THE ASIAN EDUCATIONAL THERAPIST

ISSN: 2972-4104, Volume 3, Issue 3, Page 49 - 65

CASE REVIEW

Psychoeducational Evaluation and Profiling Using the Educational Therapy Framework: A Case Study

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Article DOI: https://doi.org/10.64663/aet.22

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Cite as: *Ding, Zining (2025). Psychoeducational Evaluation and Profiling Using the Educational Therapy Framework: A Case Study. The Asian Educational Therapist, 3(3), 49-65.*

ABSTRACT

This case study presents a comprehensive psychoeducational evaluation of an eleven-year-old Chinese boy, referred to as LH, who has co-occurring Attention-Deficit/Hyperactivity Disorder (ADHD) and Tourette Syndrome. The evaluation was conducted using the Hierarchy Model within the Educational Therapy framework. Cognitive assessment with the Wechsler Intelligence Scale for Children (WISC) revealed that LH demonstrates strengths in visuospatial reasoning, concept formation, and factual knowledge. At the same time, he shows weaknesses in attention, sequential processing, short-term memory, abstract reasoning, and processing speed. WISC-derived profiles indicated potential learning difficulties, particularly in reading, arithmetic, and multi-step problem-solving. Socio-emotional assessment using the Strengths and Difficulties Questionnaire for Children indicated that LH experiences significant difficulties in peer relationships. He shows limited social motivation and faces challenges in establishing and maintaining stable interactions. These social vulnerabilities can be understood in the context of LH's cognitive and neurodevelopmental profile. Attention deficits, executive function weaknesses, and the presence of tics contribute to social challenges and may increase the risk of peer isolation. In summary, this case study demonstrates how the Hierarchy Model within the Educational Therapy framework can systematically integrate multi-domain assessment data to generate a comprehensive psycho-educational profile. Unlike conventional approaches that focus on isolated cognitive scores or single-domain academic outcomes, this model offers a holistic understanding of children's challenges, the underlying processes contributing to them, and potential avenues for individualized intervention planning.

Keywords: *Educational Therapy, Learning Disorder, Attention-Deficit/ Hyperactivity Disorder, Tourette Syndrome*

1. INTRODUCTION

Specific learning disorders (SLDs) are a group of neurodevelopmental conditions characterized by persistent difficulties in acquiring academic skills, such as reading, writing, or mathematics, despite adequate intelligence and educational opportunities (American Psychiatric Association [APA], 2013). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013), these difficulties are not explained by intellectual disability, sensory deficits, or lack of educational opportunities, but instead reflect enduring difficulties in the cognitive and linguistic processes underpinning literacy and numeracy. SLDs often manifest in early school years when children face structured learning demands, and they are known to persist into adolescence and adulthood if not adequately addressed. The prevalence of SLDs has been widely studied across different cultural and educational contexts. Global epidemiological research suggests that between 5% and 15% of school-aged children meet diagnostic criteria for an SLD, with reading disorder (dyslexia) being the most common, followed by disorders of written expression and mathematics disorder (dyscalculia) (Görker, 2019; Peterson & Pennington, 2015; Yang et al., 2022). Collectively, these figures highlight the significant proportion of children worldwide struggling with SLDs, with important implications for their educational attainment, emotional health, self-esteem, and long-term vocational opportunities.

A key feature of SLDs is that they seldom occur in isolation. Instead, they frequently co-occur with other neurodevelopmental, psychiatric, and behavioral conditions. In a large German population-based cohort study (N > 3,000), children with learning difficulties exhibited substantial comorbidity, with 28% meeting criteria for ADHD, 28% for depression, 21% for anxiety disorders, and 22% for conduct disorder (Visser et al., 2020). Consistent with these findings, systematic reviews indicate that psychiatric comorbidities, such as anxiety, depression, and conduct problems, occur at markedly higher rates in children with SLDs compared to their typically developing peers (Khodeir et al., 2020). These comorbid conditions can substantially complicate diagnosis, prognosis, and intervention planning.

ADHD is one of the most common neurodevelopmental disorders in children, often characterized by symptoms of inattention, hyperactivity, and impulsivity, which adversely affect academic, behavioral, and social functioning (Musullulu, 2025). A systematic review reported that the comorbidity rate of ADHD in children with SLD ranged approximately from 25.5% to 41.9%. Other comorbidities included oppositional defiant disorder (ODD; ~7.8%), conduct disorder (CD; 0.8%–3%), and depressive disorders (8.8%–10.8%) (Khodeir et al., 2020). In that review, although only five studies met the inclusion criteria, the prevalence of ADHD among SLD children was consistently highest across studies. This high rate of overlap can be explained by shared genetic liability, overlapping cognitive deficits such as weaknesses in working memory and processing speed, and the reciprocal impact of attentional dysfunction on academic skill acquisition (Pennington, 2006; McGrath et al., 2011; McGrath & Stoodley, 2019). Meta-analytic studies show that while both ADHD and dyslexia mainly affect distinct brain regions, subtle gray matter reductions converge in the right caudate nucleus, a key area for executive functioning and procedural learning (McGrath & Stoodley, 2019). Supporting this, Lee and colleagues (2023) found that gray matter volumes in the right caudate and anterior cingulate cortex were associated with both reading and attention performance in children. These findings suggest that shared neuroanatomical features, particularly in fronto-striatal circuits, may underlie the frequent co-occurrence of dyslexia and ADHD.

While ADHD is a frequent comorbid condition among children with SLD, the presence of Tourette Syndrome (TS), which is another neurodevelopmental condition, further complicates the clinical and educational profile. TS is a chronic tic disorder characterized by both motor and vocal tics. Studies report that 85.7% of individuals with TS have at least one lifetime psychiatric comorbidity, with ADHD

being the most prevalent at 54.3% of cases (Hirschtritt et al., 2015; Robertson, 2015). Previous research has reported selective cognitive impairments, particularly in attention, executive functioning, and verbal processing, that is associated with TS. For example, a study of children with TS found that they performed worse than controls on IQ, attention, and mathematics achievement, with preserved visuospatial abilities (Huckeba et al., 2008). And their attention deficits, especially in sustained attention and working memory, strongly predicted arithmetic performance. Similarly, comparative studies of TS, TS+ADHD, and TS+OCD revealed that while TS alone was associated with deficits in specific executive functions (e.g., inhibition and strategy generation), the TS+ADHD group exhibited broader impairments across multiple executive function measures, including attentional control, planning, and organizational skills (Channon et al., 2003). Such difficulties impair not only arithmetic problem-solving but also more general academic self-regulation and task management, which ultimately lead to compromised classroom performance.

Besides cognitive and academic challenges, children with multiple comorbidities frequently experience pronounced emotional and social difficulties. A meta-analysis by Nelson and Harwood (2011) found that children with learning disabilities report significantly higher levels of anxiety than typically developing peers, with a medium effect size (d = 0.61). Such emotional distress directly interferes with cognitive processes essential for learning, including attention, working memory, and self-regulation, thereby further exacerbating academic challenges (Owens et al., 2012). Children with both TS and ADHD are particularly vulnerable to emotional difficulties, such as anxiety, tension, frustration, and stress-related symptoms, which may, in turn, intensify tic severity (Ludlow et al., 2022). And these emotional challenges have been found to directly undermine self-esteem or indirectly impair psychosocial functioning and overall quality of life (Eapen et al., 2016).

Given the complexity and heterogeneity in children who have multiple comorbidities with learning difficulties, a more comprehensive and integrative framework is required. Educational Therapy (EdTx) is an interdisciplinary, holistic intervention model that combines principles from education, developmental psychology, and neuroscience. Rather than targeting isolated academic skills or behavioral symptoms, EdTx seeks to strengthen the foundational cognitive, socio-emotional, sensory, and motor processes that support learning, self-regulation, and adaptive functioning (AET, 2002; Chia & Wong, 2014). Within this framework, comprehensive evaluation and profiling are essential as they provide the foundation for tailoring interventions to the child's unique developmental needs. To operationalize this assessment process, EdTx incorporates the Hierarchy Model of Abilities and Skills as a guiding structure (Lau & Xie, 2020). It organizes human functioning into five interrelated and hierarchically supporting blocks.

1.1 Block I: Innate Abilities and Skills

This foundational block encompasses core cognitive abilities such as language, abstract reasoning, problem-solving, short-term memory, and cognitive flexibility. These capacities form the basis of intellectual functioning and learning potential. Assessment at this level often uses standardized intelligence measures like the Wechsler Intelligence Scale for Children–Fifth Edition (WISC–V; Wechsler, 2014), enables therapists to map a child's cognitive profile, prevent overinvestment in areas of constitutional difficulty, and optimize intervention efficiency by aligning instructional goals with a child's innate strengths and limitations.

1.2 Block II: Sensory and Motor Abilities and Skills

The second block focuses on sensory processing and perceptual-motor coordination, including proprioceptive, vestibular, tactile, visual, and auditory functioning. Evaluation of this domain provides critical insights into a child's sensory thresholds and regulation patterns. Tools such as the Sensory Profile 2 (SP2, Dunn, 2014) are commonly used in this block.

1.3 Block III: Adaptive Behavioral Abilities and Skills

This block examines daily living skills and social adaptation abilities, including toileting, dressing, eating, personal hygiene, and basic social interaction. Assessments such as the Adaptive Behavior Diagnostic Scale (ABDS; Pearson Assessments, 2016) are typically employed to identify strengths and needs in this area.

1.4 Block IV: Social-Emotional Behavioral Abilities and Skills

The fourth block addresses socio-emotional functioning, covering both internalizing (e.g., anxiety, depression, emotional avoidance) and externalizing (e.g., aggression, impulsivity) behaviors that may interfere with learning and peer relationships. Evaluation in this domain may employ projective test such as the Draw-a-Person Test (Machover, 1949) and Thematic Apperception Test (Murray, 1943), or standardized rating scales such as the ADHD Rating Scale–5 (DuPaul et al., 2016) and the Gilliam Autism Rating Scale–Third Edition (GARS-3) (Gilliam, 2014).

1.5 Block V: Cognitive Behavioral and Academic Abilities and Skills

The final block consolidates higher-order cognitive and academic capacities, including expressive and receptive language, reading comprehension, mathematical calculation, abstract reasoning, and executive functions such as planning and time management. Assessment at this level, ranging from standardized achievement tests to curriculum-based measures, allows therapists to identify specific obstacles to classroom learning and inform the design of individualized education plans (IEPs).

The hierarchical model guides clinicians in selecting appropriate assessment tools, organizing and analyzing assessment data, and ultimately constructing an integrative psychoeducational profile. This structured profiling allows therapists to identify both primary academic challenges and the cognitive, sensory, and socio-emotional factors that contribute to them. Moreover, areas of strength that can be utilized to support learning and developmental growth are also noted. This approach is especially relevant for children with co-occurring learning and neurodevelopmental disorders, as their challenges typically span multiple, interacting domains, with deficits in one area potentially exacerbating difficulties in others. The present study examines an 11-year-old Chinese boy previously diagnosed with ADHD and TS. The hierarchy approach within the EdTx was used to organize his test outcomes, and generate a psychoeducational profile that informs tailored intervention strategies.

2. CASE STUDY

2.1 Brief Background Information of the Client

‘LH’, the pseudonym is used to anonymized a 11-year-11-month-old Chinese male. His mother contacted Merlion Paediatric Therapy Clinic, Singapore, through a referral, to explore educational therapy support for her child. According to the medical report provided by the parent, LH received a confirmed diagnosis of Tourette Syndrome (TS) in 2022 and of Attention Deficit-Hyperactivity Disorder (ADHD) in 2023, at two different pediatric hospitals in China. Both diagnoses were documented in official psychomedical reports, which were shared with the clinic for review. The family sought educational therapy to provide structured and holistic intervention that supports LH's learning, behavioral regulation and overall developmental.

2.2 Assessment Overview for Educational Subtyping and Profiling

2.2.1 Hierarchical Model of Abilities and Skills

The current analysis is based on previously collected medical and psychological assessment reports of LH from 2022 to 2023 in a Chinese hospital setting. Consequently, not all hierarchical blocks of abilities and skills could be assessed. Specifically, Block II (Sensory Behavioral Abilities & Skills), III (Adaptive Behavioral Abilities & Skills) and Block V (Cognitive Behavioral Abilities & Skills) do not have corresponding assessment data in the existing records and therefore they are not included in the current analysis. The discussion focuses on the blocks for which standardized assessment data are available.

2.2.2 Block I: Innate Abilities & Skill

The Wechsler Intelligence Scale for Children–China (WISC-RC; Dan et al., 1990)
The WISC-RC is the Chinese adaptation of the Wechsler Intelligence Scale for Children-Revised (WISC-R; Wechsler, 1974), designed to assess the cognitive abilities of children aged 6 to 16. The administration and scoring procedures for the Chinese WISC-R closely follow those of the original version, ensuring standardized administration and interpretation. However, the content and stimuli used in the test are culturally adapted to be relevant and appropriate for Chinese-speaking children, which helps to minimize any potential cultural bias in the assessment.

The WISC-R is composed of several subtests, each designed to assess different aspects of intellectual functioning. Below is a brief description of each subtest:

Subtest	Abbreviation	Description
Information	IN	Assesses general knowledge and verbal comprehension by asking the child to answer questions about factual information.
Similarities	SI	The child is asked to identify how two words or concepts are similar, testing abstract reasoning and verbal conceptualization.
Vocabulary	VO	Evaluates expressive language abilities by asking the child to define words presented by the examiner.
Comprehension	CO	Measures social understanding and practical reasoning by presenting various situations and asking the child to explain or interpret them.
Arithmetic	AR	Assesses numerical reasoning and mathematical problem-solving skills through oral arithmetic problems.
Digit Span	DS	Evaluates auditory attention and working memory by asking the child to repeat sequences of digits forward and backward.
Picture Completion	PC	Measures visual perception and attention to detail by presenting incomplete pictures and asking the child to identify the missing part.
Picture Arrangement	PA	Evaluates perceptual organization and social understanding by having the child arrange pictures to create a logical story.
Block Design	BD	Assesses visuospatial abilities and nonverbal reasoning by having the child recreate a pattern using colored blocks within a time limit.
Object Assembly	OA	Measures visual-motor coordination, spatial perception, and problem-solving by assembling puzzle-like pieces into a complete picture.
Coding	CD	Assesses processing speed and attention to detail, including ability to process visual information efficiently and maintain sustained attention.

These subtests collectively provide a comprehensive assessment of a child's intellectual abilities across various domains, including verbal comprehension, perceptual reasoning, working memory, and processing speed. From the individual subtests, **three composite scores** are derived: ***Verbal IQ (VIQ)***, reflecting verbal comprehension and language-related cognitive abilities; ***Performance IQ (PIQ)***,

representing nonverbal reasoning and visuospatial skills; and ***Full-Scale IQ (FSIQ)***, providing an overall estimate of intellectual functioning by integrating verbal and nonverbal performance. The WISC-C offers a robust framework for identifying cognitive strengths and weaknesses, supporting the diagnosis of learning difficulties, and guiding educational and therapeutic planning.

2.2.3 Block IV: Socio-Emotional Behavioral Abilities & Skills

The Strengths and Difficulties Questionnaire for Children – Parent Version (SDQ-PC1; Goodman et al., 1997)

SDQ-PC1 is a widely used screening tool designed to assess the behavioral and emotional strengths and difficulties of children aged 4 to 10 years. It provides a brief but reliable snapshot of a child's psychosocial functioning from the perspective of parents or primary caregivers, aiming to identify potential areas of concern that may require further evaluation or intervention. The SDQ-PC1 consists of 25 items divided into five subscales: Emotional Symptoms (assessing anxiety, depression, and emotional distress), Conduct Problems (evaluating behavioral and rule-breaking difficulties such as aggression or oppositional behavior), Hyperactivity/Inattention (measuring hyperactivity, impulsivity, and attention difficulties characteristic of ADHD), Peer Relationship Problems (assessing social interaction difficulties, peer acceptance, and friendship quality), and Prosocial Behavior (capturing positive social behaviors such as kindness, empathy, and helpfulness). Each item is rated on a 3-point scale: 0 = Not true, 1 = Somewhat true, 2 = Certainly true, based on observations of the child's behavior over the past six months. Subscale scores are calculated by summing relevant items, with higher scores indicating greater difficulties, except for the Prosocial Behavior subscale, where higher scores reflect more positive behavior.

3. RESULTS AND DISCUSSION FROM ASSESSMENTS FOR PSYCHOEDUCATIONAL EVALUATION AND PROFILING

3.1 Block 1: Innate Abilities & Skill

The WISC-C was administered to assess LH's intellectual functioning. This test yields a measure of general intelligence, the Full-Scale IQ (FSIQ), as well as two primary composite scores: the Verbal IQ (VIQ) and the Performance IQ (PIQ), which capture verbal-conceptual reasoning and nonverbal/visuospatial problem-solving, respectively. Each index is derived from a set of subtests, whose scaled scores are standardized to a mean of 10 with a standard deviation of 3. In this framework, differences ≥3 points from the mean are considered clinically significant for verbal subtests and ≥4 points for performance subtests. Table 1 summarizes LH's scaled scores, and percentile ranks across all administered subtests.

Table 1. WISC Subtest Results

Subtest	Scaled Scores	Percentile Rank	Difference from the Subtest Mean
Verbal Subscale			
1. Information (IN)	12	74.9	[+2]
2. Similarities (SI)	9	37.7	[-1]
3. Arithmetic (AR)	8	25.1	[-2]
4. Vocabulary (VO)	11	62.3	[+1]
5. Comprehension (CO)	8	25.1	[-2]
6. Digit Span (DS)	10	50	[0]
Performance Subscale			

1. Picture Completion (PC)	5	4.7	[-5]
2. Picture Arrangement (PA)	6	9.2	[-4]
3. Block Design (BD)	14	90.8	[+4]
4. Object Assembly (OA)	12	74.9	[+2]
5. Coding (C)	7	15.9	[-3]

Across the verbal subtests, LH's performance falls generally within the expected range, with no scores showing a significant difference either from the normative mean of 10. It indicates that his verbal abilities present a balanced profile without marked intra-individual discrepancies. Within this overall pattern, Information (12) represents a relative strength, reflects a good base of general knowledge and the ability to recall factual information learned at home and in school. By contrast, Arithmetic and Comprehension, both with scaled scores of 8, fall below the normative mean, though not at a level considered clinically significant. The AR test reflects relative weak mental calculation, numerical reasoning, sustained attention and short-term memory for meaningful information. The CO test, which ask questions of social and practical understanding of real-life scenarios, indicates that the application of common-sense and social reasoning may be less developed relative to his strengths in factual knowledge. Finally, scores of Vocabularies (11), Digit Span (10), and Similarities (9) test were close to the mean. Vocabulary reflects adequate word knowledge, language development, and expressive ability. Digit Span indicates average attention/concentration ability and short-term memory for non-meaningful auditory stimuli. Similarities (9), which assesses abstract verbal reasoning and the ability to identify conceptual relationships, is broadly age-appropriate as well. Overall, these findings depict a verbal profile in which LH demonstrates solid knowledge acquisition, average auditory memory as well as verbal expression and reasoning, and slightly weaker capacities in numerical reasoning and practical social judgment. This pattern suggests that while LH can retrieve and communicate learned information effectively, applying this knowledge flexibly in problem-solving or real-world social contexts may present relative challenges.

Performance subtests showed greater variability, with some reflecting with some clinically significant deviations from the normative mean. LH’s strongest performances were observed in visuospatial and constructive tasks. On Block Design, LH scored 14, one standard deviation above the mean, demonstrating a notable strength in spatial analysis and construction as well as abstract visual reasoning/problem solving. Similarly, the score of Object Assembly (12) also showed above-average visual synthesis and construction of objects and part–whole reasoning. In contrast, Picture Completion (5, 5th percentile) and Picture Arrangement (6, 9th percentile) were markedly below average. The PA subtest requires the child to arrange a series of scrambled images into a coherent story sequence. LH’s low PA score therefore reflects weaknesses in sequential reasoning, planning, and the ability to infer cause–effect relationships. Because the stories often depict human interactions, the task also engages social understanding and the application of common-sense reasoning to interpret social situations. The underdeveloped social reasoning observed on the PA task is consistent with his performance on the Comprehension (CO) subtest. On the PC subtest, LH demonstrated reduced alertness to visual details and a limited ability to detect differences and similarities among visual stimuli (i.e., visual discrimination). As both tests rely on careful attention to visual detail, this ability appears consistently impaired. Additionally, deficits in visual attention were also evident in the Coding (CD) task, which requires the child to quickly and accurately convert numbers into corresponding symbols based on a provided key within a limited time. The low CD score further suggests relative weaknesses in processing speed and visual-motor coordination. Overall, LH’s performance subtests reveal clear intra-individual discrepancies, with pronounced strengths in abstract visual-spatial reasoning and constructive tasks, alongside notable weaknesses in visual attention, sequential reasoning, processing speed, and the integration of visual information in socially meaningful contexts.

Following the review of subtest scores, LH's composite scores offer a broader overview of his general intellectual profile. LH obtained a FSIQ of 92, indicating average overall intellectual functioning. His Verbal IQ was 97 and Performance IQ was 90, both falling within the average range and suggesting generally balanced verbal and nonverbal cognitive abilities, with no significant discrepancy between the two indices. To gain more nuanced understanding on LH's cognitive functioning, WISC profiles, derived from clusters of subtest scores, is calculated. By examining these profiles, professionals can identify whether a child manifest learning difficulty, attention deficits, or behavioral concerns, as well as social-emotional vulnerabilities. Table 2 presents the results of LH's WISC profiles and brief explanations for each.

Table 2. WISC Profile Results

WISC-C Profiles	**Sum of Scaled Scores**	**Cutoff/ Means**	**Descriptors**
Wechsler Development Index (WDI)	0	>0.20	No neurological impairment as the WDI does not exceeds 0.20.
ACID Profile	37	40	High likelihood of learning disability (Watkins et al., 1997).
Bannatyne Profile			
1. Spatial Category	31	30	Sequential<Conceptual< [Spatial=Acquired Knowledge] This pattern is indicative of classical dyslexia.
2. Conceptual category	28	30	
3. Sequential category	23	30	
4. Acquired Knowledge category	31	30	
ACoDS Profile (Attn-Conc)	25	30	Inattention and concentration deficit.
AIDS Profile (H/I)	30	30	No evidence of hyperactivity-impulsivity.
ADS Profile (Distractibility)	18	20	Easily distracted.
Learning Ability Profile (LAP)	18	20	There is slight deficit in learning ability.
Attention Span Profile (ASP)	23	30	Inattention is noted.
Concentration Profile (CP)	13	20	Concentration is impaired.
Mental Alertness Profile (MAP)	18	20	Slightly less mindful.
Freedom from Anxiety Profile (FAP)	25	30	Stress and anxiety are noted.
Sequencing Profile (SeqP)	31	40	Deficit in sequential processing
Visual Memory Profile (VMP)	12	20	Visual memory is impaired.
Visual Perception of Meaningful Stimuli (VPMSP)	23	30	Perception of meaningful visual stimuli is weak
Visual Perception of Abstract Stimuli Profile (VPASP)	21	20	Average ability to perceive abstract visual stimuli.
Visual Perception (VP)	11	20	Deficit in visual perception
Visual-Motor-Spatia (VMS)	26	20	Strength in visuomotor integration and spatial reasoning.
Concept Formation (CF)	60	60	Age-appropriate ability in recognizing patterns, and grouping things based on common concepts
Abstract Thought (AT)	20	30	Abstract reasoning is weak.
Visualise Whole (VW)	18	20	Slight difficulty in grasping overall patterns
Long-Term Memory (LTM)	40	40	Long-term memory is adequate.

Attention to Details (AtD)	23	30	Reduced attention to details.
Environmental Experience (EE)	36	40	Somewhat limited environmental experience, less developed understanding of common knowledge, social rules, and context.
Social Competence			
1. Sensory Relations	19	29	Difficulties processing, interpreting and using social cues. Strength in applying knowledge and reasoning to solve practical social problems.
2. Semantic Orientation	31	29	
3. Symbolic Orientation	25	29	
4. Abstract Reasoning	31	29	
5. Pragmatic Reasoning	38	29	

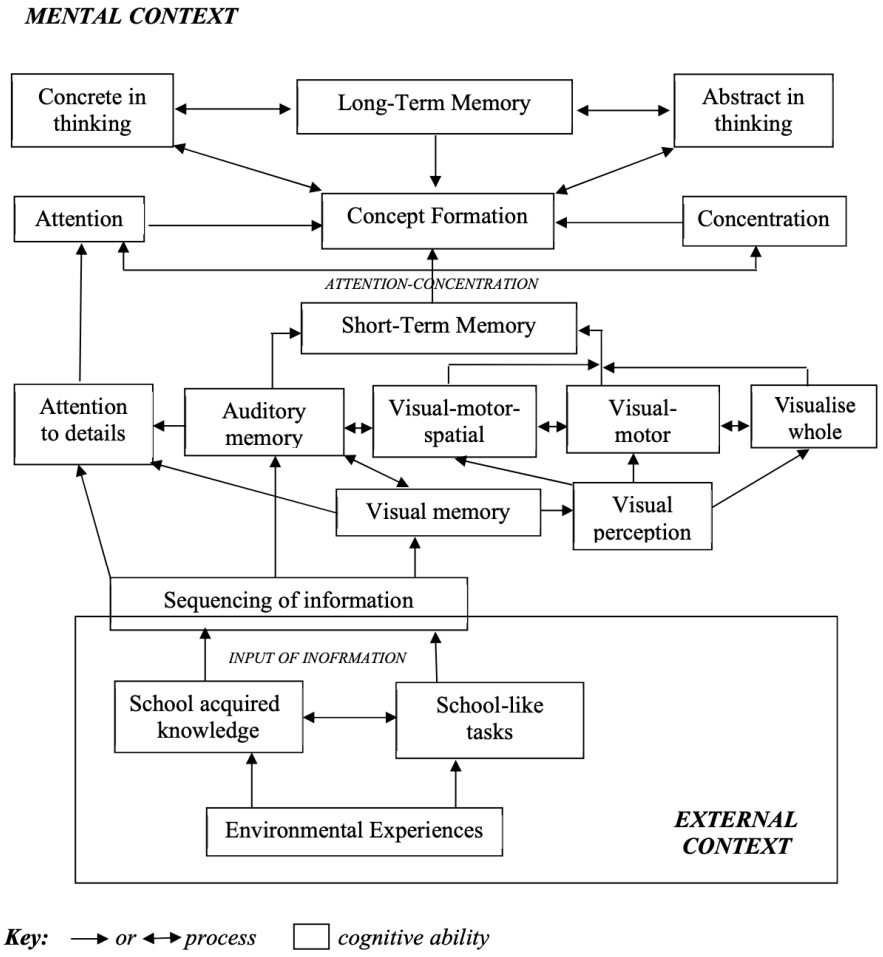
The WISC Developmental Index (WDI; Watkins, 1996) was first examined to rule out possible neurological impairment or brain dysfunction that underlie LH's present difficulties. This index compares subtests that are relatively resistant to brain dysfunction ("Hold" subtests) with those that are thought to show greater decline when cognitive or brain functions are compromised ("Don't Hold" subtests). LH's WDI was 0, which is well below the cutoff score of 0.20, indicating no evidence of neurological impairment or disproportionate developmental weakness between these domains. Both the ACID and LAP profiles suggest the presence of learning difficulties. And a pattern of relative strengths in spatial and conceptual abilities with weaker sequential processing skills (e.g., auditory memory and sequencing), as reflected in the Bannatyne Profile, points to a specific learning disorder, dyslexia (Bannatyne, 1968, 1971, 1974).

This disorder primarily affects reading and related language-based processing skills, such as decoding, word recognition, and fluency. It is important to note that dyslexia encompass different subtypes (e.g., phonological dyslexia, surface dyslexia), and determining the specific type would require further targeted assessments (e.g., phonological awareness, rapid naming, or orthographic processing tests). The presence of Attention Deficit Disorder (ADD) without hyperactivity-impulsivity is confirmed positively by AIDS, ACoDS, ADS, ASP, CP and MAP, which is consistent with LH's DSM-5 diagnosis.

LH might demonstrate slower task completion and increased errors on mathematics problem-solving, reading comprehension, and writing tasks, as these activities require sustained concentration (Gaye et al., 2024). ADD often co-occur with executive function impairments such as planning, task organization and time management. That could make it difficult for students to follow complex instructions, initiate and complete multi-step assignments and keep track of homework deadlines. Working memory deficits, another common co-occurring issue with ADD, are also evident in LH's profile. His weak arithmetic performance (previously mentioned in subtest results) has been found to be closely linked to memory ability as it supports the temporary storage and manipulation of information necessary for mathematical problem-solving (Boz, 2024). Research indicates that academic struggles and repeated experiences of failure can provoke excessive worry, heightened anxiety, and frustration, which appear to be present in LH, as suggested by the FAP result (Van Stralen et al., 2016).

In addition to learning-related disorders identification, WISC profiles also provide well-round examination for various of psychological patterns derived from two or more subtests. Figure 1 is a diagrammatic model of psychoeducational diagnostic evaluation which illustrates the dynamic flow of information from external input to internal cognitive processing. At the foundational level, the External Context such as environmental experiences and school-related tasks, provides the initial input of information for learning. LH's EE profile indicates somewhat limited environmental experience, suggesting that foundational contextual knowledge and familiarity with common rules and expectations are less developed, which may reduce the efficiency of subsequent processing.

Figure 1. Diagrammatic Presentation of Psychoeducational Diagnostic Evaluation



Incoming visual stimuli are first processed through perceptual systems. LH demonstrates an overall weak visual perception (VP = 11), especially for meaningful stimuli (VPMSP = 23). That indicates difficulty accurately perceiving and extracting useful information from visual inputs. Attention to Details (AtD = 23) is also reduced, meaning LH can be easily distracted by irrelevant visual information, which prevent critical features of visual or task-relevant information being processed. Together, these deficits indicate that the initial capture and encoding of information into short-term memory may be incomplete or error-prone. In contrast, LH demonstrates a strength in visuomotor integration and spatial reasoning (VMS = 26), suggesting that he can more effectively learn and solve problems through hands-on activities, spatial organization, and tasks that require coordinated motor actions.

Once information is perceived and processed, it is temporarily stored in short-term memory (STM), which allows the brain to further manipulate (e.g., needed for task like comparing, matching, and simple calculations) and/or transfer it to long-term memory for later use. LH's limited attention, visual memory and sequencing abilities may constrain the amount and order of information effectively maintained in STM. That can lead to difficulty following multi-step instructions, integrating sequential information, or accurately retaining details for problem-solving.

Information held in STM is then processed through higher-order integration. LH exhibits average Concept Formation (CF = 60), indicating that once information is successfully encoded, he can recognize commonalities and form correct concepts when clear rules or explicit cues are provided. However, LH had limited abstract thinking (AT = 20), which refers to the capability to move beyond

immediate concrete features to make abstract connections when lack of clear structure or clues. Thus, it is difficult for LH to apply concepts to novel contexts and understand metaphors, analogies, or higher-order logic.

In summary, while foundational input through environmental experience and visual perception is somewhat limited, LH's strengths in visuomotor integration and concept formation provide compensatory resources for learning when tasks are structured or supported. Weaknesses in attention to detail, sequencing, short-term memory, and abstract reasoning indicate that multi-step, unstructured, or novel tasks may present particular challenges, as critical information can be incompletely captured, misordered, or insufficiently integrated. This comprehensive view highlights how deficits at early stages of perception and attention cascade through higher-order cognitive processes, ultimately affecting learning efficiency and academic performance. It also underscores the importance of targeted instructional strategies that leverage LH's spatial and conceptual strengths while scaffolding areas of weakness, such as stepwise guidance, visual supports, and structured practice, to optimize learning outcomes.

3.2 Block IV: Socio-Emotional Behavioral Abilities & Skills

After cognitive functioning and learning ability, we shift the evaluation on LH's socio-emotional behavioral performance through the SDQ-PC1 Test. The results were shown in Table 3. Scores for Emotional Symptoms (3.0), Conduct Problems (5.0), Hyperactivity/Inattention (4.0), and Prosocial Behavior (7.0) fell within the normal range. The only subscale outside the typical range was Peer Relationship Problems (7.0), which concerns social interactions and relationships with peers. According to the original assessor from the Chinese hospital, LH lack of both social motivation and skills. Although he is capable of simple and brief interactions with classmates (e.g., group running exercise or short communication), he shows limitations in establishing and maintaining deeper or more stable peer relationships. Consequently, he may experience social isolation, particularly in upper primary or secondary school.

Table 3. SDQ-PC1 Results

Subscales	Scores	Descriptors
1. Emotional Symptoms	3.0	Normal
2. Conduct Problems	5.0	Normal
3. Hyperactivity/Inattention	4.0	Normal
4. Peer Relationship	7.0	Abnormal
5. Prosocial Behavior	7.0	Normal

Children's peer relationship difficulties are influenced by multiple factors. In LH's case, social difficulties can be better understood in social difficulties are best interpreted in the context of his cognitive and neurodevelopmental profile. Two WISC-derived indices, Sensory Relations (SR = 19) and Symbolic Orientation (SO = 25), are notably below the normative cutoff (29), suggesting a possible vulnerability in the perceptual and inferential aspects of social cognition (concerns processes of perceive, interpret, and respond to social information). SR reflects the ability to integrate perceptual information and to attend selectively to salient, meaningful features in complex visual fields.

Deficits in this process can affect attention to and perception of socially relevant information, such as facial expressions, body movements, tone of voice, and contextual cues. This may lead to significant confusion and difficulties in adjusting behavior appropriately during interpersonal interactions. SO captures the capacity for symbolic and abstract reasoning, specifically, deriving implicit meaning, intention, or causality from incomplete or indirect information. Low score in this area therefore implies

limited understanding and reasoning of others' mental states as well as the application of social rules. Together, these two WISC indices indicate a plausible vulnerability in social cognition which has been linked to an increased risk of peer misunderstanding, isolation and conflicts (Bailey et al., 2025). It is worth noting that the above discussion of LH's social functioning is based on indirect inferences drawn from intellectual assessment data. Therefore, direct assessment of social perception and reasoning, as well as structured teacher ratings and classroom observations, is recommended to further substantiate these inferences.

In addition to cognitive vulnerabilities, LH's neurodevelopmental characteristics can exert a significant impact on his social functioning. A meta-analysis of 109 studies involving children and adolescents diagnosed with, or at risk for, ADHD (N = 104,813) found that deficits in attention and self-regulation can substantially impair social skills (Ros & Graziano, 2018). Such impairments include weak turn-taking, difficulties in initiating and maintaining conversations, reduced sensitivity to social feedback, and challenges in adhering to social norms, which can contribute to peer rejection and social maladjustment. Longitudinal research further indicates a reciprocal relation between peer relationships and ADHD symptomatology (Bellaert et al., 2024). Specifically, peer rejection and victimization predict subsequent increases in inattention and irritability, whereas improvements in peer acceptance are associated with reductions in some ADHD symptoms over time. These findings emphasize the importance of targeting both attentional/self-regulatory capacities and social-pragmatic skills to promote social adaptation and positive peer relationships. Moreover, the presence of TS may further disrupt social functioning. Sudden motor or vocal tics interrupt the flow of conversation or activity, making exchanges feel awkward and reducing peers' willingness to participate (Bitsko et al., 2020). These tics often attract unwanted attention or even judgmental reactions from others, leading to negative emotions (e.g., nervousness, embarrassment, and shame) and adverse self-image. This may discourage the child from initiating interactions. Over time, such disruptions and avoidance behaviors reduce opportunities for positive, repeated exchanges that are essential for building trust and deeper friendships. A number of studies have shown that children and youth with TS report higher rates of bullying, lower self-esteem, and increased stress, depression, and social anxiety relative to their neurotypical counterparts (Charania et al., 2022; Watson et al., 2024)

Understanding influential factors of LH's social difficulties help inform the effective intervention choice. Targeted social skills training programs that address specific deficits in social cognition and communication can be beneficial. For example, social skills training programs that explicitly teach recognizing social cues, turn-taking, emotional self-regulation, and appropriate communication have been shown to improve social competence in children with ADHD (Huang et al., 2018). A recent randomized controlled trial in China comparing Group Executive Function Training (GEFT) with Social Skills Training (SST) found that both reduced peer relationship difficulties, with GEFT showing more lasting effects and improvements in self-control, executive function, and other social skills (Lan et al., 2020).

In LH's case, SST should be tailored to accommodate his ADHD and tic characteristics. Training may include shorter, highly structured sessions with frequent breaks and use of visual cues to maintain attention. Specific strategies, such as recognizing early signs of an impending tic and preparing social scripts or short phrases to explain a tic to peers, can be taught to help maintain engagement in social interactions despite interruptions. Environmental modifications, including seating arrangements that minimize distractions, scheduled short breaks, and opportunities for motor regulation exercises (e.g., stretching or deep breathing), can further reduce the disruptive effects of tics. In parallel, peer-focused activities are critical for promoting social inclusion. Systematic reviews indicate that when peers are incorporated into interventions, children with ADHD show improvements in social participation, pragmatic communication, and reduced undesirable social behaviors (Fox et al., 2020). Providing psychoeducation about the concept of neurodiversity and age-appropriate knowledge of common neurodevelopmental disorders (for example, their challenges, strengths, and the involuntary nature of

certain symptoms) can help reduce misconceptions and stigma and foster more understanding and empathy of neurodiverse children. Implementing a peer buddy system, in which typically developing peers is paired with children with special needs to provide social, behavioral, and academic support, can further improve the social adaptation.

Peer buddy models appropriate social behaviors (e.g., turn-taking, emotion expression, conflict resolution), offers subtle prompts to sustain attention and follow routines, and reinforces positive social engagement. Such supportive partnerships not only enhance the child's opportunities for successful social interaction and inclusion, but also foster greater confidence, self-regulation, and a sense of belonging within the peer community (Mikami et al., 2013). Finally, collaborative efforts among educators, clinicians, and families are essential. Schools play a key role by promoting an inclusive environment where students with neurodevelopmental differences are not discriminated against or judged based on their diagnoses. Therapists provide structured social skills training, and caregivers reinforce these skills at home. When all parties work together in this way, the child's environment becomes more supportive of positive peer relationships and social development.

Overall, this case study demonstrates how assessment data can be systematically analyzed and interpreted to construct a comprehensive psychoeducational profile using the Hierarchy model of EdTx framework. However, there are several limitations. First, the study is based on a single case, which limits the generalizability of the findings. Second, while the present case is concerned with ADHD and TS, its applicability to other neurodivergent conditions remains untested. Third, not all functional domains proposed in the hierarchy model were examined due to the absence of standardized assessments, which limits the extent to which the current findings represent the child's complete learning and psychological profile. To address these limitations, future research should examine whether the hierarchy model can be generalized to other neurodevelopmental and psychological conditions (e.g., ASD, specific learning disorders, and mood disorders), and whether it effectively informs psychoeducational profiling and individualized intervention planning. Specifically, subsequent studies could employ more comprehensive assessment batteries to evaluate all functional domains proposed in the model and to further investigate its utility in case conceptualization. In addition, longitudinal and school-based research would be valuable to determine how the model supports ongoing intervention design, interdisciplinary collaboration, and policy-level decision-making within inclusive education contexts.

3. CONCLUSION

This case study illustrates the utility of the Hierarchy Model within the Educational Therapy framework for developing a comprehensive psychoeducational profile of an 11-year-old boy with co-occurring ADHD, and TS. Cognitive assessment revealed strengths in visuospatial reasoning, concept formation, and factual knowledge. At the same time, weaknesses were observed in attention, sequential processing, short-term memory, abstract reasoning, and processing speed. Analysis of LH's WISC profiles also revealed potential learning disorders and psychological abilities. These cognitive patterns help explain the child's learning difficulties and challenges in academic tasks that require sustained attention, multi-step problem-solving, and flexible application of knowledge.

Assessment of socio-emotional functioning highlighted difficulties in peer relationships, limited social motivation, and challenges in maintaining stable social interactions. These social-emotional deficits can be associated with the child's learning difficulties, neurodevelopmental conditions, and underlying cognitive dysfunction. For example, attention deficits and executive function impairments can disrupt social engagement, while tics can interfere with smooth interactions, making it harder to build trust and stable friendships. Brief interventions, such as structured social skills practice, may help improve peer interaction and social participation, although the primary focus of this study is on profiling rather than intervention planning.

The comprehensive evaluation of LH, integrating WISC-C profiles, developmental indices, and socio-emotional assessments, provides a detailed understanding of his learning abilities and cognitive functioning. WISC profiles revealed a generally balanced verbal and nonverbal cognitive profile, with notable strengths in verbal knowledge, abstract reasoning, visuospatial analysis, and visuomotor integration, alongside weaknesses in sequential processing, attention, short-term memory, processing speed, and practical social reasoning. These patterns suggest that LH may experience specific learning difficulties, including challenges in reading, arithmetic problem-solving, and applying knowledge to multi-step or novel tasks. Weaknesses in working memory and executive functions further constrain his ability to follow complex instructions, organize tasks, and manage academic demands.

LH exhibits specific social-emotional vulnerabilities, most notably in peer relationships. His social difficulties appear closely linked to his broader cognitive and neurodevelopmental profile. WISC-derived social competency measures indicate below-average performance in tasks assessing sensory relations and symbolic orientation, suggesting challenges in social perception, abstract reasoning about others' intentions, and interpreting social cues. These cognitive limitations, when combined with attention deficits and tics symptoms, can lead to difficulties in initiating, maintaining, and sustaining peer interactions. Consequently, LH may experience social isolation and limited opportunities for forming stable, reciprocal friendships, particularly in more socially demanding school environments. Targeted social skills training adapted to LH's developmental characteristics as well as peer-mediated activities can facilitate appropriate social behaviors and enhance positive peer engagement. Furthermore, collaborative efforts among educators, clinicians, and families are essential to create supportive environments that reinforce social skills and promote social inclusion.

Overall, the Hierarchy Model within Educational Therapy offered a comprehensive profile of LH's cognitive, academic, and socio-emotional abilities, highlighting both strengths and areas of difficulty. This integrative perspective not only identifies potential learning and behavioral challenges but also clarifies the underlying processes that contribute to them. Additionally, analysis of assessment data in such systematic, model-informed way offers actionable guidance for addressing learning and behavioral difficulties through multi-domain developmental support, rather than concentrating solely on academic performance.

5. ACKNOWLEDGEMENT

None.

6. COMPETING INTERESTS

The author has declared that no competing interests exist.

7. FINANCIAL DISCLOSURE

Non funds obtained.

8. ARTIFICIAL INTELLIGENCE DISCLOSURE

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

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