



Communication issues in co-occurring ADHD and autism spectrum disorders. Evaluative approaches and targeted interventions: mini review

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Abstract

Purpose: This mini-review presents strategies for assessing and treating communication difficulties in individuals with comorbid attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). Standardized assessments such as the Clinical Evaluation of Language Fundamentals and the Test of Language Development provide quantitative insights, while pragmatic tools, such as the Pragmatic Language Skills Inventory and the Social Communication Questionnaire provide qualitative measures of social communication skills. A comprehensive assessment also integrates clinical interviews, multi-contextual observations,

Views: A multifaceted approach tailored to individual needs is required to effectively treat communication difficulties. Evidence suggests benefits from social skills training, structured group therapy sessions, and speech and language therapy focusing on expressive, receptive, and pragmatic language skills. Augmentative and alternative communication systems provide support for individuals with limited verbal skills. In addition, the development of supportive academic frameworks, such as Individualized Education Programs or Individualized Accommodation Plans, involves environmental modifications and collaborative educational planning including psychologists, educators, and families.

Conclusions: Comorbid ADHD and ASD significantly impair communication, necessitating precise evaluation and multimodal interventions such as social skills training and augmentative and alternative communication tools. Collaborative, evidence-based approaches enhance functional outcomes and quality of life in affected individuals.

Key words: communication disorders, ADHD, ASD, comprehensive assessment, multimodal treatment, social skills training, speech therapy, augmentative and alternative communication, mini-review.

INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorder (ASD) are two neurodevelopmental disorders that often co-occur and present significant challenges for individuals and their families [1]. Specifically, individuals with ASD often face critical communication challenges, while those with ADHD may experience communication difficulties, even though these are not considered central to the disorder.

ADHD is characterized by persistent patterns of inattention, hyperactivity, and impulsivity that interfere with functioning or development, while ASD is marked by difficulties in social communication and interaction, alongside restricted and repetitive behaviors [2]. The co-occurrence of these disorders can exacerbate the challenges faced by affected individuals, particularly in the domain of communication.

Individuals with ASD often face critical communication challenges, including difficulties with verbal and non-verbal communication, understanding social cues, and engaging in reciprocal social interactions [3]. While communication difficulties in ADHD are less central to the disorder, individuals with ADHD may still experience pragmatic language impairments, difficulties in maintaining attention during conversations, and challenges with social interactions. These communication issues can significantly impact social, academic, and occupational functioning.

Understanding the unique communication issues, faced by individuals with both conditions, is critical for effective assessment and intervention. Comprehensive knowledge of these challenges is essential for developing tailored strategies that address the specific needs of this population. This paper provides a comprehensive review of the communication challenges experienced by

individuals with co-occurring ADHD and ASD, focusing on diagnostic criteria, communication difficulties, and assessment and treatment strategies [2, 3].

METHODS

This mini-review followed a structured approach to source selection. We searched data in Scopus, PubMed, PsycINFO, and Google Scholar for articles published in the last two decades. Inclusion criteria comprised peer-reviewed studies, empirical research, and relevance to comorbidity of ADHD with ASD, diagnostic criteria, communication difficulties in ADHD and ASD and focused treatments. Exclusion criteria were non-peer-reviewed articles and studies not focused on the specified communication challenges.

RESULTS

ADHD is diagnosed based on a persistent pattern of inattention and/or hyperactivity-impulsivity that significantly disrupts functioning or development. Inattention is identified when an individual consistently displays at least six of the following symptoms over a period of at least six months, which are not in line with their developmental level and impair their social and academic/occupational activities: frequent careless mistakes in work, difficulty sustaining attention during tasks, not listening when directly spoken to, failure to complete tasks, organizational problems, reluctance to engage in mentally effortful tasks, losing necessary items, being easily distracted, and forgetfulness in daily activities.

Hyperactivity and impulsivity, the other core aspect of ADHD, involve persistently displaying at least six of the following symptoms: fidgeting or tapping hands or feet, leaving one's seat in situations where remaining seated is expected, running or climbing inappropriately, inability to engage in activities quietly, a constant feeling of being "on the go", excessive talking, blurting out answers before questions are completed, difficulty waiting one's turn, and interrupting or intruding on others.

For a diagnosis, these symptoms must have been present before the age of 12 and observed in multiple settings such as home, school, work, or with friends. The symptoms should cause significant impairment in social, academic, or occupational functioning. The diagnosis also excludes symptoms that could be better explained by another mental disorder. ADHD can be categorized into different presentations: Combined Presentation (meeting criteria for both inattention and hyperactivity-impulsivity), Predominantly Inattentive Presentation (meeting criteria for inattention but not hyperactivity-impulsivity), or Predominantly Hyperactive/Impulsive Presentation (meeting criteria for hyperactivity-impulsivity but not inattention).

Additionally, ADHD can be specified as in partial remission if fewer than full criteria have been met for the past six months but still result in impairment. The severity of ADHD can be classified as mild, moderate, or severe based on the number and intensity of symptoms and their impact on daily functioning.

These diagnostic criteria are outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), published by the American Psychiatric Association, providing a standardized framework for healthcare professionals to assess and diagnose ADHD.

The DSM-5 provides a structured framework for diagnosing ASD, organized into five main criteria labeled A through to E. Criteria A and B are particularly pivotal in the diagnostic process [2].

Criteria A revolve around deficits in social communication and interaction. This encompasses challenges in social-emotional reciprocity, such as difficulties in engaging in back-and-forth conversations and initiating relationships. It also includes struggles with nonverbal communicative behaviors, like interpreting body language and maintaining eye contact. Additionally, this criterion addresses the complexities of developing and maintaining relationships, including imaginative play and context shifting.

Criteria B focus on restricted and repetitive behaviors and interests. This involves stereotyped or repetitive motor movements, insistence on sameness, and highly specific interests pursued with intense focus. Individuals with ASD often derive comfort and sense of predictability from these routines and rituals, which may manifest in rituals before exams or adherence to structured daily routines.

Criteria C through to E provide further context and qualifications for an ASD diagnosis. Criteria C emphasize that ASD is a neurodevelopmental condition present from early childhood, with symptoms that persist across various contexts. Criterion D underscores that these symptoms must cause significant impairment in social, occupational, or other important areas of functioning. Lastly, Criterion E clarifies that ASD should not be attributed to intellectual disabilities or other developmental conditions, though these may co-occur.

The DSM-5 criteria aim to standardize the diagnosis of ASD while recognizing the diversity of experiences within the autistic community. It serves as a clinical tool to guide professionals in identifying and understanding the core features of ASD accurately. The co-occurrence of ADHD and ASD exacerbates communication challenges, making social engagement and effective interaction more difficult.

Recent epidemiological studies indicate that the comorbidity of ADHD and ASD is not uncommon.

ADHD and ASD frequently co-occur, with studies indicating that 50 to 70% of individuals with ASD also

present with ADHD [4, 5]. This high comorbidity rate suggests a significant overlap in the neurocognitive impairments associated with these disorders. For instance, both ADHD and ASD individuals show impaired response inhibition and sustained attention, with ADHD traits largely accounting for the neurocognitive challenges observed in ASD patients [6]. This highlights the necessity for clinicians to consider ADHD traits when evaluating and treating ASD to better understand and address the cognitive difficulties involved.

The clinical implications of this comorbidity are profound. Children diagnosed with both ADHD and ASD have greater treatment needs, more co-occurring conditions, and are more likely to present with a combined hyperactive/impulsive and inattentive ADHD subtype [7]. Moreover, individuals with ASD face a higher burden of comorbidities, potentially due to higher rates of perinatal exposures such as preterm birth and hypoxia at birth [8].

The overlapping symptoms can make social interactions and communication significantly more challenging. Individuals with co-occurring ADHD and ASD may exhibit hyperactive and impulsive behaviors, frequently interrupt conversations, and find it difficult to maintain social reciprocity. The impulsive and restless nature of ADHD can exacerbate the repetitive speech patterns typical of ASD, making it difficult for others to engage in meaningful exchanges with them [9]. These communication problems can further isolate the individual socially and contribute to the emergence of co-occurring emotional and behavioral disorders.

We propose an integrated model to understand the co-occurrence of ADHD and ASD, emphasizing the shared and distinct neurocognitive profiles and symptoms, such as impulsivity and social communication difficulties. This model explores common etiological factors, including genetic predispositions, neurobiological abnormalities, and environmental influences, that contribute to both disorders [10]. By incorporating these elements, our framework aims to guide future research and clinical practice, promoting more effective diagnostic and therapeutic strategies for managing co-occurring ADHD and ASD [11].

Comprehensive assessment is essential to effectively address the communication challenges of individuals with co-occurring ADHD and ASD. ADHD and ASD symptom assessment tools should be used to identify the full range of communication challenges. Clinicians need to consider the individual's language skills, social communication skills, pragmatic language skills, and the impact of hyperactivity and impulsivity on communication. Interdisciplinary collaboration is essential for a comprehensive evaluation [12].

Treatment of communication difficulties requires a multimodal approach [13]. Interventions must address

symptoms of both ADHD and ASD. Behavioral strategies, such as social skills training and communication-focused therapies, are critical in helping individuals cultivate conversational skills, turn taking, and understanding nonverbal cues [14, 15]. In addition, medication management can contribute to a reduction in hyperactivity and impulsivity, thereby facilitating better communication. To ensure comprehensive support and intervention, collaborative efforts among professionals, educators, and families are essential.

Communication challenges in ADHD and ASD

Both ADHD and ASD are associated with a range of communication difficulties, including social communication, verbal and nonverbal interaction, and pragmatic language [16]. Individuals with ADHD may have problems maintaining focus in conversations, active listening, and organizing thoughts [17]. Individuals with ASD may have difficulty with social reciprocity, interpreting nonverbal communication, and engaging in dialogue [18].

Research indicates that people with ADHD/ASD experience greater communication difficulties than those with either disorder alone [18]. Findings from Sikora *et al.* [19] suggest that children with the two disorders experience reduced quality of life and adaptive functioning compared to their peers with a single disorder. These communication challenges significantly impact the social interactions, academic performance, and overall well-being of individuals with these disorders.

Impact of communication problems

Impaired social communication significantly affects social interactions, educational achievement, and quality of life [20–22]. Challenges in social reciprocity and understanding social norms can lead to difficulties in forming friendships and participating in group activities [23]. Children with co-occurring ADHD and ASD may struggle with peer group social dynamics, resulting in feelings of isolation [24].

In addition, academic success may be compromised, given that individuals with both ADHD and ASD may find it difficult to understand spoken instructions, articulate thoughts, and also to collaborate effectively [25, 26]. These impairments can negatively affect their educational performance.

Assessing communication impairments in ADHD and ASD comorbidities

A thorough assessment is essential to identify the specific communication impairments in individuals with ADHD and ASD comorbidities. Standardized assessments like the Clinical Evaluation of Language Fundamentals (CELF) and the Test of Language Development (TOLD)

Table 1. Assessment tools

Assessment Tool	Purpose	Adaptations	Description	Authors/Developers
Clinical Evaluation of Language Fundamentals (CELF)	Measures language skills	Greek, Spanish, Mandarin	Standardized test for assessing language and communication skills	Wiig, Semel, Secord (28)
Test of Language Development (TOLD)	Measures language skills	Greek, Spanish, Mandarin	Standardized test for evaluating language development in children	Hammill, Pearson, Wiederholt (29)
Pragmatic Language Skills Inventory (PLSI)	Evaluates social communication skills	Primarily English-speaking, various translations	Standardized tool for assessing pragmatic language abilities	Gilliam, Miller (30)
Social Communication Questionnaire (SCQ)	Assesses severity of communication challenges	Primarily English-speaking, various translations	Screening tool for social communication issues, particularly in ASD	Berument, Rutter, Lord, Pickles, Bailey (31)

are critical for measuring language skills. Additionally, the Pragmatic Language Skills Inventory (PLSI) and the Social Communication Questionnaire (SCQ) are recommended for evaluating social communication skills and the severity of communication challenges [27] (Table 1).

An integrative assessment protocol should also include clinical interviews, varied contextual observations, and input from informed stakeholders, such as parents, educators, and caregivers. This comprehensive approach ensures a detailed profile of the individual's communication abilities across different settings.

A thorough assessment is essential to identify the specific communication impairments in individuals with ADHD and ASD comorbidities. Standardized assessments such as the CELF and the TOLD should be administered to measure the extent of language skills [27, 32, 33]. In addition, the PLSI and the SCQ are recommended for a nuanced assessment of social communication skills and the severity of communication challenges [34]. An integrative assessment protocol also includes clinical interviews, contextually varied observations, and input from informed stakeholders, including parents, educators, and caregivers. This comprehensive approach ensures a detailed profile of the individual's communication abilities in a variety of settings.

Multimodal intervention strategies to improve communication

Therapeutic methods were selected based on evidence-based practices, individual patient profiles, and contextual factors such as cultural and environmental considerations. The selection of appropriate interventions is vital, ensuring they are tailored to the specific needs of individuals with co-occurring ADHD and ASD [35].

Selecting therapeutic methods for patients with co-existing ADHD and ASD requires a systematic approach integrating evidence-based practices, individual patient needs, and contextual factors. Evidence-based practices, such as behavioral therapy and medications like stimulants for ADHD and SSRIs for ASD, are supported by

rigorous studies [36, 37]. Individual patient needs include thorough assessments of medical history, psychosocial factors, and personal preferences to ensure treatments are customized. Contextual factors, like healthcare setting resources and cultural competence, ensure interventions are feasible and accessible [38].

The underlying multidimensional nature of communication issues in ADHD and ASD co-occurrences necessitates a multimodal therapeutic framework, individualized to the diverse profiles of individuals with these disorders [39]. Empirical evidence supports a number of interventions designed to improve communication effectiveness and overall functional outcomes in this population [40] (Table 2):

1. Social skills training: Empirical studies support social skills training programs, involving group therapy and structured social skills workshops, to improve interactive skills from conversational turn-taking, active listening, to interpreting nonverbal communication [46-48]. These programs are intended to provide a safe environment for individuals to practice and refine their social communication skills.
2. Speech and language intervention: Individualized speech therapy is essential to address the specific communication deficits observed in comorbid ADHD and ASD. Therapeutic goals may include promoting expressive and receptive language skills, pragmatic language use, and the use of nonverbal communication techniques. Therapists utilize a variety of evidence-based interventions to promote communication skills and overall language development [49-52].
3. Augmentative and alternative communication: AAC systems are particularly beneficial for individuals with significant verbal communication challenges. These systems encompass a diverse assistive technology array, from simple picture boards to sophisticated speech-generating devices, that facilitate alternative expression modes and promote inclusiveness in social interaction [53].
4. Environmental adaptation: The optimization of the communicative environment is of critical importance

Table 2. Treatment approaches

Approaches	Description	Authors
Social skills training	Programs involving group therapy and structured workshops to improve interactive skills like conversational turn-taking and active listening.	Soares, Bausback, Beard, Higinbotham, Bunge, Gengoux (41)
Speech and language intervention	Individualized therapy addressing communication deficits in ADHD and ASD, promoting expressive/receptive skills and pragmatic language use.	Law, Dennis, Charlton (42) Smith (43) Tisot, Evans (44)
Augmentative and alternative communication	Utilization of AAC systems (from simple to complex) to facilitate alternative modes of expression and inclusiveness in social interaction.	Smith (43)
Environmental adaptation	Strategies (visual supports, routines, instructions) enhancing communication for individuals with ADHD and ASD comorbidities.	Tisot, Evans (44)
Collaborative educational strategies	Development of educational plans (IEPs, IAPs) supporting attention, organization, and social communication needs in academic settings.	Curro, Shooman, Foo (45)

for individuals with ADHD and ASD co-morbidities. Strategies that enhance comprehension and facilitate effective communication include visual aids, predictable routines, and concise instructions [54, 55].

5. Collaborative educational strategies: Collaboration across disciplines is critical to the development of educational plans, such as Interprofessional Education (IPE) Individualized Educational Plans IEPs and Individualized Accommodation plans (IAPs) [56]. This plan should include strategies that support attention, organization, and social communication in an academic setting. Providing specialized support and accommodation within these plans is essential to meet the unique communicative needs of students presenting with ADHD and ASD comorbidities [57].

In conclusion, communication difficulties significantly impact the lives of individuals with co-occurring ADHD and ASD, affecting their social interactions, academic performance, and overall quality of life. Assessment using standardized measures, clinical interviews, and observations is crucial to understand the specific communication impairments in this population. Multimodal interventions, including social skills training, speech and language therapy, AAC, environmental support, and collaborative educational support, offer opportunities for individuals to improve their communication skills, enhance social interactions, and promote academic success.

Research and advancements in intervention approaches will further enhance our understanding of the most effective strategies for addressing communication issues in individuals with co-occurring ADHD and ASD. By implementing these interventions and fostering collaboration among professionals, educators, and parents, we can improve the overall functioning and well-being of individuals with co-occurring ADHD and ASD, ultimately enhancing their communication abilities and enabling them to thrive in social and academic settings.

STRENGTHS OF THE STUDY

The aim of this mini-review is to provide a synthesis of the existing literature on communication challenges in individuals with co-occurring ADHD and ASD, and to provide a consolidated reference point for clinicians and researchers. Noteworthy strengths include the comprehensive scope, as the review covers a broad range of evaluation measures and intervention techniques, providing a wide perspective on the subject. In addition, this approach integrates insights from multiple professional disciplines and emphasizes the significance of a collaborative approach to treatment.

Furthermore, this review concentrates on interventions supported by empirical research, guaranteeing that the recommendations are based on scientifically validated practices.

Finally, it offers practical advice for clinical practice regarding the practical impact of communication difficulties.

LIMITATIONS OF THE STUDY

Despite its contributions, this mini-review has several limitations that should be acknowledged.

Given its succinct nature, the treatment of each topic is necessarily concise and may lack the breadth of a full systematic review.

The review may not cover all relevant studies because of space limitations, potentially biasing the representation of literature. Additionally, the field is rapidly evolving, further necessitating updated syntheses in future works. As research on ADHD and ASD is constantly evolving, this review may not include the most recent findings and emerging trends. Furthermore, even though the review includes studies with diverse methodologies and populations, its conclusions may have limited applicability to individual cases.

Future research should focus on addressing these limitations through comprehensive systematic reviews, including meta-analyses, and by consistently updating the evidence base to reflect the most recent research findings.

CONCLUSIONS

The impact of communication challenges on individuals with both ADHD and ASD is considerable, affecting their social interactions, academic performance, and overall quality of life. Precise evaluation with established tools, supplemented by clinical interviews and observational methods, is required to delineate the specific communicative challenges within this group. A range of multimodal interventions have been found to be beneficial, including social skills training, specialized speech and language

therapy, the use of AAC tools, the optimization of environmental factors, and the establishment of collaborative educational frameworks. All of these interventions help enhance communication skills.

Emerging research and innovations in therapeutic interventions are enhancing our understanding of effective strategies to address communication challenges in individuals with comorbid ADHD and ASD. The collaboration among clinicians, educators, and families, combined with these interventions, leads to improved functional outcomes for individuals with ADHD and ASD comorbidities. Prioritizing integrative and evidence-based practices can greatly enhance the well-being of individuals, enabling them to succeed in social and academic endeavors with greater efficiency.

Conflict of interest

Absent.

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