Article

If We Don't Look, We Won't See: Measuring Language Development to Inform Literacy Instruction

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Abstract

Oral language abilities enable children to learn to read, and they predict future academic achievement and life outcomes. However, children with language impairment frequently go unidentified because schools do not systematically measure oral language development. Given that identification paves the way for treatment, schools should increase attention to oral language development, particularly within response to intervention (RTI) frameworks, which aim to prevent learning disabilities by identifying and intervening at early stages. Formal schooling should address language comprehension (in addition to word reading) to ensure an adequate foundation for future reading comprehension. In support, we overview the developmental relations between oral language abilities and reading skills, review current school-based assessment frameworks, and discuss how these frameworks can include language assessments. Measuring language skills early and often benefits not only those who have language impairment but also all children, as it documents language variability to inform differentiated instruction.

Keywords

reading, language development, literacy, language disorder, response to intervention, assessment, instruction

Tweet

Schools should measure oral language early and often to identify children with language disorders and inform differentiated instruction to improve reading comprehension for all.

Key Points

- Reading comprehension involves two abilities: word reading and language comprehension.
- From the very beginning, formal schooling should address language comprehension (in addition to word reading) to ensure an adequate foundation for future reading comprehension.
- Children with language impairment are largely unidentified, but they exhibit significant reading comprehension difficulties.
- Schools should attend to language development, particularly through measuring oral language skills and following with response to intervention (RTI) frameworks that identify and intervene early.
- Policy changes could promote the direct assessment and facilitation of language development in schools, including (a) educator coursework on language development and language facilitation, (b) classroom instruction dedicated to building language skills, and (c) research funding directed to the development of measures that are appropriate for progress monitoring of oral language in the school grades.

Introduction

Literacy skills critically impact academic achievement, employment opportunities, and public health outcomes (Braveman, Egerter, & Mockenhaupt, 2011; DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004). Unfortunately, many students struggle to become literate. Results of the 2015 National Assessment of Educational Progress indicated that 25% of eighth-grade students in the United States had not achieved basic reading proficiency. Over 30 years of research has established that oral language skills set the foundation for reading and writing development (see Hogan, Cain, & Bridges, 2012, for review). Accordingly, children with language impairment are 6 times more likely to have a

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reading impairment than their peers with typical language development (Stoeckel et al., 2013). Many children struggle with reading comprehension in late elementary and middle school grades after having initially appeared to be good readers; these "late emerging poor readers" often exhibit oral language delays in early grades that predate the late emerging reading difficulties (Catts, Compton, Tomblin, & Bridges, 2012). Unfortunately, less than one third of children with language impairment are identified before they struggle to read (Adlof, Scoggins, Brazendale, Babb, & Petscher, 2017; Nation, Clarke, Marshall, & Durand, 2004; Tomblin et al., 1997); this results in a missed opportunity to provide early language intervention that could increase the odds of attaining successful literacy (Shanahan & Lonigan, 2010).

To anticipate our recommendations: Children with language impairment are not identified because schools do not systematically measure oral language skills. Given that identification paves the way for treatment, schools should increase attention to language development, particularly through a focused effort to measure oral language skills within response to intervention (RTI) frameworks. Furthermore, measuring oral language skills at school entry and regularly throughout the early school grades should benefit *all* children—not just those who have language impairment—by providing educators with information about their students' language development that can inform instructional practices to improve reading comprehension. To support this recommendation, we overview the developmental relations between oral language abilities and reading skills, review strengths and limitations of current school-based assessment frameworks, and discuss three ways these frameworks may change to include systematic measurement of language abilities.

Developmental Relations Between Oral Language Skills and Reading Skills

To understand a piece of printed text, a person must rely on two sets of abilities: (a) *word decoding*, the ability to decode the printed strings of alphabet letters into pronounceable words, and (b) *language comprehension*, the ability to understand the meaning conveyed by the words, phrases, and sentences if they are spoken aloud instead of read. The importance of word decoding and language comprehension abilities is highlighted in the simple view of reading (Gough & Tunmer, 1986), which states that both are necessary and neither alone is sufficient for reading comprehension to occur. The simple view is supported by numerous empirical studies involving readers of all ages and ability levels (Foorman, Petscher, & Herrera, 2018; Garcia & Cain, 2014). Each component of the simple view is admittedly complex, and a limitation of the simple view as a model of reading is that it oversimplifies all of the knowledge and processes that underlie the ability to decode words and comprehend text (Castles, Rastle, & Nation, 2018; Catts, 2018; Kirby & Savage, 2008). However, the simple view is useful for educational practices in at least two ways. It denotes the two general classes of skills that should be taught as part of literacy instruction, and it provides a problem-solving framework for assessing why some children have poor reading comprehension and how their problems can be prevented or remediated (Adlof, Perfetti, & Catts, 2011; Hogan, Adlof, & Alonzo, 2014; Roberts & Scott, 2006). That is, when a child struggles to comprehend a text, it could be caused by difficulty reading the words, difficulty understanding the meaning within the text, or both (Catts, Adlof, & Weismer, 2006).

The simple view becomes more complex when considering the developmental relationships between decoding, language comprehension, and reading comprehension across the school grades. In the early elementary grades, reading comprehension is primarily constrained by word decoding skills. When children enter kindergarten, their ability to understand spoken language naturally exceeds their ability to comprehend texts because they have not yet been taught to decode print. Thus, during the primary grades, as children are being taught to decode, the texts they are asked to comprehend are usually written at a level below their oral language abilities. Beginning around third grade, as word reading becomes automatized, the relationship shifts, and reading comprehension is primarily constrained by oral language skills (Adlof, Catts, & Little, 2006; Foorman et al., 2018; Language and Reading Research Consortium [LARRC], 2015). As such, children in the primary grades are described as "learning to read" and children in later grades (as well as adults) are described as "reading to learn." This description is mostly correct, but it follows from the linguistic demands and background knowledge requirement of the texts that children encounter as they develop word-reading skills. Moreover, the developmental shift in the relative constraints on reading comprehension does not imply that literacy instruction should proceed in a linear fashion (e.g., first teach word reading skills, and then teach comprehension skills, after word reading skills are in place). Rather language comprehension skills should be addressed from the very beginning of formal schooling (alongside word reading skills) to ensure adequate stimulation of the oral language skills that underpin future listening comprehension (Castles et al., 2018; LARRC & Chiu, 2018).

School Assessment Frameworks

Currently, most schools use RTI frameworks to measure students' academic progress and identify students who may qualify for special education services for reading or other academic subjects (e.g., math). RTI was developed as a framework for the prevention, identification, and intervention of learning disabilities, and was introduced as an allowable method for identifying children needing special education

services beginning with the 2004 reauthorization of the Individuals With Disabilities Education Act (IDEA; PL 108-446). RTI is a prevention-oriented framework that involves high-quality, scientifically based instruction for all students and increasing levels of instructional support, referred to as "tiers," for students who need it. Students are identified as candidates for additional educational support through universal screenings (brief, targeted assessments administered to all students), which are typically administered at the beginning of each school year, and progress monitoring assessments, which are administered at regular intervals throughout the school year. All students begin in Tier 1, which is high-quality regular education. Students who are determined to be at risk, or who do not make progress as expected, are referred to higher tiers, where they receive additional instructional support (e.g., more intensive and explicit small group instruction) and their progress is monitored more frequently. Ultimately, students who do not make adequate progress in response to this additional support may be referred for an evaluation for the highest tier, which involves special educational services (see Gersten et al., 2009, for more information on RTI framework). Note that RTI is not the only path to special education services. The traditional path to special education is still available; this path involves a parent, teacher, or other school personnel requesting an evaluation, and a team-based determination of an eligible disability that impacts academic progress and requires specialized instruction. In theory, an advantage of RTI over traditional methods of identification is that RTI is not concerned with the specific type of disability or cause of academic difficulties. Instead, in this framework, those who struggle to learn when provided high-quality instruction should receive extra support. However, currently, RTI frameworks are better developed for identifying children with delays associated with word reading skills than for children with delays in oral language because the most commonly used measure of learning is word reading itself.

Word Reading Skills

To decode words in an alphabetic language such as English, children need to be able to link the sounds of the language with the letters that are used to spell those sounds. Thus, phonological awareness and alphabet knowledge are two prerequisites for learning to decode. Phonological awareness is the ability to reflect on and manipulate the sounds that make up words in one's language, such as the ability to recognize words that rhyme, to count the syllables in words, and to identify words that start or end with the same sound (Torgesen, Wagner, Rashotte, Burgess, & Hecht, 1997). Alphabet knowledge includes the ability to recognize and name alphabet letters as well as the sounds they represent (Piasta & Wagner, 2010). RTI initially developed in response to evidence that many students entered schools without a strong foundation of these prerequisite skills, and many schools were not explicitly and systematically teaching decoding (see Fuchs & Fuchs, 2006). However, when provided with high-quality instruction, many children who initially appeared to be struggling readers made progress and learned to decode (Fletcher & Vaughn, 2009). A smaller number of children did not respond well to high-quality instruction. It was argued that these "treatment resisters" (Torgesen, 2000) were more likely to be learning disabled and require the more intensive supports provided by special education services (Fuchs & Fuchs, 2005).

Based on these studies and others, the Institute of Education Sciences recommends that schools using RTI frameworks around word reading should assess and teach the prerequisite skills that underpin decoding ability (Gersten et al., 2009). Beginning in kindergarten, schools should universally screen phonological awareness and alphabet knowledge, and provide explicit and systematic instruction in phonological awareness and phonics to support early word reading development. Through first and second grade, schools should continue to monitor progress in phonological awareness, decoding, and word reading fluency (Gersten et al., 2009). Currently, most schools include screening and progress monitoring of these early literacy skills. Furthermore, the importance of these efforts—as well as the need for high quality, explicit, systematic phonics instruction—has been highlighted by a nationwide advocacy effort (Ward-Lonergan & Duthie, 2018) focused on identifying children with dyslexia, a disorder characterized by inaccurate and dysfluent word reading and spelling, which are often preceded by poor phonological awareness and slow development of alphabet knowledge.

Oral Language Skills

Word reading abilities compose only half of the simple view equation. What about the broader language skills that are necessary to support reading comprehension at the level of the word, the sentence, and the discourse (i.e., multiple sentences linked in conversations or paragraphs)? These broader language skills include vocabulary, grammar, and knowledge of discourse styles including conversation, narratives, and informational texts. We note that in the past, speech-language pathologists (SLP) in public schools often conducted universal screens of oral language at kindergarten orientations. However, many schools discontinued this practice with the introduction of RTI for phonological awareness and word reading, believing the RTI process would identify children's language difficulties. As we explain below, evidence suggests that is not the case. Although most educators share the goal of fostering reading comprehension, current RTI frameworks do not systematically measure these broader language skills. At least two factors have impeded the development of RTI frameworks for oral language.

Awareness of "hidden" language deficits. First, a common assumption holds that children who appropriately participate in social conversations and learn to read words have the necessary language skills to learn to comprehend text. However, the linguistic demands of comprehending text are generally greater than the demands of oral language (cf. Castles et al., 2018). Moreover, oral language weaknesses can be masked or difficult to observe within everyday conversational interactions (cf. Nation et al., 2004). In fact, approximately 7% to 9% of children have a significant impairment in the ability to understand and produce spoken language, despite otherwise normal development, including normal hearing and normal nonverbal intelligence. This condition, known as "developmental language disorder" (DLD; see also "specific language impairment"[1]) cuts across socioeconomic strata, and genetic studies indicate a neurobiological basis (for review, see Rice, 2013).

Despite its relatively high prevalence rate, DLD is largely underdiagnosed. A large, epidemiologic study of the prevalence of DLD in kindergarten students found that parents reported that 70% of affected children had not been previously identified (Tomblin et al., 1997). Currently, the diagnosis of DLD relies on a parent, teacher, or other professional (e.g., pediatrician) to raise concerns about language development and seek an evaluation from an SLP. However, oral language difficulties can be difficult to detect without formal language assessment. In social conversations, as well as formal academic settings, children with weak language skills may be misperceived as shy, inattentive, or uninterested. In contrast, parents are more likely to be aware of speech articulation difficulties (i.e., problems pronouncing words correctly; Tomblin, 1996, as cited in Tomblin et al., 1997) or difficulty learning to read words fluently (Adlof et al., 2017; Catts et al., 2006; Hendricks, Adlof, Alonzo, Fox, & Hogan, 2019). Indeed, many children with DLD have normal speech articulation and good word reading skills, but still struggle with reading comprehension (Bishop, McDonald, Bird, & Hayiou-Thomas, 2009; Catts et al., 2006; Kelso, Fletcher & Lee, 2007; Ramus, Marshall, Rosen, & van der Lely, 2013). In addition, factors such as race, ethnicity, mother's education level, and familial socioeconomic status influence identification and service delivery. Children with weak oral language skills who are from majority racial and ethnic backgrounds, whose mothers have higher levels of education, and who are from families with higher socioeconomic status are more likely to be identified and receive treatment for speech and language difficulties (Morgan et al., 2016; Wittke & Spaulding, 2018).

Over the last few years, a growing campaign has raised awareness and educated the public about DLD (Bishop, Snowling, Thompson, Greenhalgh, & The CATALISE Consortium, 2016, 2017). Despite the recognized problem of underdiagnosis, the CATALISE Consortium warned against the use of universal screenings in the preschool years, due to concerns about the poor sensitivity and specificity of existing measures, as well as the potential costs of over-identification (Bishop et al., 2017). However, better sensitivity and specificity can be achieved with universal screens administered to school-age children (e.g., Adlof et al., 2017; Archibald & Joanisse, 2009; Hendricks et al., 2019). Furthermore, if schools are already using an RTI framework for word reading, they can capitalize on existing infrastructure to conduct screens and progress monitoring of language. Measuring language development within RTI frameworks may also help to improve the identification of DLD in culturally and linguistically diverse populations, for whom fewer valid, norm-referenced diagnostic assessments are available (cf. Norbury & Sparks, 2013). Focusing diagnostic decisions on a failure to make appropriate progress over time rather than a low score at a single testing occasion may help to ensure resources are correctly allocated to children who need them, and that children who exhibit normal language variation are not incorrectly labeled as having a language impairment.

In addition to children with DLD, even more children exhibit moderate early language delays—not severe enough to qualify as DLD—which predict subsequent poor reading comprehension skills (Catts et al., 2006; Petscher, Justice, & Hogan, 2018). Across the school grades, these children appear to decline in their relative standing compared with peers on some oral language measures. This decline may be in part due to the reciprocal relationship between oral and written language skills (Matthew effect; Cain & Oakhill, 2011). However, a recent study showed that these children with poor reading comprehension in fifth grade had lower language skills during toddlerhood compared with their peers with good comprehension, well before formal reading instruction (Petscher et al., 2018). Although universal screening at a single point in time may be insufficient for capturing subtle language delays in this group of children, if language development is measured at regular intervals across the early grades, their slower rate of language growth might make them more visible.

Availability of measures. In addition to a lack of awareness of the need to measure language, practical barriers have also impeded the implementation of universal screening and progress monitoring for language. First, most published language assessments are diagnostic instruments designed for administration by SLPs. Several published assessments provide acceptable levels of sensitivity and specificity for identifying children with DLD, but they often require an hour or more to administer, which makes them unrealistic for universal screening. In addition, existing published assessments are generally not designed to measure developmental change across short intervals. In contrast to diagnostic assessment, progress monitoring requires multiple equated tests of the same skills. Of course, progress-monitoring measures must be valid, reliable, and sensitive to growth over time. Ideally,

they should also be easy to implement, time efficient, and inexpensive. Such measures exist for word reading and its prerequisites, but limited tools are currently available for oral language.

Until recently, few validated assessments existed for universal screening and progress monitoring of the broad oral language skills that support comprehension (vocabulary, morphology, syntax, and discourse; Gersten et al., 2008). However, new research is addressing these barriers. First, language screens can be administered simultaneously to whole classrooms of children to identify children at risk for language impairment and future reading comprehension difficulties with acceptable levels of sensitivity and specificity. In these studies (Adlof et al., 2017; Hendricks et al., 2019), children in a group setting try to individually mark a picture out of four that represents a sentence read aloud, and the test sentences feature syntactic constructions that are known to be difficult for children with DLD. In addition, progress has been made in developing brief assessments that can be administered multiple times a year and are sensitive to changes in language skills over time. For example, short stories—equated on numerous measures of language complexity—can be used to assess listening comprehension and narrative language skills in a progress monitoring framework such as RTI (Petersen & Spencer, 2012; Spencer, Kajian, Petersen, & Bilyk, 2013). Finally, computer-adaptive testing procedures, such as Lexia's RAPID Assessment (n.d.), based on the simple view of reading, are explicitly created for screening and progress monitoring. Computerized adaptive testing (CAT) is a form of computer-based assessment that adapts to a child's ability level by presenting specific questions according to the accuracy of previous responses. Also called "tailored testing" because the test adjusts to a child's performance, adaptive testing is particularly helpful in the RTI framework because it has the potential to maximize the precision of information gathered while minimizing time the spent to obtain it (Mitchell, Truckenmiller, & Petscher, 2015). Despite these promising steps forward, more is needed to bring oral language into what has been proven to be practicable for word reading in an RTI framework.

Three Action Steps That Would Promote Direct Measurement of Language in School Assessment Frameworks

Thus far, we have expressed a need for focused attention on oral language development in schools. More specifically, we called for direct assessment of language development to identify children with language impairment and language delays that put them at risk for future reading comprehension difficulties. We discussed factors that have impeded the development of RTI frameworks around language development, and we reviewed new approaches to language assessment that can now readily augment existing school assessment frameworks, which currently focus primarily on measuring word reading and its precursors. In this section, we propose three policy changes that would promote the direct measurement of language in schools.

First, we propose that *educator training programs*, including those training classroom teachers, special educators, reading specialists, and SLPs, should draw from a comprehensive, evidence-based reading framework that includes coursework addressing each component of reading comprehension—word decoding and language comprehension. Moreover, these programs should provide coursework focused on how to stimulate each component in the classroom. Decades of scientific evidence show that the skills needed to learn to read words are different than the skills needed to comprehend text (see Castles et al., 2018 for review). Policy changes need to mandate the depth and breadth of coursework in these training programs because left to themselves, training programs tend to espouse the views of the faculty, regardless of scientific backing (DeMonte, 2013; National Reading Panel, 2000; Rickenbrode & Walsh, 2013).

Second, we propose that schools build *instructional time* into their English and Language Arts (ELA) blocks to explicitly focus on building language skills, beginning as early as kindergarten. In the past decade, the Common Core State Standards (CCSS) and the Reading for Understanding initiatives have increased attention to the language skills that underpin reading comprehension. Quality language instruction is critical to address new Common Core standards aimed at improving core language skills associated with comprehension (Language: Vocabulary Acquisition & Use [CCSS.ELA-LITERACY.L.2.3-L.2.5]; Reading Literature: Recounting Stories [CCSS.ELA-LITERACY.RL.2.2, 2.3., 2.5]; and Reading Informational Texts: Craft & Structure [CCSS.ELA-LITERACY.RI.2.4]). Importantly, language skills impact achievement in all academic content areas, not just reading. For example, the Next Generation Science Standards reflect the importance of language skills in science. A recent study found that 70% of the variance in fifth graders' performance on a state test of science was accounted for by language abilities (Petscher, Quinn, & Wagner, 2016). To address these language goals, the early reading curriculum should include a focus on not only quality, explicit, code-based, word-reading instruction, but also instructional time for improving the language skills that are linked to later reading instruction, including foundational language skills (e.g., vocabulary and grammar) and higher level language concepts and skills (e.g., comprehension monitoring, story grammar and expository text structure, and inferencing; see Hogan, Bridges, Justice, & Cain, 2011). This shift would necessitate screening for both word reading and language skills, the two components that underpin reading comprehension. Having data on both sets of skills will provide teachers the necessary information to

group children according to word reading skills for word reading instruction, and according to broader language abilities for comprehension instruction.

Third and finally, we propose increased *research funding*, including funds specifically allocated toward the development of measures appropriate for universal screening and progress monitoring of oral language skills in school-aged children. An analysis comparing National Institutes of Health (NIH) funding rates for different neurodevelopmental disorders found that substantially less grant funds were allocated to the study of DLD relative to other disorders with similar or lower prevalence rates that also impact academic progress, including attention deficit hyperactivity disorder and autism spectrum disorder (Bishop, 2010). Moreover, most published research on children with DLD focuses on children in preschool and primary school grades. While it is clear from the existing longitudinal research that DLD places children at higher risk for reading comprehension difficulties and reduced educational and employment opportunities (Catts et al., 2012; Conti-Ramsden & Durkin, 2012), more research is needed to chart the expected developmental trajectory of oral language skills across later school grades in both typically developing children and children with DLD. Substantial research investments by the National Institute of Child Health and Human Development in the 1990s and 2000s were instrumental to the development of RTI frameworks for word reading. Now is the time to leverage the growing public attention on DLD and reading comprehension difficulties to make similar progress in facilitating children's oral language development.

Conclusion

In this article, we have asserted that children with language impairment (DLD) are not identified because language skills are not systematically measured in schools. These children, as well as other children with moderate delays not severe enough to be classified as impaired, are at increased risk for reading comprehension difficulties, lower academic achievement, and lower quality of life. There has been recent progress with public awareness campaigns on DLD (Bishop, Clark, Conti-Ramsden, Norbury, & Snowling, 2012). New websites, such as DLDandMe.org (n.d.), are shining a light on DLD with a focus on making information accessible to the public. Building on this progress, we have advocated for increased attention to language development by schools to improve reading outcomes for all students, and we discussed three policy changes that would promote the direct assessment and facilitation of language development in schools, including (a) specific coursework on language development and language facilitation within university educator training programs, (b) dedicated instructional time in school ELA blocks to explicitly focus on building language skills beginning in kindergarten, and (c) dedicated research funding toward the development of measures that can be used for screening and progress monitoring of oral language in school-aged children.

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Note

1. The terms *specific language impairment* (SLI; Leonard, 2014; National Institute on Deafness and Other Communication Disorders, 2017; Rice, Haney, & Wexler, 1998) and *developmental language disorder* (DLD; Bishop, Snowling, Thompson, Greenhalgh, & The CATALISE Consortium, 2017) are frequently used interchangeably, but they are not quite synonymous. Children with SLI compose the majority of all children with DLD, but are generally required to meet stricter criteria for nonverbal IQ (e.g., less one standard deviation below the mean) than children with DLD (e.g., no more than two standard deviations below the mean; Bishop et al., 2017).

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