The Language Basis of Literacy: Word Reading, Comprehension, and Writing

Suzanne M. Adlof, Ph.D. sadlof@mailbox.sc.edu

Webinar for Kansas Department of Education Presented January 11, 2022

The Language Basis of Literacy: Word Reading, Comprehension, and Writing

Suzanne M. Adlof
sadlof@mailbox.sc.edu
@SuzAdlof



@SCROLL Lab

1

Ethan, age 8

- Ethan is the oldest child in his family; he's currently enrolled in 2nd grade.
- Ethan's parents enjoy reading and read to him often since he was a baby.
- Ethan initially enjoyed school. He had some difficulty learning letters in kindergarten.
- In first grade, he had more difficulty learning to read and began expressing a dislike of going to school. He begins receiving Tier 2 supports.
- His struggles continue in second grade.
- His mom is becoming concerned. She had been thinking he was just a "late bloomer" but as the curriculum becomes more challenging, she is worried something more serious might be going on.

2

Ella, age 8

- Ella is the middle child in her family; she's currently enrolled in 2nd grade.
- Ella seems to enjoy school. She looks forward to seeing her friends, and she has a good relationship with her teachers.
- Ella's academic performance always seemed fine until the middle of 2nd grade. Her scores on the school's progress monitoring assessment showed a surprising drop compared to her previous performance.
- Ella's mom thought she might've had a bad testing day, but the spring reading scores came back worse. Ella's mom is surprised and worried.

3

It's understandable that these parents are worried

- Over 17% of adults (45 million) in the United States cannot read above a third-grade level.
- Over 33% of fourth grade students in the United States have not achieved basic literacy skills.
- Added concerns of "learning loss" related to the COVID-19 pandemic

https://www.nationsreportcard.gov/highlights/reading/2019/https://www.proliteracy.org/Portals/0/pdf/PL_AdultLitFacts_US_flyer.pdf

4

Why do so many children struggle to learn to read?

1. Lack of evidence-based instruction

2. Language-based learning difficulties are frequently undetected, unaddressed

- Dyslexia
- Developmental Language Disorder (DLD)

5

What does it take to become literate?

Simple View of Reading
(Gough & Tunmer, 1986)

Word reading × Listening comp. = Reading comp.

6

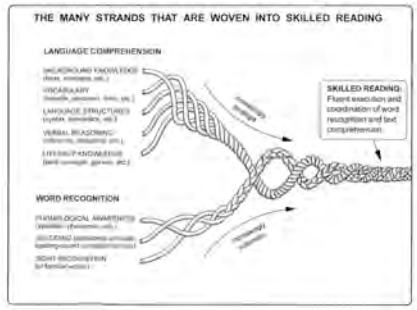
Simple View of Reading
(Gough & Tunmer, 1986)

Word reading × Listening comp. = Reading comp.

Language Basis of SVR

- Word reading: Phonological awareness; Orthographic knowledge; Morphological awareness
- Listening comp.: Vocabulary; Grammar; Inference
- Reading comp.: Background knowledge; Discourse & text structures

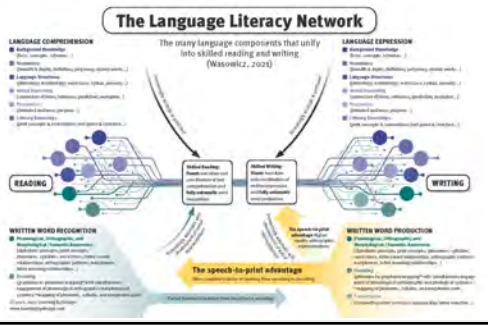
7



Scarborough, H. S. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory, and practice. In S. Neuman & D. Dickinson (Eds.), *Handbook for research in early literacy* (pp. 97–110). New York, NY: Guilford Press.

8

Wasowicz, J. (2021). The Language Literacy Network. Learning by Design, Inc.



9

Evidence-Based Reading Instruction

- **Explicit**
  - Teaches children how written language system works
- **Systematic**
  - Sequence of instruction is carefully and strategic planned from simple to complex; lessons build on previously learned information
- **Scaffolded**
  - Gradual release of responsibility from teacher to student
- **Comprehensive**
  - Phonemic awareness, orthography, morphology, vocabulary, syntax, and narrative & expository text structures

10

Simple View of Reading
(Gough & Tunmer, 1986)

Word reading × Listening comp. = Reading comp.

Linked to different disorders that frequently co-occur

- Word reading: Weak in children with **dyslexia**
- Listening comp.: Weak in children with **DLD**

(Adlof, 2020; Adlof & Hogan, 2018; Catts et al., 2005; Ehrhorn et al., 2021; Snowling et al., 2020)

11

Dyslexia

(International Dyslexia Association, 2002)

*"Dyslexia is a specific learning disability that is neurobiological in origin. It is **characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities**. These difficulties **typically result from a deficit in the phonological component of language** that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge."*

12

Myths and Facts About Dyslexia

- X People with dyslexia read backward
- X Dyslexia is caused by uncoordinated eye movements
- X Dyslexia could be prevented if parents read to their children more
- X Children with dyslexia will never learn to read with comprehension
- ✓ Children without dyslexia also reverse letters before they learn to read
- ✓ Vision problems ≠ dyslexia and do not explain decoding difficulties
- ✓ Dyslexia is a heritable condition; home reading activities help support children's language development but do not prevent dyslexia
- ✓ With proper instruction, individuals with dyslexia can learn to read and comprehend

13

Developmental Language Disorder (DLD)

A significant impairment in ability to ***learn, understand, and use spoken language*** (Bishop et al., 2017; McGregor, 2020)

- Congenital
- Neuro-biologically based
- No known biomedical cause

Prevalent
- 1/14 students (~7%) has DLD

Hidden
- 2/3 of children with DLD undiagnosed

Persistent
- Language difficulties present ~ 5 years continue through adulthood

Comorbidities
- Speech sound disorder, ADHD, & dyslexia often co-occur

14

Functional Impacts of DLD

- ↑ risk for reading and learning disabilities (Catts et al., 2005, 2006; Snowling et al., 2020)
- ↓ educational attainment (Durkin et al., 2009)
- ↑ risk for grade retention (Tomblin & Nippold, 2014)
- ↓ employment opportunities (Conti-Ramsden et al., 2018)
- ↑ anxiety and depression (Botting et al., 2016)
- ↑ rates of recidivism in youth offenders (Winstanley et al., 2021)

15

Myths and Facts About DLD

- X Children with DLD have trouble pronouncing words correctly
- X Parents can prevent DLD by talking to their children
- X Children will "grow out of" DLD eventually
- X Children with DLD are not very smart
- X Children with DLD should focus on one language
- ✓ DLD is a problem understanding or expressing language, not speech sounds
- ✓ DLD has a genetic basis
- ✓ DLD is a persistent disorder with long-term impacts
- ✓ DLD is not an intellectual disability
- ✓ Bilingualism does not cause DLD or make it worse; children with DLD can learn two languages

16

Dyslexia is a "language-based" disorder
(Catts, 1989; Shaywitz, 1998)

Children with dyslexia often
- Have a family history of learning disabilities
- Begin talking later than typical
- Have difficulty learning names of letters, numbers
- Have difficulty pronouncing words correctly
- Have difficulty learning common nursery rhymes
- Have slower development of vocabulary & morphosyntax

Shifting Classifications
(Sun & Wallach, 2014)

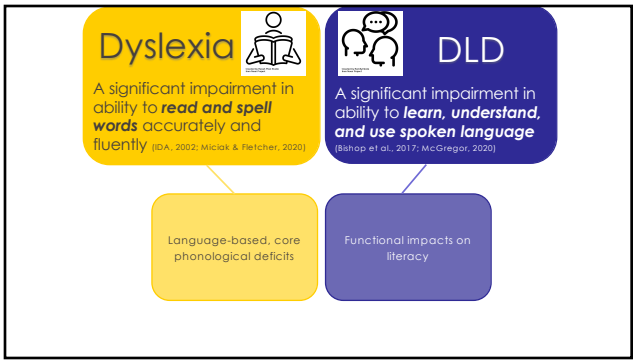
Children who initially received special education services from a speech-language pathologist under the "speech or language impairment" category often are later re-classified as having a "specific learning disability" in reading.

17

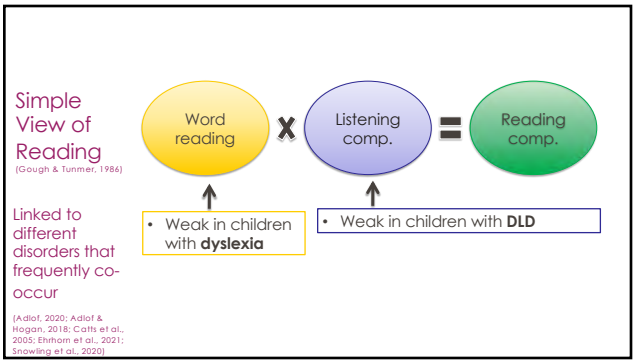
Is Dyslexia the Same as DLD?

- ***No, but they often co-occur***
  - Many (but not all) children with dyslexia have weaknesses in morphology, semantics, and syntax that warrant attention
  - Many (but not all) children with DLD struggle with word reading
  - Across studies, overlap between disorders ranges from 17–71% (Adlof & Hogan, 2018)
- Children with ***either dyslexia or DLD*** (or both) are likely to struggle with reading comprehension, ***but they require different kinds of intervention***

18



19



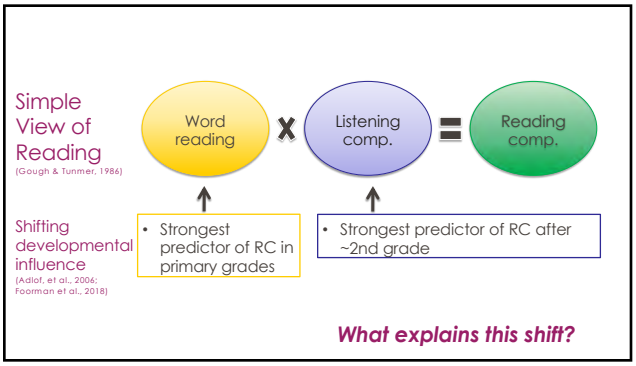
20

Common Misunderstandings

X Word reading and listening comprehension are equally important for reading comprehension

✓ Both are necessary, but once adequate word reading is established, listening comprehension is the stronger predictor

21

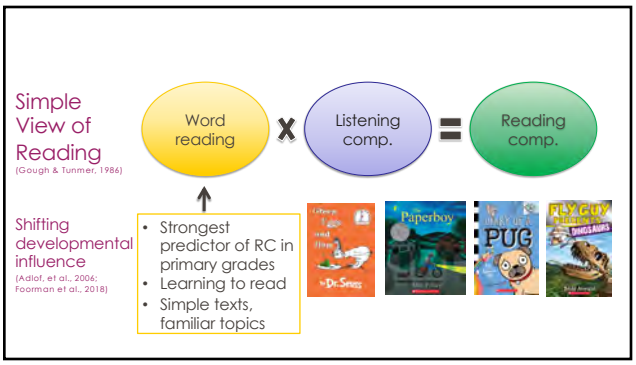


22

Language develops automatically, but reading must be taught.

About language development: "there is almost no way to prevent it from happening, short of raising a child in a barrel" (Pinker, 2009)

23



24

Core Knowledge
Grade 1 Language Arts

https://www.coreknowledge.org/free-resource/ckla-domain-02-human-body



The human body truly is an amazing thing. Some parts of a human are on the outside where we can see them. What parts of your body can you see? What parts of the children sitting near you can you see? You can probably see skin, hair, faces, and fingernails. Skin comes in different colors. Hair does, too. Hair may be curly, wavy, or straight. Eyes may be brown, blue, or green. People are also different sizes and different ages, too.

This work is based on an original work of the Core Knowledge ® Foundation made available through licensing under a Creative Commons Attribution-NonCommercial- ShareAlike 4.0 International License. This does not in any way imply that the Core Knowledge Foundation endorses this work.

25

Simple View of Reading
(Gough & Tunmer, 1986)

Word reading X Listening comp. = Reading comp.

Shifting developmental influence
(Adlof, et al., 2006; Foorman et al., 2018)



- Strongest predictor of RC after ~2nd grade
- Reading to learn
- Texts increasingly complex, with unfamiliar vocabulary, about unfamiliar topics

26

Core Knowledge
Grade 8 Science

https://www.coreknowledge.org/wp-content/uploads/2022/11/CKSci_G8U5_Genetics_SR_Web.pdf



Essential Amino Acids and Protein Needs

There are twenty common amino acids that our bodies need, primarily to form important proteins. Nine of these amino acids are called essential amino acids (EAAs). They are essential because they aren't made in the body. They must be consumed through your diet.

The table shows the recommended daily amount of each EAA, in milligrams of EAA per kilogram of an adult's body weight. For example, every day, an adult should consume 10 milligrams of isoleucine for each kilogram of their body weight. Several foods that are rich in EAAs are featured in the table, to show the relative amounts of each EAA found in a 170-gram (six-ounce) serving of each. How much of each EAA a person needs is a function of their size as well as whether they are trying to gain mass. In turn, the amount of protein-rich food a person needs is a function of their size.

This work is based on an original work of the Core Knowledge ® Foundation made available through licensing under a Creative Commons Attribution-NonCommercial- ShareAlike 4.0 International License. This does not in any way imply that the Core Knowledge Foundation endorses this work.

27

Common Misunderstandings

X Word reading and listening comprehension are equally important for reading comprehension

✓ Both are necessary, but once adequate word reading is established, listening comprehension is the stronger predictor

28

Common Misunderstandings

X Language arts instruction should focus on decoding first and comprehension later

✓ Instruction in the language skills that support comprehension can and should begin immediately, in the spoken domain

✓ Waiting to teach these skills may be particularly harmful for children with lower language abilities

29

Simple View of Reading
(Gough & Tunmer, 1986)

Word reading X Listening comp. = Reading comp.

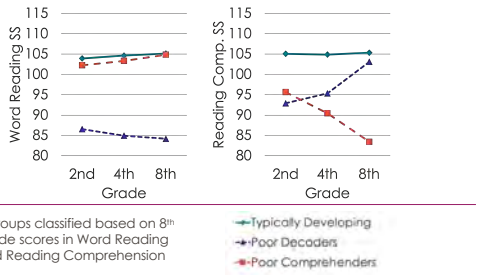
Linked to different disorders that frequently co-occur
(Adlof, 2020; Adlof & Hogan, 2018; Catts et al., 2005; Ehrhorn et al., 2021; Snowling et al., 2020)

- Weak in children with **dyslexia**
- Weak in children with **DLD**

30

Reading comprehension difficulties that seem late to emerge are linked to early oral language weaknesses

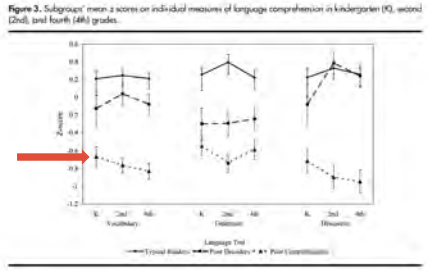
(Catts, Adlof, & Weismer, 2006)



31

Reading comprehension difficulties may appear late to emerge; but they are linked to early oral language weaknesses

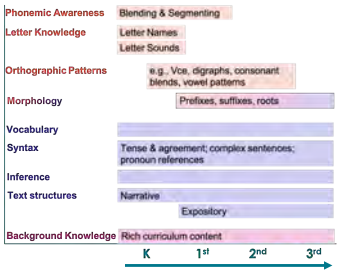
(Catts, Adlof, & Weismer, 2006)



32

Evidence-Based Reading Instruction

Addresses both word reading and comprehension from the start



(Foorman et al., 2016)

33

Children with DLD often fly under the radar.



Iowa Longitudinal Study

- Followed > 600 children from epidemiologic sample from K to 12th grade
- < 30% of parents of children with language impairment in K had been previously informed that their child had a speech or language problem (Tomblin et al., 1997)

UK Epidemiologic Study (Norbury et al., 2016)

- < 40% of 4-5-year-old children with DLD had previously been referred to a speech-language pathologist
- < 40% of children with DLD had received extra school supports.

34

But do they experience functional impacts?



Iowa Longitudinal Study

- 75% of children with language impairment in K had low reading comprehension by adolescence, but many of these were "late-emerging" (Catts et al., 2012)
- Children with language impairment scored lower than children with typical language on ITBS and were rated lower in academic competence by their teachers (Tomblin, 2014)

UK Epidemiologic Study

- 11% of children with DLD were rated by their teachers as having a "good" level of academic achievement vs. 70% of children with typical language skills

35



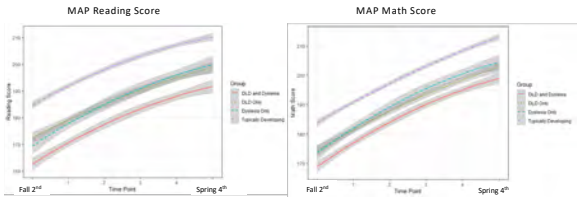
Reading and Math Achievement in Children With Dyslexia, Developmental Language Disorder, or Typical Development: Achievement Gaps Persist From Second Through Fourth Grades

Dawna M. Duff, PhD[1], Alison E. Hendricks, PhD[2], Lisa Fitton, PhD[3], and Suzanne M. Adlof, PhD[3]

36

Impact of Dyslexia and DLD on Academic Achievement (Duff, Hendricks, Fitton, & Adlof, 2022)

Subgroup Performance on MAP Assessments
2nd – 4th grades (*N* = 448)



37

Do children without a clinical diagnosis experience academic impacts?

Darwinek, CC BY-SA 3.0 https://creativecommons.org/licenses/by-sa/3.0

- **Yes,** and . . .
  - Children with DLD experienced a similar degree of impact as children with dyslexia (i.e., word reading difficulties) in terms of achievement test scores, but they were ***less likely*** to have received services
- Receipt of speech, language, or special education services, according to parent report or school report
  - DLD-only: 8-15%
  - Dyslexia–only: 16-33%
  - DLD+Dyslexia: 31-38%
  - TD: 2-9%

38

Flying under the radar

Receipt of speech, language, or hearing services, according to parent or school report
- DLD-only: 8-15%
- Dyslexia–only: 16-33%
- DLD+Dyslexia: 31-38%
- TD: 2-9%

Parent report of "concerns" about reading or language skills (2nd grade)
- DLD-only: 29%
- Dyslexia–only: 60%
- DLD+Dyslexia: 56%
- TD: 7%

Within all groups, parents more often report concerns about reading than oral language

(Adlof, Scoggins, Babb, Brazendale, & Petscher, 2017; Duff, Hendricks, Fitton, & Adlof, 2022; Hendricks, Adlof, Alonzo, Fox, Hogan, 2019; Chan, Adlof, Duff, Mitchell, Ragunathan, & Ehrhorn, 2022)

39

Flying under the radar

Our research has focused on parent concerns, but others find that teachers also have difficulty discriminating normal from disordered language skills

(Christopulos & Kean, 2020; Hendricks & Jiminez, 2021; Samson & Lesaux, 2009; Williams, 2006)

40

Why does DLD fly under the radar?

- Difference between normal and impaired oral language is hard to track without direct measurement
- Conversational language is less demanding than written language
- Errors are infrequent, even in DLD
- Communication breakdowns can be attributed to other factors, e.g., attention, shyness, etc.
- Range of "normal" is wide
  - –For TD children, the range of competence in is wide, but range of use is smaller (cf. differences between conversational language and academic language)

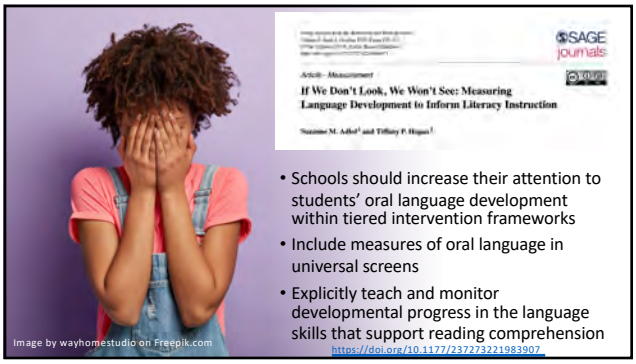
41

	Conversation	Written Language
Words		
	Lower lexical diversity • More pronouns, proper names, and fillers (ah)	Higher lexical diversity • More nouns and adjectives • Nominalizations are more common in academic texts (introduction, reaction, preservation) • More complex words (syllables & morphemes)
	• Shorter, simpl… structures • Information deliv…d in small units • Prosody modulates flow of information and cues linguistic structure	• …more varied structures • Punctuation provides …ted cues to structure and meaning
Pragmatics		
	• Shared message • Opportunity to immediately repair communication breakdowns	• One-way communication • Content determined by writer • Reader responsible for monitoring understanding

Teachers' Classroom Talk

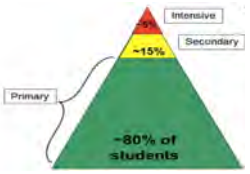
e.g., Montag, 2019; Dawson et al., 2021

42



43

Multi-tiered Systems of Support



National Center on Intensive Intervention
https://intensiveintervention.org

Prevention-oriented, whole-school framework

- All students receive high quality evidence-based instruction in Tier 1
- Universal screens and progress monitoring assessments are used to "catch them before they fail"
- Students flagged as at risk or who show slow progress receive additional supports and closer monitoring in Tier 2
- Increased intensity of intervention and frequency of assessment in higher tiers
- Multiple school-personnel involved, less separation between general and special education

44

TLDR

- Language is the foundation for all school learning
- Reading and language difficulties frequently co-occur, but language impairments are often missed
- Children with reading difficulties should be evaluated for language difficulties
- Children who have been dismissed from SLP caseloads should be monitored closely in reading and writing
- Children with DLD are under-identified; many will experience significant comprehension difficulties even with adequate decoding skills
- Measuring and supporting oral language in all kids will help promote strong reading and writing for all.

45

What Can You Do?

1. Help raise **awareness** of the importance of language for reading and writing
2. Ensure that all children receive high-quality, evidence-based instruction in **language** as well as reading and writing
3. **Include measures of oral language** in universal screening efforts, and monitor progress in oral and written language development from kindergarten forward
   - Not only phonemic awareness & vocabulary, but also morphology, syntax, and discourse

4. Facilitate **collaboration** between teachers, speech-language pathologists, reading coaches and others to support students at all instructional tiers.

46

Thank you!

@SCROLL Lab

47

The Language Basis of Literacy: Word Reading, Comprehension, and Writing

Suzanne M. Adlof, Ph.D. sadlof@mailbox.sc.edu

January 11, 2022

Linked Web Resources

Adult Literacy Fact Sheet
https://www.proliteracy.org/Portals/0/pdf/PL_AdultLitFacts_US_flyer.pdf

NAEP Reading Results
https://www.nationsreportcard.gov/highlights/reading/2019/

Scarborough's Rope:
https://dyslexiaida.org/scarboroughs-reading-rope-a-groundbreaking-infographic/

The Language Literacy Network:
https://learningbydesign.com/wpcontent/uploads/2022/01/TLLN_11x8.5.pdf

IDA Definition of Dyslexia
https://dyslexiaida.org/definition-of-dyslexia/

Core Knowledge Curricula:
https://www.coreknowledge.org/curriculum/

References Cited

Adlof, S.M. (2020). Promoting reading achievement in children with developmental language disorders: What can we learn from research on SLI and dyslexia? *Journal of Speech, Language, and Hearing Research, 63*, 3277-3292. https://doi.org/10.1044/2020_JSLHR-20-00118

Adlof, S.M. & Hogan, T. P. (2018). Understanding dyslexia in the context of developmental language disorders. *Language Speech and Hearing Services in the Schools, 49* (4) 762-773. https://pubs.asha.org/doi/10.1044/2018_LSHSS-DYSLC-18-0049

Adlof, S.M., Catts, H.W., & Little, T. D. (2006). Should the simple view of reading include a fluency component? *Reading and Writing, 19,* 933-958.

Adlof, S.M. & Hogan, T. P. (2019). If we don't look, we won't see: Measuring language development to inform literacy instruction. *Policy Insights from the Behavioral and Brain Sciences.* https://doi.org/10.1177/2372732219839075

Adlof, S.M., Scoggins, J., Brazendale, A., & Babb, S., & Petscher, Y. (2017). Identifying Children at Risk for Language Impairment or Dyslexia with Group-Administered Measures. *Journal of Speech, Language, and Hearing Research, 60*, 3507-3522. doi:10.1044/2017_JSLHR-L-16-0473

Bishop, D. V., Snowling, M. J., Thompson, P. A., Greenhalgh, T., Consortium, C.-2, Adams, C., Bellair, J. (2017). Phase 2 of CATALISE: A multinational and multidisciplinary Delphi consensus study of problems with language development: Terminology. *Journal of Child Psychology and Psychiatry*, *58*(10), 1068–1080.

Botting, N., Durkin, K., Toseeb, U., Pickles, A., & Conti-Ramsden, G. (2016). Emotional health, support, and self-efficacy in young adults with a history of language impairment. *British Journal of Developmental Psychology*, *34*(4), 538-554.

Botting, N., Toseeb, U., Pickles, A., Durkin, K., & Conti-Ramsden, G. (2016). Depression and anxiety change from adolescence to adulthood in individuals with and without language impairment. *PLoS One*, *11*(7), e0156678.

Catts, H. W. (1989). Defining dyslexia as a developmental language disorder. *Annals of Dyslexia*, *39*(1), 50-64.

Catts, H.W., Adlof, S.M., & Ellis Weismer, S. (2006). Language deficits of poor comprehenders: A case for the simple view of reading. *Journal of Speech, Language, and Hearing Research*, *49,* 278-293.

Catts, H.W., Adlof, S.M., Hogan, T.P., & Ellis Weismer, S. (2005). Are SLI and dyslexia distinct disorders? *Journal of Speech, Language, and Hearing Research, 48,* 1378-1396.

Chan, J., Adlof, S.M., Duff, D. M., Mitchell, A., Ragunathan, M., & Ehrhorn, A. (2022). Examining the associations between parent concerns and school-age children's language and reading abilities: A comparison of samples recruited for in-school vs. online participation. *Language Speech and Hearing Services in Schools.* https://doi.org/10.1044/2021_LSHSS-21-00080

Christopulos, T., & Kean, J. (2020). General education teachers' contribution to the identification of children with language disorders. *Perspectives of the ASHA Special Interest Groups*, *5*(4), 770-777.

Conti-Ramsden, G., Durkin, K., Toseeb, U., Botting, N., & Pickles, A. (2018). Education and employment outcomes of young adults with a history of developmental language disorder. *International Journal of Language and Communication Disorders, 53*(2), 237–255. https://doi.org/10.1111/1460-6984.12338

Dawson, N., Hsiao, Y., Banerji, N., Tan, A. W. M., & Nation, K. (2021). Features of lexical richness in children's books: Comparisons with child-directed speech. *Language Development Research*.

Duff, D., Hendricks, A.E., Fitton, L., & Adlof, S.M. (2022). Reading and math achievement in children with dyslexia, developmental language disorder, or typical development: Achievement gaps persist from second through fourth grades. *Journal of Learning Disabilities.* https://doi.org/10.1177/00222194221105515Durkin et al. 2009

Ehrhorn, A., Adlof, S. M., Fogerty, D., & Laing, S. (2020). Probing phonological processing differences in nonword repetition for Children with Separate or Co-occurring Dyslexia and Developmental Language Disorder. *Scientific Studies of Reading.* https://doi.org/10.1080/10888438.2020.1849223

Foorman, B. R., Petscher, Y., & Herrera, S. (2018). Unique and common effects of decoding and language factors in predicting reading comprehension in grades 1–10. *Learning and Individual Differences*, *63*, 12-23.

Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, *7*(1), 6-10.

Hendricks, A., Adlof, S.M. Alonzo, C. N., Fox, A. B., & Hogan, T.P. (2019). Identifying children with developmental language disorder using a brief, whole-classroom screen. *Journal of Speech-Language, and Hearing Research, 62*, 896-908. https://doi.org/10.1044/2018_JSLHR-L-18-0093

Hendricks, A. E., & Jimenez, C. (2021). Teacher report of students' dialect use and language ability. *Language, Speech, and Hearing Services in Schools*, *52*(1), 131-138.

McGregor, K. K. (2020). How We Fail Children With Developmental Language Disorder. *Language, Speech, and Hearing Services in Schools*, *51*(4), 981-992. https://doi.org/10.1044/2020_LSHSS-20-00003

Miciak, J., & Fletcher, J. M. (2020). The critical role of instructional response for identifying dyslexia and other learning disabilities. *Journal of Learning Disabilities*, https://doi.org/10.1177/0022219420906801

Montag, J. L. (2019). Differences in sentence complexity in the text of children's picture books and child-directed speech. *First language*, *39*(5), 527-546.

Norbury, C. F., Gooch, D., Wray, C., Baird, G., Charman, T., Simonoff, E., ... & Pickles, A. (2016). The impact of nonverbal ability on prevalence and clinical presentation of language disorder: evidence from a population study. *Journal of Child Psychology and Psychiatry*, *57*(11), 1247-1257.

Pinker, S. (2009). *Language learnability and language development*. Cambridge, MA: Harvard University Press. As cited in Castles, A., Rastle, K., & Nation, K. (2018). Ending the Reading Wars: Reading Acquisition From Novice to Expert. *Psychological Science in the Public Interest*, *19*(1), 5–51. https://doi.org/10.1177/1529100618772271

Samson, J. F., & Lesaux, N. K. (2009). Language-minority learners in special education: Rates and predictors of identification for services. *Journal of Learning Disabilities*, *42*(2), 148-162.

Scarborough, H. S. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory, and practice. In S. Neuman & D. Dickinson (Eds.), *Handbook of Research in Early Literacy* (pp. 97–110). New York, NY: Guilford Press.

Sun, L., and Wallach, G. P. (2014). Language Disorders Are Learning Disabilities: Challenges on the Divergent and Diverse Paths to Language Learning Disability. *Topics in Language Disorders, 34*(1), 25-38.

Tomblin, J. B. & Nippld, M. A. (2014). *Understanding individual ifferences in language development across the school years*. Psychology Press.

Tomblin, J. B., Records, N. L., Buckwalter, P., Zhang, X., Smith, E., & O'Brien, M. (1997). Prevalence of specific language impairment in kindergarten children. *Journal of Speech, Language, and Hearing Research*, *40*(6), 1245-1260.

Shaywitz, S. E. (1998). Dyslexia. *New England Journal of Medicine*, *338*(5), 307-312.

Snowling, M. J., Hayiou-Thomas, M. E., Nash, H. M., & Hulme, C. (2020). Dyslexia and Developmental Language Disorder: comorbid disorders with distinct effects on reading comprehension. *Journal of Child Psychology and Psychiatry*, *61*(6), 672-680. https://doi.org/10.1111/jcpp.13140

Willcutt, E. G., Betjemann, R. S., Pennington, B. F., Olson, R. K., DeFries, J. C., & Wadsworth, S. J. (2007). Longitudinal study of reading disability and attention-deficit/hyperactivity disorder: Implications for education. *Mind, Brain, and Education*, *1*(4), 181-192.

Wittke, K., & Spaulding, T. J. (2018). Which preschool children with specific language impairment receive language intervention?. *Language, speech, and hearing services in schools*, *49*(1), 59-71.

Winstanley, M., Webb, R. T., & Conti-Ramsden, G. (2021). Developmental language disorders and risk of recidivism among young offenders. *Journal of Child Psychology and Psychiatry*, *62*(4), 396-403.