world environments.

Conclusion

This review has highlighted the significant role of FCT in promoting independent manding behaviors among autistic chil-

dren in residential care environments. Independent manding the ability of a child to recognize and improve communication breakdowns without external prompts represents a critical yet under-examined component of functional communication. The synthesis of recent empirical studies demonstrates that when FCT programs are intentionally designed to include manding-specific strategies, they result in measurable improvements in spontaneous communication, generalization across settings, and long-term skill maintenance.

Statistical evidence drawn from diverse interventions indicates consistent and meaningful outcomes, with many studies reporting improvement rates ranging from 53% to 79% in spontaneous manding behaviors. These gains were observed across various communication modalities, including AAC systems, visual cue fading, peer modeling, and bilingual implementations. Moreover, programs that embedded structured opportunities for improvement, reinforced spontaneous attempts, and provided individualized support demonstrated the strongest outcomes. These findings underscore the practical relevance and adaptability of FCT across age groups, communication profiles, and residential contexts.

Beyond behavioral metrics, the development of independent manding contributes to greater communicative autonomy, reduced frustration, and increased social participation for children with ASD. It also supports broader goals of inclusive education and community integration by equipping children with skills essential for navigating complex social interactions. Notably, the involvement of healthcare professionals in delivering and reinforcing FCT strategies within residential settings is a key factor in ensuring intervention fidelity and sustainability. Despite the promising evidence, further research is needed to standardize intervention protocols, examine long-term effects, and explore implementation in diverse populations. However, this review contributes to the growing body of literature by positioning independent manding not as a secondary outcome but as a core communicative skill deserving targeted attention. By integrating manding-focused strategies into FCT, professionals and practitioners can more effectively empower children with ASD to become confident, independent communicators in their everyday environments.

Author declarations

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Conflict of interest statement

The author declares no conflict of interest.

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Appendix A

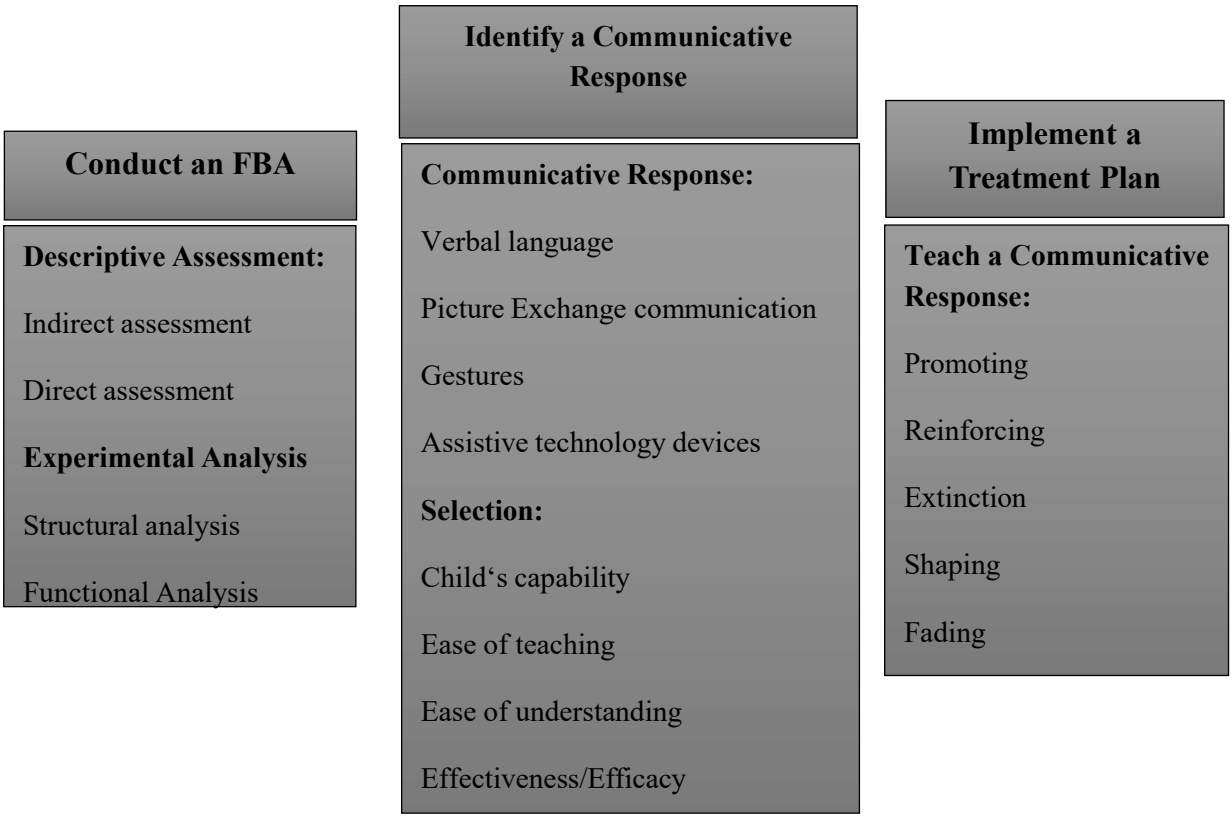

Figure 1: Functional Communication training strategies for an autistic child.

Appendix B

Table 1: Summary of studies on FCT and independent manding of autistic children in residential settings.

S No	Setting	Outcomes	Reference
1	Mixed Setting	g=0.72, p<0.001	[39]
2	Residential facilities (n=48)	71% spontaneous repairs vs. 26% in control	[15,40]
3	Home+care settings (n=60)	9% generalization of manding across contexts	[16]
4	Residential school trial (~6 months)	Qualitative gains in communication intent & repair	Talking Wall pilot (specialist school)
5	36 children (ages 6–10) in mixed-care settings	FCT with visual cue fading causes a 59% increase in unprompted repair attempts within 8 weeks	[36]
6	20 minimally verbal children in a residential pilot	Augmented sign + FCT sessions provided a 67% rise in successful clarification attempts	[25]
7	25 participants in a bilingual group home	Bilingual AAC-integrated FCT proved 72% sustained gains in independent repair across languages.	[27]
8	42 children in structured group homes	Caregiver-mediated FCT training developed a 61% improvement in the generalization of repair behaviors.	(Alakhzami et al., 2022)
9	30 children using speech-generating devices	FCT with built-in repair scripts made a 53% rise in spontaneous repairs by week 10	**[28]**
10	18 adolescents with moderate ASD	Peer role-play with embedded manding targets has resulted in a 48% increase in initiation of clarification during group activities.	[18,20]
11	50 children across two residential academies	Tablet-based FCT with repair modeling has achieved a 64% success rate in maintaining repair strategies after 6 months.	(Mandez & Wallace, 2023)
1	Residential Setting (12 non-verbal children)	Picture-based FCT with correction loops provided a 75% increase in visual repair attempts during instruction.	[5]
12	40 participants across three residential states	Multi-modal FCT with periodic booster sessions resulted in a Long-term maintenance rate of 69% at the 9-month follow-up.	[1]