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## A CASE REPORT ON A CHANGE IN DIAGNOSIS FROM AUTISM TO LANGUAGE DISORDER

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*Received: 26 October 2022; Accepted: 13 February 2023; Published: 19 June 2023*

### ABSTRACT

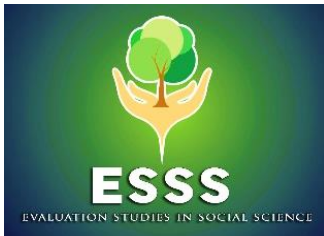
This report presents the case of a patient with nickname Al, who was evaluated for autism spectrum disorder (ASD). The diagnosis is supported by comprehensive assessments that examine his psycho-social, cognitive, and adaptive functioning. His low score in the Gilliam Autism Rating Scale and Social Responsiveness Scale suggests his ASD symptoms were below threshold. His performance in the Wechsler Preschool and Primary Scale of Intelligence and Vineland Adaptive Behavior Scale was opposite to children with ASD but consistent with children with language disorder. The change in Al's diagnosis may be accountable by optimal outcome in ASD or misdiagnosis. Therefore, this case illustrates the significance of applying evidence-based assessments in diagnosing neurodevelopmental conditions.

**Keywords:** *Autism spectrum disorder; language disorder; assessment; diagnostic decision-making; misdiagnosis.*

### BACKGROUND

Autism spectrum disorder (ASD) is characterized by psychosocial difficulties and restricted/repetitive behaviours and interests (RRBI) (American Psychiatric Association, 2013). Concerns have been raised regarding its possibility of over- or mis-diagnosis, due to its rising prevalence worldwide (Zeidan et al., 2022). Specifically, the difficulties in diagnosing ASD, including over-lapping symptoms with other neurodevelopmental conditions (Taylor & Whitehouse, 2016) and heterogenous presentation (Hus & Segal, 2021), may increase the risk of misdiagnosis.

Although standardized assessment can improve diagnostic accuracy of ASD, they are sometimes omitted due to time and resource constraints (Durkin et al., 2015; Hausman-Kedem et al., 2018). This happened for our client, Al, who was diagnosed with ASD without standardized assessment. Hence, this report illustrates how diagnostic conclusion is reached by



collaborating comprehensive psychological, social, cognitive, and adaptive functioning assessment results with research evidence.

### **METHOD**

#### *Case presentation*

Al was a five-year-four-month-old Malay boy, who showed social communication difficulties (e.g., speech delay, fleeing eye contact, and limited social reciprocity) and RRBI (e.g., consistent preference for light-coloured food and hand-flapping during excitement) from one to three-year-old. He was diagnosed with mild ASD at three-year-ten-month-old. After attending occupational and speech therapy, he showed improvement and was referred for assessments to revise the diagnosis.

Al grew up as the only child in a family without psychiatric history. He was delivered full term through C-section surgery due to fetal distress. He was hospitalized twice due to viral fever and rotavirus. During assessments, rapport was easily built with Al. He answered questions spontaneously with intelligible speech, displayed appropriate eye contact and emotional expressions, was physically active, and followed instructions well.

#### *Ethical concern*

The caregiver provided written informed consent to publish this case. Names are fabricated to protect the client's confidentiality. No ethical approval was required.

#### *Assessment results and interpretations*

The Gilliam Autism Rating Scale – Third Edition (GARS-3; Gilliam, 2014) and Social Responsiveness Scale – Second Edition (SRS-2; Constantino & Gruber, 2012) were administered to Alex's mother and class teacher, respectively. The Wechsler Preschool and Primary Scale of Intelligence – Third Edition (WPPSI-III; Wechsler, 2002) and Vineland Adaptive Behavior Scales – Second Edition (VABS-II; Sparrow et al., 2005) were also administered to assess his cognitive and adaptive functioning.

Al scored 53 in GARS-3 and 40 in SRS-2, suggesting his unlikelihood in fulfilling ASD diagnostic criteria and the absence of social impairments. The WPPSI-III (Table 1) revealed significant differences between his index scores, suggesting his Full Scale IQ (FSIQ) may be misleading and should not be interpreted.

Table 1

*Al's WPPSI-III Results.*

Index	Composite score	95% Confidence interval	Percentile rank	Qualitative description
VIQ	61	57-69	0.5	Extremely low
PIQ	108	101-114	70	Average
PSQ	100	91-109	50	Average
FSIQ	82	78-87	12	Low average

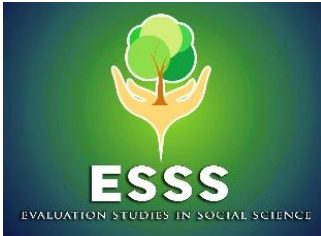
*Note.* VIQ = Verbal IQ; PIQ = Performance IQ; PSQ = Processing Speed Quotient; FSIQ = Full Scale IQ.

To understand Al's cognitive strength and weakness, his subtests scores were compared against the mean index score (Table 2). His extremely low Verbal IQ (VIQ), particularly in the Vocabulary subtest, is likely related to his limited verbal fluency. In Performance IQ (PIQ), his average score in Block Design is relatively weaker when compared to his superior performance in Matrix Reasoning. This difference is found in  $\geq 25\%$  of the standardization sample and does not imply cognitive deficits. Indeed, his average PIQ suggests his ability to analyse pictorial information are comparable to his peers. Similarly, his average Processing Speed Quotient (PSQ) indicates that his psychomotor speed is comparable to his peers.

Table 2

*Al's Relative Strength and Weakness in VIQ, PIQ, and PSQ*

Subtest	Scaled score	Qualitative description	Difference from mean	Base rate (%)
<b>Verbal IQ (Mean = 3.33)</b>				
Information (S)	6	Borderline	2.67*	25
Vocabulary (W)	1	Extremely low	-2.33*	10
Word Reasoning	3	Extremely low	-0.33	-
<b>Performance IQ (Mean = 11.33)</b>				
Block Design (W)	9	Average	-2.33*	$\geq 25\%$
Matrix Reasoning (S)	14	Superior	2.67*	$\geq 25\%$
Picture Concept	11	Average	-0.33	-
<b>Processing Speed Quotient (Mean = 10)</b>				
Symbol Search	11	Average	1	-
Coding	9	Average	-1	-



*Note.* \* Significant at  $p \leq .05$ ; S = Strength; W = Weakness.

The VABS-II (Table 3) revealed that Al had moderately low adaptive functioning. He lagged behind his friends in performing self-care and household tasks, as well as maintaining peer relationship. Nevertheless, his abilities to communicate and control body movements are comparable to his peers.

Table 3  
*Al's VABS-II Results*

Domain	Standard score	95% Confidence Interval	Percentile rank	Adaptive level
Communication	91	83-99	27	Adequate
Daily Living Skills	81	73-90	10	Moderately low
Socialization	77	69-85	6	Moderately low
Motor Skills	100	90-110	50	Adequate
Adaptive Behavior	84	79-89	14	Moderately low
Composite				

Table 4 presents Al's relative strength and weakness within each VABS-II domain when a difference of  $\pm 2$  from the median score was used as the rule of thumb. He showed stronger abilities in reading and writing than conversing verbally. He also demonstrated stronger ability in performing self-care tasks than community tasks. His community performance is likely impeded by his weak verbal expression.

Table 4

*Al's Relative Strength and Weakness in each VABS-II Domain*

Subdomain	V-scale score	Qualitative description	Difference from median
<b>Communication (Median = 14)</b>			
Receptive	14	Adequate	0
Expressive	9	Low	-5
Written	18	Moderately high	4
<b>Daily Living Skills (Median = 12)</b>			
Personal	14	Adequate	2
Domestic	12	Moderately low	0
Community	10	Moderately low	-2
<b>Socialization (Median = 11)</b>			
Interpersonal Relationships	11	Moderately low	0
Play & Leisure Time	10	Moderately low	-1
Coping Skills	12	Moderately low	1
<b>Motor Skills (Median = 15)</b>			
Gross	16	Adequate	1
Fine	14	Adequate	-1

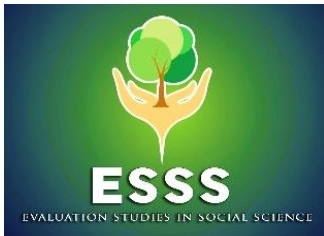
### ***Provisional diagnosis***

315.39 (F80.9) Language Disorder

## **DISCUSSION**

Al's diagnosis was changed from autism spectrum disorder (ASD) to learning disorder (LD) for several reasons. First, Al's ASD symptoms, as assessed by GARS-3 and SRS-2, were below threshold. Second, his moderately low intellectual and adaptive functioning is incompatible with autistic children (Bradshaw et al., 2019). Third, his WPPSI-III profile is similar to children with LD who have strength in PIQ but weakness in VIQ (Filippatou & Lpvanou, 2005), but dissimilar from autistic children who show weak PSQ (Braconnier & Siper, 2021). Forth, Alex scored higher Socialization than Communication, which is compatible with children with LD (Shevell et al., 2005) but opposite from children with ASD (Balboni et al., 2016). Hence, Alex's delayed language development is likely due to LD.

Two reasons may account for the change in Al's diagnosis. First, Al experienced optimal outcome, which describes the condition that some individuals diagnosed with ASD no



longer fulfil the diagnostic criteria during follow-up (Fein et al., 2013). AI's early intensive therapy, maturation, and high baseline functioning, have been related to optimal outcome (Eigsti et al., 2023). Residual functional difficulties, such as LD, learning problems, and behavioral issues, are commonly observed among individuals with optimal outcome (Shulman et al., 2019; Whiteley et al., 2019).

Second, AI may be misdiagnosed with ASD because his previous diagnosis was based on observations only. Observations are unreliable markers of ASD because some RRBI, such as echolalia and repetitive motor movements, are also present among children with LD (Taylor & Whitehouse, 2016). The omission of standardized assessment is also associated with misdiagnosed ASD (Hausman-Kedem et al., 2018). This highlights the importance of using standardized assessments to improve diagnostic accuracy (Hayes et al., 2018; Kaufman, 2022).

LD is associated with challenges in peer relationship, education, career, and mental health (Kulkarni et al., 2022; Sureda-Garcia et al., 2021). Therefore, speech-language therapy emphasizing vocabulary development, such as those involving dialogic story reading and hands-on vocabulary instructions, is recommended for its effectiveness in improving expressive abilities of children with language disorder (Kk Nair et al., 2022; Rinaldi et al., 2021). Regular attendance to early intervention program and kindergarten is also recommended to improve his cognitive and language abilities through specialized care and peer interactions (Kesäläinen et al., 2022; Schmitt et al., 2022; Tan & Mohamad, 2019).

## CONCLUSION

This report illustrates the complexity involved in diagnosing neurodevelopmental conditions, and the importance of combining comprehensive standardized assessment with research literature prior making final diagnosis confirmation.

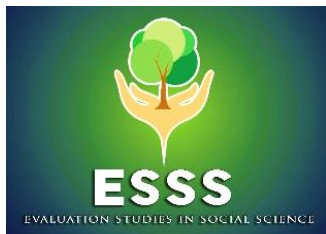
## ACKNOWLEDGEMENT

This study not granted funding.

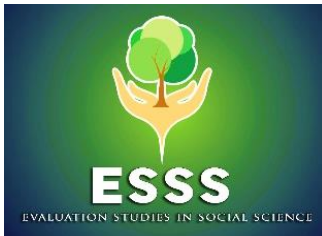
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