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Integrating DSM-5 criteria with the CASE Framework: A psychoeducational approach to understanding and supporting children with autism spectrum disorder

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Abstract
Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by persistent challenges in social communication, restricted interests, and repetitive behaviors (known as the triad of impairments). This paper examines the diagnostic foundations of ASD through frameworks of DSM-5, DSM-5-TR and/or ICD-11 and connects these clinical criteria to functional implications in education using the CASE framework, consisting of Cognitive, Academic, and Social-Emotional aspects. Additionally, it incorporates the Hierarchy of Abilities and Skills (HAS) model to provide a layered, developmental approach to assessment that considers biological, sensory, adaptive, emotional, and cognitive domains. By aligning the DSM-5 diagnostic criteria with both the CASE and HAS models, this paper presents a comprehensive psychoeducational profile that supports individualized educational therapy (EdTx) planning. It also outlines the significant cognitive, academic, social-emotional, and societal harms that can result from untreated conditions of ASD. Overall, the integration of clinical, developmental, and educational models enables a deeper understanding of how ASD affects learning, behavior and development, reinforcing the importance of early diagnosis and targeted intervention.

Keywords: Academic assessment, ASD diagnosis, CASE framework, Educational therapy, HAS model

Introduction

Recently, on July 4, 2025, *Science Daily* [1] announced that the research team at Princeton University and the Simons Foundation has identified four biologically and clinically distinct subtypes of Autism Spectrum Disorder (ASD) or autism in short. The new findings of the Princeton study [2] have offered a more personalized understanding of the condition: The first subtype group (37%), though with typical developmental milestones, is the largest, characterized by core autistic traits and co-occurring psychiatric conditions. The next subtype group (34%) displays moderate autistic traits without significant delays or psychiatric issues. The third subtype group (19%), with fewer behavioral or psychiatric symptoms, exhibits developmental delays. Lastly, the smallest subtype group (10%) manifests the most severe challenges across development, behavior, and mental health. This last subtype is also known as profound autism reported by Clarke *et al.* [3], and according to the Lancet Commission convened in December 2021 [4], based on three international databases analyzed, it was "determined that approximately 30% of people with diagnosed autism qualify for the new diagnosis of 'profound'" (cited in Autism Science Foundation [5], p. 5). More importantly, this new classification of ASD has highlighted the diversity within the autism spectrum and also offered to guide more tailored interventions.

ASD is considered a medical condition, specifically a neurodevelopmental disorder, and it has been clearly defined in the Diagnostic and Statistical Manual of Mental Disorders-5th Edition (DSM-5) [6], as well as the subsequent Diagnostic and Statistical Manual of Mental Disorders-5th Edition-Text Revision (DSM-5-TR) [7], and the International Classification of Diseases, 11th Revision (ICD-11) [8, 9, 10] as follows: a neurodevelopmental condition marked by ongoing difficulties in what is classically known as 'the triad of impairments' [11]: social communication, together with restricted interests and repetitive behaviors, which differ in intensity and varied manifestations from person to person. According to Yang and Xie [12] and Chia and Yang [13], the operating definition of ASD differs between the West and the East, and more so, varies globally due to differences in cultural perceptions, diagnostic criteria, and access to assessment tools. While the DSM-5 and/or DSM-5-TR have defined ASD within a unified spectrum emphasizing behavioral and developmental markers [6, 7], the ICD-11 [8] frames the condition more widely within neurodevelopmental disorders, reflecting diverse medical, educational, and social service frameworks [9, 10]. Cultural norms influence how autistic behaviors are being perceived/interpreted (i.e., what is viewed as atypical social interaction in one culture may be considered typical in another), leading to disparities in identification and prevalence rates worldwide [14, 15]. Several studies [16, 17] have both shown that the current DSM-5 [6] provides better specificity to reduce false-positive diagnoses of ASD. However, this is done so "at the expense of potentially reducing sensitivity, especially for older children, adolescents, and adults, individuals without intellectual disabilities, and individuals who previously met criteria for diagnoses of DSM-IV Asperger's Disorder or PDD-NOS" (p.187) [14]. Moreover, autistic behaviors also change or shift over time as individuals grow up, though changes may go unnoticed and vary by individual and environment [18, 19]. Thus, the operating definition of ASD remains very dynamic [20], constantly shaped by evolving scientific

understanding, diagnostic practices, sociocultural context, and lifespan development.

1. What the DSM-5 says about Autism

According to the DSM-5 [6] (APA, 2013) and/or DSM-5-TR [7] (APA, 2022), Autism Spectrum Disorder (ASD) under the diagnostic code F84.0 is defined as: "A neurodevelopmental disorder characterized by persistent deficits in social communication and social interaction across multiple contexts, along with restricted, repetitive patterns of behavior, interests, or activities" (para. 1; cited in the official website of the American Speech-Language-Hearing Association) [21].

2.1 Diagnostic Criteria (DSM-5-TR, 2022)

The following diagnostic criteria F84.0 on ASD are taken from the DSM-5 [6] (available online at: https://a4.org.au/dsm5-asd):

a. Persistent deficits in social communication and social interaction across multiple contexts, manifested by all of the following:

1. Deficits in social-emotional reciprocity, such as abnormal social approach, failure of normal back-and-forth conversation, reduced sharing of interests or emotions, or failure to initiate or respond to social interactions.
2. Deficits in nonverbal communicative behaviors used for social interaction, such as poorly integrated verbal and nonverbal communication, abnormalities in eye contact or body language, deficits in understanding gestures, or total lack of facial expression.
3. Deficits in developing, maintaining, and understanding relationships, such as difficulties in adjusting behavior to social contexts, difficulties in sharing imaginative play, or absence of interest in peers.

b. Restricted, repetitive patterns of behavior, interests, or activities, manifested by at least two of the following:

1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., echolalia, lining up toys, repetitive phrases).
2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal/nonverbal behavior (e.g., extreme distress at small changes, rigid thinking patterns).
3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to unusual objects, excessive circumscribed interests).
4. Hyper- or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., indifference to pain, fascination with lights or textures).

c. Symptoms must be present in the early developmental period, though they may not become fully manifest until social demands exceed limited capacities or may be masked by learned strategies.

d. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

e. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. However, ASD and intellectual disability frequently co-occur; social communication should be below that expected for the general developmental level.

2.2 Severity Levels of ASD

DSM-5 [6] and DSM-5-TR [7] have classified ASD by severity based on the level of support needed in two domains: (i) social communication, and (ii) restricted, repetitive behaviors. Each of the two domains is rated on the following three-level scale: Level 1: Requiring support; Level 2: Requiring substantial support; and Level 3: Requiring very substantial support.

In sum, ASD is best understood as a continuum of neurodevelopmental differences rather than a single condition. The term 'spectrum' has been applied in the autistic condition to reflect the broad variability in the patterns of strengths and needs (or weaknesses) across social, cognitive, sensory, and behavioral dimensions. Chia [19] has identified these patterns in terms of three core experience domains (CEDs): (i) sensory needs, i.e., " [A]utistic sensory profiles can involve hypersensitivity (over-responsiveness), hyposensitivity (under-responsiveness), or sensory-seeking behaviors across any sensory modality (e.g., sound, light, texture, movement)" (p.114) [19]; (ii) communication differences, i.e., " [A]utistic communication styles may include differences in verbal expression (e.g., echolalia, atypical prosody), nonverbal communication (e.g., reduced eye contact, alternative gestures), and/or a preference for written/digital communication" (p. 114) [19]; and (iii) social interaction differences, i.e., " [A]utistic social differences may involve different approaches to friendship, reciprocity, & shared activities, and most of the time being more direct, interest-based, and/or energy-sensitive" (p. 114) [19].

The three CEDs of ASD (i.e., sensory needs, communication differences, and social interaction differences) can be best met through the three-level scale of support, corresponding to the severity and intensity of individual needs. For autistic children with mild differences, universal supports (e.g., inclusive classroom strategies), sensory-friendly environments, and communication flexibility (e.g., picture cards, visual graphic organizers, written options) may suffice [22]. Those with moderate differences can benefit from targeted interventions, e.g., occupational therapy for sensory regulation, speech-language support for pragmatic and expressive communication, and structured social skills programs to facilitate peer interaction. Autistic children with severe differences often require intensive, individualized, and multidisciplinary interventions, e.g., personalized sensory integration plans, augmentative and alternative communication (AAC) systems, and one-on-one/small-group therapeutic social coaching) embedded within specialized education or care settings [22]. Across all three levels, support must be dynamic, strength-based, and adaptive, recognizing that each autistic individual's sensory, communicative, and social profile may fluctuate depending on context, environment, and developmental stage.

The DSM-5 [6] represents a medical diagnostic model designed primarily for clinicians and mental health professionals. Its purpose is to determine whether an individual meets the criteria for a mental disorder. The underlying logic is that deviation from normative behavior or development leads to functional impairment, which then requires clinical intervention. As such, the DSM-5 [6] and/or

DSM-5-TR [7] focuses on defining disorders, controlling symptoms, and establishing classifications. This approach reflects an external observation and functional impairment perspective, emphasizing observable behaviors and their associated dysfunctions.

In contrast, Chia's [19] Core Experience Domains (CEDs) framework adopts an experiential understanding model. It is not concerned with identifying who "has a problem," but rather with understanding how an autistic individual experiences the world, what these experiential differences mean in daily life, and how educational and social systems can better accommodate these differences. The framework assumes that each person perceives, communicates, and socializes differently, leading to unique needs that support systems should address. Therefore, the CED framework is not focused on diagnosis but on understanding and adaptation.

The current DSM framework [6, 7], while highly effective for diagnostic purposes, has several limitations when applied directly to education and social support. Its use of pathologizing terms such as "disorder," "deficit," and "impairment" often encourages educators and support providers to adopt a "fix or correct" mindset. Its primary goal is classification and diagnosis, rather than explaining individual learning styles, sensory differences, or social preferences. Furthermore, it emphasizes observable abnormal behaviors without addressing the subjective experience or motivations behind them, leaving educators with little guidance on how to design effective support strategies. In short, the present DSM framework answers the question, "Does this person meet diagnostic criteria?" but not, "What kind of environment and support does this person need?"

Conversely, the CED framework [19] is particularly suited to guiding education and social support because of its humanistic and experience-based orientation. It views differences not as deficits but as diverse ways of experiencing the world, encouraging educators to ask, "Why does the child respond this way?" rather than, "How can we make the child normal?" By focusing on sensory, communication, and social experiences, it provides insights into the reasons behind behaviors. For example, understanding that a child avoiding noise is not being defiant but experiencing sensory overload. The CED framework [19] emphasizes modifying environments, teaching methods, and social expectations to accommodate individual differences, aligning with the neurodiversity paradigm and fostering respect for individual variations. Its terminology, such as "sensory needs" and "communication differences," is accessible to educators, therapists, and parents alike, bridging the gap between medical and educational perspectives.

2. Establishing a Psychoeducational Diagnostic Profile for ASD

Establishing a psychoeducational diagnostic profile (PeDP) of a child with ASD involves a comprehensive evaluation across multiple developmental domains. Among them, three most critical dimensions identified are: Cognitive, Academic, and Social-Emotional (CASE) aspects [23] (see Figure 1). Each domain offers insight into how an individual with ASD perceives, learns, and interacts with the world, forming the foundation for individualized educational therapy, intervention, and support planning.

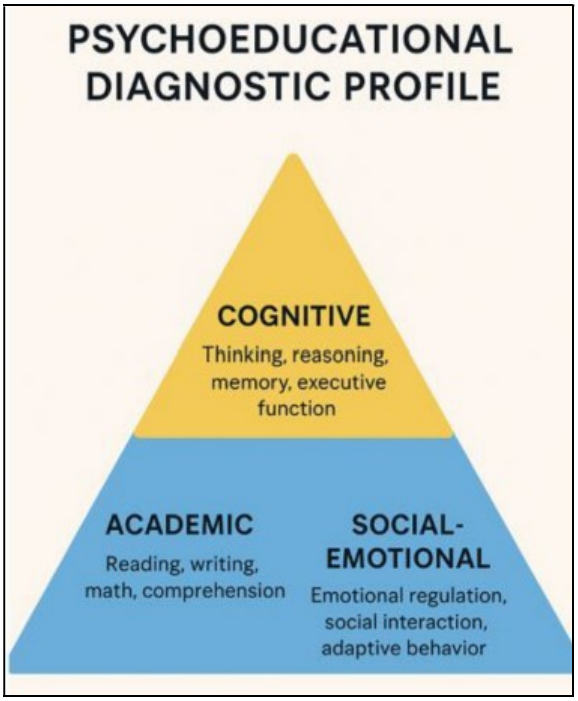

Fig 1: The CASE Aspects [23]

3.1 Cognitive Aspect

The cognitive aspect assesses how the child processes, understands, and uses information. It examines intellectual or cognitive functioning (including executive functioning skills), reasoning, problem-solving, attention, memory, and executive skills. This aspect helps determine how autism affects cognitive style. For example, an uneven development across verbal and nonverbal reasoning or challenges in flexible thinking.

According to Chia [23], the purpose of cognitive profiling is twofold: Firstly, it is to identify cognitive strengths (e.g., visual pattern recognition, rote memory) that can be used for learning. Secondly, it is to pinpoint cognitive weaknesses that may hinder communication, attention, or learning regulation.

The key components in this cognitive domain include the following:

1. Intellectual functioning (IQ profile): This is assessed by psychometric tools, e.g., Wechsler Intelligence Scale for Children-5th Edition (WISC-V) [24] or Stanford-Binet Intelligence Scales-5th Edition (SB-5) [25]. Children with ASD often show spiky profiles, high in visual-spatial reasoning but lower in verbal comprehension or working memory.
2. Processing speed: Many autistic children have slower pace of information processing, affecting classroom responsiveness.
3. Executive functioning: Difficulties with planning, organizing, shifting attention, or inhibition are common among autistic individuals.
4. Theory of Mind and perspective-taking: Atypical development in children with ASD may lead to difficulties understanding others' intentions or emotions.

3.2 Academic Aspect

The academic aspect evaluates the child's functional learning and behavioral skills as well as academic achievement relative to developmental or chronological

expectations. It identifies how cognitive abilities translate into real-world learning outcomes.

The purpose of academic profiling is threefold [23]: Firstly, it is to determine academic placement and support services. Secondly, it is also important to design Individualized Education Plans (IEPs) or Individualized Intervention Plans (IIPs) that align teaching strategies with strengths (e.g., manipulatives, visual aids, structured routines) and accommodate challenges (e.g., verbal comprehension support). Thirdly, it is to distinguish primary learning difficulties from those secondary to autism (e.g., language processing vs. attention regulation).

The key components in the academic domain include the following:

1. Reading and language-based skills: These are assessed through tools, e.g., Woodcock-Johnson Tests of Cognitive Abilities-4th Edition (WJ-4 COG) [26] or Wechsler Individual Achievement Test-3rd Edition (WIAT-III) [27]. Some autistic children exhibit hyperlexia, i.e., advanced word decoding but poor comprehension [28].
2. (2) Mathematics skills: Often variable, a child with ASD may display strengths in calculation but challenges in problem-solving due to weak abstract reasoning or language comprehension.
3. (3) Written expression: It may be affected by fine motor difficulties, executive dysfunction, or limited imagination [29].
4. (4) Learning style and motivation: Some children with ASD show a strong preference for visual learning and structured routines.

3.3 Social-Emotional Aspect

The social-emotional domain encompasses how a child perceives, expresses, and manages emotions, as well as how they form and maintain interpersonal relationships. In children with ASD, this domain is profoundly affected, as difficulties in social cognition and emotional regulation are hallmark characteristics of the condition. These challenges often manifest in limited social reciprocity, difficulty interpreting nonverbal cues, and challenges in understanding or expressing emotions, making social-emotional functioning a central diagnostic feature of autism.

According to Chia [23], social-emotional profiling serves three primary purposes. First, it helps in understanding the emotional needs and coping mechanisms of the child. Second, it enables the identification of specific triggers that may lead to sensory overload or social distress. Third, it provides a foundation for guiding therapeutic interventions, including social skills training, emotional literacy programs, and counseling support. Through this profiling process, practitioners can develop individualized strategies that promote emotional stability and social adaptation.

The social-emotional domain comprises several key components. These include social communication, which involves nonverbal communication, reciprocity, and understanding of social cues; emotional recognition and regulation, referring to the ability to identify one's own and others' emotions and respond appropriately; behavioral regulation, which includes managing rigidity, repetitive behaviors, and anxiety when routines change; adaptive behavior, encompassing daily functioning, social problem-solving, and independence, often assessed using standardized tools (e.g., *Vineland Adaptive Behavior Scales* [35]), and co-occurring emotional difficulties, including anxiety, depression, and social withdrawal, which frequently accompany ASD, and hence, they complicate the emotional development.

Furthermore, social-emotional factors play a critical role in shaping a child's learning, cognitive development, and everyday functioning. Difficulties with emotion regulation, heightened anxiety, or social interaction challenges can impair attention, motivation, and problem-solving skills, thereby restricting academic and cognitive growth. Conversely, well-developed social-emotional competencies (e.g., self-awareness, empathy, and interpersonal effectiveness) enhance learning capacity, collaboration, and adaptive functioning. Systematic profiling of these factors allows educators and clinicians to identify both barriers and strengths, enabling the design of targeted interventions that foster emotional well-being, developmental progress, and successful participation in daily life.

2.4 Integrative Summary: Interplay of the CASE Aspects

Together, these three domains (as shown in Table 1 below) provide a holistic psychoeducational diagnostic profile, showing how the child learns, processes, and interacts, and enabling a personalized educational therapy (EdTx) plan grounded in both strengths and needs.

Table 1: The Interplay of the CASE Aspects [23]

Domain	Focus	Outcome of Assessment	Application in Intervention
Cognitive	Thinking, reasoning, memory, executive function	Identifies intellectual profile and learning style	Tailor instruction methods and pacing
Academic	Reading, writing, math, comprehension	Measures achievement levels and learning gaps	Develop IEP goals and targeted learning support
Social-Emotional	Emotional regulation, social interaction, adaptive behavior	Reveals strengths/challenges in social and emotional domains	Design social-emotional learning and behavior plans

3. Connecting DSM-5 Diagnostic Criteria for ASD with the CASE Aspects

There is a meaningful way to connect DSM-5 diagnostic criteria [6, 7] for Autism Spectrum Disorder (ASD) with the psychoeducational CASE framework [23] (Cognitive, Academic, and Social-Emotional aspects) to assist educational therapists in identifying children with ASD and Customizing intervention plans for them individually, as no two children with ASD are alike in every aspect (see Figure 2).

The DSM-5 describes the clinical features of autism, while the CASE framework interprets how those features functionally affect learning and development [23]. Table 2 below provides a detailed matching and explanation.

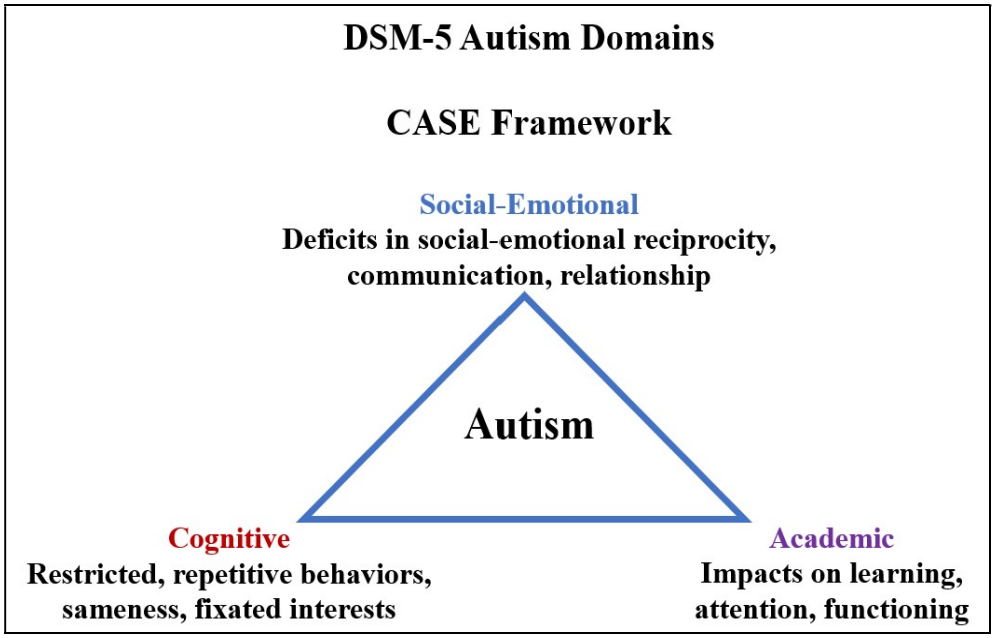

Fig 2: DSM-5 Autism Domains in the CASE Framework [23]

Table 2: Mapping DSM-5 Autism Domains to CASE Framework [23]

DSM-5 Core Criteria	CASE Aspect	Description of Functional Impact
A1. Deficits in social-emotional reciprocity.	Social-Emotional	Difficulty engaging in back-and-forth communication, understanding emotions, or sharing experiences affects social bonding and emotional literacy.
A2. Deficits in nonverbal communicative behaviors.	Social-Emotional / Cognitive	Problems interpreting gestures, facial expressions, and tone indicate challenges in social perception and social cognition (Theory of Mind).
A3. Deficits in developing, maintaining, and understanding relationships.	Social-Emotional	Struggles with adapting to peer dynamics, interpreting social rules, and building friendships reflect deficits in social understanding and empathy.
B1. Stereotyped or repetitive motor movements, use of objects, or speech.	Cognitive / Academic	Indicates rigidity in cognitive flexibility and executive function; may influence classroom behavior, transitions, and problem-solving.
B.2 Indicates rigidity in cognitive flexibility and executive function; may influence classroom behavior, transitions, and problem-solving.	Cognitive / Academic / Social-Emotional	Cognitive rigidity affects adaptability to new learning or social contexts. It may cause anxiety when routines change.
B3. Highly restricted, fixated interests that are abnormal in intensity or focus.	Cognitive / Academic	Can manifest as strong specialized knowledge (academic strength) but limited generalization of skills or attention to a broader curriculum.
B4. Hyper- or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment	Cognitive / Social-Emotional	Sensory dissonance (over/under-sensitivity) impacts attention regulation, emotional control, and classroom participation.
C. Symptoms present in early developmental period	All CASE domains	Early atypical development affects cognitive processing, academic readiness, and social-emotional learning.
D. Symptoms cause significant impairment in functioning	All CASE domains	Impairment manifests in learning, communication, and emotional well-being, requiring educational and therapeutic support.
E. Not better explained by intellectual disability or global developmental delay	Cognitive	Ensures cognitive assessment distinguishes autism from general intellectual limitations.

3.4 Integrated Interpretation by CASE Domains

In the follow-up to the earlier notes of Chia [23] on the CASE framework, the authors of this paper have extended their explanation to illustrate the DSM-5 link to each of the three CASE domains with its respective interpretation as mentioned in Table 3 below:

Table 3: DSM-5 Link to the CASE Aspects [23]

Domain	DSM-5 Link	Interpretation
(1) Cognitive Aspect	Restricted/repetitive behaviors, insistence on sameness, fixated interests, sensory reactivity.	a. Reflects differences in executive functioning, flexibility, attention, and information processing. b. Autistic cognition often shows a 'spiky profile,' i.e., high performance in certain areas (e.g., visual reasoning, memory) and lower in abstract or social reasoning.
(2) Academic Aspect	Manifestations of cognitive rigidity, communication deficits, and sensory behaviors that influence learning outcomes.	a. Impacts literacy, numeracy, and comprehension due to language processing and attention regulation challenges. b. Some children may display hyperlexia (advanced decoding but weak comprehension) or narrow learning focus due to fixated interests. c. Structured routines, visual supports, and individualized learning plans are essential.
(3) Social-	Deficits in social-emotional	a. Central to autism's core features.

Emotional Aspect	reciprocity, communication, relationship understanding, and emotional regulation.	b. Difficulty with emotion recognition, social perspective-taking, anxiety regulation, and adaptive behavior. c. Requires support through social-emotional learning (SEL) and behavioral-emotional regulation programs

Next, Table 4 below shows a visual summary of DSM-5/CASE alignment.

Table 4: DSM-5/CASE Alignment

DSM-5 Core Domain	Corresponding CASE Aspect	Examples of Impact in Education
Social communication deficits	Social-Emotional	Difficulty making friends, interpreting emotions, or participating in group learning.
Restricted, repetitive behaviors	Cognitive / Academic	Rigid thinking, intense focus on specific topics, limited flexibility in problem-solving.
Sensory sensitivities	Cognitive / Social-Emotional	Over-stimulation in class, anxiety, avoidance behaviors.
Early developmental onset	All	Delayed speech, uneven learning progression, emotional immaturity.

By linking DSM-5 diagnostic criteria to the Cognitive–Academic–Social-Emotional (CASE) framework, educators and educational therapists can:

- Translate clinical features into functional educational insights.
- Build a comprehensive psychoeducational profile that informs individualized therapy and teaching.
- Recognize that autism is not merely a behavioral disorder, but a neurodevelopmental variation that shapes thinking, learning, and emotional engagement.

4. Hierarchy of Abilities & Skills to be Assessed for Children with ASD

The Hierarchy of Abilities and Skills (HAS) model (see Figure 3 below), first introduced up by Chia [30], provides a structured, multi-layered framework to assess ASD from biological foundation to higher-order cognition. There are five blocks or levels of abilities and skills: Innate abilities, sensory perceptual-motor processing and coordination abilities and skills, adaptive behavioral abilities and skills, social-emotional abilities and skills, and cognitive abilities and skills (see Table 4 for more details). The HAS model ensures that evaluation is not limited to surface behaviors (e.g., social symptoms) but extends to the underlying sensory, adaptive, emotional, and cognitive processes, allowing for a comprehensive psychoeducational profile and targeted educational therapy intervention.

The HAS model [30] can be applied to assess a child for ASD across five levels of abilities and skills (see Table 5 below) that are associated with developmental functioning as follow:

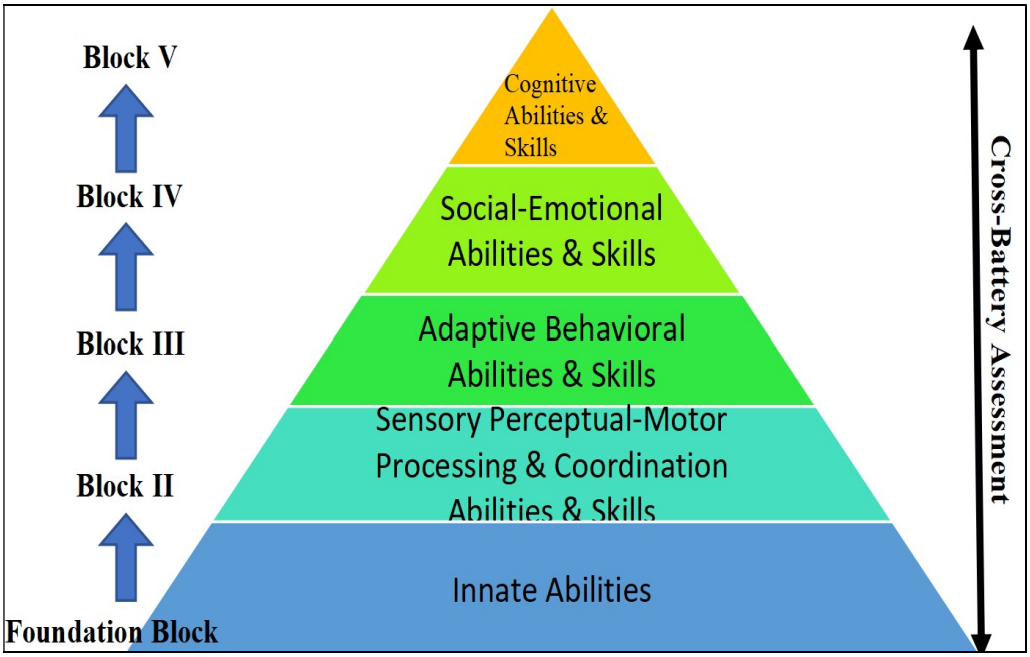

Fig 3: The Hierarchy of Abilities and Skills (HAS) Model [30]

Table 5: The Hierarchy of Abilities & Skills (HAS) Model [30]

Level	What is it?	Examples
Level 1: Innate Abilities (Neurogenetic Foundation)	At this foundational level, assessments focus on the child's biological and neurogenetic base, including intellectual potential, neurological functioning, and genetic markers. Identifying possible chromosomal or neurogenetic anomalies (e.g., Fragile X, 16p11.2 deletions) provides a baseline for understanding the child's cognitive potential and developmental predispositions that may contribute to ASD symptoms.	IQ tests (e.g., WISC-V [24], SB-5 [25]), genetic testing, and neuroimaging.
Level 2: Sensory Behavioral Abilities &	This level examines how the child receives, modulates, and responds to sensory input (e.g., hypersensitivity to sound, tactile defensiveness, sensory-seeking	Sensory Profile (SP) [31, 32], and Sensory Processing Measure (SPM)

Skills	behavior). Dysregulation in sensory processing can manifest as avoidance, distress, or repetitive behaviors: the key behavioral indicators of ASD that interfere with learning and social adaptation.	[33].
Level 3: Adaptive Behavioral Abilities & Skills	At this level, the focus shifts to daily living skills, communication, and socialization. Assessments evaluate how effectively the child applies learned skills to meet environmental demands. Deficits at this level (e.g., poor self-care, limited communication independence, or restricted social adaptability) signal core impairments in ASD affecting personal and social functioning.	Adaptive Behaviour Assessment System-3rd Edition (ABAS-3) [34], and Vineland Adaptive Behavior Scales-3rd Edition (VABS-3) [35].
Level 4: Socio-Emotional Behavioral Abilities & Skills	This level captures social communication, emotional reciprocity, and behavioral patterns. Instruments like GARS-3 and ADOS-2 help identify autism-specific traits, such as limited eye contact, difficulty in social-emotional reciprocity, and restricted, repetitive interests. This level is central to confirming ASD diagnosis according to DSM-5 criteria.	Gilliam Autism Rating Scale-3rd Edition (GARS-3) [36], and Autism Diagnostic Observation Schedule-2nd Edition (ADOS-2) [37].
Level 5: Cognitive Behavioral Abilities & Skills	At the highest level, assessments focus on executive functioning, attention control, planning, processing, and problem-solving. ASD often involves cognitive rigidity, reduced mental flexibility, and difficulty with abstract reasoning. Understanding these cognitive patterns supports intervention planning, especially for individualized education and therapeutic programming.	Cognitive Assessment System-2nd Edition (CAS-2) [38], Developmental NEuroPSYchological Assessment-2nd Edition (NEPSY-II) [39].

5. What Harms may cause to Untreated Children with ASD

Untreated cases of children with ASD can lead to a range of cognitive, academic, social-emotional, and functional harms that affect both the individual and their environment (family, school, community). The severity and type of harm depend on the individual's neurodevelopmental profile, environmental support, and co-occurring conditions.

The authors of this paper have identified five categories of harms. First category concerns cognitive and neurodevelopmental harms. Without appropriate intervention, autistic children with neurodevelopmental challenges may face significant cognitive and neurodevelopmental harms. These can include delayed or uneven cognitive growth, particularly in executive functioning domains such as planning, attention, working memory, and cognitive flexibility, leading to widening developmental gaps over time. Adaptive functioning may also remain underdeveloped, resulting in persistent difficulties with everyday problem-solving, organization, and independent living skills. Furthermore, increased cognitive rigidity may intensify, causing greater resistance to change and difficulty with transitions. The lack of timely support also heightens the risk of co-morbid conditions such as ADHD, anxiety, or intellectual disability, which may go unrecognized and untreated, further compounding the individual's challenges.

The second category which is often the main concern of parents and teachers centers on academic and learning harms. Individuals with neurodevelopmental differences are at heightened risk of academic and learning harms when appropriate support is lacking. Difficulties in social communication and sensory regulation can significantly hinder classroom engagement and academic performance, often resulting in underachievement. Children with associated language delays or hyperlexia may also struggle with literacy and numeracy acquisition, particularly when instruction is not tailored to their specific learning profiles. In some cases, behaviors linked to their condition may be misinterpreted as misconduct, leading to punitive responses such as school exclusion or even dropout, rather than the provision of necessary support. Furthermore, without a formal diagnosis, students are frequently denied access to appropriate educational pathways, including Individualized Education Plans (IEPs) and differentiated instruction, thereby limiting their opportunity to succeed within the mainstream educational system.

Next, the third category covers social-emotional and behavioral harms. Without timely and appropriate intervention, individuals with neurodevelopmental challenges are vulnerable to significant social-emotional and behavioral harms. Chronic social isolation is common, as difficulties in social reciprocity can lead to peer alienation, exclusion, or even bullying. This isolation, compounded by frequent emotional dysregulation due to sensory overload or communication breakdowns, often manifests in heightened anxiety, meltdowns, or persistent stress. Over time, repeated social failures and experiences of stigma can erode self-esteem and contribute to identity confusion, fostering feelings of shame or inadequacy. These cumulative stressors substantially increase the risk of developing serious mental health disorders, including anxiety, major depression, and, in severe cases, suicidal ideation during adolescence or adulthood, underscoring the critical importance of early and sustained support.

The fourth category pertains to functional and life-outcome harms. In the absence of early and targeted interventions, individuals with neurodevelopmental conditions face long-term functional and life-outcome harms that significantly impact their quality of life. Challenges in employment and independent living are common, as deficits in social communication, executive functioning, and daily living skills can hinder job retention and autonomy. These difficulties often place strain on family relationships, with misunderstood behaviors contributing to caregiver burnout, frustration, and conflict [40]. Over time, persistent social exclusion, limited independence, and unmet mental health needs collectively reduce overall well-being. Moreover, autistic behavioral patterns are known to evolve throughout the lifespan, yet these changes often go unnoticed or unsupported, with outcomes heavily influenced by individual and environmental factors [18]. Additionally, difficulties in expressing physical discomfort or health concerns may lead to healthcare neglect, leaving medical issues undiagnosed or untreated. This highlights the urgent need for a life-course approach to care that prioritizes communication support, adaptive skill development, and inclusive systems across all domains of life.

The fifth category touches on systemic and societal harms. Systemic and societal harms arising from unaddressed ASD are far-reaching and deeply impactful. A pervasive lack of understanding and visibility surrounding ASD often leads to stigmatization and discrimination, with individuals mis-characterized as lazy, disobedient, or socially deviant,

contributing to their social exclusion and marginalization. Economically, families bear a substantial burden, often incurring high costs due to reduced work opportunities, limited access to early intervention services, and reliance on crisis-based care rather than preventative support. Perhaps most significantly, the societal failure to recognize and support the unique strengths of individuals with ASD results in considerable missed potential. Many individuals on the spectrum possess exceptional cognitive or creative talents, sometimes referred to as autistic savant abilities [41, 42], yet these capacities often remain underdeveloped or un-utilized in the absence of appropriate educational and vocational supports. This not only limits individual fulfillment but also represents a broader loss to society in terms of innovation, diversity, and inclusion.

In summary, untreated cases of ASD does not only affect symptom severity (see Figure 4 for a summary of harms of untreated ASD cases. In fact, it also shapes an individual's whole developmental trajectory. Early identification and comprehensive intervention (educational therapy, behavioral support, family training, and inclusive schooling) are crucial for improving adaptive functioning, emotional health, and lifelong autonomy.

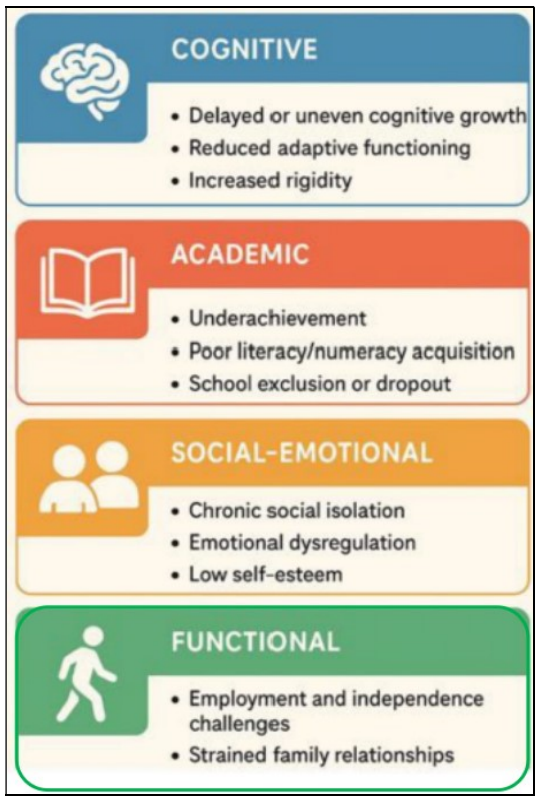

Fig 4: Harms of Untreated ASD Cases

6. Conclusion

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition, which manifests uniquely in each and every individual, shaped by cognitive, academic, and social-emotional (CASE) dimensions. This paper has examined how ASD is defined through diagnostic frameworks like the DSM-5-TR and the ICD-11, and how these clinical criteria translate into functional impacts on learning and development when viewed through the CASE framework. The integration of the DSM-5 criteria with psychoeducational assessments, such as the CASE and HAS models, offers a more holistic understanding of autistic children, ensuring that evaluations move beyond surface behaviors to include sensory, adaptive, and cognitive underpinnings.

Recognizing ASD through a structured psychoeducational lens is not merely about labeling; it is about identifying how a child thinks, learns, feels, and interacts with their world. This understanding is essential for crafting individualized educational therapy (EdTx) plans that align with both strengths and support needs. Moreover, an early and accurate assessment is not only beneficial; in fact, it is also critical. As outlined, untreated ASD can result in significant cognitive, emotional, academic, and societal harms, including school failure, mental health difficulties, social exclusion, and diminished life outcomes.

Therefore, a comprehensive, interdisciplinary approach, grounded in clinical accuracy and educational insight, is necessary for improving the lives of children with ASD. Bridging diagnostic criteria with educational practice enables early intervention, reduces harm, and opens pathways for these children to thrive in learning, relationships, and life.

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