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**Using the DLD Diagnostics Toolbox
to Guide Terminology Decisions for
Childhood Language and Learning
Disorders**

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International Committee: RADLD.org
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Slides available:
<http://bit.ly/lwmpubs> →
Presentations
(or use QR code)




ASHA
November 2022

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Overview

1. What is DLD?
2. The DLD Diagnostics Toolbox
 - 6 volumes


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At its core...

Developmental Language Disorder
is difficulty with **lexical and grammatical diversity, productivity, and flexibility, and/or the social use of language**



PERSISTENT FUNCTIONAL IMPACT

Western  Watch this great video by a young person with DLD explaining DLD: https://youtu.be/rw0Rk0d1_0

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Functional Impact of DLD in Children

- Emotional & self-management difficulties (Fujiki et al., 2002)
- Behavioural problems (Maggio et al., 2014)
- Peer difficulties; friendship quality (Durkin & Conti-Ramsden, 2007)
- Peer victimization / bullying (Redmond, 2011)
- Academic learning (Adolf & Hogan, 2018)

DLD in the Classroom Self-advocacy & DLD

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Implications Impacts & Outcomes

DLD has a continuous & diverse impact on life, but

- It's a disadvantage, not a disaster
Conti-Ramsden et al., 2018, p. 252
- A history of DLD does not, of itself, predetermine outcomes
Johnson et al., 2010, p. 60

Services are required that meet both the duration and the breadth of the needs of people with DLD...
Durkin et al. 2017, p. 1643

...even in adulthood
Dubois et al., 2020, p. 12

Western  See next 5 hidden slides for details

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Outcomes for Young Adults

- Education
- Employment
- Independent living

Video: Life as an adult with DLD
<https://www.youtube.com/watch?v=hg5evvPYc-EY>

→ Source: Systematic review by Dubois, St-Pierre, Desmarais, & Guay (2020), U. Laval 🙌

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Education Outcomes

No differences compared to peers

- Participation in post-secondary education

Differences compared to peers

- More institutional support
- Higher risk of school drop out
- Greater academic struggles
- Learn less in lecture-based courses

Predictors: Literacy skills in adolescence (16-19 years)

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Dubois et al., 2020; Becker & McGregor, 2016

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Employment Outcomes

No differences compared to peers

- Employment rates
- Job satisfaction
- Levels of support on the job
- Job security

Differences compared to peers

- More part-time jobs
- Difficulties in job search process
- Longer periods of unemployment
- Lower job levels
- Risk of lower income in long term

Predictors: Language skills at 5 years

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Dubois et al., 2020

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Independent Living Outcomes: Home

No differences compared to peers	Differences compared to peers
<ul style="list-style-type: none"> • Marriage • Traffic infractions • Interactions with law enforcement 	<ul style="list-style-type: none"> • Higher rates of early parenting • Challenges: financial literacy, independent living • More difficulty obtaining driver's license

Predictors: Oral language skills at 17 years predicted having a driver's license
 No language predictors for financial literacy or parenting outcomes

western Dubois et al., 2020

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Independent Living Outcomes: Social & Community

No differences compared to peers	Differences compared to peers
<ul style="list-style-type: none"> • Participation in social groups • Protective factor: Relative strengths in *prosocial behaviours related to better community integration & less difficulty with friendships 	<ul style="list-style-type: none"> • Challenges: friendships • Higher need for social support; less community integration • Lower self-efficacy, self-esteem • Higher levels of shyness

Predictors: Oral language skills at 17 years predicted shyness, self-esteem

*Prosocial behaviours: Behaviours that are positively responsive to others' needs & welfare (e.g., empathy, sharing, kindness, helpful)

western Dubois et al., 2020

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Questions About Cause of DLD

- DLD is a language disorder with no known biomedical cause
 - (at this time)
- We don't understand what causes DLD; certainly, there is no single cause
- Multifactorial causal model
 - Lots of different factors make a small contribution to language outcomes
 - many different genes; many environmental factors
 - risk & protective factors
- We can't predict which genetic & environmental factors will result in DLD
- **We KNOW: Parents do not cause DLD**
 - not in terms of genes (there are just too many)
 - not in terms of what you do (your child hears lots of great language models)

western See more: <https://dld.ca/learn-more/about-causes-of-dld/>

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Label to Use

- Addressed in 'The CATALISE studies'
 - Bishop et al. (2016): Criteria used to identify language disorder
 - Bishop et al. (2017): Terminological issues

Lots of open access resources
(see reference list)

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Study 2: Terminology Highlights

Language disorder:

Persistent language problems with significant impact on everyday social & educational progress

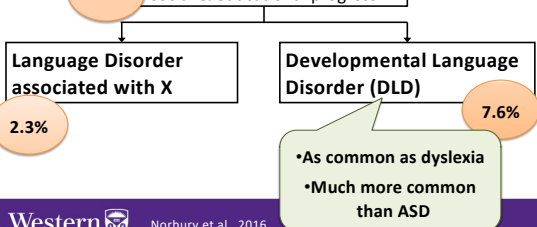
- Not late talkers resolved by 5 years old
- Not uncomplicated phonology problems in preschoolers (Speech Sound Disorder)
- Not those with limited exposure to language of instruction (ELLs)
- Nonverbal ability is not a criterion

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Study 2: Terminology Highlights

Language disorder:

Persistent language problems with significant impact on everyday social & educational progress



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Developmental Language Disorder
describes a persistent language
problem with a significant impact on
everyday social interactions or
educational progress.

...with no associated biomedical condition

Broad definition:
Need additional
information



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Nature of language impairments

- Phonology
- Syntax
- Semantics
- Word finding
- Pragmatics/language use
- Verbal learning & memory

DLD

Risk factors

- Family history
- Poverty
- Low level of parent education
- Neglect or abuse
- Prenatal/perinatal problems
- Male

Co-occurring disorders

- Attention
- Motor skills
- Literacy
- Speech
- Executive functions
- Adaptive behaviours
- Behaviour



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The DLD Toolbox

- <https://www.uwo.ca/fhs/lwm/news/index.html>
- Instagram: @dld_diagnostics
- Twitter: @larchiba6

- 6 volumes right now!

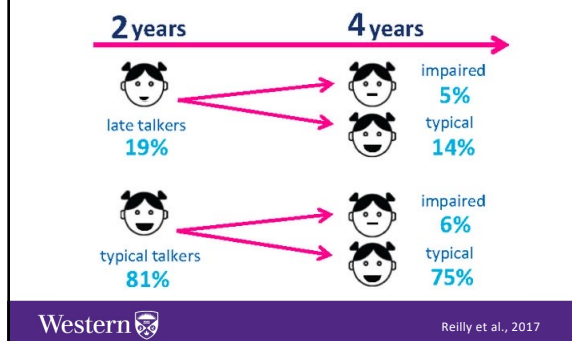


Volume 1
https://www.uwo.ca/fhs/lwm/news/2020/07_01_Report.html



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Early Language Study in Victoria (AUS)



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Prognosis in Early Years

- Under 3 years
 - Prediction is difficult; many late talkers catch up; some school age children with DLD were not late to talk
 - Higher risk: Fail to combine words at 24 mths; receptive deficits; lack of gestures; lack of imitation of body movements; positive family history
- 3-4 years
 - Prediction improves: In 4-yr-olds, greater number of areas of language functioning impaired, poor sentence repetition
 - Prognosis good: expressive phonology only

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Bishop et al., 2017

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Prognosis in Early Years

- 4-5 years
 - Prognostication more reliable
 - Bishop & Edmundson (1987): 90% accuracy in discrimination of good/poor outcomes
 - Severity of phonological impairment alone is not a good prognostic index
 - Good prognosis: phonology only; retells main events in story sequence (even if morphosyntactic & phonological errors); average nonverbal abilities
 - Poor prognosis: difficulties in form & content especially involving comprehension; unable to retell simplified sequence of story events (even with pictures)
- 5 years and over
 - Language problems in 5-yr-olds are likely to persist
 - Risk factor for literacy problems: Family history

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What label would you use if you were concerned but not confident of a Language Disorder profile?

Recommendation:

Avoid use of 'delay'

Recommendation:

Use term 'language difficulty'

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Delay vs. Disorder

- Seems to equate to resolving vs. persistent difficulty
 - but, it is challenging to know who will resolve on the basis of late talking alone (Reilly et al., 2016)
- There is no possible criteria that could reliably distinguish delay vs. disorder
 - Discrepancy scores cannot distinguish delay vs. disorder (Bishop et al., 2017)
 - No evidence for flat vs. spiky profile as equating to these concepts
- Recommendation: Avoid use of term delay
 - Avoid inaccurate use
 - Avoid creating feeling that child will 'catch up' or 'it's not that serious'

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You can identify DLD in under 5s

- If prognosis warrants assumption of persistent language disorder
 - severity
 - multiple language components impaired
 - multiple risk factors
 - continued impairment at 6 month review
- Prognostic indicators can change with age (Bishop et al., 2016)

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DLD in Under 5s

Volume 5 Diagnostic Scenario

- ✓ Language difficulties

? Likely to persist

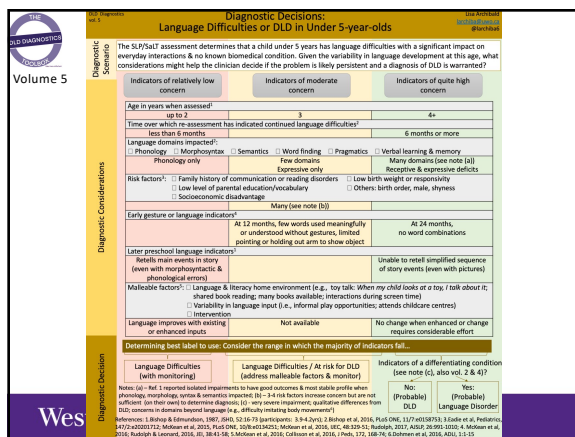
- ✓ Significant impact on everyday social interactions

v No currently diagnosed biomedical conditions

https://www.uwo.ca/fhs/lwm/news/2021/06_07_DLDUnder5.html



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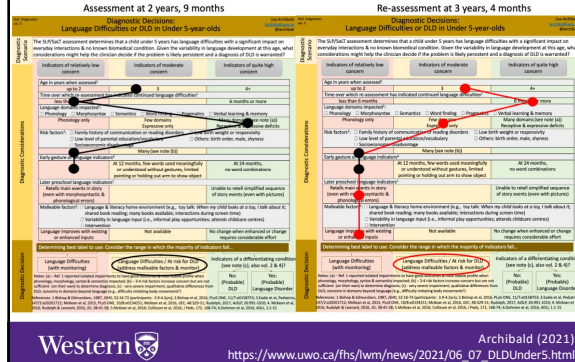
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DLD Toolbox

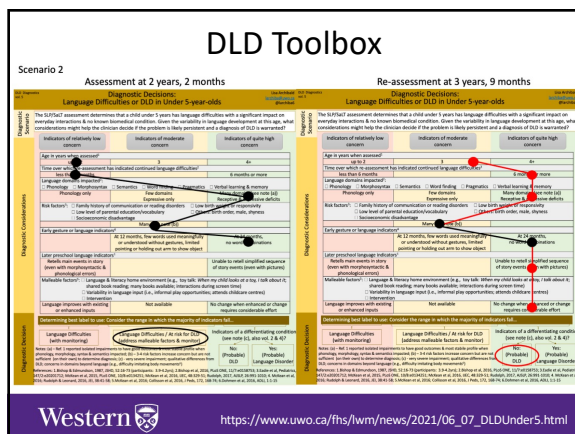
Scenario 1

Assessment at 2 years, 9 months

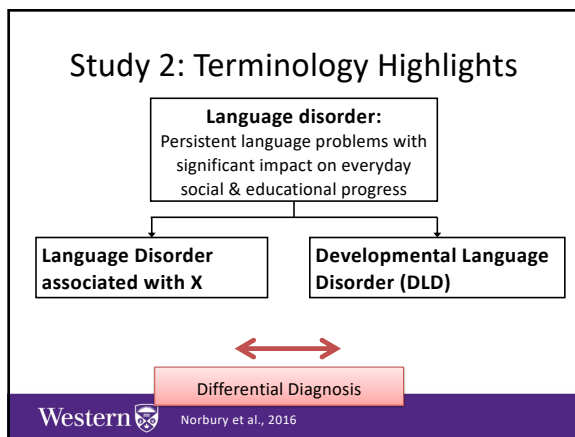
Re-assessment at 3 years, 4 months



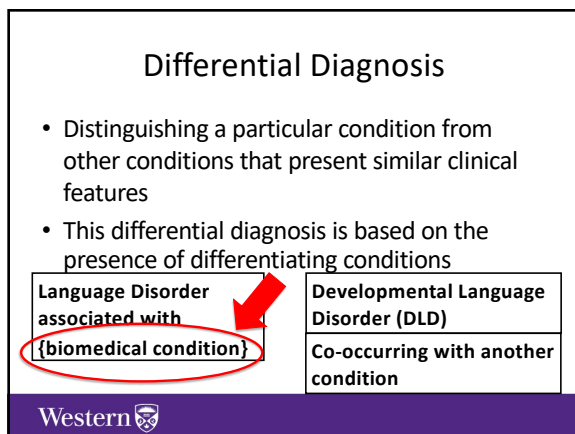
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What makes a differentiating condition (for language disorders)?

- It is a diagnosed biomedical condition
- The biomedical condition has a complex pattern of impairments
- The observed language disorder occurs as part of this pattern
- The language disorder is a primary (direct) or secondary (associated) symptom of the diagnosed condition

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What makes a differentiating condition (for language disorders)?

- The associated language disorder might be qualitatively different from DLD (in one or more ways):
 - has a clear genetic etiology
 - has a different prognosis from DLD
 - requires distinctive intervention
 - some language limitations different from DLD

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Language Disorder associated with...

- Differentiating conditions
 - Brain injury
 - Sensori-neural hearing loss
 - ASD
 - Intellectual disability
 - Genetic conditions with known impacts on language development (e.g., Down Syndrome)
 - Neurodegenerative diseases with known impacts on language development (e.g., Rett syndrome)
 - Acquired epileptic aphasia in childhood
 - Cerebral palsy

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DLD co-occurring with...

- Not every co-occurring condition is a differentiating condition!
- If an existing (diagnosed) condition is...
 - not a differentiating condition
 - likely to impact language performance

→

Developmental Language Disorder
co-occurring with {existing condition}

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Conditions Co-occurring with DLD

- Previously diagnosed (i.e., existing conditions)
- Do not commonly include a language disorder in their presentation (i.e., not a differentiating condition)
- Are impairments in domains relevant to language performance (i.e., cognition, sensation, behaviour)
- Can affect pattern of language impairment and/or response to intervention
- Include attentional, motor, reading, spelling, speech, adaptive, behavioural, or emotional difficulties

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Conditions Co-occurring with DLD

- Examples
 - ADHD
 - Developmental Coordination Disorder
 - Auditory Processing Disorder
 - Terms describing below average cognition not in the intellectual disability range
 - e.g., borderline intellectual functioning

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Language Disorder Profile

Language Disorder Associated with X <ul style="list-style-type: none"> • Intellectual Disability • Autism 	Developmental Language Disorder <ul style="list-style-type: none"> • Specific Learning Disorder • Behaviour Disability • Speech Sound Disorder • Dyslexia
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Volume 4
https://www.uwo.ca/hs/wpm/news/2021/01_04_DLDCoAss.html

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Diagnostic Decisions:
DLD as a Co-occurring Condition vs. Language Disorder Associated with (X)

Volume 4

<p>Diagnostic Scenario</p> <p>Differential diagnosis is the distinguishing of a particular condition from other conditions that present similar clinical features. The differential diagnosis of "Developmental Language Disorder" (DLD) from "Language Disorder associated with (X)" is made based on the presence of differentiating conditions. This scenario focuses on existing conditions that might be considered differentiating vs. co-occurring.</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Child referred to SLU/SALT services (see DLD Diagnostics vol. 1)</p> <p>SLU/SALT assessment results consistent with Language Disorder</p> <p>Child has been diagnosed with another existing condition relevant to language performance or development</p> </div> <div style="width: 45%;"> <p>Child has no other diagnosed condition relevant to language performance or development</p> <p>See DLD Diagnostics vol. 1 & 2</p> </div> </div> <p>The pattern of impairments commonly associated with the existing condition does not include language disorder; however, the existing condition is likely to impact language performance</p> <p>The existing condition is a differentiating condition, that is, a biomedical condition in which a language disorder can occur as part of a complex pattern of impairments</p> <p>Provide diagnosis of DLD co-occurring with existing condition</p> <p>Provide diagnosis of Language Disorder associated with (Biomedical condition)</p>	<p>Co-occurring conditions relevant to language performance include impairments in cognitive, sensorimotor, or behavioural domains</p> <p>Differentiating biomedical conditions might include an associated language disorder as a primary (direct) or secondary (associated) symptom.</p> <p>The associated language disorder is potentially different from DLD in one or more ways:</p> <ul style="list-style-type: none"> • a clear genetic aetiology • a different prognosis than DLD • requires a distinctive intervention approach (or might with further research) • some of the language limitations might be qualitatively different from DLD <p>Conditions co-occurring with DLD:</p> <ul style="list-style-type: none"> • are not the clear or obvious cause of the language disorder • can affect pattern of impairment • can affect response to intervention • include attentional, motor, reading, spelling, speech, adaptive, behavioural, or emotional difficulties <p>Nonexhaustive List of co-occurring conditions</p> <ul style="list-style-type: none"> • Attention Deficit Hyperactivity Disorder (ADHD) • Developmental Coordination Disorder (DCD) • Auditory Processing Disorder (APD) • Developmental Dyslexia • Speech Sound Disorder • Specific Learning Disability • Terms describing below average cognitive ability not in the Intellectual Disability range (e.g., Borderline Intellectual Functioning, Mild Intellectual Disability) <p>Nonexhaustive List of differentiating conditions</p> <ul style="list-style-type: none"> • Brain Injury • Sensorineural hearing loss • Autism Spectrum Disorder (ASD) • Intellectual Disability • Cerebral Palsy • Acquired epileptic aphasia in childhood • Genetic conditions with known impacts on language development (e.g., Down Syndrome) • Neurodegenerative diseases with known impacts on language development (e.g., Rett Syndrome)
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Notes: 1. Refer to https://www.uwo.ca/hs/wpm/news/2021/01_04_DLDCoAss.html
 Bishop et al. (2017) Conduct Study 2: CATAL, URL: <https://doi.org/10.1111/cts.12111>
 Bishop et al. (2018) *Assessing speech & language development* (WPA 18-19), <https://doi.org/10.1111/cts.12111>

Wes

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But what about?

Suspected/uncertain biomedical condition

You have determined the presence of a language disorder. You suspect an associated biomedical condition, but there is no diagnosis (at present).

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Suspected/uncertain biomedical condition

- Options:
 - Use the overarching term, 'Language Disorder' until diagnosis is resolved
 - If timely, wait for resolution
 - Provisional clinical profile of DLD

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Volume 2

Diagnostic Decisions: DLD vs. Language Disorder Associated with [X]

Speech language pathologists / therapists may be working as part of a formal multidisciplinary team, or as an informal team with colleagues and families around particular cases. In an educational setting, team members may include child, parent, general educator, special educator, speech-language pathologist/therapist, other allied health professionals, etc.

Diagnostic Scenario	Diagnostic Decision	Report wording: Possible Diagnostic Statement
Child referred to SUP/SALT services (see DLD Diagnostics v. 1) SUP/SALT assessment results consistent with Language Disorder		
No concerns by any team member regarding biomedical condition ¹	Provide DLD diagnosis	The assessment results indicate that (child) has a Developmental Language Disorder (DLD).
Concerns raised by team members regarding a biomedical condition ¹	Assessment of biomedical condition will NOT occur in timely fashion	The assessment results indicate that (child) has a Developmental Language Disorder (DLD). (Child) may undergo additional neurodevelopmental assessments in the future. If given an alternative diagnosis known to have an associated language disorder, the term, Language Disorder associated with that condition would be recommended (based on the current assessment).
	Assessment of biomedical condition will occur soon	(Child) was diagnosed with (biomedical condition) in (Specialists' name's) report dated (report date). Results of the speech and language assessment indicate that (child) has a Language Disorder associated with (biomedical condition).
	Provide diagnosis consistent with outcome of biomedical assessment	A language disorder associated with (biomedical condition) may impact behaviour, attention, and academic achievement. More information about language disorders is available on the attached information sheet.

More "possible additional statements" are suggested in DLD Diagnostics v. 1.

Notes: 1 - concerns regarding cognitive or intellectual development require further investigation and should be reported on Report Language Development.

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So many terms...

- Specific Learning Disorder
- Specific Learning Disability
- Developmental Language Disorder

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DSM-5

Language Disorder <ul style="list-style-type: none"> • Persistent difficulties in the acquisition and use of language across modalities (spoken, written, sign) • Difficulties not attributable to other causes (e.g., neurological impairment; intellectual disability) • Consistent with DLD 	Specific Learning Disorder <ul style="list-style-type: none"> • Persistent difficulty learning and using academic skills (reading, writing, math) • Alternate terms: dyslexia; dyscalculia • Potentially comorbid with DLD; dual diagnosis given only if each disorder independently interferes with learning
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Specific Learning Disability

- A disorder in one or more of the basic psychological processes involved in **understanding or in using language, spoken or written**, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and **developmental aphasia**.

DLD!

- [IDEA, Section 300.8.c10]

- Educational identification that may be used to describe children with DLD: <https://dldandme.org/terminology/>; <https://dldandme.org/dld-in-schools-an-insiders-perspective/>

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Diagnostic Decisions: DLD, Specific Learning Disorder (Learning Disability): What's the difference?

Developmental Language Disorder (DLD) and **Specific Learning Disorder (SLD)** are neurodevelopmental disorders. Although their precise etiology is unknown, in both cases, the primacy of biological factors (i.e., combined effects of many genes) is assumed to interact with environmental factors. These disorders commonly co-occur. A dual diagnosis is warranted when clinical judgment & assessment findings indicate each condition restricts daily activities including learning. Ideally, children making slow educational progress should receive a comprehensive, interdisciplinary assessment of language, cognitive, social, emotional, and academic achievement.

Developmental Language Disorder (DLD)

Persistent language difficulties with a significant impact on everyday interactions or school learning that emerges in the course of development (CADASIL), but also consistent with the CD-11 category of the same name.

This definition is consistent with DSM-5 Language Disorder, and includes pragmatic language skills (see also, Social Pragmatic Communication Disorder).

An impairment to phonology only (i.e., no other components of language) would not be diagnosed as DLD (CADASIL), but could indicate a Speech Sound Disorder (speech production and articulation difficulty) or Dyslexia (word recognition difficulty).

DLD pertains to language learning. The hallmark trait is a predisposition for language acquisition, which means that language learning happens largely without explicit instruction. Difficulties arise early on but may not raise concern for a variety of reasons (variability in early language development, assuming child will "catch up" difficulties seeming "not too bad"). Many individuals with DLD go undiagnosed or mis-diagnosed.

Language is fluency in language? DLD can be expected to impact both oral and written language (and related academic skills including math). In older individuals, difficulties may be more evident in written language tasks such as reading comprehension & written composition.

Minimally, a child with DLD should be assessed for dyslexia and reading comprehension. A lack of response to individualized instruction (with sufficient dosage) targeting educational skills would be a reason to refer for an assessment of learning.

In some educational jurisdictions & countries, educational support is provided based on the presence of a disability (or other educational identification label) rather than a disorder.

Specific Learning Disorder (SLD)

SLD is a condition characterized by persistent difficulties in learning that are not due to a disorder in language or learning. It is a condition that can interfere with learning & is distinct from DLD, Specific Learning Disorder, ADHD, and others. Children with DLD or Specific Learning Disorder may be identified as having a Specific Learning Disability.

Many definitions of learning disability (see below) stipulate MAOI conditions that can interfere with learning & include DLD, Specific Learning Disorder, ADHD, and others. Children with DLD or Specific Learning Disorder may be identified as having a Specific Learning Disability.

Specific Learning Disability – As a result of a disorder involving language or learning processes, an individual experiences (or is at risk of experiencing) difficulties with the abilities to listen, think, speak, read, write, do math, or solve problems. (1) Specific Learning Disorder & Specific Learning Disability are not synonymous even though they overlap strongly in their educational consequences and other difficulties associated with a specific learning disability.

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Could this still be DLD?

- Scenario: Standardized assessment results do not clearly indicate DLD. Could it still be DLD?
- Standardized tests:
 - May not be sensitive to all impairments that affect day-to-day language functioning (Bishop et al., 2016)
 - May not differentiate some individuals with language difficulties

Volume 3
https://www.uwo.ca/hs/awm/files/blpr_tools/DLDDiagnostics_LowAvLang_UB8E_v3.pdf

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Diagnostic Decisions: Considering DLD in Context of Low Average Language Test Scores

Speech-language pathologists / therapists combine information from multiple sources including caregiver report, observation, standardized tests, language learning context, etc. Many factors influence decisions regarding what to do or not to do in an assessment. This scenario focuses on standardized language tests scores.

Child referred to SLPSALT services (see DLD Diagnostics v. 1)

SLPSALT standardized language assessment is not clearly indicative of language disorder (scores in the borderline average to low average range)

Could this still be DLD?

Additional evidence in favour of a DLD diagnosis

- Additional standardized language test chosen based on reason for referral indicates language disorder
- Results of dynamic assessment indicate presence of language disorder
- Standardized & psychometrically sound parent or teacher checklist indicates language disorder
- Written language efforts indicate presence of a language disorder

Considerations

- Are the psychometric properties of your tests sufficient for identifying DLD?
- Is referred child comparable to test's normative sample?
- What language(s) does the child speak? What language are tests completed in?
- What are the results of previous assessments, interventions, or services in a response to intervention framework?
- Is poor performance under conditions of high load related to language demands?
- Is there evidence that language skills are substantially different from peers in some way?

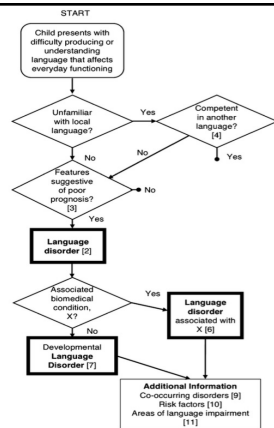
Additional evidence disconfirming a DLD diagnosis

DLD often co-occurs with conditions such as ADHD & speech sound disorder, and can occur in children who do not speak the majority language. These factors, however, could – on their own – account for low average language test performance.

- Poor performance is FULLY accounted for by one of the following:
 - Other conditions such as ADHD or Speech Sound Disorder
 - Risk factors known to impact language development
 - Opportunities for instruction
 - Dialect differences
 - Second language differences
- There is no functional impact related to a language disorder

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Study 2: Decision Pathway



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What's next?

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Advocacy: Websites

- RADLD.org
 - Websites, blogs, videos, free papers, personal stories, promotional materials
 - Annual DLD awareness day
 - 2021 – October 15
- DLDandMe.org
 - Support & resources for parents, teachers, and those impacted by DLD


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We're on it at Western!

Developmental Language Disorder: The Childhood Condition We Need to Start Talking About

Authors: [Marika Robillard](#) and [Lisa Archibald](#)

Young Reviewers: [Dr. Sarah-Jane Blain](#) and [Dr. Sarah-Jane Blain](#)




ABSTRACT
Using language is a skill that allows us to share our ideas and feelings, to learn, to connect, and to understand the world around us. Unfortunately, some are

Frontiers in Young Minds
<https://kids.frontiersin.org/article/10.3389/frym.2019.00094>

Communiqué

5-6-7 Audiology Communication Health Assistants Students



Developmental Language Disorder: Why You Should Add DLD to Your Vocabulary

Published on March 14th, 2019

Also 2 blogs by Marika Robillard on DLD in other languages (April 25, 2019; Oct. 4, 2019)

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We're on it at Western!

- My students' projects:
 - <https://www.uwo.ca/fhs/lwm/teaching/dld2.html>

Supporting DLD in the classroom
<https://youtu.be/PKegRIHFqH4>

Follow me on twitter at @larchiba6 !!


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Thank you!

- To contact me...
 - larchiba@uwo.ca
 - Lab website & #DLDTtoolbox
 - <http://www.uwo.ca/fhs/lwm/>
 - #DLDTtoolbox instagram
 - @dld_diagnostics
 - Lab blog
 - <http://www.canadianslp.blogspot.com/>
 - Twitter
 - @larchiba6
 - Pinterest
 - www.pinterest.com/lisaarchibald

 Social Sciences and Humanities Research Council of Canada
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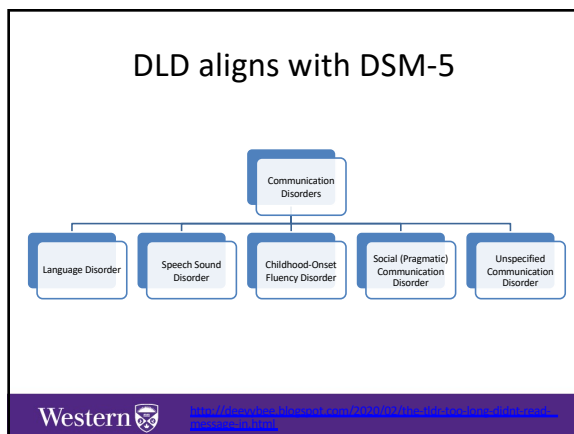




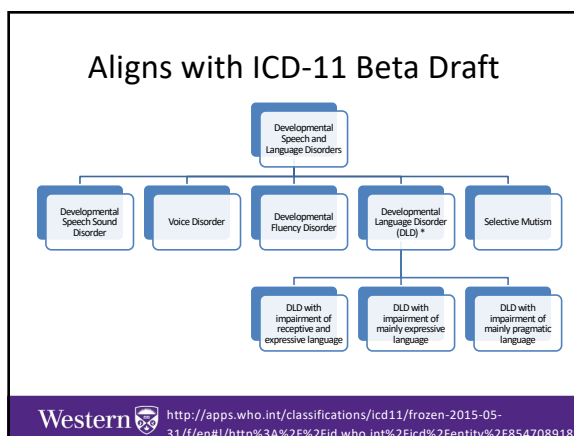
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