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title Supporting school aged children with Developmental Language Disorder (DLD)

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acronyms	
DLD	Developmental Language Disorder
SLCN	Speech, Language and Communication Needs
SLPs	Speech, Language Therapists/Pathologists
ASD	Autism Spectrum Disorder
RTI	Response to Intervention
EHC	Education, Health, Care plan

What policymakers need to know

- It is essential that the wider community is educated about Developmental Language Disorder, including parents, education staff, and health professionals. Increased awareness of the Disorder empowers individuals to actively monitor and investigate symptoms that may contribute to eventual diagnosis and treatment.
- Specific training and screening tools should be provided to teachers and included as part of the annual assessment process during the school-aged years. This will provide an avenue for dialogue between education staff and families about accessing additional support services, such as speech, language therapists / pathologists.
- Increased employment opportunities should be provided by state and territory public education settings, with a focus on embedding universal, selective and targeted supports for students with Developmental Language Disorder.
- Collaboration between policy makers, education staff and speech, language therapists / pathologists are required to promote the understanding of spoken language development, as well as its facilitation and importance to education, health, and social outcomes.

background

Developmental Language Disorder (DLD) is a type of speech, language, and communication need (SLCN) that affects the way that people understand and use language (RCSLT, 2020). It is a neurodevelopmental condition that emerges in early childhood and frequently persists into adulthood (McGregor, 2020), and can affect a person's ability to learn effectively, establish relationships and seek gainful employment (Cronin, 2017).

DLD is one of the most common neurodevelopmental disorders; with an estimated prevalence of 7.58% (Norbury et al., 2016). DLD is 50 times more prevalent than hearing impairment and five times more prevalent than autism spectrum disorder (ASD) (McGregor, 2020). This translates to approximately two children being diagnosed with DLD within a typical Australian classroom of 30 students.

Despite this prevalence, supports for students with DLD are limited within public education settings. This is likely the result of poor public awareness of DLD by parents, teachers, and policymakers, as well as the heterogeneous nature of DLD.

defining DLD

32 different terms for DLD have been referenced in the literature, including 'Specific Language Impairment,' 'Developmental Aphasia,' 'Language Learning Impairment' and 'Language Disorder.' This inconsistent terminology has been directly linked to poor public awareness of DLD (Bishop, 2010; as cited by Norbury, 2018). However, in 2016, the CATALISE Consortium, using a multinational and multidisciplinary Delphi methodology, reached a consensus on the diagnostic term 'DLD' (Bishop et al., 2016; 2017). The panel, led by Professor Dorothy Bishop (University of Oxford, United Kingdom), consisted of 57 international experts including speech language therapists/pathologists (SLPs), psychologists (educational), paediatricians, psychiatrists, specialist teachers and charity representatives.

DLD is a language disorder that occurs in the absence of a biomedical condition, such as ASD. Commonly documented risk factors for DLD include a family history of language disorders or dyslexia, being male, being a younger sibling in a large family, and fewer years of parental education (Rudolph, 2016). DLD can co-occur with other neurodevelopmental disorders, including difficulties in the areas of attention (for example, attention deficit hyperactivity disorder), motor skills (for example, Developmental Coordination Disorder), literacy, executive functioning (including working memory), auditory processing and behavioural problems (Bishop et al., 2016; 2017).

As language is a multi-faceted system, the impact of DLD is unique to each person. DLD can affect one or several of the following areas:

- phonology (the pattern of sounds used by the child),
- vocabulary (the words that a child can say and understand),
- grammar (the way that language is constructed),
- morphology (meaningful changes to words to signal tense, number, etc.),
- narrative skills (the ability to relate a sequence of ideas), and
- pragmatic language (the ability to understand the intended meaning of others and to communicate effectively in conversation) (Adams et al., 2012).

There is a robust association between language disorder and poor psychosocial outcomes. People with DLD are six times more likely than others to experience clinical levels of anxiety (McGregor, 2020) and three times more likely to have clinical depression (Conti-Ramsden and Botting, 2008); girls with DLD are three times more likely to experience sexual abuse (Brownlie et al., 2007), while boys with DLD are four times more likely to engage in delinquent behaviour (Brownlie et al., 2004). Adults with DLD are twice more likely to go over a year without employment than other adults (Law et al., 2009; as cited by McGregor, 2020).

recognising and diagnosing DLD

Despite evidence-based early intervention for DLD being considered best practice, many children with the disorder remain undiagnosed until primary school or later when a parent, educator or health professional raises concerns about a child's communication skills or academic progress and the assessment process is initiated (Conti-Ramsden et al., 2012).

Delays in diagnosis and intervention have been attributed to parents who often have difficulty in recognising their child's oral language difficulties (Hendricks, 2019). For example, 70% of parents with children who met criteria for DLD in kindergarten are unaware of their child's difficulty with language (Tomblin et al, 1997). Similarly, the majority of parents with school-aged children who presented with characteristics of DLD reported no concerns about their child's speech and language development (Adlof et al., 2017).

Children who present with co-occurring conditions, such as dyslexia, may have an increased likelihood of being identified as requiring further assessment for DLD. However, parents of children with DLD are more likely to highlight concerns about their child's speech production, reading and writing skills rather than their spoken language skills (Hendricks et al., 2019).

Education staff play a key role in both identifying children with SLCN and in supporting these, and other students', language development (Dockrell et al., 2017) and there is an increasing focus on the perceptions of education staff supporting the needs of these students (Sadler, 2005; Glover et al., 2015; Dockrell and Howell, 2016; Dockrell et al., 2017).

Despite having difficulties following classroom instructions, children with DLD can often remain unnoticed in the classroom setting, especially if they are quiet. As with parents, teachers are more likely to notice obvious speech errors or behavioural difficulties, difficulties in accessing the curriculum or difficulties learning to read, rather than receptive and expressive language difficulties (Norbury, 2018). Many teachers have identified gaps in their knowledge, skills, or expertise to identify, manage or intervene with children with language impairment (Antoniuzzi et al., 2010; Law et al., 2000; as cited by Glover et al., 2015).

The knowledge of typical language development in children is essential to recognise indicators that a student may be presenting with signs of DLD. Information about speech and language development, however, is often minimal or absent in many initial teacher training programs (Dockrell et al., 2017; Dockrell and Lindsay, 2001; Miller, 1991).

It is argued that teachers need to develop an understanding of language and literacy in learning as part of their pedagogical core knowledge (Love, 2009).

For example, in 2005, a study of 89 teachers working in mainstream schools across the United Kingdom were interviewed about their knowledge of supporting children with a diagnosis of speech and language impairment. Most teachers interviewed did not remember having received any input on speech and language impairment in their initial teacher training (Sadler, 2005). In 2017, 170 education staff and SLP professionals in England (United Kingdom) were interviewed about SLCN, where the major barrier to practice was identified as the lack of training of education staff. This is reflected by the difficulties education staff experience with terminology and oral language markers of SLCN (Dockrell et al., 2017).

SLPs are the primary professionals responsible for the assessment and diagnosis of DLD, although a multi-disciplinary team may be required for differential diagnosis of an associated biomedical condition, such as ASD or brain injury (Norbury, 2018). Diagnosis involves interview with a parent or caregiver about developmental and family history, observation of the child's language and communication strategies across multiple contexts, and direct assessment of language skills using standardised assessment (Norbury, 2018). Research suggests children with DLD have deficits in non-verbal ability and impairments in some executive function abilities (Henry et al., 2012; Pauls and Archibald, 2016; Roello et al., 2015; as cited by Thomas et al., 2019).

Linguistic assessments (grammar, phonology, and semantic tests) that include non-linguistic aspects (phonological awareness, phonological short-term memory and working memory for use in diagnosing DLD are limited (Clinical Evaluations of Language Fundamentals – 5th Edition, Wiig et al., 2013; Comprehensive Test of Phonological Processing-2nd Edition, Wagner et al., 2013) and there is scope for contemporary research on non-linguistic features of DLD to be more widely used to inform assessment and practice (Thomas et al., 2019).

It has been suggested that extending the specialist assessment team for children with DLD to include SLPs, paediatric psychologists, development paediatricians, audiologists, occupational therapists, social workers, and special education teachers is likely to better reflect the needs of the child (Liu et al., 2018; as cited by McGregor, 2020).

DLD and academic achievement

Research evidence indicates that predictors of poor prognosis vary with a child's age, but in general language problems that affect a range of skills are likely to persist, (Bishop et al., 2017). Children with DLD are generally slower to learn new vocabulary and show marked difficulty with certain aspects of grammar, such as tense markers (Bedore and Leonard, 1998; Rice and Wexler, 1996; Tager-Flusberg and Cooper, 1999; as cited by Hendricks et al., 2019). In 4-year-olds, the greater the number of areas of language functioning that are impaired, the higher the likelihood that the problems will persist into school age (Bishop and Edmundson, 1987; as cited by Bishop et al., 2017). Children learn at school by listening to their teacher's spoken language, reading language written in texts, asking questions to participate in classroom activities and participating in classroom discussions.

Language problems that are still evident at 5 years and over (children who are in school-aged) are likely to persist (Stothard et al., 1998; as cited by Bishop et al., 2017).

Children who start school with oral language problems are at risk of reading problems and poor academic attainment (Bishop and Adams, 1990; Catts et al., 2002; Thompson et al., 2015; as cited with Bishop et al., 2017). When compared to typically developing students, those with DLD are six times more likely to experience reading disabilities, six times more likely to experience significant difficulties with spelling, four times more likely to have trouble with mathematics and 12 times more likely to face all three of these difficulties combined (Young et al, 2002; as cited by McGregor, 2020).

Academic and social difficulties associated with DLD can also be influenced by family and socioeconomic characteristics (Valera-Pozo et al., 2020). DLD is found more frequently in individuals growing up in a low sociocultural context (Auza-Benavides et al., 2019; Reilly et al., 2010; as cited by Valera-Pozo et al., 2020); as acknowledged by the CATALISE consortium who included social difficulties (poverty and low level of parental education) as a risk factor of DLD (Bishop et al., 2016; 2017).

However, family involvement (parental behaviours, concerns and participation in both school and home to assist children in their educational process)(Serna and Martinez, 2019) and not socioeconomic status can be a protective factor for young people (relating to behavioural, emotional, and school adjustment) diagnosed with DLD (Valera-Pozo et al., 2020).

evidence-based intervention for DLD

Treatment for DLD is variable and lacks systemic review (Law et al., 2017). Interventions for children with DLD include a variety of practices that are specifically designed to promote language development and / or remove the barriers to participation in society that arise from such difficulties (Law et al., 2017).

Intervention may be provided in homes, preschools, primary and high schools, university programs for SLP, or private speech pathology practices (NIDCD, 2017). Intervention can be delivered by a SLP or through specially trained proxies, such as parents, education staff, or allied health assistants. Parents are often actively engaged in delivering interventions to younger children although their role in intervention tends to decrease as the child gets older (Law et al., 2017).

Children with DLD require ongoing and sustained speech pathology intervention. Large scale, high-quality randomised controlled trials of intervention for DLD are uncommon, resulting in poor clinical efficacy (Law et al., 2017; as cited by Norbury, 2018). The access and delivery of speech pathology services (for example, direct vs. indirect therapy, individual vs. group settings, and the intensity, duration, and frequency of treatment sessions) also varies widely across contexts.

There have been efforts to identify the optimal therapy dose for language impairment (Proctor-Williams and Fey, 2007; Schmitt et al., 2017; Yoder et al., 2014; Yoder et al., 2015; as cited by Justice, 2018) and more specifically, DLD (Plante et al., 2019, Matic et al., 2018).

Results are inconsistent and it appears that decisions regarding therapy intensity are largely based on context, clinician, and child and family preferences (Justice, 2018).

Significant, positive treatment effects for direct interventions of DLD (therapy that is led by a SLP) with specific language targets including vocabulary, expressive grammar, and some elements of narrative and discourse have been observed (Ebbels et al. 2018; as cited by Norbury, 2018). In addition, studies of interventions that target receptive language (Boyle et al., 2010) though positive outcomes have also been reported (Ebbels, 2013; Ebbels et al., 2014; Ebbels et al., 2017). Receptive language skills appear more resistant to treatment (Norbury, 2018).

As DLD is a lifelong condition, people may require access to speech and language therapy services at different stages throughout their lifetime, particularly at transition points including preschool to primary school, primary school to high school and high school to further education (RCSLT, 2020).

SLP services in schools promote academic, social, vocational and emotional outcomes by facilitating student access, participation and inclusion in the curriculum and the broader school environment (Archibald, 2017; Ebbels et al., 2018; Meaux and Norris, 2018; Powell, 2018; Walker, 2018; as cited by Speech-Language and Audiology Canada, 2020).

Recent models of SLP service delivery for children conceptualise services as involving a hierarchy of SLP involvement, whereby some support is provided for all, with greater support for those children with more severe needs (Gascoigne, 2006; Law et al., 2013; Ebbels et al., 2019). Schools use Response to Treatment (RTI) data to:

- identify students at risk for poor learning outcomes,
- monitor student progress,
- provide evidence-based interventions and adjust the intensity and nature of those interventions (depending on the student's responsiveness),
- and identify students with speech, language, and communication needs, (Speech Pathology Australia, 2017).

RTI involves a hierarchy of SLP involvement, whereby some support is provided for all children and greater support is given for those with more severe needs (Norbury, 2018). RTI includes (Figure 1):

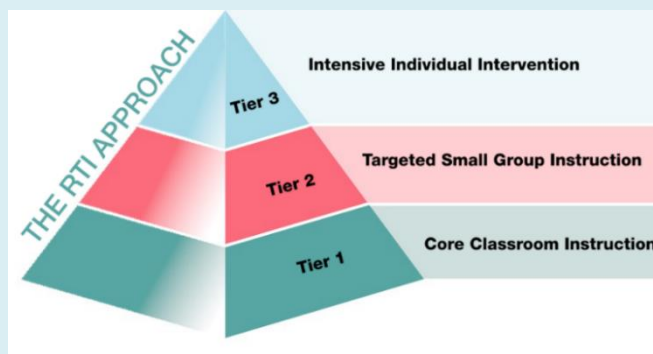


Figure 1. The RTI Approach (Speech Pathology Australia, 2017).

Tier 1: Universal approaches designed to benefit all children (for example specific training packages for education staff focused on enhancing language development).

Tier 2: Targeted interventions that may be aimed at children with less severe deficits and carried out by non-specialist providers.

Tier 3: Specialist services in which SLPs provide direct and/or individualised treatments to children with the most-significant needs (Ebbels et al., 2018; as cited by Norbury, 2018).

The RTI model of intervention is most effective when there is strong collaboration between education staff and SLPs. Research suggests that the successful inclusion of a child with disabilities (including DLD) into mainstream classrooms is facilitated by routine collaboration between teachers and their colleagues, and health professionals such as SLPs (Shaddock et al., 2007; as cited by Glover et al., 2015). When education staff are asked to be the main delivery agents of intervention (without ongoing support), interventions are generally found to be ineffective (McCartney et al. 2011).

Specialised intervention services, that include language units and specialised schools that use the RTI framework have been established in Australia. For example, the [Glenleighden School](#), Queensland offers a multidisciplinary program for students with DLD (prep to year 12) with the aim of improving educational and therapeutic outcomes (Ziegenfusz et al., 2018). Glenleighden utilises teachers, SLPs, occupational therapists, psychologist, physiotherapists, music therapists and support staff to implement the RTI approach with language intervention targeted at a whole class, small group and/or individual basis.

¹In 2018, a review of the demographic and multidisciplinary assessment data of students who attended the school (2005-2015) found a significant improvement in the students receptive and expressive language compared to children with DLD in mainstream school enrolment (Ziegenfusz et al., 2018).

In Victoria, the [Mahogany Rise Primary School](#) provides a whole of school approach to oral language with additional targeted support provided to students with diagnosed language impairment (TLS, 2014). This involves:

- A whole-class language strategy run by an internal speech pathologist for one hour a week in each Prep classroom. The class teacher observes and participates in the strategy, then follows up the activities and goals by integrating the strategy into the curriculum.
- Professional learning development days for teachers and staff meetings.
- Small-group therapy sessions for students with severe language impairment. These sessions are led by a speech pathologist and practise the skills being taught in the classroom.

¹ **Correction:** In 2018, a review of the demographic and multidisciplinary assessment data of students who attended the school between 2005-2015 was completed, (Ziegenfusz et al., 2018). Results found significant improvement in the student's receptive and expressive language during their enrolment with accelerated improvement, (Ziegenfusz et al., 2018).

In 2014, a review of the specialised program found that the treatment group showed approximately two years improvement in language in under a 12-month period, double the expected improvement according to standardised tests (TLS, 2014).

interventions for DLD in the Australian public education setting

The Australian Government has recognised the importance of inclusive education for over forty years (Anderson and Boyle, 2015). Policy and legislation that supports social and education inclusion includes:

- the Disability Discrimination Act (1992) (Commonwealth of Australia, 1992; as cited by Boon et al., 2014),
- the Salamanca Statement of 1994 (UNESCO, 1994; as cited by Boon et al., 2014), and
- the Disability Standards for Education (2005) (Commonwealth of Australia, 2005; as cited by Boon et al., 2014).

Under the Disability Standards for Education (2005), students with a disability are entitled to reasonable adjustments to enable them to participate in education on the same basis as other students.

In Australia, the presence of SLCN has been identified by teachers as the most important predictive factor for their recommendation that students required a high level of support in the classroom (McLeod and McKinnon, 2010; as cited by Glover et al., 2015). However, teachers have also reported that most students identified as having SLCN receive no involvement from outside agencies, including SLPs (McLeod and McKinnon, 2007).

State and territory governments have primary responsibility for the day to day management of schools, including provision of services such as speech pathology. Five of Australia's states and territories (Victoria, Queensland, the Australian Capital Territory, South Australia, and Tasmania) provide a speech pathology service for students in public schools, through the relevant Department of Education. New South Wales, the Northern Territory, and Western Australia either have no services in education, or have very limited provision (Senate Community Affairs, 2014). However, students in Western Australia who are diagnosed with DLD may be offered an educational placement in one of five language development centres; these centres are all located in Perth and provide some state-wide outreach services (Calder et al., 2018).

Each jurisdiction also determines its own funding supports for children with DLD. Western Australia, New South Wales and Tasmania do not provide categories of funded support for children with communication disability, including DLD, while Victoria, Queensland, South Australia, and the ACT do. In Queensland, South Australia and the Australian Capital Territory, children must demonstrate severe impairment (two standard deviations below the mean on a standardised test) to receive funding, whereas in Victoria children must demonstrate a severity level of three standard deviations below the mean (Speech Pathology Australia, 2014).

As part of the 2014 Senate Inquiry into speech, language and communication disorders and speech pathology services in Australia, Speech Pathology Australia noted a lack of national data on the incidence of speech and language disorders, and

international approaches to educational intervention

recommended that a national audit be conducted to analyse the adequacy, strengths and limitations of existing speech and language services for children across Australia (Speech Pathology Australia, 2014). However, as of 2021, this national data is still lacking.

The demand for speech pathology services in Australia outstrips supply of these services and this creates a barrier for children with DLD to access support (Speech Pathology Australia, 2014). Even when there are funded positions for speech pathologists within schools, there are not always trained professionals available to fill the role, especially in rural and remote areas (Glover et al., 2015).

Inclusive education is also supported by legislation in other countries, including the United States (Education for All Handicapped Children Act, 1975; Individuals with Disabilities Education Act, 1990; 1997; Individuals with Disabilities Education Improvement Act, 2004; as cited by Boon et al., 2014) and the United Kingdom (Education Act, 1981; 1993; Special Educational Needs and Disability Act, 2001; The Warnock Report, 1978; as cited by Boon et al., 2014).

In the United States, approximately 51 percent of certified speech pathologists are employed by education departments (American Speech-Language-Hearing Association, 2019). Like Australia however, there is a widespread, long-standing shortage of speech pathology services (McGregor, 2020). From 2004–2015, 60–90 percent of school based SLPs in the western United States reported that job openings exceeded job seekers (ASHA, 2016; as cited by McGregor, 2020).

The Individuals with Disabilities Education Act guarantees all children with disabilities access to a free and appropriate public education. Under IDEA part B, a child with a disability is eligible for treatment from ages three to 21 if the disability impacts on their academic functioning, (U.S Department of Education, 2020). DLD is likely to be eligible under the federally recognised categories: ‘speech/language impairment’, ‘developmental delay’ and/or ‘learning disability in language or reading’ (Owen Van Horne, 2019).

If a student does not qualify under the Individuals with Disabilities Education Act, they may qualify under Section 504 of the Americans with Disabilities Act (Owen Van Horne, 2019). Once eligible for special education, a 504 plan and/or Individual Education program will be developed. These legal documents describe interventions and reasonable adjustments that will be provided for the child with DLD (U.S Department of Education, 2020).

Analysis of data from two nationally representative cohorts of 4-5-year-old students attending public education settings during the periods of 1998–1999 and 2010–2011 indicated than inequities related to receipt of special education services for children deemed eligible under the category of speech-language impairment (Morgan et al. (2017; as cited by McGregor, 2020). Eligibility varied with family and child characteristics (including socioeconomic and minority status), academic achievement, and behavioural health (McGregor, 2020).

In the United Kingdom, children with SLCN are classed as having Special Educational Needs (United Kingdom Government, 2020). An Education, Health, and Care plan (EHC) is developed for children and young people who need more support than is available through Special Education Needs support. An EHC identifies educational, health and social needs and set out the additional support to meet those needs (United Kingdom Government, 2020).

In 2020, the second most common need identified on EHC plans was speech, language, and communication needs (around 43,000 pupils or 15% of all pupils with an EHC plan) (United Kingdom Government, 2020). In the United Kingdom, RTI models are also used to support the inclusion of children with SLCN (Lindsay and Dockrell, 2004).

Despite these supports, it appears that most children with DLD are receiving limited intervention support. For example, a community sample of 4-5-year-old students in the United Kingdom were examined for DLD (Norbury et al., 2016). Of the children identified as meeting the criteria for DLD, only 3.5% had a Statement of Special Educational Needs and only 39% were receiving language intervention outside of school (Norbury et al., 2016).

Like Australia, concerns have been raised in the United Kingdom regarding inconsistent practices and resources available for students based on their geographic location. In 2018, the 'Bercow: Ten Years On' report (ICAN/RCSLT, 2018) was developed based on consultation with 2,500 clinicians, clients, and families to investigate this issue. A primary criticism documented within the report was that SLCN rarely featured in national policies, leading to 'inconsistent and ineffective' services on the ground (ICAN/RCSLT, 2018). The term 'postcode lottery' was used to describe the discrepancy of services provided by local authorities, school, and health services for children with SLCN across England (ICAN/RCSLT, 2018).

Similar inequities are reflected in Australian public schools, where children diagnosed with DLD may be attending a school supported by speech pathology funded through the education department, or not, depending on the state/territory they reside in.

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