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Selective mutism and autism spectrum disorder in girls: a critical narrative review

Abstract

Selective mutism (SM) is traditionally classified as an anxiety disorder characterized by a persistent failure to speak in specific social contexts despite preserved language abilities in familiar environments. However, accumulating evidence suggests that SM represents a heterogeneous clinical phenotype in which neurodevelopmental factors may play a significant role. Concurrently, Autism Spectrum Disorder (ASD), particularly in girls, often presents with subtle or atypical manifestations, including social camouflaging and increased internalizing symptoms, contributing to underdiagnosis and delayed recognition. This study aimed to conduct a critical narrative review of contemporary literature (2018–present) examining the interface between SM and ASD in girls, with emphasis on neurobiological mechanisms, dimensional psychopathology, and diagnostic and therapeutic implications.

A structured literature search was performed using PubMed, Scopus, and PsycINFO databases, including studies published between January 2018 and the present. Articles were selected based on predefined inclusion and exclusion criteria, focusing on empirical and theoretical contributions addressing SM, ASD, female phenotype, and related neurobiological and clinical frameworks. The findings reveal converging evidence of shared neurobiological substrates, including amygdala hyperreactivity and altered connectivity within social brain networks, alongside a higher prevalence of autistic traits among children with SM. Additionally, social camouflaging emerges as a central mechanism contributing to the underrecognition of ASD in girls presenting with SM.

The persistent artificial dissociation between anxiety and neurodevelopmental frameworks may obscure underlying mechanisms and compromise diagnostic accuracy. An integrative, sex-sensitive, and transdiagnostic approach is essential for improving assessment and guiding more effective interventions.

Keywords: selective mutism; autism spectrum disorder; sex differences; camouflaging; social anxiety; neurodevelopment; dimensional psychopathology

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Natasha Ganem
Psychiatrist from State University of Rio de Janeiro, Brazil

Correspondence: Natasha Ganem MD, Rua Visconde de Pirajá, 550, 614, Ipanema. Rio de Janeiro, RJ - Brazil 22410-901, Tel +55 21 988465015

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Introduction

Selective mutism (SM) is a childhood psychiatric condition characterized by a consistent failure to speak in specific social situations in which there is an expectation for verbal communication, despite intact language abilities in other contexts. Although currently classified as an anxiety disorder in diagnostic systems such as the DSM-5-TR, this conceptualization has been increasingly challenged by emerging evidence supporting a more complex and multidimensional etiological framework. Traditionally, SM has been associated with behavioral inhibition and heightened reactivity to social threat. However, this model does not fully account for the frequent presence of pragmatic language impairments, sensory processing differences, and persistent difficulties in social reciprocity observed in a subset of affected individuals.

Concurrently, research on Autism Spectrum Disorder (ASD) has increasingly highlighted sex-related differences in phenotypic expression. Girls with ASD often present with subtler clinical features, including socially acceptable restricted interests, increased internalizing symptoms, and sophisticated compensatory strategies. These strategies, commonly referred to as social camouflaging, may mask underlying socio-communicative deficits and contribute to significant diagnostic delays. Within this context, the interface between SM and ASD has emerged as a clinically relevant construct. Dimensional models such as the Research Domain Criteria (RDoC) framework support the examination of cross-cutting domains, such as social communication, threat reactivity, and cognitive control, rather than discrete categorical diagnoses.[1]

Despite growing recognition of this overlap, there remains a lack of integrative frameworks specifically addressing the intersection of SM and ASD in girls from a sex-sensitive and neurodevelopmental perspective.

This review aims to critically examine the overlap between selective mutism and the female autism phenotype, focusing on neurobiological mechanisms, camouflaging behaviors, and implications for diagnosis and treatment.

Materials and methods

This study is a critical narrative review designed to synthesize contemporary evidence on the relationship between selective mutism and the female autism phenotype. A literature search was conducted in the PubMed, Scopus, and PsycINFO databases, covering publications from January 2018 to the present.

The search strategy employed the following keywords and Boolean operators:

("Selective Mutism" OR "SM") AND ("Autism Spectrum Disorder" OR "ASD" OR "female autism phenotype" OR "camouflaging") AND ("girls" OR "sex differences").

Inclusion criteria were:

(1) Peer-reviewed articles;

(2) Publications in English;

(3) Studies addressing selective mutism, autism spectrum disorder, or their overlap;

(4) Studies focusing on neurobiological, behavioral, or diagnostic aspects, particularly in female populations.

Exclusion criteria included:

(1) Studies not involving human subjects;

(2) Articles not directly related to the research question;

(3) Publications lacking empirical or theoretical relevance.

Studies were selected based on relevance to the research objective, with particular emphasis on recent advances in neurobiology, sex differences, and dimensional approaches to psychopathology. Data were extracted and organized into thematic categories to support a structured synthesis of findings.[2]

Results

Neurobiological mechanisms

The reviewed literature consistently reports alterations in neural circuits involved in emotional processing and social cognition in both SM and ASD. Key findings include amygdala hyperreactivity to social stimuli, altered connectivity between limbic and prefrontal regions, and dysfunction in salience and social brain networks. These patterns suggest shared neurobiological mechanisms underlying heightened sensitivity to social threat and difficulties in processing social information.

Prevalence of autistic traits in children with SM

Evidence from observational and cross-sectional studies indicates an increased prevalence of autistic traits among children diagnosed with SM compared to the general population. These traits include pragmatic language deficits, reduced social reciprocity, sensory sensitivities, and behavioral rigidity, supporting a dimensional overlap between SM and ASD.

Female autism phenotype and social camouflaging

The literature highlights that girls with ASD often present with subtler and atypical features. Social camouflaging, characterized by imitation, use of scripted interactions, and suppression of atypical behaviors, is frequently reported and contributes to underrecognition. Although these strategies may facilitate short-term social adaptation, they are associated with increased cognitive load, emotional exhaustion, and elevated anxiety.

Diagnostic challenges and sex-sensitive approaches

Traditional diagnostic frameworks may fail to capture the female autism phenotype, particularly when internalizing symptoms predominate. In this context, selective mutism may be identified without recognition of underlying neurodevelopmental differences. The literature emphasizes the importance of sex-sensitive assessment tools and comprehensive developmental evaluations.[3–6]

Discussion

The findings of this review support the conceptualization of selective mutism as a heterogeneous clinical phenotype arising from the interaction between anxiety-related mechanisms and neurodevelopmental factors.

The observed prevalence of autistic traits among individuals with SM reinforces the hypothesis of a dimensional overlap between these conditions. In this framework, SM may represent, in certain cases, a partial phenotypic expression of an underlying neurodevelopmental profile consistent with ASD. This relationship is particularly relevant in girls, given the distinct female autism phenotype. Camouflaging strategies, while enabling superficial social adaptation, impose substantial cognitive and emotional demands, often resulting in increased anxiety and functional impairment.[7–9]

Neurobiological findings, particularly amygdala hyperreactivity and altered connectivity in social brain networks, provide further support for shared underlying mechanisms. These alterations may contribute both to heightened social anxiety and to intrinsic difficulties in social processing. Importantly, anxiety symptoms in SM may, in some cases, be secondary to neurodevelopmental impairments, including deficits in theory of mind, sensory hypersensitivity, and reduced cognitive flexibility. This perspective challenges traditional categorical models and supports a transdiagnostic approach.

Clinically, the overlap between SM and ASD presents significant diagnostic challenges. Girls with ASD may not meet classical diagnostic thresholds, particularly when assessed using tools based on male-typical presentations. In such cases, SM may function as a proxy diagnosis, delaying appropriate identification of ASD. Therefore, comprehensive assessment of girls presenting with SM should include systematic evaluation for ASD, incorporating developmental history, qualitative analysis of social communication, and the use of standardized instruments sensitive to female presentations. From a therapeutic perspective, traditional interventions for SM, primarily based on cognitive-behavioral approaches, may be insufficient when neurodevelopmental features are present. Effective management requires individualized, multimodal strategies, including social communication interventions, sensory modulation, environmental adaptations, and psychoeducation.[10,11]

Conclusion

Selective mutism should be understood as a heterogeneous condition situated at the intersection of anxiety and neurodevelopmental disorders. In girls, this interface is particularly complex due to atypical ASD presentations and the widespread use of social camouflaging strategies, which often obscure underlying socio-communicative differences. An integrative, sex-sensitive, and dimensional approach is essential to improve diagnostic accuracy and guide more effective interventions. Future research should prioritize longitudinal and multimodal designs to further elucidate the mechanisms underlying this overlap and to support the development of targeted clinical strategies.

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Conflicts of interest

The author declares that there is no conflicts of interest.

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