

Preschool Language Precursors to Later Reading Problems

by Rouzana Komesidou and Tiffany P. Hogan

Language forms the basis of learning to read. The Simple View of Reading (Gough & Tunmer, 1986; Hoover & Gough, 1990) captures the contributions of language by defining reading comprehension as the product of word recognition, the ability to decode letter strings into pronounceable words, and listening comprehension, the ability to understand spoken language.

Word recognition is supported by code-related skills—phonological awareness, print and letter knowledge, and rapid naming (also referred to as rapid automatized naming or RAN) (Bishop & League, 2006; Georgiou et al., 2006). Listening comprehension is supported by oral language skills—vocabulary, grammar, inferencing, and background knowledge (Hogan et al., 2014). Word recognition contributes more to reading comprehension in the early grades when children develop their code-related skills, and listening comprehension begins to contribute more to reading comprehension around third or fourth grade, as text demands increase in content areas such as mathematics, science, and social studies (Catts et al., 2005; LARRC, 2015; Tilstra et al., 2009). Despite these differential contributions, evidence shows that word recognition and listening comprehension are interrelated and preschool is an important time for fostering children’s abilities in both components to guarantee successful reading development (LARRC & Chiu, 2018).

Early Language Factors that Indicate Risk for Later Reading Problems

The Simple View of Reading has been used to categorize reading disabilities into three main types (Catts et al., 2003): 1) dyslexia, or difficulties with code-related skills that contribute to word recognition, 2) developmental language disorder, or difficulties with oral language, and 3) co-morbid dyslexia + developmental language disorder, or difficulties with both word recognition and language comprehension. This classification highlights that deficits in early phonological awareness, print and letter knowledge, and rapid naming are primary risk factors of poor word recognition associated with dyslexia (see Figure 1) (Hulme et al., 2015), and early deficits in oral language (i.e., vocabulary, grammar, inferencing, and background knowledge) are primary risk factors of poor listening comprehension associated with developmental language disorder (see Figure 1) (Catts et al., 2008).

Poor phonological awareness affects children’s ability to appreciate the sound structure of the language to read words accurately (Hulme et al., 2015; Torgesen et al., 1997). Difficulty with phonological awareness can be obvious in preschool when children begin learning how to manipulate sounds in spoken syllables and words. Educators and caregivers might

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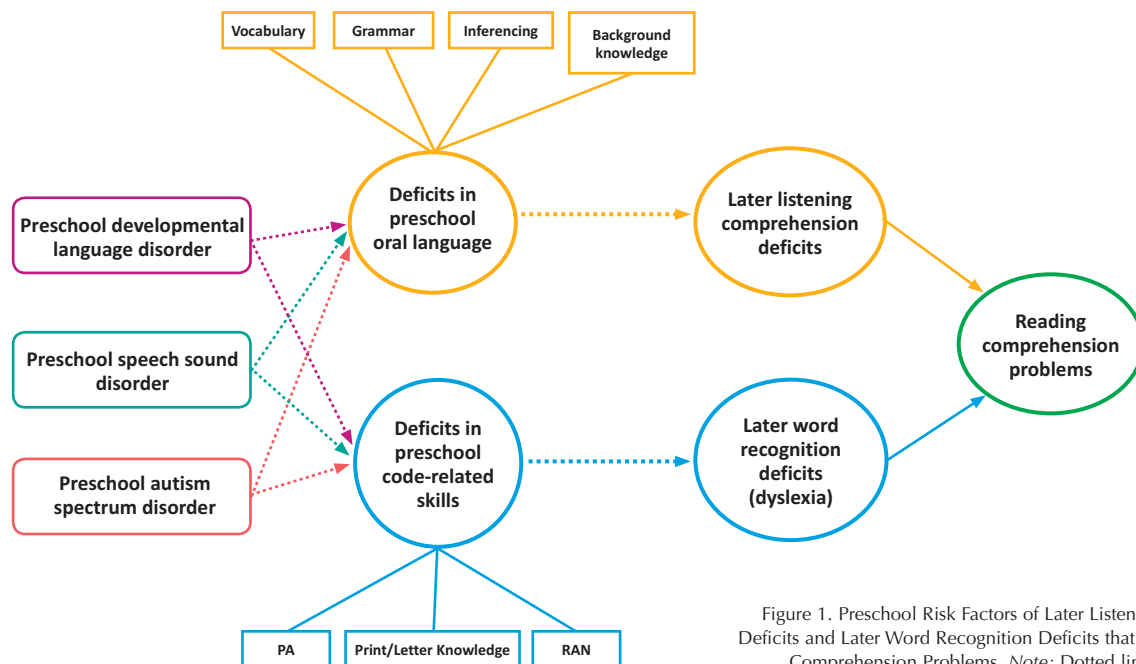


Figure 1. Preschool Risk Factors of Later Listening Comprehension Deficits and Later Word Recognition Deficits that Contribute to Reading Comprehension Problems. Note: Dotted lines indicate risk.

Abbreviations

PA = Phonological awareness

RAN: Rapid automatized naming

notice that some children struggle with blending (e.g., put together the sounds /p/, /e/, /t/ to make the word *pet*), phoneme substitution (e.g., if you replace the /k/ sound in *cat* with the /b/ sound, you get *bat*), or rhyming (e.g., *cat* rhymes with *hat*). Difficulty in learning and remembering print conventions and names of letters is also an early indicator of word reading problems (Hulme et al., 2015). Young children who exhibit code-related difficulties might also be slower in naming aloud a series of familiar items, like letters or numbers. Rapid naming is seen as a measure of the quality of children’s phonological representations with slower rates implying incomplete representations and/or access to those representations (Norton & Wolf, 2012).

Difficulty with phonological awareness can be obvious in preschool when children begin learning how to manipulate sounds in spoken syllables and words.

Difficulties in oral language can also be obvious during preschool. Educators and caregivers should look for warning signs that may be attributed to children’s failure to use and understand spoken language. Some examples are use of shorter and ungrammatical sentences (e.g., *her playing*), difficulty naming objects (e.g., the child says “thing” instead of the actual word), difficulty understanding the relationships between words (e.g., elephant and giraffe are both animals), difficulty finding the right words to express one’s thoughts, difficulty following directions, and difficulty understanding what is being said during storytime or regular conversations (LARRC & Chiu, 2018; Leonard, 2014; Rudolph & Leonard, 2016).

Early Language Disorders that Indicate Risk for Later Reading Problems

Having a language disorder prior to or during early reading instruction puts a child at high risk for reading problems in the future (see Figure 1). One type of language disorder is speech sound disorder, an umbrella term referring to varied deficits in speech production, such as persistent sound deletion, substitution, and/or distortion (Carroll & Snowling, 2004; Farquharson et al., 2018; Hearnshaw et al., 2018; Shriberg et al., 1997). Said another way, a child with a speech sound disorder has difficulty producing speech sounds that would be expected by his or her age. For example, a 4-year-old may say “fider” for “spider” even though the majority of his or her same-aged peers have learned how to correctly produce the /sp/ in “spider.” There is considerable evidence suggesting that children with speech sound disorder are at increased risk for word reading problems (Anthony et al., 2011; Cabbage et al., 2018; Carroll & Snowling, 2004; Hayiou-Thomas et al., 2017; Rvachew, 2007). Those most at risk have a speech sound disorder with additional deficits in code-related skills (i.e., phonological awareness,

print and letter knowledge, and/or rapid naming) or oral language (Bishop & Adams, 1990; Larrivee & Catts, 1999; Pennington & Bishop, 2009; Snowling et al., 2000). For example, if a child has speech sound disorder and shows deficits in phonological awareness, then he or she is more likely to have later word recognition problems. Similarly, if a child has speech sound disorder and shows deficits in oral language, then he or she is more likely to have delays in language comprehension.

Unlike speech sound disorder, the presence of preschool developmental language disorder alone puts children at clear risk for later reading problems. Children with developmental language disorder have difficulties understanding and/or using spoken language (Bishop et al., 2017; Leonard, 2014; Tomblin et al., 2017). They show deficits across multiple domains of language, that is, phonology, vocabulary, morphology, syntax, and pragmatics, which will impact their ability to construct meaning from written text (Catts et al., 2006; Nation et al., 2004). In addition, approximately half of children with developmental language disorder have dyslexia. When both domains of the Simple View of Reading are affected, more severe reading comprehension problems are likely to ensue (McArthur et al., 2000).

Finally, reading comprehension difficulties are frequent in children with autism spectrum disorder. Often, children with autism spectrum disorder have difficulties learning to read words and comprehend text (Nation et al., 2006; Ricketts et al., 2013). Moreover, social impairments typically seen in these children contribute to reading comprehension problems, beyond the influence of word recognition and language comprehension (Ricketts et al., 2013). Due to deficits in social cognition, children with autism spectrum disorder are often unable to decipher social and communicative norms from written text or understand the mental states and intentions of story characters.

Formal assessments are available to measure risk, though, importantly, most only include a few risk factors, none are 100% accurate, and all only measure risk.

Screening for Reading Problems in Preschool

The risk for later reading problems can be assessed in preschool by taking into account all of the risk factors shown in Figure 1. Formal assessments are available to measure risk (some resources are listed in Table 1), though, importantly, most only include a few risk factors, none are 100% accurate, and all only measure risk. Catts & Petscher (2020) propose the *Cumulative Risk and Protection Model*. In their model, risk factors add up to cumulative risk, and, importantly, protection factors may reduce a child’s risk. Taken together, risk and protection factors are both considered when determining risk for

TABLE 1. Resources for Early Literacy Screeners

List of early literacy screeners prepared by the Gaab lab

https://docs.google.com/spreadsheets/d/16m40o49LZ_9wZi9VPAxhHFIATvhSM1mm-0oGr48jFfo/edit#gid=427370037

List of language screeners prepared by Bao and Hogan

https://docs.google.com/spreadsheets/d/1o5U6QStilb0qE_a0wjzPeWg7_816GmquEagQi0XPpo/edit#gid=1925966314

National Center on Intensive Intervention Academic Screening Tools Chart

<https://charts.intensiveintervention.org/chart/academic-screening>

future reading problems. For example, if a preschool child has poor phonological awareness and RAN (i.e., risk factors) but has good oral language skills and preschool literacy instruction with an explicit focus on both early word reading and oral language (i.e., protection factors), then the risk for that child would be cumulatively lower than a child who has those risk factors and additionally, poor language and no formal preschool literacy instruction. Risk in preschool should be assessed continually until the start of formal education to best inform early education literacy instruction for each child, in preparation for enrollment in kindergarten. Ideally, knowing a child's cumulative risk will help ensure he or she is receiving the early intervention needed to stave off later reading failure, or to mitigate its negative effects. Newer screening assessments listed in Table 1, not yet published but in production, take into account a child's risk and protective factors for improved screening accuracy.

Ideally, knowing a child's cumulative risk will help ensure he or she is receiving the early intervention needed to stave off later reading failure, or to mitigate its negative effects.

Stimulating Oral Language Skills in Preschool

Educators and caregivers can stimulate both early word recognition and early language comprehension skills. To stimulate early word recognition, a focus should be on sounds, letters, and how the two are connected. Because other articles in this issue review the evidence base for early word reading instruction, we will focus on stimulation of oral language skills that set the foundation for later reading comprehension.

Educators and caregivers can foster children's language development by targeting foundational language skills and higher-level language skills within the context of shared book reading. Foundational language skills include vocabulary and grammar and set the foundation for higher level language skills (Hogan et al., 2011; LARRC et al., 2019). Higher level language skills include inferencing, comprehension monitoring, and text structure knowledge (Hogan et al., 2011; LARRC et al., 2019).

To improve *vocabulary*, educators and caregivers can select new words during storybook reading (e.g., *different*), provide child-friendly definitions (e.g., *different* means not the same), use them in various contexts (e.g., dogs and whales are

different animals; red and green are *different* colors), and explain how new words are related to known words (e.g., *different* is the opposite of *same*) (Beck et al., 2013). It is important to provide repeated exposures to new words either through multiple occurrences in a single storybook or repeated readings of a storybook to facilitate learning (Justice et al., 2005; Storkel et al., 2017). Storybook reading is also a good way to stimulate children's grammar because written language involves more complex grammatical structures (e.g., clauses) than spoken language (Horowitz & Samuels, 1987). In addition, educators and caregivers can use well-structured conversations to expose children to correct grammatical structures (Fey et al., 2003).

Educators and caregivers can address *inferencing* by embedding questions during book reading to prompt children to fill gaps in the story using information from the text and their background knowledge (Hogan et al., 2011; LARRC, 2016). For example, after reading a story about a girl getting a bike for her birthday, an adult can ask, "How do you think Anne is feeling?" (Anne is feeling happy), "Why?" (Because she always wanted a bike), and "What do you think will happen next?" (Anne will ride her bike). *Comprehension monitoring* can be improved by identifying parts of a story that are difficult to understand and by using strategies to fix breakdowns (Hogan et al., 2011; LARRC, 2016). Strategies include using pictures and context cues, asking open-ended questions, rereading a sentence, finding the meaning of an unknown word, and using graphic organizers to organize content and ideas. Finally, educators and caregivers can promote *text structure knowledge* by asking questions about important elements of a story (e.g., characters, setting, problem, resolution), by using graphic organizers to represent the relationships between story components, and by exposing children to informational texts (Hogan et al., 2011; LARRC, 2016).

The Language and Reading Research Consortium (LARRC) developed *Let's Know!* (download from <https://larrc.ehe.osu.edu/>), a language-focused curriculum for preschool through grade 3 (LARRC, 2016; LARRC et al., 2019). The curriculum is free and is designed to promote foundational language skills (i.e., vocabulary, grammar) and higher level language skills (i.e., inferencing, comprehension monitoring, text structure knowledge) through shared book reading. Children participate in structured lessons across four unit themes (i.e., fiction, animals, earth materials, and folktales) that incorporate language-rich text and strategies to ameliorate reading comprehension.

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Evidence-based and systematic instruction that focuses on early word reading, foundational language skills, and higher-level language skills can mitigate the effects of language-based risk factors and support children's reading development.

Taking a Proactive Position

Knowing the language-based risk factors for later reading problems and cumulative risk including protective factors, will help educators and caregivers to accurately identify children who need early language and literacy stimulation to prevent poor outcomes. Deficits in code-related (i.e., phonological awareness, print and letter knowledge, and/or rapid naming) and oral language skills are clearly linked to later reading failure. In addition, having a diagnosed language disorder in preschool, such as speech sound disorder, developmental language disorder, and autism spectrum disorder, puts a child more at risk for having deficits in code-related skills and deficits in oral language skills compared to preschool children without these disorders. Identifying early risk using age-appropriate, psychometrically sound universal screeners can pave the way for young children to receive the support they need. Moreover, evidence-based and systematic instruction that focuses on early word reading, foundational language skills (i.e., vocabulary, grammar), and higher-level language skills (i.e., inferencing, comprehension monitoring, text structure knowledge) can mitigate the effects of language-based risk factors and support children's reading development.

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