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Supporting Developmental Language Disorder: A Singaporean Perspective

Shaun Goh¹, Caroline Lee², Shermin Fong¹ and Qi Ying Tong¹

1. National Institute of Education, Nanyang Technological University
2. Singapore Institute of Technology

Abstract

Developmental Language Disorder (DLD) is one of the most common neurodevelopmental conditions around the world with a prevalence estimate of 7-8%. However, it attracts relatively less public attention and is described as a 'hidden' condition. In fact, a brief search of online newspapers in Singapore found far fewer articles related to DLD than other neurodevelopmental conditions. To address this information gap, we synthesised information relevant to three questions about DLD in Singapore: (1) Why provide support for DLD? (2) What supports are available for DLD? (3) What could the future of DLD look like? Here, international studies on the academic and socio-emotional mental health outcomes of children with DLD are considered. Local information on supporting concerns for oral language, academic and socio-emotional mental health concerns are also summarised here. Lastly, we argue that many helping hands working in collaboration assists in securing a brighter future for this overlooked neurodevelopmental condition in Singapore and around the world.

Keywords: Developmental Language Disorder, Hidden, At-Risk, Support, Collaboration

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* Correspondence to:

Dr Shaun Goh, Education Research Scientist, Centre for Research in Child Development, National Institute of Education, Nanyang Technological University. Email: shaun.goh@nie.edu.sg

INTRODUCTION

Developmental Language Disorder (DLD) is estimated to be one of the most common neurodevelopmental conditions around the world with a prevalence of 7 to 8% across the world (Norbury et al., 2016; Wu et al., 2023). For instance, the global prevalence for Autism Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD) and Intellectual Disability (ID) is estimated to range from 0.2% to 3.7% (Olusanya, 2023). Yet, DLD attracts relatively less public attention and is often described as a ‘hidden’ condition (McGregor et al., 2020; Norbury et al, 2024). In keeping with this international trend, results from a brief search of a local online database (NLB, 2023) of newspapers over the last 20 years revealed 0 results for DLD. Even when adding up all DLD related terms, the number of results denoted as newspaper articles was estimated to be 31. This is approximately 10 times less than Intellectual Disability, 18 times less than Dyslexia, and 63 times less than Autism (See Table 1). This represents a sizeable gap in publicly accessible information on DLD in Singapore, which may limit individuals with DLD from maximising their potential and further limit the ability of services to support DLD across the lifespan.

Table 1. Results from entering search terms into a local online newspaper database

Search term entered	Number of search results	Number of results denoted by online database as newspaper articles
Neurodevelopmental Disorders		
Attention Deficit Hyperactivity Disorder	467	412
Autism	3,885	1,955
Dyslexia	2,326	561
Intellectual Disability	399	308
DLD and related terms		
Language Difficulty	3	2
Language Disorder	4	3
Language Impairment	19	15
Language Delay	20	11
Developmental Language Disorder	0	0
Speech Language Communication Need	0	0

Note: URL: <https://eresources.nlb.gov.sg/newspapers>. Search was conducted for the period of 25 March 2005 to 25 March 2025, The Straits Times was selected as the only newspaper title, and double quotation marks "" were used before and after all search terms

To address this information gap, we aim to synthesise information relevant to three questions about DLD in Singapore:

1. Why provide support for DLD?
2. What supports are available for DLD?
3. What could the future of DLD look like?

1. Why provide support for DLD in Singapore?

DLD is a disorder (Bishop et al., 2017) characterised by a persistent difficulty in the use of oral language, that are not explained by other biomedical conditions, and are significant enough to pose challenges in daily communication or educational attainment. In this way, DLD serves to provide a 'shorthand' to clearly denote this presentation. As will be shown, DLD is a risk factor for what most Singaporean parents arguably want for their children, to get good (or decent) grades and be happy. This is one reason why DLD should receive support around the world and in Singapore.

1.1 Developmental Language Disorder (DLD) Defined

A starting point to understanding DLD and the risk that it entails lies in knowing what it is. The term 'Developmental Language Disorder' can be found in international ICD-11 (World Health Organisation, 2019) and local (Ministry of Education, 2018; Ministry of Education et al., 2021) diagnostic guidelines. It is a neurodevelopmental condition characterised by a specific and significant impairment in language acquisition, comprehension, production, and use of language, such as, listening, speaking, reading, and writing, that has an enduring impact on everyday communication or educational progress (Bishop et al., 2016).

It is a 'developmental' condition that arises during the early childhood developmental period (Bishop et al., 2017). It is not acquired or associated with a known biomedical cause, such as an Intellectual Disability, Autism Spectrum Disorder, or any other diagnosable condition known to limit language acquisition and use (Bishop et al., 2017; McGregor et al., 2023). Language difficulties would be present in all languages a child speaks, and the difficulties may present differently in each language (Ministry of Education, 2018; Ministry of Education et al., 2021).

Research suggests that monolingual and bilingual children with DLD are distinguished by specific difficulties acquiring and using the grammatical rules of language, or language form as evidenced from their poor performance on specific language tasks, such as non-word repetition, sentence repetition and marking grammatical verb tenses (Armon-Lotem and Meir, 2016; Bishop et al., 2016; Conti-Ramsden et al., 2001).

1.2 DLD is a risk for academic outcomes

Children with DLD have deficits in language and communication skills which are used daily in schools. For instance, receptive language skills are needed for understanding what the teacher is saying in class to acquire knowledge from classroom instruction. Expressive language skills are needed for responding to the teacher's questions and asking for clarifications. In keeping with the Simple View of Reading (Hoover & Tunmer, 2020), difficulties with oral language often translate to difficulties with written language, including reading comprehension and composition writing. The Simple View of Reading states that ' $R = D \times C$ ', which implies that the complexity of **reading (R)** can be separated simply into the produce of two skills, **decoding (D)** and **language comprehension (C)** (Hoover & Tunmer, 2020).

In this way, children with DLD are at risk of poorer reading comprehension, as they are diagnosed due to deficits in language areas such as vocabulary, grammar, or stories, which comprise language comprehension (C). For example, read this simple story

'Jake climbed up the ladder to the top of the slide. He waited patiently for his turn, having remembered what his mother said. He came down with a WOOSH and clapped his hands excitedly'.

Even if a child with DLD is able to recognise and read the printed words aloud, he or she may not be able to fully comprehend the meaning of this text, as the vocabulary may be unfamiliar (e.g. patiently, thoroughly), the grammar is indirect (e.g. 'having remembered what his mother said'), and narrative is indirect requiring inferencing ('He came down with a WOOSH' requires linking with the concept of a 'slide' referred to earlier in the story). In keeping with this illustration, research suggests that 9% of children with DLD may have specific difficulties with language comprehension (C), 25% have specific difficulties sounding out letters and blending them together to recognise words in print (D), and 50% have difficulties with both language comprehension and decoding (Werfel & Krimm, 2017). A recent systematic review identified 44 international studies on educational outcomes of DLD, reported that DLD was linked to poorer literacy and related skills of reading, spelling, writing and narratives, compared to peers (Ziegenfusz et al., 2022).

Language skills are also utilised in schools to listen to teachers speak during lessons and reply to questions, and as mentioned, to read and understand language in books. In keeping with this, the largest study on educational outcomes of DLD to date. Conti-Ramsden et al. (2009) followed DLD children from school entry and reported that approximately 50% of them scored in the D-G grade for English, Mathematics and Science at national exams when they were adolescents. This international study is indicative of a general risk across multiple academic studies, not constrained to English subject exams. Nonetheless, a small number of studies also reported no difference in educational outcomes among children with DLD (Ziegenfusz et al., 2022). Taken together,

the child with DLD is not guaranteed to have poor academic outcomes in later life, but is at an increased risk of this occurring.

1.3 DLD is a risk for socio-emotional mental health outcomes.

If a child has a mental health concern, they may speak to an adult. A child may speak about his/her thoughts and feelings and listen to adults share strategies for managing their feelings. Thoughts and feelings may be less concrete than what can be observed in the immediate surroundings and be a barrier given weak receptive and expressive skills of children with DLD.

Combining results from multiple studies, meta-analyses have reported that young children identified with DLD (Yew & O’Kearney, 2013) and language difficulties (Hengtes et al., 2020) are at higher risk of behavioural and emotional symptoms of mental health in later adolescence. Estimates indicate that children with DLD are at approximately 2 times the risk as their peers to have a behavioural or emotional concern. These include oppositional or aggressive externalising type behaviour, as well as anxious, somatic, depressed or withdrawn internalising type behaviour (Yew & O’Kearney, 2013).

Nonetheless, as a group, behavioural and emotional symptoms among DLD do not reach cut-offs for clinical concern (Wu et al., 2023; Goh et al., 2021; St Clair et al., 2007). Hence, a child with DLD is not guaranteed to have poor socio-emotional mental health outcomes but is at an increased risk of this occurring.

1.4 DLD can benefit from support

A child with DLD may receive intervention for academic or mental health concerns. For instance, among children who already have reading or mental health difficulties, up to 50% have been reported to present with weak language skills (Snowling & Hulme, 2020; Hollo & Wehby, 2014). However, this remains an area where little is known, as we are unaware of studies on the effectiveness of academic or mental health interventions among children with DLD. Nonetheless, mental health concerns for the DLD child is on average, not estimated to be severe (Yew & O’Kearney, 2013) and academic outcomes are varied (Ziegenfusz, 2022), leading to measured optimism that they are in the range where appropriate intervention could lead to better outcomes.

A child with DLD may receive intervention to improve their oral language skills. This, on average, is estimated to be a good investment. In an international study (Cronin et al., 2020), children and young people receiving intervention from a speech therapist, were estimated to better participate in future work opportunities with a value of \$355 Australian dollars more per year. According to a recent study by Donolato et al., (2023), oral language intervention is likely to be of benefit. This meta-analysis pooled findings from 45 international studies which examined the difference between those who received

language intervention compared to those who did not. Only language interventions that specifically targeted oral skills were included (e.g. explicit instruction on vocabulary, grammar, narrative, shared book reading, general language stimulation), with non-specific interventions excluded (e.g. Phonological awareness alone, focused on working memory and other cognitive functions, or focused on social skills or play). Receiving language intervention improved language, such that there was a 58% chance ($d=0.27$) that a child who received intervention would have better language than a child who did not receive intervention.

Interestingly, these gains in language did not vary by age, implying that interventions early on, as well as later ones in primary and secondary school, are equally important for supporting DLD. Thus, interventions later in life should also be considered to sustain early gains, as improvements in language were still present but were reduced in magnitude, approximately 6 months after interventions were stopped. Here, 6 months after interventions were stopped, there was a 55% chance ($d=0.16$; Donolato et al., 2023) that a child who had received intervention would have better language than a child who had not received intervention.

2. What supports are available for children with DLD in Singapore?

2.1 The Preschool Child with DLD

Young children with DLD present with difficulties acquiring and using language such that they do not meet or continue to miss their age-expected speech-language-communication milestones (Bishop et al., 2016). This means that a) 2-year-olds who are not yet producing two-word phrases or responding to verbal information, b) 3-year-olds who are not yet producing intelligible 3-to-4-word phrases, and c) 4-to-5-year-olds who are only using 3-word phrases, not answering simple wh-questions, or not following 2-to-3 step instructions within their home and school routines should be referred for further assessment (Bishop et al., 2016; Choo et al., 2019). Details of these assessments can be found in local guidelines (Ministry of Education et al., 2021).

2.2 Oral language support

Families and carers with concerns about their child's language development can complete the developmental checklist in their child's Singapore Baby Health Booklet and make an appointment to speak with their pediatrician or a doctor at a polyclinic (Ministry of Health, 2020). A referral may then be made for more specialised services, such as the Department of Child Development at KK Women's and Children's Hospital (KKH), or the Child Development Unit at National University Hospital (NUH). With this referral, a developmental assessment is completed by a developmental pediatrician to determine if the child presents with Speech, Language and Communication Needs (SLCN) requiring the services of a speech-language therapist (SLT) (Lian et al., 2012).

An SLT would then complete the comprehensive speech-language assessment needed to support a diagnosis of DLD, as well as design and implement the treatment plan required to support the child's ongoing language and communication development. For instance, an SLT may implement a treatment consisting of explicit teaching of grammar that targets the acquisition and use of morpho-syntax (Rinaldi et al., 2021), to address the core language deficits of DLD (Bishop et al., 2016). The goal of treatment would be to help children with DLD to close the gap in language development that exists between them and their same-age peers, as well as enhance the children's communication for learning and social participation at home and school (Paul et al., 2024). SLTs in Singapore are governed by the Allied Health Professions Act (Singapore Status Online, 2011), a law that requires all speech-therapists practicing in Singapore to be registered with the Allied Health Professions Council.

Speech-language assessment and intervention services for young children with DLD can also be accessed via community and private outpatient allied healthcare providers. Community speech-language service providers are managed by social service agencies, such as, Care Corner, Dyslexia Association Singapore (DAS) and Thye Hua Kwan Moral Charities (THKMC). Speech therapists in private practice are also available to provide services. A rudimentary list of private clinics can be found on a website hosted by Speech and Language Therapy Singapore (SALTS, n.d.), a professional association for speech therapists working in Singapore.

In addition, Singapore has two community-based programmes that may provide support for preschool children with DLD. In KidSTART, a practitioner provides prenatal and one-to-one home-based support on child development strategies until the child is 6 years old (KidSTART, n.d.). The programme enrolls (KidSTART, n.d.) pregnant mothers and families who have Singapore-citizen children under the age of 6 AND a monthly a) household income of \$2500 and less OR b) per capita household income of \$650 or less. For reasons yet unestablished, children from low socio-economic backgrounds consistently perform lower on oral language and literacy measures than their high socio-economic peers and are more likely to present with DLD (McGregor et al., 2023). Thus, the importance of the KidSTART programme providing support for children with DLD.

Another community-based programme that may provide support for children with DLD is the Developmental Support – Learning Support Programme (DS-LS; ECDA, 2025). DS-LS supports children in Kindergarten 1 (K1, 4- to 5-years-old) and Kindergarten 2 (K2, 5- to 6-years-old) who require low levels of Early Intervention support. The DS-LS programme provides targeted developmental and learning support for children in areas such as speech and language, social skills, motor skills, behaviour and literacy. In this programme, preschool teachers are trained to identify and refer children who may have early intervention needs to the DS-LS team, which comprises an interdisciplinary team of specialist teachers and allied healthcare professionals, including SLTs (SG Enable, 2024).

Depending on the level and type of need, children with DLD may receive a learning support package with a Learning Support Educator or a developmental support package which includes SLT services (SG Enable, 2024).

2.3 The School-Age Child with DLD

As mentioned, the school-age child with DLD likely presents with oral and written language difficulties, which would likely limit classroom communication, participation, and access to the curriculum (McGregor et al., 2023; Norbury et al., 2017), subsequently leading to poor grades and academic achievement (Conti-Ramsden et al., 2009; Dubois et al., 2020; Hoover & Tunmer, 2020). Details regarding assessments of DLD can be found in local guidelines (Ministry of Education, 2018).

2.4 Oral and written language support

Families and caregivers of school-age children with DLD can consider specialist assessment and intervention services for supporting oral language needs. These include:

- ◆ **Rehabilitation departments** at Hospitals such as National University Hospital (NUH) and KK Women's and Children's Hospital (KKH), that provide outpatient speech-language therapy services for children,
- ◆ **Social service agencies** such as Care Corner, Dyslexia Association of Singapore (DAS) and Thye Hua Kwan Moral Charities (THKMC) that provide outpatient speech-therapy services, and
- ◆ **Private speech-language therapy providers.** SLTs working with school-age children often support these children's written language difficulties that affect academic achievement.

2.5 Academic support

Perhaps owing to the lack of scientific studies examining the effectiveness of academic support specifically for school-age children with DLD, we are not aware of academic support provisions specifically for children with DLD in Singapore. That being said, children with DLD might benefit from academic supports that specifically target their learning needs. However, families will need to monitor the effectiveness of the additional educational support that they are paying for their children with DLD to receive. Some examples of academic support available to children with DLD, as well as those with other language and learning difficulties are as follows.

Families can speak to their child's primary school teacher regarding any academic concerns they might have. Teachers may share resources and strategies for supporting

your child's learning, as relevant. If appropriate, teachers may also suggest further avenues for support, such as connecting them with a Special Educational Needs (SEN) Officer (Ministry of Education, 2023) who may provide support in consultation with an Educational Psychologist, where appropriate. Also relevant are literacy support programmes, such as the Learning Support Programme (LSP; Ministry of Education, 2023) for Primary 1 to 2, and Reading Remediation (RR) and School-Based Dyslexia Remediation Programme (SDR; Ministry of Education, 2023) for Primary 3 to 4.

Families can also consider community-based services and private services. Some examples are Dyslexia Association of Singapore (DAS, n.d.), Newlife (Newlife, n.d.), Care Corner (Care Corner, n.d.) and SHINE (SHINE, n.d.), which provide learning and literacy related support for school aged children. Private educational therapy service providers can also be approached for psychological-educational assessment and intervention services.

2.6 Socio-emotional mental health support

Little is known about supporting socio-emotional mental health, such that we are not aware of international studies on the specific effectiveness of mental health support among DLD populations. Yet, as aforementioned, studies indicate that DLD is a risk factor for socio-emotional mental health. Hence, some examples of socio-emotional mental health support available to the public in Singapore are as follows.

Caregivers can visit MindSG (Health Hub, n.d.), a website initiative by various government agencies. It contains a section titled 'At this stage they are still developing their language skills', with strategies for communicating to support socio-emotional mental health. Caregivers may also share their child's socio-emotional concerns with their General Practitioner, who may refer onwards to a more specialist service, as appropriate. For instance, to more specialised services which may include support from Psychologists or Psychiatrists, if deemed appropriate. Caregivers of primary and secondary school children can also consider Child Guidance Clinics (Institute of Mental Health, n.d.). Support, such as assessment, treatment and intervention, for behavioural and emotional concerns can be accessed at these Child Guidance Clinics (Institute of Mental Health, n.d.).

Caregivers may share their concerns with their child's primary school or secondary school teacher, who may assist by sharing tips or resources such as 'Social and emotional learning resources for parents' (Ministry of Education, 2024), or refer their child to school counsellors, if appropriate. Counsellors work with children to support their socio-emotional needs (Ministry of Education, n.d.). Families may also be referred on to support from mental health services such as Response, Early Intervention, Assessment in Community Mental Health (Institute of Mental Health, n.d.), if appropriate.

Caregivers may also access private clinics and community services. Psychologists and Counsellors in private clinics provide assessment and intervention for behavioural and emotional concerns. Families can enquire for their registration with local associations, such as via publicly accessible lists available from the Singapore Association for Counselling (Singapore Association for Counselling, n.d.) or Singapore Psychological Society (Singapore Psychological Society, n.d.) Community services include Singapore Children's Society (Tinkle Friend, n.d.) which provides a helpline and chatline service for children.

3. What could the future of DLD in Singapore look like?

We hope that this modest article will shed light on a neurodevelopmental condition that is rarely spoken about. Services for DLD in Singapore are currently available across public healthcare institutions, social service agencies, and private providers. Despite there being more children with DLD than children with ASD or ID, there are currently no 'one-stop-dedicated' provision for identifying, treating, and managing the developmental, social emotional, and academic needs of children with DLD spanning preschool, school-age and adulthood. In contrast, children with ASD and ID in Singapore have specialised services and schools (LifeSG, 2025), and coverage in newspaper articles (Table 1).

A recent international study has reported this to be a point of frustration and exhaustion for many parents and their children with DLD (Leitão et al., 2025). The lack of awareness of DLD amongst the community and professionals within the community, health and education system has made it difficult to find information and help for children with DLD. Parents of children with DLD have reported increased time needed to support their child and worry about their child's social and community participation, so much so that the disorder takes a toll on the mental health and well-being for both parent and child (Leitão et al., 2025).

This problem is not going to be resolved anytime soon, given that the percentage of children who are deemed eligible for clinical services because of DLD continues to fall well short of estimates based on the prevalence of DLD in community samples and the amount of research conducted on DLD relative to other neurodevelopmental disorders remains low (McGregor, 2020).

Important questions about supporting families and individuals with DLD in Singapore remain. For instance, as articulated by an insightful reviewer of this manuscript:

- ◆ For individuals with DLD, what is the role of 'booster' sessions and embedding language support into daily routines at home or school?
- ◆ For families with DLD, to what extent are Singaporean children and families frustrated or exhausted from presenting to multiple services for their needs?

- ◆ For professionals supporting DLD, how does the lack of studies translate to providing effective support, such as for academic and socio-emotional needs of individuals with DLD?

Underpinning these, is also the question of how identification of DLD can be improved, which forms the basis for securing further support. We therefore humbly suggest that more research is urgently needed, to provide local evidence needed to answer local questions relevant to the entire ecosystem of support for DLD in Singapore.

We posit that many hands coming together to grow awareness and support for children with DLD is needed to press on to set the stage for a brighter future for the families and individuals living with DLD in Singapore. This has begun with multiple Singaporean institutions celebrating International DLD Day, and conducting research into identifying DLD (Brebner, 2010; Pua et al., 2013; Teoh & Brebner, 2023; Goh et al., 2024).

Further collaborative efforts for DLD can consider:

- ◆ working closely with the families and individuals with DLD
- ◆ involvement of multiple professionals from education, health and research
- ◆ engagement across multiple sectors of society such as the general public, professionals and policymakers ; which are all common elements of international DLD initiatives (Raising Awareness of Developmental Language Disorder, 2025; DLD and Me, n.d.).

One simple way to collaborate may be to write to the corresponding author at **shaun.goh@nie.edu.sg**, who would be pleased to listen and chat about DLD, which is a research interest of his. Looking to the future, scoping a list of needs and priorities with the many families and stakeholders who support DLD, would set the stage for securing a brighter future for people with this hidden disorder which is little known in Singapore (Table 1) and around the world.

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