



CASE REVIEW

A Single-Subject Case Study: LY - A 10-Year-Old Male with Autism and a Profound Verbal Comprehension Deficit

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Article DOI: <https://doi.org/10.64663.aet.66>

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Cite as: Lu, Qunxi (2025). A Single-Subject Case Study: LY - A 10-Year-Old Male with Autism and a Profound Verbal Comprehension Deficit. *The Asian Educational Therapist*, 3(3), 76-83.

ABSTRACT

This case study presents a comprehensive psychoeducational assessment of LY, a 10-year-old boy diagnosed with Autism Spectrum Disorder (ASD), whose most significant challenge lies in a profound verbal comprehension deficit. Using the Hierarchy of Abilities and Skills model as a conceptual framework, a multi-method, multi-informant battery of assessments was administered to evaluate LY's cognitive, sensory, adaptive, and socio-emotional functioning. Results revealed a highly uneven cognitive profile, with exceptional working memory and visual-spatial skills contrasted by severely impaired verbal reasoning and adaptive social communication. Sensory processing difficulties, particularly in the areas of avoidance and heightened sensitivity, were found to significantly impact LY's emotional regulation and peer interaction. Diagnostic tools (e.g., ADOS-2 and ADI-R) confirmed the presence of ASD, and discrepancies between parent and teacher ratings highlighted the influence of environmental and contextual factors on behavior presentation. An Individualised Intervention Plan (IIP) is proposed, incorporating Educational Therapy, Speech and Language Therapy, Occupational Therapy, Behavior-Based Therapy, and Social Skills Training, alongside school accommodations and caregiver support. This case underscores the importance of individualised, multidisciplinary approaches in supporting children with complex neurodevelopmental profiles.

Keywords: Adaptive Functioning, Autism Spectrum Disorder (ASD), Individualised Intervention, Verbal Comprehension, Sensory Processing

1. INTRODUCTION

The condition of Autism Spectrum Disorder (ASD), according to the DSM-5 (American Psychiatric Association, 2013) presents a diverse range of symptoms, often accompanied by a unique cognitive and adaptive profile involving the three Core Experience Domains (CEDs), i.e., (i) sensory needs, (ii) communication differences, and (iii) social interaction differences, in the autistic behavior pattern (Chia, 2025). This case study focuses on LY, a 10-year-old boy whose primary challenge concerns the issue of profound verbal comprehension deficit. His case underscores the importance of a nuanced interpretation of cognitive testing beyond the Full-Scale IQ (FSIQ) of the WISC-IV (Wechsler, 2003) and the critical need for targeted interventions that address specific skill deficits within the context of an ASD diagnosis.

2. CASE PRESENTATION

The subject of interest in this case study is LY, a 10-year 7-month-old male child of Chinese nationality. Because of his presenting concerns, the child was referred to a public hospital in Chengdu, province of Sichuan, for a comprehensive psychoeducational assessment due to his significant difficulties in social communication, academic performance (particularly in language-based subjects), and adaptive functioning. Results from the previous assessments administered by a few public hospitals in mainland China were found to be inconclusive regarding the child's ASD diagnosis.

3. ASSESSMENT METHODS AND RESULTS

Using the Hierarchy of Abilities and Skills (HAS) model (Chia, 2008), a multi-method, multi-informant assessment battery was administered by qualified assessors, and the procedure was organised hierarchically to evaluate innate, sensory, adaptive, and socio-emotional abilities. Below is the discussion on the findings from the assessments administered.

3.1 Cognitive and Intellectual Assessment (WISC-IV & DAP-IQ)

The results from the Wechsler Intelligence Scale for Children-4th Edition (WISC-IV; Wechsler, 2003) revealed a highly uneven cognitive profile for LY, marked by a significant pattern of strengths and weaknesses. Notably, LY demonstrated strong abilities in working memory, with a Working Memory Index (WMI) of 117, placing him in the High Average range (87th percentile), and average performance in both Perceptual Reasoning (PRI = 104, 61st percentile) and Processing Speed (PSI = 107, 68th percentile). However, these strengths sharply contrasted with a profound weakness in verbal reasoning, as reflected by a Verbal Comprehension Index (VCI) score of 70, in the 2nd percentile, which falls within the Borderline range. This 47-point discrepancy between his VCI and WMI is both clinically significant and atypical, strongly supporting a diagnosis of a Borderline Verbal Learning Disability. The General Ability Index (GAI) was 87, lower than the Full-Scale IQ, suggesting that LY's verbal deficits are significantly impacting his overall cognitive performance. Subtest scores further illustrate this disparity: while he excelled in Digit Span (scaled score = 19, 99.9th percentile) and Block Design (15, 95th percentile), his scores in Vocabulary (4, 2nd percentile), Similarities (5, 5th percentile), and Comprehension (5, 5th percentile) were critically low. Additionally, during direct observation, LY displayed echolalia and signs of hyperlexia, further supporting the interpretation that his language profile is atypical and qualitatively different from his nonverbal abilities.

Complementing these findings, the Draw-a-Person Intellectual Ability Test (DAP-IQ; Reynolds & Hickman, 2004) is used to assess children with ASD because it provides a nonverbal, low-language-demand measure of cognitive development, making it suitable for children who have communication difficulties. It offers benefits such as reducing language bias, allowing clinicians to observe conceptual

thinking, visuospatial skills, and developmental maturity through projective drawing. The results from the DAP-IQ administration indicated that LY's cognitive maturity is below age expectations. His drawings reflected an age-equivalent intellectual level of approximately 8 years and 11 months, which is roughly 20 months behind his actual chronological age. This result supports the findings from the WISC-IV and suggests a general delay in cognitive development, particularly in areas related to conceptual and symbolic representation. Taken together, these assessments highlight the need for targeted, individualised interventions focusing on LY's verbal comprehension and expressive language development while continuing to leverage his strengths in working memory and visual-spatial reasoning.

3.2 Sensory Processing (SPD-160 & SP-2C)

The Sensory Processing Disorder Screener (SPD-160; MPTC, 2023) revealed that LY frequently experiences substantial difficulties in several key sensory domains, including receptive sensory communication, sensory social engagement, and sensory-related advocacy skills. The child often struggles to process and respond appropriately to environmental sensory input, which affects his ability to engage meaningfully with others. In social contexts, LY has limited capacity to interpret and react to social cues, hindering his interactions with peers and adults. Additionally, his underdeveloped advocacy skills make it difficult for him to communicate discomfort or seek support when overwhelmed by sensory stimuli. These observations are consistent with caregiver reports and were further validated through the administration of the Sensory Profile-2, Child version (SP-2C; Dunn, 2014), which confirmed the presence of atypical sensory processing patterns that align with his daily behavioral presentation.

According to the SP-2C (Dunn, 2014) results, LY exhibits a sensory pattern classified as 'More Than Others' (MTO) in the Avoiding/Avoider and Sensitivity/Sensor quadrants, suggesting he is easily overwhelmed by sensory input and actively or passively avoids it. This reflects a low neurological threshold and the use of self-regulation strategies that often result in withdrawal from sensory-rich environments, such as busy classrooms or social settings. Notably, he also scored 'Much More Than Others' (MMTO) in social-emotional responses linked to sensory processing, indicating that his sensory challenges significantly impact emotional regulation and social functioning. These sensory sensitivities are not merely physical discomforts; they are deeply intertwined with emotional and behavioral responses, often manifesting as anxiety, irritability, or shutdowns. This highlights the critical need for integrating sensory-informed strategies within both therapeutic and educational interventions to support LY's emotional regulation, social participation, and overall functional engagement.

3.3 Adaptive Functioning (ABAS-2)

The results of the Adaptive Behaviour Assessment System-2 (ABAS-2; Harrison & Oakland, 2003) indicate that LY's adaptive functioning is significantly below age expectations, with a General Adaptive Composite score of 63, placing him at the first percentile. This reflects widespread difficulties in meeting everyday demands across various domains. His most severe challenges lie in the area of Social Skills, where he scored below the 0.1st percentile, indicating profound impairments in interpersonal communication, social reciprocity, and peer interactions. His Conceptual Skills, which include language, reasoning, and academic functioning, are also severely delayed, falling at the 1st percentile. Although Practical Skills, such as managing daily tasks and routines, represent a relative strength, they still fall well below average at the 5th percentile, underscoring the need for comprehensive, multidisciplinary support across all areas of adaptive behaviour.

3.4 Diagnostic Assessment for ASD (ADOS-2 & ADI-R)

Results from the Autism Diagnostic Observation Schedule-2 (ADOS-2, Module 2; Lord et al., 2012) indicated that LY's total score of 10 exceeded the diagnostic cutoff for his condition of ASD, with marked difficulties observed in reciprocal social interaction. Similarly, the Autism Diagnostic Interview-Revised (ADI-R; Rutter et al., 2003) revealed scores that significantly exceeded the diagnostic thresholds across all three core domains, i.e., social interaction, communication, and restricted/repetitive behaviors, further confirming the presence of ASD.

3.5 Socio-Emotional and Attention (SRS-2 & VADRS)

The assessment results revealed notable discrepancies between parent and teacher reports. On the Social Responsiveness Scale-2 (SRS-2; Constantino, 2012), the mother reported "Severe" social impairment ($T = 132$), whereas the teacher indicated only "Mild to Moderate" impairment ($T = 73$). Similarly, the Vanderbilt Attention Deficit Hyperactivity Disorder (ADHD) Rating Scale (VADRS; Wolraich et al., 1998, updated 2003) produced inconclusive findings for ADHD, with the mother endorsing elevated symptoms while the teacher reported minimal concerns. Such discrepancies between parent- and teacher-rated measures are well documented in the literature, as parents often observe behaviors within a less structured, higher-demand home environment, whereas teachers typically see the child functioning in a more predictable, structured school setting (Achenbach et al., 1987).

According to De Los Reyes and Kazdin (2005), their study indicates that cross-informant inconsistencies frequently signal context-dependent impairment, particularly for children with ASD and ADHD, whose symptoms may intensify when environmental supports are limited. Accordingly, the observed ADHD-like behaviors were interpreted as more likely secondary to the child's ASD (Hours et al., 2022), resulting in what has been termed as AuDHD (in short for ASD and ADHD comorbidity), in addition to sensory processing challenges, and/or environmental influences rather than indicative of a primary ADHD diagnosis, thereby underscoring the importance of environmental modifications and parent training, both of which have been shown to improve consistency, reduce disruptive behaviors, and enhance parent-child interactions (Centers for Disease Control and Prevention, 2020; Shaw et al., 2009).

4. DISCUSSION

LY's case presents a complex picture of ASD co-occurring with a specific and severe Verbal Comprehension Deficit. His cognitive profile is atypical, as his significant strengths in auditory working memory and visual-spatial reasoning mask a profound inability to process, comprehend, and use language meaningfully. This discrepancy likely explains his hyperlexic tendency, his use of echolalia, though he has the ability to decode words without understanding their meaning.

LY's sensory sensitivities, characterised by avoidance and heightened sensitivity, significantly exacerbate his social and communication challenges. This creates a vicious cycle where sensory overload hinders social engagement and emotional regulation. The severe deficits in adaptive skills, particularly in social and conceptual domains, unequivocally demonstrate that his cognitive challenges have a direct and detrimental impact on his daily functioning.

The discrepancy between parent and teacher reports regarding the SRS-2 and VADRS suggests that LY's difficulties may be more pronounced in the less structured home environment or may be influenced by parenting style. This observation underscores the necessity of environmental support and parent training.

5. SUGGESTED RECOMMENDATIONS AND INDIVIDUALISD INTERVENTION PLAN

Within the clinical context of treatment with whatever assessment results available, the author of this paper strongly recommends a comprehensive, multidisciplinary IIP to address the diverse needs of LY, working collaboratively with the child's parents and class teachers, implemented through quarterly Individualised Education Plans (IEPs), i.e., per every three months. This intervention approach ensures consistent monitoring and adjustments to therapeutic approaches, aligning with best practices for supporting children with complex developmental profiles (Heward et al., 2022).

The Educational Therapy (EdTx; see Chia, 2024) can serve as a foundational component in LY's IIP, primarily targeting the enhancement of verbal reasoning, vocabulary, and reading comprehension through direct, explicit instruction. Key strategies used in the EdTx include explicit vocabulary instruction using tools such as word maps, semantic feature analysis, and teaching the use of context clues to derive meaning. These evidence-based strategies aim to develop both depth and breadth of vocabulary knowledge (Beck et al., 2013). In addition, instruction in abstract thinking and verbal reasoning will incorporate analogies, categorization tasks, and Socratic questioning, promoting higher-order thinking skills. To leverage LY's visual learning strengths, graphic organisers and visual aids will be integrated to support the understanding of social and abstract concepts, a method known to be effective for learners with strong visual processing abilities (Scruggs et al., 2010).

The Speech and Language Therapy (SLTx), included in the child's IIP, can focus on ameliorating both receptive and expressive language deficits, with the goal of moving beyond echolalia toward functional communication. The SLTx will target pragmatic language, including initiating and maintaining conversations, understanding non-literal language, and using language appropriately in social contexts. Its emphasis will be placed on social communication skills that support the development of LY's meaningful relationships and independence (Paul & Norbury, 2012).

Next, the Occupational Therapy (OcTx) also plays an essential intervention role in addressing LY's sensory modulation difficulties through the implementation of a personalized sensory diet. This approach includes regular sensory breaks, the use of weighted tools, and the creation of a sensory-friendly learning environment. The goal is to promote 'sensory syzygy,' which refers to a state of sensory regulation, whose aim is to optimize LY's readiness to engage in learning and social interaction (Case-Smith & O'Brien, 2015).

In addition, the Behaviour-Based Therapy (BbTx), incorporating principles from Applied Behaviour Analysis (ABA; see Grigorenko et al., 2018) or Task Behaviour Analysis (TBA; see Chia & Lim, 2016), should be implemented in the IIP, focusing on increasing LY's adaptive behaviors, social competencies, and functional communication. These evidence-based methods employ reinforcement strategies to encourage positive behaviors while systematically reducing maladaptive ones (Cooper et al., 2020).

Moreover, Social Skills Training (SST), which involves a series of structured group sessions with individualised instruction, is a crucial addition to LY's IIP aimed at developing the child's ability to interact with peers, form friendships, and interpret social cues. This training is essential for fostering the child's peer relationships and social inclusion, often a challenge for neurodivergent children (Laugeson, 2013).

Parent-and-school collaboration also plays a pivotal role in the effectiveness of any form of collaborative intervention program involving LY. Parent or caregiver training, delivered through psychoeducation by an educational therapist or counselor, aims to empower LY's parents and other significant caregivers (e.g., grandparents) at home with practical strategies to foster language development, manage challenging behavior, and establish a structured, low-stress home environment. This approach empowers parents to become co-facilitators of development, reinforcing

therapeutic goals in the home context (Brookman-Frazee et al., 2006). At the school level, the IEP will outline accommodations (e.g., preferential seating, visual schedules, reduced language demands, and access to sensory breaks), ensuring that the learning environment for LY is both accessible and supportive (Friend & Bursuck, 2019).

Finally, medication for LY may be considered where clinically indicated, particularly in the presence of co-occurring conditions such as anxiety or ADHD. For example, the use of Concerta (methylphenidate extended-release, 18mg) may help improve attention and impulse control, indirectly supporting social functioning and learning outcomes (Pliszka, 2007). Medication decisions will be made collaboratively with medical professionals (e.g., psychiatrist, pharmacologist, and pharmacotherapist) and closely monitored for efficacy and side effects.

6. CONCLUSION

LY's case highlights the multifaceted nature of ASD, especially when the autistic condition is compounded by a severe verbal comprehension deficit and co-occurring sensory and adaptive challenges. Through a detailed, multi-method assessment guided by the Hierarchy of Abilities and Skills (HAS) model, LY's cognitive, sensory, and socio-emotional profile was carefully delineated. While he demonstrates significant strengths in working memory and visual-spatial reasoning, these are sharply contrasted by profound weaknesses in verbal comprehension, social interaction, and adaptive functioning, more so in the areas of language use and social reciprocity. These disparities point to a clear need for individualised and targeted intervention.

Importantly, the child's profile does not fit neatly into a single diagnostic label but rather illustrates the complex interplay between language, cognition, sensory regulation, and behavior that characterises many children on the autism spectrum. The findings further support the necessity of moving beyond global scores such as Full-Scale IQ, toward a more nuanced, domain-specific understanding of strengths and needs. This comprehensive view enables the development of an Individualised Intervention Plan (IIP) that is both evidence-based and contextually responsive, engaging the home, school, and clinical environments in a collaborative framework. With sustained, multidisciplinary support tailored to his unique developmental profile, LY has the potential to improve his communication, adaptive functioning, and quality of life.

7. ACKNOWLEDGEMENT

None.

8. COMPETING INTERESTS

The author has declared that no competing interests exist.

9. FINANCIAL DISCLOSURE

Non funds obtained.

10. ARTIFICIAL INTELLIGENCE DISCLOSURE

No generative AI or AI-assisted technologies were used in the preparation of this manuscript.

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