



Psychoeducational assessment of a preschool child with suspected autism spectrum disorder and mild intellectual disability

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Abstract

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by deficits in social communication, restricted and repetitive behaviours, sensory processing difficulties, and adaptive functioning impairments. Early identification and comprehensive assessment are important for understanding developmental needs and planning appropriate interventions. This case report describes the psychoeducational assessment of a 4-year-3-month-old Chinese boy, anonymously referred to as Bob, who presented with developmental delay and characteristics associated with ASD. A multi-battery assessment approach was conducted using the Sensory Profile-Caregiver Questionnaire (SP-CQ), Gilliam Autism Rating Scale-Third Edition (GARS-3), and Vineland Adaptive Behavior Scales-Second Edition (Vineland-II). Results from the SP-CQ indicated sensory seeking, sensory sensitivity, multisensory processing difficulties, and possible symptoms associated with attention-deficit/hyperactivity disorder (ADHD). The GARS-3 findings suggested a very likely probability of ASD with Level 2 severity, particularly in restrictive/repetitive behaviours and social communication difficulties. Vineland-II results demonstrated significant deficits across communication, daily living, socialization, and motor skills domains, indicating poor adaptive functioning and characteristics consistent with mild Intellectual Disability (ID). Overall, the findings suggest that Bob demonstrated developmental characteristics associated with ASD and mild ID, alongside sensory processing challenges. This case highlights the importance of comprehensive multi-battery assessments in supporting early identification, differential diagnosis, and individualized intervention planning for preschool children with neurodevelopmental concerns.

Keywords: Autism Spectrum Disorder, Intellectual Disability, sensory processing, adaptive behaviour

Introduction

Autism Spectrum Disorder (ASD) is recognized as a neurodevelopmental condition associated with persistent deficits in social communication and social interaction problems and display restricted, repetitive patterns of behaviour, interests, or activities ^[1]. Therefore, early identification and comprehensive assessment are crucial in identifying the needs of children with ASD and in planning individualized interventions. This case report discusses a 4-year-3-month-old Chinese boy, anonymous designated to as Bob, who was initially screened using the Ages & Stages Questionnaires®, Third Edition (ASQ-3™) during the initial consultation session. Findings from the screening, caregiver feedback, and behavioural observations indicated developmental delay and characteristics associated with ASD. Due to financial constraints, intervention sessions were initiated prior to comprehensive assessment. However, limited progress was observed during the first three months of the Early Intervention Program (EIP), possibly due to limited understanding of Bob's conditions. Comprehensive assessments were subsequently conducted after financial assistance became available to further evaluate Bob's sensory processing, autism-related characteristics, and adaptive functioning abilities.

Assessment Battery

Three assessments were selected for administration. All the assessments were done with the input from family members.

1. Sensory Profile-Caregiver Questionnaire (SP-CQ)
2. Gilliam Autism Rating Scale – 3rd Edition (GARS-3)
3. Vineland Adaptive Behavior Scales, Second Edition (Vineland-II)

These measures will provide a comprehensive assessment of the client's sensory processing patterns, level of autism spectrum condition, and his personal and social skills.

Assessment Descriptions and Results

Sensory Profile-Caregiver Questionnaire (SP-CQ)

The SP-CQ is an evaluation tool that provides a standard method in measuring a child's sensory processing abilities and identifying the impact of sensory processing on functional performance in daily life ^[2]. The assessment is a judgment-based questionnaire that will involve the caregivers in the data-collecting process. The questionnaire would be completed by reporting the frequency of certain behaviours described in the profile items.

a. Items relating to each Quadrant

The four major sensory quadrants are Registration, Seeking, Sensitivity, and Avoiding. In the model of sensory processing, neurological threshold is the number of stimuli for a neuron to respond to different sensory events in daily life ^[3]. In other words, every individual required different amount of sensory input to respond. Whereas self-regulation is the reaction towards sensory inputs of an individual based on his/her neurological threshold. Based on Figure 1, the vertical intersecting line represents high or low neurological threshold when an individual responds to the stimuli, and the horizontal intersecting line represents passive or active in self-regulation in respond to the stimuli.

Figure 1 shown the traits of the four sensory quadrants:

Registration: The child tends to miss or require longer period to respond to stimuli compared to others. This quadrant reflects a high neurological threshold with less

respond to the stimuli from the environment. The child always refers as a bystander.

Seeking: The child tends to actively search for stimuli from the environment to satisfy his/her needs. This quadrant reflects a high neurological threshold and active respond by searching stimuli from the surrounding. The child always refers as a seeker.

Sensitivity: The child tends to notice stimuli quickly that

often leads to overwhelm. This quadrant reflects a low neurological threshold with passive reaction towards stimuli such as meltdown when hearing unexpected loud noise. The child always refers as sensor.

Avoiding: The child tends to keep themselves away from the stimuli as they often bothered by the stimuli. This quadrant reflects low neurological threshold and active respond by minimizing sensory experience. The child always refers as avoider.

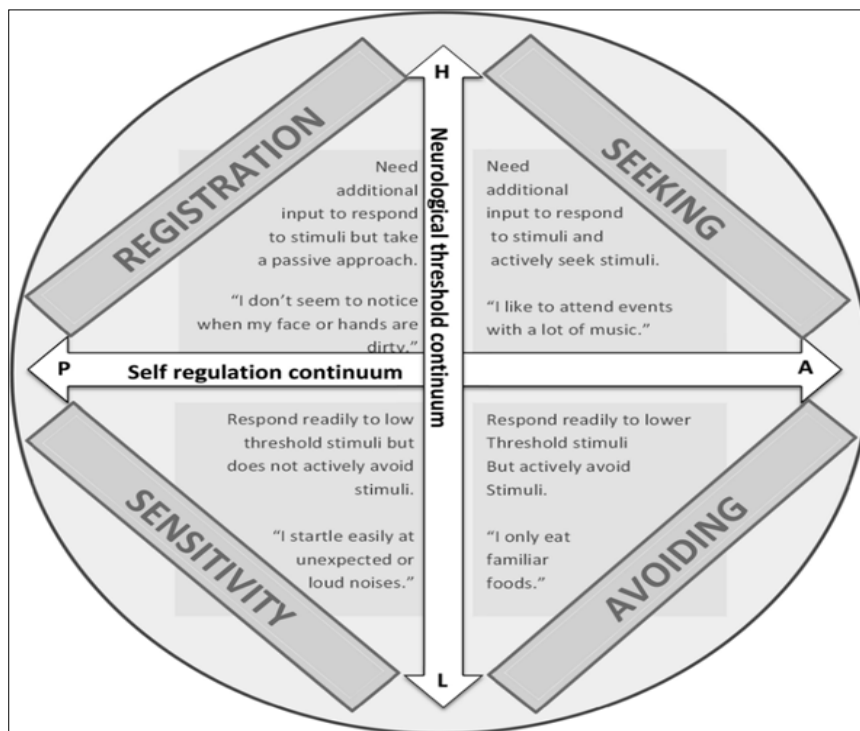


Figure 1. SP-CQ Quadrants [4]

b. Items relating to the Sensory Processing Categories

Auditory processing: It evaluates the child's responses to what they hear.

Visual processing: It evaluates the child's responses to what they see.

Vestibular processing: It evaluates the child's responses to the movement.

Touch processing: It evaluates the child's responses to what they touch.

Multisensory processing: It evaluates the child's responses to stimuli that consist of a mixed sensory experience.

Oral sensory processing: It evaluates the child's responses to touch and taste stimuli to the mouth.

c. Items relating to the Sensory Modulation categories

Sensory processing related to endurance/tone: It evaluates the child's ability to sustain performance in a task.

Modulation related to body position and movement: It evaluates the child's ability to move around functionally.

Modulation of movement affecting activity level: It evaluates the child's ability to adjust his activity level based on the required tasks.

Modulation of sensory input affecting emotional responses: It evaluates the child's ability to use body sensation to make emotional responses.

Modulation of visual input affecting emotional responses and activity level: It evaluates the child's ability to make use of visual cues to interact with others.

d. Items relating to the Behavioural and Emotional Responses Continuum

Emotional/social responses: It evaluates the child's ability to cope with psychosocial situations.

Behavioural outcomes of sensory processing: It evaluates the child's ability to achieve good performance of a task.

Thresholds for response: It evaluates the child's ability to modulate responses to environmental stimuli.

Results:

Table 1: Sensory Quadrant Results

Quadrants	Quadrant Raw Score Total	Classification	Descriptor
1. Registration	66/75	Similar To Others (STO)	Typical Performance
2. Seeking	92/130	More Than Others (MTO)	Probable Difference
3. Sensitivity	80/100	More Than Others (MTO)	Probable Difference
4. Avoiding	127/145	Similar To Others (STO)	Typical Performance

Comments

Based on Table 1, there are two quadrants fall within the 'STO, Typical Performance' range:

Registration: The result suggests that Bob is able to respond or notice the sensory input to participate in a task.

Avoiding: The result suggests that Bob is able to eliminate excessive sensory input to engage well in a task.

The two quadrants fall within the 'MTO, Probable Difference' range:

Seeking: The result suggests that Bob may have the tendency to actively seek sensory experiences more frequently compared to other children. He requires a lot of sensory inputs to satisfy his needs by creating sensation in low stimulus environments, and this behaviour might cause him to get distracted easily. However, Bob would engage in activities that provide a variety of sensory inputs.

Sensitivity: The result suggests that Bob may have the tendency to notice stimuli more quickly compared to other children. He may be bothered by the things in the surrounding that others cannot notice, and this behaviour might cause him to have difficulty staying focus on a task.

Table 2: Sensory Processing Section Results

Sections	Section Raw Score/Total	Classification	Descriptor	Neurological Threshold (Low/High)	Self-Regulation (Active/Passive)
A. Auditory Processing	26/40	More Than Others (MTO)	Probable Difference	Low	Active
B. Visual Processing	41/45	Similar To Others (STO)	Typical Performance	Low	Active/Passive ¹
C. Vestibular Processing	50/55	Similar To Others (STO)	Typical Performance	Low	Passive
D. Touch Processing	71/90	More Than Others (MTO)	Probable Difference	Low	Passive
E. Multisensory Processing	23/35	Much More Than Others (MMTO)	Definite Difference	High	Passive
F. Oral Sensory Processing	44/60	More Than Others (MTO)	Probable Difference	Low/High ²	Active

Note:

¹ Same scores for both Active and Passive items

² Same scores for both Low and High Threshold items

Comments

Based on Table 2, there are two sensory processing sections fall within the 'STO, Typical Performance' range:

Visual Processing: The result indicates that Bob is able to respond effectively to visual information, such as the verbal cues required in a task. Bob scored low threshold and had same scores for both active and passive responses in this section. This suggests that although he detected the visual information provided in a task, he will either actively or less likely respond.

Vestibular Processing: The result indicates that Bob is good in balancing and movement activities. Bob scored low threshold and passive response in this section, suggesting that although he was aware of the balance and movement required in the activity, he still needed a lot of input to respond.

There are three sensory processing sections fall within the 'MTO, Probable Difference' range:

Auditory Processing: The result indicates that Bob may have challenges in processing auditory information effectively, especially the tasks that requires listening skills. Bob scored low threshold and active response in this section, suggesting that he will actively respond to whatever sound he heard from the surrounding. This would affect his attention to the on-hand task as he was bothered by the noise.

Touch Processing: The result indicates that Bob may have challenges in processing touch information effectively, especially the tasks that required him to touch. Bob scored low threshold and passive response in this section, suggesting that although he detected the touch stimulus, he may choose not to respond. He might have a slow response to the things that touched him and requires more intense touch input to make him respond.

Oral Sensory Processing: The result indicates that Bob may have challenges in processing the oral sensory input, such as certain tastes, textures, or temperatures of food and beverages. Bob had same scores for both low and high threshold and active response in this section. It suggests that he may either actively respond to the things that touched his mouth, or craving for the things he liked.

There is a sensory processing section falls within the 'MMTO, Definite Difference' range:

Multisensory Processing: The result indicates that Bob may have challenges in processing multisensory information effectively when the tasks involved a variety of sensory inputs. Bob scored high threshold and passive response in this section, suggesting that he may slow to respond even with a lot of mixed sensory stimuli. This would affect his engagement in the task as he struggles with filtering out unnecessary distractions and focusing on the important stimulus.

Table 3: Sensory Modulation Section Results

Sections	Section Raw Score/Total	Classification	Descriptor	Neurological Threshold (Low/High)	Self-Regulation (Active/Passive)
G. Sensory Processing Related to Endurance/Tone	45/45	Similar To Others (STO)	Typical Performance	N/A ¹	N/A ¹
H. Modulation Related to Body Position and Movement	38/50	More Than Others (MTO)	Probable Difference	Low	Active/Passive ²

I. Modulation of Movement Affecting Activity Level	25/35	Similar To Others (STO)	Typical Performance	Low	Active
J. Modulation of Sensory Input Affecting Emotional Responses	14/20	More Than Others (MTO)	Probable Difference	Low	Active
K. Modulation of Visual Input Affecting Emotional Responses and Activity Level	16/20	Similar To Others (STO)	Typical Performance	N/A ³	N/A ³

Note:

¹ Cannot be determined due to absence of Low Threshold and Active items

² Same scores for both Active and Passive items

³ Cannot be determined due to absence of neurological threshold and self-regulation items

Comments

Based on Table 3, there are three sensory modulation sections fall within the 'STO, Typical Performance' range:

Sensory Processing Related to Endurance/Tone: The result manifests that Bob could regulate himself to sustain performance in a task.

Modulation of Movement Affecting Activity Level: The result manifests that Bob could adjust his activity level according to the task demand. Bob scored low threshold and active response in this section, suggesting that Bob would respond actively towards every movement activity.

Modulation of Visual Input Affecting Emotional Responses and Activity Level: The result manifests that Bob could utilize visual cues in social interaction circumstances.

There are two sensory modulation sections fall within the 'MTO, Probable Difference' range:

Modulation Related to Body Position and Movement:

The result manifests that Bob may have challenges in the ability to move around functionally, such as activities that required balance. Bob scored low threshold and either active or passive response in this section, suggesting that he will either actively or passively respond towards the balancing or even his safety in the movement activities. Stated another way, he would actively seek the dangerous activities without considering his safety or he may not take care of himself safely during movement activities.

Modulation of Sensory Input Affecting Emotional Responses:

The result manifests that Bob may have challenges in the ability to use body sensation to make emotional responses, such as regulate emotions when facing an upset situation. Bob scored low threshold and active response in this section, suggesting that he may actively respond to all social and environmental cues. It indicates that he may easily overwhelm with the sensory stimuli affecting his emotional instability.

Table 4: Behavioural and Emotional Responses Section Results

Sections	Section Raw Score/Total	Classification	Descriptor	Neurological Threshold (Low/High)	Self-Regulation (Active/Passive)
L. Emotional/Social Responses	67/85	Similar To Others (STO)	Typical Performance	Low ¹	Active ¹
M. Behavioural Outcomes of Sensory Processing	21/30	More Than Others (MTO)	Probable Difference	N/A ²	N/A ²
N. Items Indicating Thresholds for Response	9/15	Much More Than Others (MMTO)	Definite Difference	High	Active

Note:

¹ Cannot be determined due to absence of High Threshold and Passive items

² Cannot determined due to absence of neurological threshold and self-regulation items

Comments:

Based on Table 4, there is a behavioural and emotional responses section falls within the 'STO, Typical Performance' range:

Emotional/Social Responses: The result shows that Bob is able to cope with social situations without affecting his emotions.

There are a sensory modulation section falls within the 'MTO, Probable Difference' range:

Behavioural Outcomes of Sensory Processing: The result shows that Bob may have some challenges in the ability to

perform well in a task, such as completing the tasks and perform good quality of work.

Apart from that, there is a sensory modulation section falls within the 'MMTO, Definite Difference' range:

Items Indicating Thresholds for Response: The result shows that Bob may have more challenges in the ability to manage his responses to environmental stimuli. Bob scored high threshold and active response in this section, suggesting that he may need support to discriminate unwanted stimuli and react appropriately to environmental stimuli.

Table 5: SP-CQ Cluster Evaluation for Suspected ADHD

Sections	Raw Score/Total	Classification
Visual/Tactile Processing Cluster	33/60	Definite Difference
Factor 1: Sensory Seeking	53/85	Definite Difference
Factor 2: Emotionally Reactive	62/80	Typical Performance
Factor 5: Inattention/Distractibility	20/35	Probable Difference

Comments

Based on Table 5, Bob showed typical performance for Factor 2. However, he had probable challenges in Factor 5 and definite challenges in Visual/Tactile Processing Cluster as well as Factor 1. According to Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), individuals with ADHD will display persistent pattern of inattention and/or hyperactivity-impulsivity that impacts daily functioning ^[1]. Hence, Bob might have ADHD or

Attention Deficit Disorder (ADD) as the Processing Cluster, Factors 1 and 5 met the criteria of ADHD or ADD but not for Factor 2.

The researchers found that ADHD individuals would constantly seek body movement and stimuli that could be due to inhibitory control difficulty ^[5]. It means Bob may actively seeking sensory stimuli while working on the task and this could indirectly impact his attention towards the task.

Table 6: SP-CQ Data Scores and 9 Factors Evaluation for Suspected Autism

Sections	Score Range	Raw Score	Description
A. Auditory Processing	20-30	26	Within the Range
B. Visual Processing	25-37	41	Out of Range
C. Vestibular Processing	37-47	50	Out of Range
D. Touch Processing	50-70	71	Out of Range
E. Multisensory Processing	15-25	23	Within the Range
F. Oral Sensory Processing	27-47	44	Within the Range
G. Sensory Processing Related to Endurance/Tone	25-47	45	Within the Range
H. Modulation Related to Body Position & Movement	30-40	38	Within the Range
I. Modulation Related to Movement Affecting Activity Level	17-25	25	Within the Range
J. Modulation of Sensory Input Affecting Emotional Response	10-15	14	Within the Range
K. Modulation of Visual Input Affecting Emotional Responses & Activity Level	10-15	16	Out of Range
Factor 1: Sensory Seeking	45-65	53	Within the Range
Factor 2: Emotionally Reactive	35-50	62	Out of Range
Factor 3: Low Endurance/Tone	35-43	45	Out of Range
Factor 4: Oral Sensory Sensitivity	25-37	37	Within the Range
Factor 5: Inattention/Distractibility	15-25	20	Within the Range
Factor 6: Poor Registration	13-33	32	Within the Range
Factor 7: Sensory Sensitivity	10-20	20	Within the Range
Factor 8: Sedentary	10-15	20	Out of Range
Factor 9: Fine Motor/Perceptual	5-10	3	Out of Range

Comments

Based on Table 6, there were 12 out of 20 sections scored within the range for suspected Autism. As mentioned before, individual with ASD may face difficulties in social interaction and behavioural control, DSM-5 also stated that individuals with ASD would also have hyper- or hypo-reactivity to the sensory input of the environment ^[1]. In Bob's case, he is facing some sensory processing and sensory modulation issues which have met the criteria of ASD. Due to sensory processing differently and has difficulty modulating himself, Bob may show challenges in daily social situation, especially in perceiving information and expressing himself to others.

Based on 9 factors profiling, Factors 4, 6, 7, and 8 are relating to ASD. Bob scored within the range in Factors 4, 6, and 7. This suggests that Bob is suspected to have autism, and based on the GARS-3 result on Table 8, Bob scored level 2 in the severity level of autism.

Gilliam Autism Rating Scale – 3rd Edition (GARS-3)

The GARS-3 is a norm-referenced screening instrument that assists in identifying autism and the levels of severity of the individuals from age 3 to 22 ^[6]. The items are consistent with the diagnostic criteria used to identify autism spectrum disorder in Diagnostic and Statistical Manual of Mental Disorders – 5th Edition (DSM-5).

GARS-3 contains of six subscales that are specific, observable, and measurable behaviours. The four-subscale composite is used when the individuals are nonverbal or having severely communication impaired. Based on the result, the higher the Autism Index score, the greater is the probability of having autism spectrum disorder that reflects more severe autistic behaviours. Table 7 shows the interpretation guide for the result analysis.

Table 7: Interpretation Guide for GARS-3 Result

Autism Index	≤ 54	55 - 70	71 - 100	≥ 101
Probability of ASD	Unlikely	Probable	Very Likely	
DSM-5 severity level for ASD		Level 1	Level 2	Level 3
Descriptor	Not ASD	Minimal support required	Requiring substantial support	Requiring very substantial support

Subscales of GARS-3

Restricted/repetitive behaviour: It refers to the child's behaviours that involved repetitive activities or fixations.

Social interaction: It refers to the child's ability to interact with others and engage in a social situation.

Social communication: It refers to the child's ability to understand and use verbal and non-verbal communication styles during a conversation.

Emotional responses: It refers to the child's ability to regulate emotions and express his emotions appropriately.

Cognitive style: It refers to the child's way of processing information and thinking.

Maladaptive speech: It refers to the child's unusual language usage while speaking

Results

Table 8: GARS-3 Report Summary

Subscales	Scaled Scores	Percentile Rank
Restrictive/Repetitive Behaviours	11	63
Social Interaction	10	50
Social Communication	11	63
Emotional Responses	5	3
Cognitive Style	N/A	N/A
Maladaptive Speech	N/A	N/A
Subscale scores (4 scores)	37	37
Subscale scores (6 scores)	N/A	N/A
Autism Index	95	
Probability of Autism:	Very Likely	
Severity Level	2	

Comments

Based on Table 8, Bob scored the highest score on Restrictive/Repetitive Behaviours and Social Communication subscales. It shows that Bob has more difficulty in these areas as he displays repetitive body movements and performs certain things ritualistically that veer far from accepted. He is also facing challenges in understanding the body language and interpreting as well as using social subtleties. However, Bob scored the lowest score on Emotional Responses subscale. It shows that Bob could recognize his and others' emotions and make appropriate emotional responses to different situations. The four-subscale composite is used as Bob has difficulty to communicate. The Autism Index of 95 indicates that Bob is very likely to have ASD with a level 2 of severity. Hence, the result suggests that he requires significant individual attention and guidance to function well in daily activities and also intense academic and behavioural coaching.

Vineland Adaptive Behavior Scales, Second Edition (Vineland-II)

The Vineland-II is an instrument to support the diagnosis of intellectual and developmental disabilities [7]. It used to assess personal and social competency of individuals from birth through adulthood. These scales aim to measure what the individual does but not what he or she is able to do. It consists of four domains: Communication, Daily Living, Socialization, Motor Skills that shown the individual's performance of the daily activities.

Domains and subdomains of Vineland-II

Communication domain

Receptive: It measures the way of an individual listens and understands the spoken information from the others.

Expressive: It measures the way of an individual expresses himself by using spoken words and sentences.

Written: It measures an individual's knowledge about letter formation, reading and writing skills.

Daily living skills domain

Personal: It measures the way of an individual self-care behaviours including eating, dressing, and practicing personal hygiene.

Domestic: It measures the way of an individual performs household tasks.

Community: It measures the way of an individual integrates into the society by understanding and following the societal rules.

Socialization domain:

Interpersonal relationship: It measures the way of an individual interacts with others in a social environment.

Play and leisure time: It measures an individual's playstyle during leisure time.

Coping skills: It measures the way of an individual manages himself in various situations.

Motor skills domain:

Gross: It measures an individual's arms and legs coordination and movement.

Fine: It measures the way of an individual operates objects using hands and fingers.

Maladaptive behaviour domain:

Maladaptive behaviour index: It is a composite of Internalizing, Externalizing, and Other types of unwanted behaviour that may influence adaptive functioning.

Results

Table 9: Vineland-II Score Summary

Subdomain/Domain	v-Scale Score	Standard Score	Percentile Rank	Adaptive Level	Age Equivalent (year:month)	Strength/Weakness
Receptive	5	49	<1	Low	0:10	Strength
Expressive	5			Low	1:0	
Written	11			Moderately Low	2:5	
Communication				Low		
Personal	7	49	<1	Low	1:4	Strength
Domestic	10			Moderately Low	1:10	

Community	7			Low	0:7	
Daily Living Skills		55	<1	Low		
Interpersonal Relationships	7			Low	0:6	
Play and Leisure Time	5			Low	<0:1	Weakness
Coping Skills	10			Moderately Low	1:11	Strength
Socialization		57	<1	Low		
Gross Motor Skills	10			Moderately Low	2:6	
Fine Motor Skills	8			Low	2:2	
Motor Skills		64	1	Low		
Adaptive Behaviour Composite		54	<1	Low		

Table 10: Maladaptive Behaviour Score Summary

Subdomain/Domain	v-Scale Score	Level
Internalizing	19	Elevated
Externalizing	16	Average
Maladaptive Behaviour Index	20	Elevated

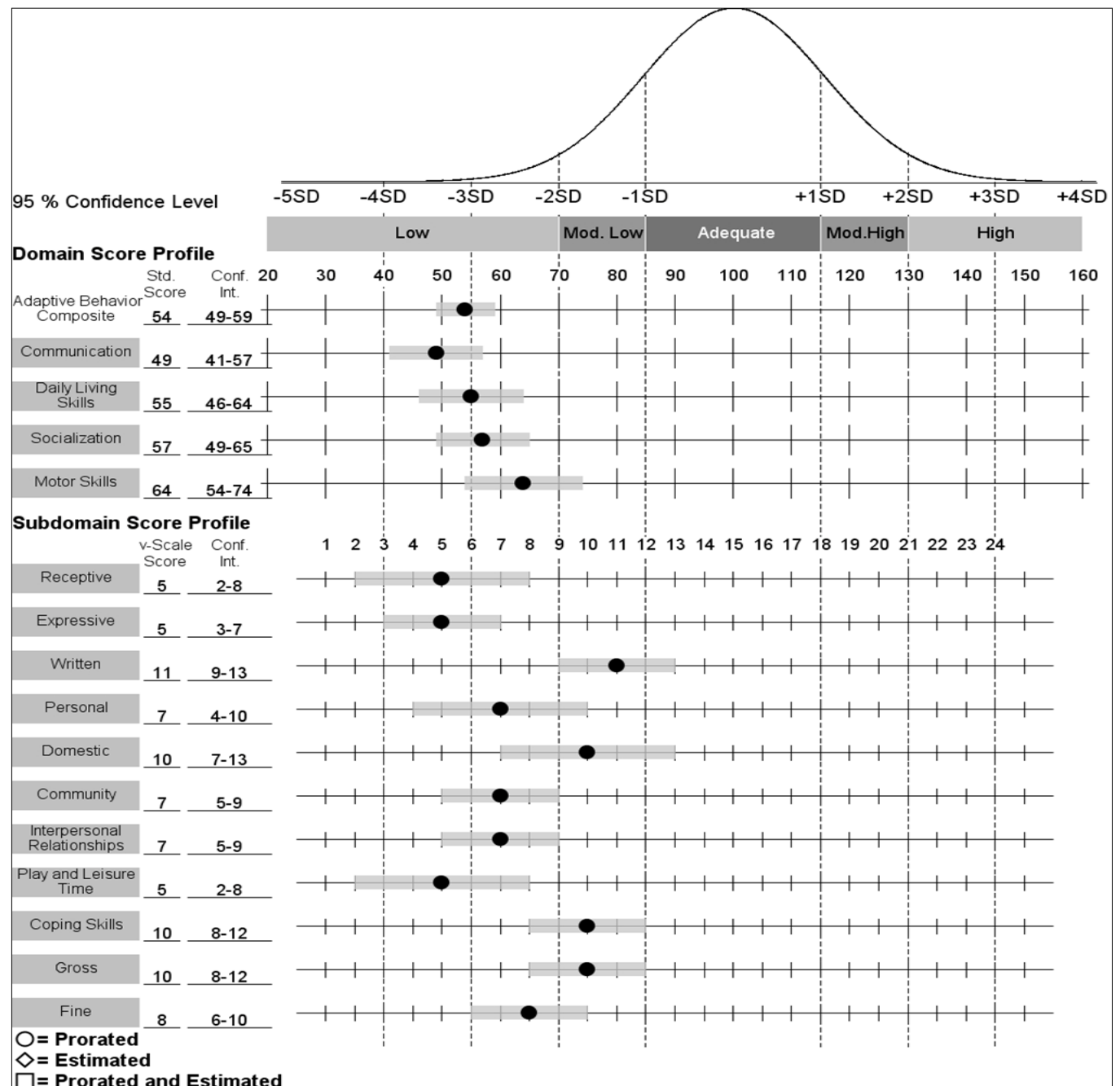


Fig 2: Vineland-II Score Profile

Comments

Based on Table 9, Bob scored low in each domain. He was facing the most challenges in the Communication domain. As he has difficulty communicating using words and understanding spoken information, he scored low for both Receptive and Expressive. However, Written was his strength among subdomains in Communication. In the Daily Living Skills domain, Bob scored low for Personal and Community subdomains. The result indicates that he has difficulty taking care of himself properly and integrating himself into the society. Domestic was his strength which indicates that he is less challenges in performing household chores when necessary. In Socialization domain, Bob scored low for Interpersonal Relationship and Play and Leisure Time. Play and Leisure Time was the most challenges among all domains and subdomains. This explains that he prefers to play on his own during playtime without interacting with others. Despite that, Coping Skills was his strength, suggesting that he is facing little challenges to manage himself in various situations. In Motor Skills, Bob scored low for Fine Motor Skills. This indicates that he has difficulty handling objects such as writing tools, scissors or small objects. He had moderately low for Gross Motor Skills, suggesting that he had little difficulty in moving and coordinating his body. Overall, Bob scored low in adaptive behaviour composite.

Table 10 showed that Bob scored elevated for Internalizing behaviour and average for Externalizing behaviour. This indicates that Bob may struggle with negative inner thoughts and emotions that influencing his adaptive behaviours, such as avoids others and prefers to be alone, overly anxious cries or laugh easily, or lacks interest in life [7].

Figure 2 showed a generalized or flat pattern of deficits across the domains in adaptive behaviour. It indicates that Bob may have mild mental retardation as he fulfilled the criteria of two standard deviations or more below the mean at least one domain or the composite score when compared to normative sample [8, 9]. For Bob's result, all domains and Adaptive Behaviour Composite were two or more standard deviations below the mean. Bob may have a combination of autism and mental retardation as he shows delay in Communication domain but higher standard score on Motor Skills domain [7].

Other than that, Bob's result indicates that he may have non-verbal autism as the mean Adaptive Behaviour Composite was more than three standard deviations below the mean in nonclinical reference group. The mean subdomain v-scale scores in Play and Leisure Time, and Expressive subdomains should be between 4.7 to 5.3 that were more than three standard deviations lower than the average. However, only the mean subdomain v-scale scores for Interpersonal Relationship did not meet the criteria of nonverbal autism profile. In Maladaptive Behaviour Scales, the scores for Internalizing subscales are elevated and average scores for Externalizing subscales have fulfil the criteria of nonverbal autism profile. This could be explained as internalizing behaviours are more associated with autism.

Assessment Summary

SP-CQ

According to the result in SP-CQ, Bob is probably the seeker and sensor. He is actively seeking sensory experience and at the same time is sensitive towards stimuli in the

environment. Based on his result, Bob does not meet the criteria for Sensory Processing Disorder as he only showed probable difference for Seeking and Sensitivity, but typical performance for Low Registration and Avoiding. Furthermore, Bob does not show any sign of depression and anxiety from the result of the 4 sensory quadrants. Bob showed more challenges in Multisensory Processing and Threshold for Response. It indicates that Bob has difficulty filtering out unnecessary stimuli that would affect his response towards the ongoing task. From Table 5 result, Bob might have ADHD or ADD as he displayed the symptoms of hyperactivity and inattention. In Table 6, Bob has only met 3 out of 4 Factors in 9 Factors profiling. Hence, he might have autism as he shows difficulty in some areas related to autism.

GARS-3

Bob was suspected to have ASD with a level 2 of severity. He showed more challenges in Restrictive/Repetitive Behaviour and Social Communication. His uncontrollable restrictive behaviours and communication difficulty have affecting him to function well in daily life. The researcher found that level 2 autism will have challenges in social interaction with others, such as understanding nonverbal cues and initiating and sustaining conversation with others; language and communication problem such as limited vocabulary and difficulty remaining on the topic; displays repetitive behaviour that is noticeable by others such as hand-flapping, rocking themselves; and lastly adaptability difficulty such as inflexible in changing daily routines [10]. Bob has met the criteria of level 2 autism based on his result; hence, Bob requires substantial support to help him adapts with neurotypical environment by learning to communicate in a socially acceptable way and controlling his restrictive/repetitive behaviours.

Vineland-II

According to Figure 2, Bob had scored all domains and subdomains below than average. He had a generalized pattern of deficit that indicates Bob may suffer from a mild mental retardation, and it is also named as mild Intellectual Disability (ID) in DSM-5 [1]. The individual with mild ID will be having difficulties in intellectual functioning such as problem solving and abstract thinking; difficulties in adaptive functioning such as cognitive, social, and practical skills; and all these difficulties appeared during developmental period. Based on the Vineland-II result, Bob was suffering from adaptive functioning issues that affect daily functioning. However, Bob's IQ score is unknown as no IQ test is conducted. Other than that, Bob had fulfilled the criteria of nonverbal autism. As noted by the DSM-5, poor adaptive functioning is often related to other neurodevelopmental disorders, such as ASD and ADHD [1]. Therefore, Bob's symptoms of ASD and ADHD have affected his adaptive skills in various environment.

Conclusion

Based on the multiple-battery assessment results, Bob is suspected to have autism which has match with the clinical observation in the initial consultation. Based on DSM-5, one of the criteria of the individual with ASD is having sensory processing difficulties. Although the result from SP-CQ only showed some forms of difficulties in sensory processing, Bob is still fulfilling some symptoms of ASD. In

GARS-3, Bob was having level 2 autism which specifically have more challenges in restrictive/repetitive behaviour and social communication. In Vineland-II, Bob was suspected to have a combination of mild mental retardation and autism. Individuals with mild ID finds challenges in abstract thinking, social functioning, and adaptive skills that would affect daily living ^[1]. Bob results showed that he is facing difficulties in all areas of adaptive behaviours. The result of suspected ADHD that found in SP-CQ has shown that Bob may have ADHD or ADD even though Bob did not meet all the criteria. However, the result in Vineland-II did not meet the criteria of ADHD. Thus, Bob's results could not firmly explain that Bob might be having ADHD or ADD. It would be helpful if some assessments that could evaluate ADHD or ADD could be conducted for Bob to see a clearer picture of the symptoms. Hence, based on these three assessment results, Bob is highly possible to have ASD combined with a mild ID.

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