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Autism Spectrum Disorder in an 11-Year-Old Female: A Case Report Highlighting Clinical Features and Intervention Challenges

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ABSTRACT

Background: Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterised by deficits in social communication, restricted interests, repetitive behaviours, and varying levels of intellectual and language impairment. Early, comprehensive assessment and tailored intervention are critical for improving functional outcomes and quality of life. Objective: This case study aimed to conduct a detailed multidimensional assessment of an 11-year-old female with ASD requiring substantial support, identify her cognitive, behavioural, and adaptive functioning profile, and design an evidence-based, individualised management plan to enhance developmental outcomes. Methods: A multi-method approach included behavioural observations, semi-structured interviews, the Portage Guide to Early Education, Childhood Autism Rating Scale, Conners' Rating Scale-Revised, Raven's Coloured Progressive Matrices, and Slosson Intelligence Test. Interventions such as an Individualised Education Plan (IEP), Applied Behavior Analysis (ABA), speech and language therapy, and social skills training were implemented. Results: Assessments revealed significant deficits in social reciprocity, language, and adaptive functioning, with average non-verbal intelligence but below-average verbal cognitive ability. Intervention outcomes indicated modest improvements in communication, behavioural regulation, and adaptive skills, particularly when therapy aligned with the child's interests. Conclusion: Comprehensive, individualised interventions, family involvement, and structured support significantly improve outcomes in ASD, though persistent challenges necessitate ongoing, adaptive care.

Keywords
Autism Spectrum Disorder, cognitive assessment, behavioural intervention, social communication, intellectual impairment, case study.

INTRODUCTION

AAK, a female child aged 11 years and 11 months at the time of assessment on 19 February 2024, was referred for a comprehensive evaluation to address persisting developmental, behavioural, and academic difficulties. She had previously been diagnosed with Autism Spectrum Disorder (ASD) at the age of five, but no updated assessments had been conducted since that time, creating a clinical imperative to re-evaluate her current symptom profile and functional status. The primary goals of this assessment were to clarify the nature and severity of her autistic features, determine the presence of any comorbid conditions, particularly attention-deficit/hyperactivity disorder (ADHD), evaluate her cognitive and adaptive functioning, and inform the development of an evidence-based, individualised intervention plan. The referral was initiated to support her special educational placement and to facilitate structured interventions targeting her communication, socialisation, behavioural regulation, and adaptive skill deficits.

AAK was born at term following an uneventful pregnancy and delivery, and her perinatal history was unremarkable. Early developmental history, however, revealed clear delays across multiple domains. Social smile was slightly delayed, achieved between three and four months of age, while gross motor milestones such as sitting, crawling, and walking were significantly delayed, occurring around nine to ten months, ten to twelve months, and twenty to twenty-four months respectively. Language milestones were also notably delayed, with first words emerging between twenty and twenty-four months. These developmental lags were consistent with early neurodevelopmental concerns and contributed to her eventual diagnosis of ASD. Her home environment was reported as supportive and nurturing, with both parents actively engaged in her care, although maternal anxiety was noted as a potential factor influencing her emotional regulation. AAK is the second-born of two siblings and shares a positive relationship with her older sister, who attends mainstream schooling and performs well academically.

Behaviourally, AAK's profile has remained complex and challenging. Her mother and teachers reported persistent repetitive behaviours, such as rocking and humming, and intense fixations on specific interests, including particular cartoon series and specific objects like a black pencil and a red chair. Insistence on sameness was a prominent feature, illustrated by her rigid dietary preferences—consuming the same food daily for years—and distress when routines were disrupted. Social interaction remained limited; she struggled to initiate and sustain conversations, often used repetitive or contextually inappropriate language, and showed fleeting eye contact. Her vocabulary remained significantly restricted, and echolalia was occasionally observed. AAK's attention span was short, and her engagement was highly contingent upon her interest in the activity. She frequently demonstrated poor on-seat behaviour, distractibility, and episodes of intense emotional dysregulation, particularly when frustrated or confronted with non-preferred tasks.

Concerns about ADHD were raised due to her hyperactivity, distractibility, and organisational difficulties. However, comprehensive assessment—including behavioural observations, clinical interviews, and Conners' Rating Scale reports from two teachers—yielded inconsistent findings. While Teacher A reported markedly atypical scores across most domains, indicating a high risk of ADHD, Teacher B's ratings were less severe, and inattention-related items were rated as age-appropriate. The absence of corroborating data from home and the contextual dependence of her attentional difficulties—largely emerging in low-interest situations—suggested that these symptoms were better explained within the framework of ASD rather than a separate ADHD diagnosis. This diagnostic reasoning was supported by the fact that restricted interests and attentional challenges are integral to ASD presentation and may mimic ADHD symptoms in some contexts (1).

Cognitive assessment presented a complex picture. On Raven's Coloured Progressive Matrices, AAK achieved a raw score placing her at the 75th percentile, suggesting average non-verbal fluid intelligence relative to her age peers. However, her performance on the Slosson Intelligence Test, a measure of verbal crystallised intelligence, was significantly below age expectations, corresponding to a mental age of approximately 3.8 years. This stark discrepancy between non-verbal and verbal domains is consistent with the uneven cognitive profiles frequently observed in individuals with ASD, particularly those with language impairments (2). It also underscores the necessity of interpreting intellectual functioning using a multi-method, domain-specific approach rather than relying on a single measure. The results collectively indicated preserved non-verbal reasoning abilities but profound deficits in language-mediated cognitive processing, thereby justifying the diagnostic specifier of accompanying language impairment.

Developmental assessment using the Portage Guide to Early Education (PGEE), although limited by its ceiling of 72 months and originally designed for younger children, highlighted significant lags in socialisation and language functioning, with current functioning ages in these domains falling over 80 months below her chronological age. These findings were consistent with behavioural observations and communication assessments, although they must be interpreted cautiously due to the tool's limitations when applied beyond its normative age range. The Childhood Autism Rating Scale (CARS) yielded a raw score of 35, indicative of mild to moderate autism, but the substantial functional impairments documented across communication, socialisation, adaptive functioning, and behavioural regulation domains supported a clinical judgment of ASD requiring substantial support (Level 2) under DSM-5-TR criteria (3).

Overall, AAK's presentation reflects the multifaceted and heterogeneous nature of ASD, characterised by significant social communication deficits, restricted and repetitive behaviours, sensory sensitivities, and pronounced difficulties with behavioural and emotional regulation. While her non-verbal cognitive abilities are relatively intact, her profound verbal impairments, adaptive delays, and persistent functional challenges justify the inclusion of intellectual and language impairment specifiers. Comorbid ADHD remains a diagnostic consideration but is not confirmed based on current evidence. The integration of standardised assessments, multi-informant reports, and clinical judgment provides a comprehensive understanding of AAK's strengths and needs, forming the foundation for targeted interventions. These interventions must leverage her preserved cognitive abilities and strong interests while systematically addressing deficits in communication, social interaction, self-regulation, and adaptive functioning through evidence-based therapeutic, educational, and behavioural strategies (4).

ASSESSMENT PLAN

A comprehensive, multi-method assessment plan was designed to obtain a holistic understanding of AAK's functioning across developmental, cognitive, behavioural, and adaptive domains. The assessment aimed to update her diagnostic formulation, clarify the severity of Autism Spectrum Disorder (ASD), explore potential comorbidities such as Attention-Deficit/Hyperactivity Disorder (ADHD), and guide the development of a targeted intervention plan. The selection of assessment tools was informed by their psychometric validity, clinical relevance, and applicability to AAK's presenting concerns, developmental history, and age.

The evaluation began with detailed clinical interviews involving AAK's mother and two of her teachers to obtain comprehensive information on her developmental trajectory, behavioural presentation, and functional challenges across settings. A semi-structured interview was conducted directly with AAK to assess her language use, social reciprocity, self-awareness, and perspective-taking abilities. This qualitative data was complemented by behavioural observations carried out during testing sessions and naturalistic settings, focusing on repetitive behaviours, sensory sensitivities, attention regulation, social engagement, and emotional responses.

To assess developmental progress and adaptive skills, the Portage Guide to Early Education (PGEE) was administered. Although the tool is designed for children up to six years of age, its use provided insight into residual developmental delays, particularly in language and socialisation domains. To quantify autism symptomatology and current severity, the Childhood Autism Rating Scale (CARS) was used, allowing for standardised comparison against normative profiles and aiding in differential diagnosis.

Given concerns about attentional and behavioural regulation, the Conners' Rating Scale–Revised (CRS-R) was administered to two teachers to capture cross-setting behavioural patterns related to attention, hyperactivity, oppositionality, anxiety, and emotional lability. This multi-informant approach was intended to enhance diagnostic accuracy by reducing single-rater bias. To assess cognitive functioning comprehensively, two complementary tools were employed: Raven's Coloured Progressive Matrices (CPM) to measure non-verbal reasoning and fluid intelligence, and the Slosson Intelligence Test (SIT) to evaluate verbal cognitive abilities and crystallised intelligence. This dual-assessment approach was chosen to capture the uneven cognitive profile frequently observed in ASD, where verbal and non-verbal domains often diverge significantly (1).

Throughout the assessment process, ethical considerations were prioritised, including obtaining informed parental consent and child assent, maintaining confidentiality, and adapting assessment procedures to accommodate AAK's sensory sensitivities and attentional limitations. Each test session was structured to minimise fatigue and distraction, with frequent breaks and the use of visual supports where appropriate. Together, these strategies ensured the collection of reliable, ecologically valid data to inform diagnostic refinement and intervention planning.

BEHAVIOURAL OBSERVATIONS

Behavioural observations were conducted in both structured and semi-structured contexts throughout the assessment process to gain qualitative insights into AAK's functioning beyond standardised test results. These observations provided critical context for interpreting quantitative findings and were consistent with her known profile of Autism Spectrum Disorder (ASD) requiring substantial support.

AAK's engagement during sessions was markedly inconsistent and closely linked to task interest. When presented with activities aligned with her preferences—such as drawing or discussing familiar cartoons—she exhibited brief periods of focused attention, positive affect, and goal-directed

behaviour. However, during less preferred tasks, her attention rapidly deteriorated. She frequently disengaged from the task at hand, displayed significant distractibility, and required repeated prompts to reorient. These attentional lapses were often accompanied by repetitive motor behaviours, including rhythmic rocking and oscillatory movements while seated, as well as repetitive vocalisations such as humming or echolalia. These stereotyped behaviours appeared to serve a self-regulatory function, increasing in frequency during periods of stress or low engagement.

Social interaction during observations was limited and characterised by deficits typical of ASD. AAK's eye contact was fleeting and poorly modulated, and she rarely initiated communication. When prompted, her responses were often minimal, contextually inappropriate, or consisted of repetitive words or phrases, such as repeatedly saying "good" regardless of question content. Attempts to engage her in reciprocal dialogue were frequently unsuccessful, as she tended to steer conversations toward highly circumscribed interests, such as specific cartoon series, and struggled to expand beyond these topics. Nevertheless, her behaviour suggested a desire for connection, particularly with familiar adults, although she remained largely detached from peers and exhibited limited interest in social play or collaborative activities.

Adaptive behaviours were similarly constrained. AAK demonstrated significant insistence on sameness and resistance to change. Disruptions to expected routines—such as modifications to task structure or unavailable preferred materials—often triggered heightened distress, characterised by vocal protests, tantrums, or physical agitation. For example, the unavailability of a specific black pencil resulted in refusal to engage with tasks, and transitions between activities frequently elicited anxiety and oppositional behaviour. Sensory sensitivities were also observed, with AAK showing strong preferences for specific textures and resistance to unfamiliar sensory experiences, consistent with parental and teacher reports of restricted dietary variety and sensitivity to changes in her environment.

Despite these challenges, AAK demonstrated a clear capacity for learning when interventions were structured around her interests and delivered with high levels of predictability and visual support. During tasks that incorporated visual aids, step-by-step instructions, and reinforcement strategies, her compliance and engagement improved significantly. Her behaviour also suggested an emerging awareness of social expectations, as she occasionally attempted to imitate modelled behaviours after multiple demonstrations, although these attempts were inconsistent and often required substantial prompting.

Overall, behavioural observations confirmed pervasive impairments across multiple domains, including social communication, behavioural flexibility, and emotional regulation. They also highlighted the functional impact of restricted interests and sensory sensitivities on her daily functioning. These findings were consistent with the diagnostic criteria for ASD and provided essential guidance for tailoring interventions to her unique cognitive and behavioural profile. Interventions that prioritise structured environments, visual supports, and interest-based learning are likely to yield the most significant gains in AAK's adaptive functioning and social participation (2).

RESULTS

The comprehensive assessment of AAK combined standardised testing, behavioural observations, clinical interviews, and multi-informant rating scales to form a multidimensional profile of her cognitive, behavioural, social, and developmental functioning. The results provide a nuanced understanding of her strengths and weaknesses across key domains relevant to Autism Spectrum Disorder (ASD) and associated conditions.

Autism symptomatology: The Childhood Autism Rating Scale (CARS) yielded a total raw score of 35, which falls within the mild to moderate autism range. This indicates that AAK demonstrates significant behavioural features characteristic of ASD, including deficits in social interaction, difficulties with imitation, limited emotional range, and atypical responses to environmental stimuli. Specific behavioural domains such as adaptation to change, verbal and non-verbal communication, and social reciprocity were notably impaired, while visual response remained largely age-appropriate. Despite the CARS indicating a mild-to-moderate presentation, clinical judgment and functional assessment supported a classification of ASD requiring substantial support (Level 2) due to the pervasive impact on her adaptive, social, and communicative functioning.

Developmental functioning: The Portage Guide to Early Education (PGEE), though limited by its upper age threshold, highlighted significant developmental delays in language and socialisation domains, with current functioning levels lagging behind her chronological age by more than 80 months in both areas. In contrast, self-help, cognitive, and motor domains were at or near the expected levels for the test ceiling (72 months), indicating relative strengths in basic self-care and motor abilities. The marked disparity between language/social functioning and other domains underscores the extent of her communication and social interaction deficits and their significant impact on her adaptive profile.

Cognitive functioning: AAK's cognitive profile was uneven, reflecting the heterogeneity commonly observed in ASD. On Raven's Coloured Progressive Matrices (CPM), a non-verbal measure of fluid intelligence, she achieved a raw score of 32, corresponding to the 75th percentile and indicating average intellectual functioning. This suggests preserved abstract reasoning and problem-solving abilities when tasks are presented in a non-verbal format and do not rely heavily on language. However, her performance on the Slosson Intelligence Test (SIT), which assesses verbal crystallised intelligence, was significantly below age expectations, with a mental age equivalent of approximately 3.8 years and a total standard score below 44. This profound discrepancy indicates a marked impairment in verbal reasoning, language-mediated problem solving, and knowledge acquisition, justifying the diagnostic specifier of accompanying language impairment.

Table 1. Developmental Milestones Achievement

Milestone	Typical Age	Age Achieved	Status
Cry after birth	Immediately	Immediately	Achieved
Eye contact	6–8 weeks	7–9 weeks	Achieved
Social smile	2–3 months	3–4 months	Slightly delayed
Neck holding	3–4 months	3–4 months	Achieved
Sitting	6–7 months	9–10 months	Delayed
Crawling	7–8 months	10–12 months	Delayed
Walking	11–17 months	20–24 months	Delayed
First word	12–18 months	20–24 months	Delayed

Attention, behavioural regulation, and emotional functioning: Results from the Conners' Rating Scale-Revised (CRS-R) highlighted significant behavioural difficulties, although findings varied between informants. Teacher A reported markedly atypical scores across all domains, including oppositional behaviour, hyperactivity, anxiety, social problems, and emotional dysregulation. The ADHD Index score suggested a severe risk of attention-deficit/hyperactivity disorder, and the Conners' Global Index confirmed pervasive behavioural challenges. Teacher B's ratings were less

severe, with average scores in cognitive inattention and DSM-IV inattention domains, although hyperactivity, impulsivity, anxiety, and emotional lability were still rated as markedly atypical. This discrepancy suggests a strong situational influence on her attentional and behavioural regulation difficulties. Clinical interpretation, supported by observational and interview data, concluded that inattention and hyperactivity were more likely attributable to restricted interests and limited attentional scope associated with ASD rather than a separate ADHD diagnosis.

Table 2. Portage Guide to Early Education (PGEE) Summary

Domain	Current Functioning Age (Months)	Discrepancy from Chronological Age (143 months)	Interpretation
Socialization	62.2	-80.8	Below average
Self-help	72	-71	Age-appropriate up to 72 months
Cognitive Functioning	72	-71	Age-appropriate up to 72 months
Motor Functioning	72	-71	Age-appropriate up to 72 months
Language Functioning	57.8	-85.2	Below average

Table 3. Childhood Autism Rating Scale (CARS) Scores

Domain	Raw Score	Behaviour Description
Relating to people	2.5	Mildly–moderately abnormal
Imitation	3	Moderately abnormal
Emotional response	3	Moderately abnormal
Body use	2	Mildly abnormal
Object use	2	Mildly abnormal
Adaptation to change	3.5	Moderately abnormal
Visual response	1	Normal
Listening response	2.5	Mildly–moderately abnormal
Taste, smell, touch	2.5	Mildly–moderately abnormal
Fear or nervousness	2.5	Mildly–moderately abnormal
Verbal communication	2.5	Mildly–moderately abnormal
Non-verbal communication	2	Mildly abnormal
Activity level	2	Mildly abnormal
Intellectual response	1.5	Mildly abnormal
General impression	2.5	Mildly–moderately abnormal

Total Score: 35 → Mild–Moderate Autism

Table 4. Conners' Rating Scale – Teacher A

Subscale	Raw Score	T-Score	Interpretation
Oppositional	5	73	Markedly atypical
Cognitive problems/Inattention	14	69	Moderately atypical
Hyperactivity	11	90	Markedly atypical
Anxious-Shy	14	90	Markedly atypical
Perfectionism	16	85	Markedly atypical
Social Problems	17	76	Markedly atypical
ADHD Index	27	90	Markedly atypical
CGI: Restless-Impulsive	13	90	Markedly atypical
CGI: Emotional Lability	10	90	Markedly atypical
DSM-IV: Inattentive	18	80	Markedly atypical
DSM-IV: Hyperactive-Impulsive	17	90	Markedly atypical
DSM-IV: Total	35	90	Markedly atypical

Table 5. Raven's Coloured Progressive Matrices (CPM) Results

Measure	Value	Interpretation
Total Score	32	75th percentile
Grade	III-	Intellectually average
Discrepancy	Slight	Minor variability noted

Table 6. Slosson Intelligence Test (SIT) Results

Measure	Value	Interpretation
Chronological Age	11 years 11 months	-
Raw Score	29	Low
Total Standard Score	<44	Poor verbal functioning
Mean Age Equivalent	3.8 years	Significantly below age
Percentile Rank	<1	Defective intellectual functioning
Stanine Category	<1	Severe deficit

Adaptive and behavioural functioning: Observational data confirmed that AAK's functioning is significantly influenced by her restricted interests, sensory sensitivities, and need for routine. She demonstrated rigid behavioural patterns, repetitive motor movements, and an intense fixation on specific objects and routines. Changes in routine or the removal of preferred items consistently triggered distress, tantrums, or avoidance behaviours. Social interaction remained limited, characterised by minimal initiation, poor eye contact, and context-inappropriate communication.

Her vocabulary was restricted, and she frequently used repetitive or echolalic phrases. Despite these challenges, AAK demonstrated clear potential to learn and engage when interventions aligned with her interests and were delivered in a structured, visually supported context.

Table 7. Summary of Intervention Outcomes

Domain	Pre-Intervention	Post-Intervention	Observed Change
Social communication	Minimal initiation, echolalic speech	Initiates brief exchanges with support	Moderate improvement
Behavioural regulation	Frequent tantrums, severe rigidity	Fewer tantrums, improved transition handling	Gradual improvement
Attention and focus	<1 minute sustained attention	3–5 minutes with visual aids	Noticeable progress
Adaptive skills	Dependent in daily tasks	Improved independence in self-care routines	Incremental progress
Academic engagement	Avoidance, poor task completion	Better engagement with structured tasks	Limited but positive

Table 8. Short-Term and Long-Term Goals

Domain	Short-Term Goals (3–6 months)	Long-Term Goals (1–2 years)
Social skills	Initiate conversation for 5 min	Build and maintain friendships
Attention	Complete homework with 2–3 prompts	Meet/exceed grade-level academic expectations
Emotional regulation	Use 2 coping strategies during stress	Independently regulate behaviour in 80% of situations
Organisation	Bring required materials 90% of the time	Manage a weekly planner independently
Self-care	Follow morning routine 4/5 days	Perform daily living tasks with minimal supervision

In summary, the results indicate that AAK meets diagnostic criteria for Autism Spectrum Disorder, requiring substantial support, with significant impairments in language, socialisation, and adaptive functioning. She exhibits average non-verbal reasoning skills but profound deficits in verbal intelligence and language-mediated tasks. Inattention, hyperactivity, and emotional dysregulation are prominent but are best conceptualised within the context of ASD rather than a comorbid ADHD diagnosis. These findings provide a strong evidence base for the development of a comprehensive, individualised intervention plan focused on communication, social skills, behavioural regulation, and adaptive functioning.

CASE FORMULATION

AAK's clinical presentation is best conceptualised within the framework of Autism Spectrum Disorder (ASD), requiring substantial support, with accompanying intellectual and language impairment. This formulation synthesises developmental history, behavioural observations, standardised test results, and contextual factors to explain the mechanisms underlying her current difficulties and inform targeted intervention.

From a developmental perspective, AAK's early delays in social smile, motor milestones, and expressive language were among the earliest indicators of atypical neurodevelopment. These delays persisted into later childhood and now manifest as profound deficits in social communication, restricted interests, and repetitive behaviours. Her language impairments are evident across both expressive and receptive domains, with significantly limited vocabulary, echolalic speech, and difficulty understanding abstract or complex language. These deficits contribute to significant challenges in reciprocal social interaction, often resulting in social withdrawal, reduced peer relationships, and difficulty forming meaningful connections.

Cognitive assessment revealed an uneven intellectual profile, with preserved non-verbal reasoning abilities alongside severely impaired verbal intelligence. This dissociation suggests that AAK's cognitive strengths are likely to be masked by her language limitations, affecting her academic performance and capacity for verbal learning. These cognitive disparities also exacerbate difficulties with self-awareness, problem-solving, and adaptive functioning. Her behavioural profile, characterised by repetitive movements, fixations on specific objects or activities, and resistance to change, aligns with the restricted and repetitive behaviour domain of ASD. The severity of these behaviours is functionally significant, often disrupting learning, socialisation, and daily routines.

Inattention, hyperactivity, and emotional dysregulation, though superficially suggestive of ADHD, are more parsimoniously explained by the attentional limitations inherent in ASD. AAK's attentional focus narrows around areas of high interest, and her disengagement from non-preferred tasks reflects the intrinsic motivational and cognitive patterns seen in autistic individuals. Her intense reactions to changes in routine or unmet expectations—manifesting as tantrums, aggression, or shutdowns—are best understood as responses to sensory overload, anxiety, and difficulties with emotional regulation rather than oppositional intent.

Environmental and familial factors further contextualise AAK's presentation. Her home environment is stable and supportive, with parents actively involved in her care. However, maternal anxiety may influence the consistency and effectiveness of behaviour management strategies, potentially reinforcing maladaptive responses. Protective factors, including strong familial support, access to specialised educational services, and early intervention, provide a foundation for continued progress. Conversely, precipitating factors such as transitions, environmental changes, or sensory disruptions often exacerbate her behavioural and emotional challenges.

Applying the "4 Ps" formulation model, predisposing factors include possible genetic susceptibility and early neurodevelopmental differences. Precipitating factors involve environmental changes and heightened social demands that exceed her coping capacity. Perpetuating factors include ongoing sensory sensitivities, rigid behavioural patterns, and attentional difficulties. Protective factors encompass strong family involvement, consistent educational support, and structured interventions targeting her core deficits.

In sum, AAK's case illustrates the complex interplay of neurodevelopmental, cognitive, behavioural, and environmental factors characteristic of ASD. Her preserved non-verbal intelligence and clear desire for social connection are significant strengths that can be leveraged in intervention planning. However, her profound language impairment, behavioural rigidity, sensory sensitivities, and emotional dysregulation necessitate intensive, multidisciplinary support. A targeted, interest-based intervention approach, incorporating speech and language therapy, social communication training, behavioural interventions, and family education, is essential to enhance her functional independence, social participation, and quality of life (1,2).

DIAGNOSIS

Based on the integration of developmental history, behavioural observations, clinical interviews, standardised assessments, and multi-informant reports, AAK meets the diagnostic criteria for Autism Spectrum Disorder (ASD) as outlined in the Diagnostic and Statistical Manual of Mental

Disorders, Fifth Edition, Text Revision (DSM-5-TR) (1). Her presentation is characterised by persistent deficits in social communication and social interaction across multiple contexts, alongside restricted, repetitive patterns of behaviour, interests, or activities. These symptoms have been present since early childhood and cause clinically significant impairment in social, academic, and adaptive functioning.

Primary Diagnosis:

- Autism Spectrum Disorder (F84.0) – requiring substantial support (Level 2)
- Specifiers:
- With accompanying intellectual impairment
- With accompanying language impairment

The diagnostic criteria for ASD are met as follows:

Persistent deficits in social communication and social interaction:
AAK demonstrates profound deficits in reciprocal social interaction, including minimal initiation of communication, limited eye contact, and difficulty sustaining conversations. She exhibits restricted vocabulary, repetitive language use (e.g., echolalia), and an inability to interpret or use non-verbal communication effectively. These deficits extend to challenges in forming and maintaining peer relationships and adapting behaviour to suit social contexts.

Restricted, repetitive patterns of behaviour, interests, or activities:

Repetitive motor behaviours such as rocking, humming, and repetitive use of phrases are frequent. She shows strong insistence on sameness, including rigid routines, a narrow range of preferred foods, and intense distress when routines are altered. Fixated interests, such as particular cartoons, specific objects (e.g., a black pencil), and art-related activities, dominate her engagement and limit her exploration of new experiences.

Symptoms present in early developmental period:

Developmental history confirms early-onset delays, including delayed social smile, speech and language milestones, and gross motor skills. ASD-related symptoms were evident from early childhood and persist across settings.

Clinically significant impairment:

The symptoms significantly interfere with her daily functioning, including academic performance, peer relationships, self-care skills, and emotional regulation. Her restricted behavioural repertoire and communication difficulties limit her independence and adaptive functioning.

Exclusion of alternative explanations:

Although ADHD-like symptoms such as inattention and hyperactivity were observed, they are better explained by ASD-related attentional profiles, restricted interests, and sensory sensitivities. No evidence supports the presence of a primary intellectual disability independent of ASD; rather, cognitive deficits are considered part of the broader ASD phenotype. The inclusion of the intellectual and language impairment specifiers is supported by standardised assessment data. The discrepancy between her average non-verbal reasoning ability (75th percentile on Raven's CPM) and profoundly low verbal cognitive functioning (mental age ~3.8 years on SIT) indicates significant language-mediated intellectual limitations. Similarly, language assessments and observational data confirm marked deficits in expressive and receptive communication. Collectively, these findings justify the Level 2 support classification, reflecting a need for substantial, ongoing intervention across educational, therapeutic, and home environments.

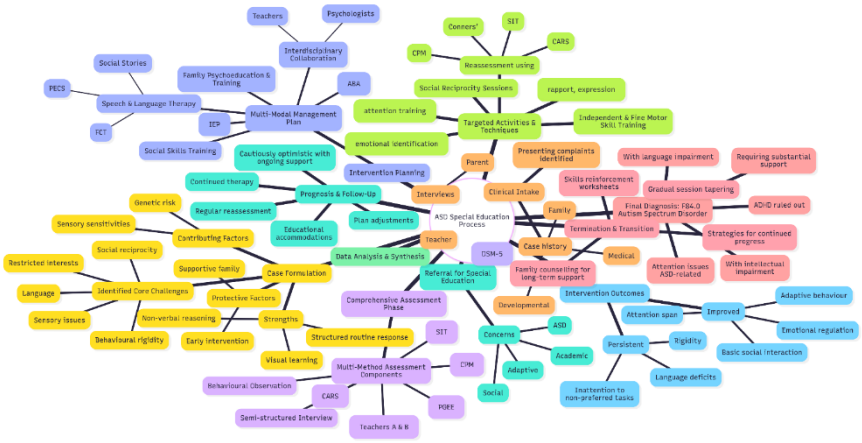

Figure 1 Mind Map Depicting Examination in an ASD Case Report

FUNCTIONAL IMPACT

AAK's diagnosis has wide-ranging implications for her social, academic, adaptive, and emotional functioning, influencing nearly every domain of daily life. Understanding these impacts is essential for designing effective interventions and planning for long-term support needs.

Social and Communication Functioning:

AAK's social communication deficits significantly impede her ability to establish and maintain relationships. Her limited vocabulary, repetitive and context-inappropriate language use, and difficulty interpreting non-verbal cues contribute to social isolation and reduced opportunities for peer engagement. Her inability to initiate or sustain reciprocal conversations often leads to missed social learning experiences and impedes the development of age-appropriate social skills. These deficits also affect her interactions with educators and caregivers, limiting her ability to seek help, express needs, or engage in collaborative activities. Consequently, AAK often gravitates towards solitary activities and demonstrates a marked preference for predictable, structured interactions over dynamic social exchanges.

Academic Functioning:

Despite average non-verbal reasoning abilities, AAK's academic performance remains significantly below grade level due to her language impairment, attentional challenges, and behavioural rigidity. Difficulties in following instructions, sustaining attention, and organising tasks contribute to incomplete work and frequent off-task behaviour. Moreover, her learning is highly dependent on task interest, and she often disengages from activities that do not align with her restricted interests. While her visual-spatial skills and pattern recognition abilities may allow her to perform well in non-verbal tasks, language-heavy subjects such as reading comprehension, writing, and verbal problem-solving present significant barriers. These challenges necessitate specialised instructional approaches, including differentiated teaching strategies, visual supports, and language scaffolding.

Adaptive and Daily Living Skills:

AAK demonstrates uneven development in adaptive functioning. While basic self-help skills such as dressing and feeding are within an age-appropriate range, higher-order adaptive skills—such as planning, organisation, problem-solving, and independent decision-making—are significantly delayed. Her insistence on sameness and sensory sensitivities further complicate daily routines; for example, rigid food preferences limit dietary variety, and changes in daily structure often trigger behavioural outbursts. Difficulties in understanding safety cues and following multi-step instructions pose additional challenges to independent functioning. As a result, she requires consistent supervision and structured support to navigate daily tasks.

Emotional and Behavioural Regulation:

Emotional dysregulation is a prominent feature of AAK's presentation. She exhibits intense emotional responses, including tantrums, crying, or aggression, when confronted with changes, frustrations, or sensory overload. These behaviours often disrupt learning environments, strain social relationships, and increase caregiver burden. Her limited coping repertoire—primarily avoidance or repetitive behaviours—further exacerbates these difficulties. Emotional regulation challenges also contribute to low frustration tolerance and hinder her ability to persist through challenging tasks, thereby limiting opportunities for skill development.

Community Participation and Independence:

AAK's restricted behavioural repertoire and communication difficulties limit her participation in community and extracurricular activities. She is highly dependent on familiar environments and structured routines, often showing anxiety in unfamiliar settings. These limitations reduce her exposure to new learning opportunities and restrict her independence in navigating public spaces, participating in group activities, or developing functional life skills essential for adolescent and adult functioning.

GOALS

The development of clear, measurable, and individualised goals for AAK is central to her ongoing intervention planning. These goals are designed to target core deficits associated with Autism Spectrum Disorder (ASD), while simultaneously building on her existing strengths and interests. They are structured into short-term goals (3–6 months) and long-term goals (1–2 years), addressing key domains such as social communication, academic engagement, emotional regulation, adaptive functioning, and independence. All goals are formulated following the SMART framework—Specific, Measurable, Achievable, Relevant, and Time-bound—to ensure progress can be tracked and evaluated effectively.

Short-Term Goals (3–6 months):

Social Communication:

- Objective: Improve reciprocal conversational skills by initiating and maintaining a structured conversation for at least 5 minutes with a peer in a supervised setting.
- Strategy: Participation in weekly social skills groups using role-play, modelling, and video modelling techniques.
- Outcome Metric: Achieving conversational reciprocity in 4 out of 5 opportunities as rated by therapist observation logs.
- Attention and Task Engagement:
- Objective: Enhance sustained attention on academic tasks by completing classroom assignments with no more than two verbal prompts across a 20-minute session.
- Strategy: Use of visual schedules, task chunking, and reinforcement strategies (e.g., token economy) to improve engagement.
- Outcome Metric: Demonstrating increased on-task behaviour from a baseline of 30% to 70% within 12 weeks.
- Emotional Regulation:
- Objective: Identify and apply at least two coping strategies (e.g., deep breathing, counting, requesting a break) in 80% of observed instances of frustration.
- Strategy: Implementation of cognitive-behavioural techniques and structured emotion coaching sessions.
- Outcome Metric: Reduction in temper outbursts and tantrums recorded by behaviour tracking forms.

Organisational Skills:

- Objective: Independently organise school materials and bring all required items to class on 4 out of 5 school days.
- Strategy: Visual checklists, colour-coded folders, and daily review routines with caregiver support.
- Outcome Metric: Teacher-reported compliance rate over an 8-week monitoring period.

Self-Care Routines:

- Objective: Complete morning self-care tasks (dressing, brushing teeth, preparing school bag) with no more than one prompt across five consecutive school days.
- Strategy: Use of visual step-sequence cards and reinforcement schedules.
- Outcome Metric: Mastery of routine tasks measured through caregiver logs.
- Long-Term Goals (1–2 years):

Social Integration:

- Objective: Form and sustain at least one reciprocal friendship through participation in structured group activities.
- Strategy: Engagement in extracurricular programmes and facilitated peer interaction sessions.
- Outcome Metric: Peer-reported and teacher-observed social interactions over consecutive terms.

Academic Progress:

- Objective: Meet or exceed grade-level expectations in core academic areas through improved attention, task completion, and adaptive learning strategies.
- Strategy: Individualised Education Plan (IEP) with differentiated instruction and regular progress monitoring.
- Outcome Metric: Grade reports and teacher assessments demonstrating academic improvement.
- Behavioural and Emotional Self-Regulation:
- Objective: Independently recognise triggers and implement coping strategies in at least 80% of high-stress situations.
- Strategy: Continued emotion regulation training and self-monitoring tools (e.g., emotional check-ins, visual thermometers).
- Outcome Metric: Significant reduction in frequency and intensity of behavioural incidents.

Executive Functioning and Independence:

- Objective: Use a weekly planner to manage assignments, appointments, and daily tasks with minimal adult support.
- Strategy: Scaffolding executive function skills through task planning exercises and self-monitoring checklists.
- Outcome Metric: Planner usage logs and teacher reports indicating consistent application.

Vocational and Independent Living Preparation:

- Objective: Perform age-appropriate life skills tasks (e.g., simple cooking, laundry) with minimal supervision.
- Strategy: Structured life skills training sessions integrated into home and school programmes.
- Outcome Metric: Caregiver-reported independence in 80% of targeted tasks.

INTERVENTION PLAN

A comprehensive, multidisciplinary intervention plan is necessary to address the multifaceted challenges AAK faces as a result of ASD, language impairment, and associated behavioural difficulties. This plan is designed to be collaborative, evidence-based, and adaptive, involving educators, therapists, healthcare professionals, and family members. Interventions are targeted across five primary domains: education, behavioural therapy, social communication, speech and language development, and family involvement.

Individualised Education Plan (IEP):

A tailored IEP is central to AAK's educational support. The plan integrates structured teaching approaches, visual supports, predictable routines, and environmental modifications to reduce anxiety and enhance engagement. Incorporating her special interests—such as art and drawing—into instructional activities will foster motivation and facilitate learning. Differentiated instruction and visual task breakdowns will be used to accommodate language deficits and support comprehension.

Applied Behaviour Analysis (ABA):

ABA-based interventions will target specific behaviours including repetitive movements, temper outbursts, and on-seat behaviour. Techniques such as discrete trial training (DTT), reinforcement schedules, and task analysis will be applied to build new skills and reduce maladaptive behaviours. Token economies and tangible rewards will serve as motivational tools, while functional behaviour assessments (FBA) will guide the modification of antecedents and consequences to improve behavioural outcomes.

Social Skills Training:

Social communication deficits will be addressed through structured social skills training, incorporating role-play, peer-mediated interventions, and video modelling. Activities will focus on turn-taking, initiating and maintaining conversations, interpreting non-verbal cues, and expanding the

range of conversational topics. Given AAK's expressed interest in becoming a "YouTuber," digital media activities such as creating short videos can be integrated into therapy to enhance engagement and social communication.

Speech and Language Therapy:

Language interventions will focus on expanding vocabulary, improving sentence structure, and enhancing pragmatic language skills. Evidence-based techniques such as the Picture Exchange Communication System (PECS), Functional Communication Training (FCT), and social stories will be implemented to build communication competence. Speech therapy will also address articulation and comprehension deficits, using visual and tactile prompts as needed.

Family Support and Psychoeducation:

Parental involvement is critical to the success of AAK's intervention plan. Psychoeducation sessions will equip her parents with strategies for managing behavioural challenges, reinforcing communication skills, and supporting the generalisation of skills across settings. Parent training will also focus on building resilience, reducing anxiety, and improving consistency in behaviour management practices. Collaborative home-school communication channels will be established to ensure consistent intervention implementation.

Collaborative Care and Medical Support:

A multidisciplinary team—including psychologists, speech and language therapists, occupational therapists, special educators, and paediatricians—will collaborate to monitor AAK's progress, adjust interventions, and address emerging needs. Regular team meetings will ensure coordinated care and prevent fragmented service delivery.

SESSION LOG

To systematically monitor AAK's therapeutic progress, a structured session log was maintained across the course of her intervention. Each session was designed with specific objectives, targeted outcomes, and reinforcement strategies. The following summary outlines key sessions, their focus, and AAK's responses:

Date	Session Type	Objective	Procedure	Response/Outcome
27 Feb 2024	Draw Your Heart Out	Rapport building, self-expression	Encouraged free drawing to facilitate engagement	Drew animated birds but refused to discuss; indicated enjoyment of art but difficulty with verbal expression
27 Feb 2024	PGEE Administration	Assess developmental delays	Assessed five developmental domains	Significant lags in language and socialisation identified
27 Feb 2024	CARS Administration	Assess current ASD symptom severity	Teacher interview and structured observation	Mild-to-moderate ASD confirmed
5 Mar 2024	Beat the Clock	Improve attention and on-seat behaviour	Timed tasks with reinforcement (star stickers)	Session halted due to tantrums and demand for reinforcers
11 Mar 2024	CPM Administration	Measure non-verbal reasoning and attention	Administered cognitive tasks with prompts	Average reasoning ability, poor attention and task persistence
11 Mar 2024	Social Reciprocity Training	Develop social interaction skills	Role-play and peer interaction exercises	Required multiple trials; limited interest and engagement
18 Mar 2024	Color the Feeling	Emotional awareness and expression	Colour-coding emotion words	Initially disengaged, later completed task enthusiastically
18 Mar 2024	Independent Skills Training	Daily living skills	Folding and ironing clothes	Initial engagement, tantrums during ironing attempts
19 Mar 2024	Fine Motor Skills Training	Motor control and attention	Painting with stencils	Highly engaged; insisted on specific colour mixing
26 Mar 2024	SIT Administration	Assess verbal intelligence	Verbal cognitive tasks	Severe verbal deficits; attention fluctuated
26 Mar 2024	Conners' Rating Scale	Behavioural assessment	Teacher reports collected and analysed	Mixed findings; ADHD ruled out clinically

This structured session record highlights AAK's variable engagement, strong preference for interest-based activities, and persistent difficulties with attention, behavioural regulation, and verbal communication. These patterns reinforce the need for interventions to be highly individualised, interest-driven, and supported by consistent reinforcement strategies.

OUTCOME AND PROGNOSIS

Following the comprehensive assessment and the initial implementation of targeted interventions, AAK demonstrated measurable but uneven progress across several developmental domains. Her response to structured, interest-based interventions was encouraging, highlighting the critical importance of tailoring therapeutic approaches to her cognitive strengths and motivational profile. Progress was most evident in areas that capitalised on her visual learning style, repetitive preferences, and strong attachment to routine.

Social communication outcomes showed modest but meaningful gains. AAK began initiating simple interactions with familiar adults, especially when prompted within highly structured contexts. Her ability to sustain reciprocal exchanges increased from one or two brief turns to short, two-to three-turn conversations when visual supports or scripts were used. Echolalic speech persisted but showed emerging functional use, particularly when reinforced through naturalistic language teaching. However, spontaneous peer interactions remained minimal, and pragmatic language deficits continued to significantly limit her social engagement.

Behavioural regulation showed gradual improvement. The frequency of severe tantrums and emotional outbursts decreased with the consistent use of antecedent-based interventions, reinforcement schedules, and emotion identification strategies. Although she continued to exhibit rigid routines and distress during transitions, the introduction of transition warnings and visual schedules reduced resistance and improved predictability

tolerance. Attention span increased slightly, especially during tasks linked to her interests, and the use of reinforcement-based approaches helped extend on-task behaviour. However, distractibility and task avoidance persisted, particularly during non-preferred academic activities.

Cognitive and academic functioning remained stable but constrained by language limitations. Non-verbal reasoning skills continued to support her performance in visually mediated problem-solving tasks, while language-based learning challenges continued to impede academic progress in literacy and comprehension. Academic gains were observed when content was adapted using visual supports, scaffolding, and task chunking, but generalisation of these skills to unmodified classroom tasks remained limited.

Adaptive functioning showed incremental progress. AAK became more independent in basic self-care routines and demonstrated improved compliance with structured tasks. However, higher-level adaptive skills such as planning, organisation, and independent problem-solving continued to lag significantly behind age expectations. Emotional regulation strategies, once explicitly taught, began to generalise modestly into natural contexts, suggesting a promising trajectory with continued support.

The overall prognosis for AAK is considered guarded to favourable, contingent on the sustained intensity, consistency, and individualisation of intervention. Her prognosis is strengthened by several protective factors: average non-verbal cognitive ability, a supportive and engaged family, strong response to visual and structured interventions, and early diagnosis with ongoing support. Challenges that may limit long-term outcomes include persistent language deficits, high behavioural rigidity, sensory sensitivities, and difficulties with emotional regulation. With continued multidisciplinary intervention—particularly in speech-language therapy, social communication training, and adaptive skills development—AAK is expected to make meaningful progress toward greater functional independence, improved social participation, and enhanced quality of life (1,2).

LIMITATIONS

While this comprehensive assessment and intervention process provided valuable insights into AAK's developmental profile, several limitations must be acknowledged to contextualise findings and guide future evaluation.

Assessment tool limitations: The use of the Portage Guide to Early Education (PGEE) beyond its standardised age range introduced interpretive constraints. Although it offered valuable qualitative data on developmental lags, its results cannot be considered norm-referenced for a child of AAK's age. Similarly, reliance on the Slosson Intelligence Test (SIT) for verbal cognitive assessment, while clinically informative, may have underestimated her language potential due to task demands and attentional variability. Future assessments should incorporate age-appropriate tools such as the Wechsler Intelligence Scale for Children (WISC-V) and adaptive functioning measures like the Vineland Adaptive Behavior Scales (Vineland-3) or Adaptive Behavior Assessment System (ABAS-3) to enhance diagnostic precision.

Cross-setting data gaps: The absence of parental Conners' Rating Scale data limited the ability to fully evaluate attention-related behaviours across home and school contexts. As ADHD symptoms require evidence from multiple settings, the inability to obtain corroborating parent data constrained the conclusiveness of diagnostic differentiation. Additionally, observations were primarily conducted in structured assessment settings, which may not fully represent AAK's behaviour in less structured, real-world environments.

Time constraints: The intervention phase described here represents a relatively short period and does not capture long-term trajectories or the potential effects of extended therapeutic input. Behavioural and communication skills in children with ASD often require months or years of consistent intervention to achieve significant and generalisable change. Longitudinal follow-up and repeated assessments will be critical for tracking developmental trajectories and refining support strategies.

Environmental factors: External factors, such as variability in educational settings and differences in teacher expectations, may have influenced behavioural outcomes and assessment results. Moreover, parental anxiety and inconsistent application of behavioural strategies at home may have impacted the generalisation of newly acquired skills.

Generalisation and ecological validity: While structured tasks yielded measurable improvements, generalisation of skills to naturalistic settings remained limited during the evaluation period. This is a well-documented challenge in ASD intervention and requires deliberate generalisation strategies, such as natural environment teaching and coordinated school-home programming.

Acknowledging these limitations underscores the importance of a dynamic, iterative assessment and intervention process. Future evaluations should prioritise more comprehensive standardised assessments, multi-informant data collection, longitudinal tracking, and interventions that explicitly target generalisation across environments (3).

ETHICS AND CONSENT

All procedures conducted during AAK's assessment and intervention adhered to established ethical standards for clinical practice in child neurodevelopmental evaluation and intervention. Informed written consent was obtained from AAK's parents prior to the initiation of any assessment procedures, including cognitive testing, behavioural observations, and therapeutic interventions. The purpose, scope, potential benefits, and limitations of the assessment were clearly explained, and parents were provided with opportunities to ask questions and withdraw consent at any stage without consequence.

Assent was sought from AAK in a developmentally appropriate manner. Given her communication limitations, assent was assessed through non-verbal indicators of willingness to participate, such as engagement with tasks, tolerance of the assessment environment, and affirmative responses to simplified explanations of the process. Participation was entirely voluntary, and care was taken to ensure that AAK's comfort, safety, and autonomy were prioritised throughout all interactions.

Confidentiality was strictly maintained. All identifying information was anonymised in written reports and documentation, and data were securely stored in accordance with clinical governance policies. Any sharing of assessment results with external stakeholders, such as school personnel or healthcare providers, was conducted only with explicit parental consent. The case report was prepared for educational and clinical purposes with parental permission, and all details were de-identified to protect AAK's privacy.

The assessment and intervention procedures adhered to the ethical principles outlined in the American Psychological Association's Ethical Principles of Psychologists and Code of Conduct and the British Psychological Society's Code of Ethics and Conduct (4,5). The emphasis on informed consent, assent, confidentiality, and non-maleficence reflects best practices in the assessment and care of neurodiverse children. The involvement of a multidisciplinary team further ensured that interventions were evidence-based, developmentally appropriate, and aligned with AAK's best interests.

CONCLUSION

This case study of AAK provides an in-depth, multidimensional understanding of the complex clinical presentation and management needs of a child diagnosed with Autism Spectrum Disorder (ASD) requiring substantial support, accompanied by intellectual and language impairments. Through a comprehensive assessment battery encompassing behavioural observations, semi-structured interviews, developmental and cognitive testing, and multi-informant behavioural ratings, the evaluation elucidated a nuanced profile of AAK's strengths and challenges. Her cognitive profile revealed a disparity between average non-verbal reasoning and significantly delayed verbal cognitive skills, a pattern frequently observed in ASD. Marked deficits in social reciprocity, communication, behavioural flexibility, and adaptive functioning were consistent with diagnostic criteria and highlighted the pervasive impact of ASD on daily functioning.

The assessment further underscored the necessity of interpreting behavioural symptoms within the broader context of neurodevelopmental differences. Features such as inattention and hyperactivity, initially suggestive of ADHD, were ultimately attributed to the restricted interests and sensory sensitivities characteristic of ASD. This highlights the importance of careful differential diagnosis to ensure accurate case formulation and targeted interventions. The evaluation also demonstrated the importance of incorporating qualitative data from observations and interviews alongside standardised testing to capture the full complexity of the child's functioning.

Intervention outcomes emphasised the central role of individualisation, structure, and interest-based approaches. AAK's engagement, learning, and emotional regulation improved most notably when interventions were tailored to her strengths, preferences, and cognitive style. Family involvement, consistent multidisciplinary collaboration, and the integration of structured educational and therapeutic strategies were pivotal to facilitating progress. However, persistent challenges—including language deficits, behavioural rigidity, and difficulties with generalisation—highlight the need for sustained, intensive, and adaptive intervention over time.

This case underscores several broader implications for clinical practice. First, it demonstrates that comprehensive, multi-method assessment is essential for accurate diagnosis, effective intervention planning, and ongoing outcome monitoring in ASD. Second, it reinforces the value of incorporating family-centred care, ecological validity, and multi-informant perspectives in both assessment and intervention. Lastly, it illustrates that while ASD presents enduring challenges, targeted, evidence-based interventions—particularly those leveraging a child's unique strengths and interests—can significantly enhance functional outcomes, social participation, and quality of life. Ongoing reassessment, adaptation of strategies, and interdisciplinary collaboration remain crucial to optimising developmental trajectories and supporting individuals like AAK in achieving their full potential.

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