CASE REPORT

Navigating the Intersection of ADHD and Dyslexia in a Child's Academic Struggles: A Case Report

Tan Wei Jun[1,2], Azizah Othman[3,4], Aisyah Zulkipli[1,2], Putri Intan Dianah Megat[1,2,5]

[1] Department of Neuroscience, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian Kelantan, Malaysia
[2] Department of Psychology, Faculty of Human Development, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, Malaysia
[3] Department of Paediatrics, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, 161500 Kubang Kerian Kelantan, Malaysia
[4] Hospital Pakar Universiti Sains Malaysia, Health Campus, Universiti Sains Malaysia, 161500 Kubang Kerian Kelantan, Malaysia
[5] Faculty of Psychology and Social Sciences, University of Cyberjaya, 63000 Selangor, Malaysia

ABSTRACT

John (pseudonym), an 11-year-old Chinese boy, was referred for psychological assessment due to academic difficulties. He struggles with spelling and reading in English, and recognising Chinese characters. He was described as inattentive, forgetful, and easily distracted. John was diagnosed with Wolff-Parkinson-White syndrome at age nine and underwent two surgeries recently. While WPW and the effects of multiple surgeries are not directly linked to cognitive deficits, their potential indirect effects remain uncertain. Psychological assessments indicated average general cognitive abilities (WISC-V), an elevated dyslexia risk (DST-J), and significant inattentiveness without hyperactivity (Conners' Scales). His difficulties appear to be due to attentional deficits and executive dysfunction such as weakness in working memory, processing speed, and inhibition, alongside literacy difficulties. While the profile is consistent with ADHD – Predominantly Inattentive Presentation, further testing is needed to confirm possible comorbid Specific Learning Disorder. This case highlights the importance of comprehensive assessment to guide appropriate interventions.
Malaysian Journal of Medicine and Health Sciences (2026) 22(SUPP2):164-167. doi:10.47836/mjmhs.22.s2.24

Keywords: ADHD, Dyslexia, Differential diagnosis, Assessment, Case formulation

Corresponding Author:
Azizah Othman, DPsych (Clinical Psychology)
Email: azeezah@usm.my
Tel: +609 7676525

INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (ADHD) and dyslexia are two conditions commonly associated with academic difficulties in children. ADHD is a neurodevelopmental disorder characterised by persistent patterns of inattention and/or hyperactivity-impulsivity that interfere with functioning or development (1). Inattention symptoms include difficulty sustaining focus, following through task, and forgetfulness, while hyperactivity-impulsivity includes excessive movement, being fidgety, and difficulty waiting turns. One can have predominantly inattentive presentation, or predominantly hyperactive/impulsive presentation, or a combined presentation. Whereas dyslexia is a specific learning disorder primarily affecting reading and writing, despite adequate general cognitive functioning and educational opportunities (1).

Research indicates a high comorbidity between ADHD and dyslexia, ranging between 25% and 48% (2,3). However, while both conditions can share similar symptoms such as reading difficulties and inattentiveness in class, the underlying cognitive deficits differ. ADHD primarily affects attentive regulation and working memory, while dyslexia stem from language processing difficulties. The overlapping symptoms can complicate diagnosis and intervention planning, making comprehensive assessments crucial.

CASE REPORT

John (pseudonym) is an 11-year-old Chinese boy referred by a paediatrician at Universiti Sains Malaysia Specialist Hospital (HPUSM) for psychological assessment due to persistent academic difficulties. His learning difficulties started since kindergarten and has worsened over time despite consistent tuition support. For example, in the recent examination, he scored 17% in Mathematics, 7% in Malay, and 11-15% in science, while English is a relative strength at 50%. Social functioning is described as normal, with no sensory-related difficulties or restricted/repetitive behaviours.

John's family is predominantly Mandarin-speaking, but

he prefers using English, a language he acquired through online media. He attends a Chinese-medium school, where he encountered significant challenges in recognising Chinese characters and retaining the spelling of words in English and Malay. Parents and teachers describe him as inattentive, forgetful, and often disengages in conversations, a pattern observed since early schooling (around age five to six) and have persisted across settings, including at home and in the classroom.

John's prenatal and birth history was uneventful, and he achieved developmental milestones on time. Socially, he is described as shy but can engage with peers. There is no reported history of psychiatric conditions nor neurodevelopmental disorders in the family. Medically, John was diagnosed with Wolff-Parkinson-White (WPW) syndrome in June 2022 after experiencing breathing difficulties, cold sweats, fever lasting a week, vomiting, and an increased heart rate. He underwent two successful radiofrequency ablation (RFA) surgeries to cut off the extra accessory pathway causing the abnormal heart rhythm in May 2024 and September 2024 and is currently recovering well. While there is no known direct effect of WPW syndrome and multiple surgeries on cognitive functioning, the potential indirect effects remain uncertain. In terms of education, John has been enrolled in a Chinese-medium school since Standard 1 and has been receiving additional tuition in Chinese, mathematics, science, and English. Despite these efforts, his academic difficulties persisted.

A psychological assessment conducted over three sessions by a clinical psychologist trainee under supervision evaluated John's cognitive and executive functioning. He was generally cooperative and engaged, though occasionally distracted by background noise and task transitions, requiring prompts to refocus. On the WISC-V, John demonstrated average general cognitive ability, with a relative strength in visual–spatial skills and a marked weakness in working memory. Table I summarises the assessments conducted.

Results from the Dyslexia Screening Test–Junior indicated a strong risk of dyslexia, particularly in phonemic segmentation and spelling. However, in the absence of a comprehensive academic achievement assessment, a definitive diagnosis of Specific Learning Disorder could not be confirmed.

To assess attention and executive function, multiple measures were employed. Behaviour rating scales (Conners') from parents and teachers indicated symptoms of inattentiveness meeting DSM-IV criteria, with minimal hyperactivity-impulsivity, including often failing to give close attention to details, difficulty sustaining attention, forgetfulness in daily activities, and losing materials necessary for tasks. These behaviours were consistent across contexts and present for more than six months (since around age five to six). Although John performs averagely on Conners' Continuous Performance Test – Third Edition (CPT-3), this does not exclude ADHD. CPT-3 arguably lacks ecological validity due to its simplicity that does not reflect real-world classroom complexity. This is further supported by the D-KEFS Trail Making Test where John scored below average for visual scanning, and low-average for Inhibition/Switching of the Color-Word Interference Test. Table II details the assessments results.

Table I: Psychological Assessments Conducted

Name of Tests	Purpose	Sources
Wechsler Intelligence Scale for Children – Fifth Edition (WISC-V)	To measure the client's general cognitive ability, and to rule out intellectual disability	Wechsler, D. (2014). WISC-V: Technical and Interpretive Manual. Bloomington, MN: Pearson.
Dyslexia Screening Test – Junior (DST-J)	To screen for the risk of dyslexia as the client's parents reported difficulties with reading comprehension and spelling.	Fawcett, A. J., & Nicolson, R. I. (2004). The Dyslexia Screening Test - Junior (DST-J). Pearson.
Conners' Parent Rating Scale – Revised: Long	To screen for ADHD symptoms from the parents' perspectives	Conners., C. K. (1997). Conners' Rating Scales - Revised Technical Manual. Multi-Health Systems.
Conners' Teacher Rating Scale – Revised: Short	To screen for ADHD symptoms from the class teacher perspectives	Mueller, F., Brozovich, R., & Johnson, C. B. (1999). Conners' Rating Scales-Revised (CRS-R). Diagnostique, 24(1–4), 83–97.
Conners' Continuous Performance Test – Third Edition (CPT 3)	To assess four different dimensions of attention, including inattentiveness, impulsivity, sustained attention, and vigilance.	Conners, C. K. (2014). Conners' Continuous Performance Test-Third Edition (CPT-3). Multi-Health Systems.
Delis-Kaplan Executive Function System (D-KEFS) Trail Making Test (TMT)	To provide an objective measure of the client's processing speed, cognitive flexibility, inhibition, attention, and working memory.	Delis, D. C., Kaplan, E., & Kramer, J. H. (2001b). Delis-Kaplan Executive Function System Technical Manual. PsychCorp.
Delis-Kaplan Executive Function System (D-KEFS) Color-Word Interference Test (CWIT)	To measure the client's ability of inhibit an overlearned verbal response and attention.	Delis, D. C., Kaplan, E., & Kramer, J. H. (2001b). Delis-Kaplan Executive Function System Technical Manual. PsychCorp.

Overall, John showed significant inattention on multi-informant behavioural ratings, combined with working memory and executive function weaknesses, suggesting that his attention regulation difficulties are more pronounced under high cognitive load, consistent with ADHD – Predominantly Inattentive Presentation. Also, his literacy-related difficulties could be a comorbid of SLD, but further academic testing (e.g., Wechsler Individual Achievement Test) is needed for definitive SLD diagnosis.

DISCUSSION

ADHD and dyslexia frequently co-occur and present

Table II: Assessments Results

Name of Tests	Sub-Tests	Scaled/ Standard Score	Percentile	Descriptors
Wechsler Intelligence Scale for Children – Fifth Edition UK Edition (WISC-V UK)	Verbal Comprehension	89	23	Low Average
	Visual Spatial	119	90	High Average
	Fluid Reasoning	109	73	Average
	Working Memory	**79**	**8**	**Very Low**
	Processing Speed	111	77	High Average
	Full Scale	98	45	Average
Dyslexia Screening Test – Junior (DST-J)	Rapid Naming	34	-	No risk
	Bead Threading	8	-	No risk
	One Minute Reading	42	-	Mild risk
	Postural Stability	1	-	No risk
	Phonemic Segmentation	**7**	-	**High risk**
	Two Minute Spelling	**11**	-	**Moderate risk**
	Backwards Digit Span	3	-	Mild risk
	Nonsense Passage Reading	46	-	Mild risk
	One Minute Writing	20	-	No risk
	Verbal Fluency	11	-	No risk
	Semantic Fluency	10	-	Mild risk
	Vocabulary	13	-	Mild risk
Conners' Parent Rating Scale – Revised: Long	Conners' ADHD Index	71	-	Significant problem
	Conners' Global Index: Restless Impulsive	71	-	Significant problem
	Conners' Global Index: Emotional Lability	57	-	Should raise concern
	Conners' Global Index: Total	68	-	Significant problem
	DSM-IV: Inattentive	76	-	Significant problem
	DSM-IV: Hyperactive-Impulsive	64	-	Possible significant problem
	DSM-IV: Total	72	-	Significant problem
	Inattentive Symptoms	**7/9**	-	**Suggestive of DSM-IV diagnosis**
	Hyperactive-Impulsive Symptoms	3/9	-	Not suggestive of DSM-IV diagnosis
	Oppositional	59	-	Should raise concern
Conners' Teacher Rating Scale – Revised: Short	**Cognitive Problems/Inattention**	**66**	-	**Significant problem**
	Hyperactivity	51	-	Should not raise concern
	Conners' ADHD Index	79	-	Significant problem
	Oppositional	59	-	Should raise concern
Conners' Continuous Performance Test – Third Edition (CPT 3)	Inattentiveness	-	-	No issue
	Impulsivity	-	-	No issue
	Sustained Attention	-	-	No issue
	Vigilance	-	-	No issue
Delis-Kaplan Executive Function System (D-KEFS) Trail Making Test (TMT)	**Visual Scanning**	**1**	-	**Very Low**
	Number Sequencing	11	-	Average
	Letter Sequencing	**5**	-	**Low-Average**
	Number-Letter Switching	10	-	Average
	Motor Speed	10	-	Average
Delis-Kaplan Executive Function System (D-KEFS) Color-Word Interference Test (CWIT)	**Color Naming**	**6**	-	**Low Average**
	Word Reading	**3**	-	**Very Low**
	Inhibition	**5**	-	**Low Average**
	Inhibition/Switching	**5**	-	**Low Average**

with overlapping features, such as inattention and academic difficulties, which complicate differential diagnosis. In John's case, working memory emerged as a central vulnerability within a broader pattern of executive functioning weaknesses, raising the question of whether attentional difficulties are primary or secondary to learning challenges, or the result of both interacting.

Neuropsychological findings indicated slowed processing speed, reduced cognitive flexibility, and impaired inhibition and sequencing. These executive difficulties, together with very low working memory capacity, are likely to affect reading fluency, spelling, and the visual demands of learning Chinese characters, particularly in tasks requiring sustained cognitive control and time pressure.

Although the DST-J suggested a high risk of dyslexia, John's phonological weaknesses were selective, pointing to working memory limitations as a key contributor to his literacy difficulties. Average performance on the CPT-3 does not rule out attention problems, as more complex executive tasks revealed significant impairments. Overall, the profile is consistent with Baddeley's multi-component working memory model and research on the cognitive overlap between ADHD and dyslexia.

Intervention should prioritise psychoeducation, behavioural strategies, and targeted working memory and executive skills training, alongside structured literacy programmes and visual supports for Chinese learning. However, the absence of comprehensive academic and phonological assessments limits definitive conclusions regarding comorbidity. Longitudinal follow-up is therefore recommended to evaluate intervention effectiveness and clarify John's evolving learning needs.

CONCLUSION

This case highlights the importance of distinguishing between ADHD and dyslexia, particularly in children with overlapping presentation. While findings are consistent with ADHD – Predominantly Inattentive Presentation and possible SLD, a definitive SLD diagnosis requires further academic testing. Given these findings, targeted interventions should prioritise executive function enhancement and ongoing monitoring is also essential to track academic progress and response to interventions. In conclusion, early and accurate differentiation of is crucial to ensuring appropriate support and maximising educational outcomes.

ACKNOWLEDGEMENT

The authors would like to express their gratitude to John and his family for their cooperation and for providing informed consent for the publication of this case report. Special thanks are also extended to the paediatrician at HPUSM for the referral and to John's teachers for providing insights into his academic challenges.

REFERENCES

1. American Psychiatric Association (APA). Diagnostic and Statistical Manual of Mental Disorders. Fifth Edition, Text Revision. Washington, DC: American Psychiatric Association; 2022.
2. Aksoy ŞG. The Comorbidity of Specific Learning Disorders in Attention Deficit Hyperactivity Disorder. Compr. Med. 2024;16:58-62. doi: 10.14744/cm.2023.30602
3. Hongyao HE, Chun JI, Xiaoyan G, Fangfang L, Jing Z, Lin Z, et al. Associative gene networks reveal novel candidates important for ADHD and dyslexia comorbidity. BMC Medical Genomics. 2023 Sep 4;16(1):208. doi: 10.1186/s12920-023-01502-1
4. Baddeley A. The episodic buffer: a new component of working memory?. Trends in cognitive sciences. 2000 Nov 1;4(11):417-23. doi: 10.1016/S1364-6613(00)01538-2
5. Le Cunff AL, Dommett E, Giampietro V. Neurophysiological measures and correlates of cognitive load in attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD) and dyslexia: A scoping review and research recommendations. European Journal of Neuroscience. 2024 Jan;59(2):256-82.