



Dyslexia Screening and DIBELS 8th Edition

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DIBELS® 8th Edition as a Screener for Dyslexia

Executive Summary

Dyslexia is one of the most common forms of learning disability, with some estimates suggesting that it may affect more than 17 percent of school-age students (Shaywitz, 2004). Although there are many different forms of reading difficulty, dyslexia is primarily characterized by difficulty in word-level reading ability, often due to deficits in automaticity or phonological processing.

In recent years, dyslexia has garnered significant legislative attention. A majority of states now require that all students be screened for dyslexia risk in the early grades, which gives educators an opportunity to intervene before significant reading difficulties develop. Meeting these screening requirements can be a complex process due to the highly variable dyslexia screening requirements from state-to-state, which typically require assessing a range of skills across multiple grades.

Given their testing efficiency and ease of administration, CBM assessments such as the Dynamic Indicators for Basic Early Literacy Skills (DIBELS 8; University of Oregon, 2018) are well-suited to meet the logistical challenges of universal screening for dyslexia, and can additionally function as progress monitoring measures for at-risk students. DIBELS is backed by more than 20 years of research and development and is designed to identify and progress monitor students at-risk for future reading difficulties. To help schools meet these new dyslexia screening requirements, DIBELS 8th Edition includes updated measures that are better aligned to common dyslexia screening areas, such as rapid automatized naming, phonological awareness, alphabetic principle, and word reading ability. Students with difficulties in these areas demonstrate a heightened risk for general reading difficulties and the development of dyslexia. With the recent updates to DIBELS 8th Edition measures and interpretations, the University of Oregon has established updated validity evidence to support its use in screening for dyslexia-related deficits.

This white paper summarizes changes to DIBELS measures and provides evidence to support the use of early screening tools such as DIBELS to screen for dyslexia and help educators intervene before significant reading difficulties materialize, thus reducing the number of students characterized with learning disabilities. In addition, given substantial variability in state requirements for dyslexia screening that may necessitate localized screening schedules for specific screening areas, this paper illustrates the alignment of DIBELS subtests with common screening requirements in the early grades.

Background

Recent advocacy efforts to increase the awareness of and protections to those with dyslexia and other reading difficulties have resulted in major shifts in state-level educational legislation. As of 2018, 42 states have dyslexia-specific laws, 20 of which have passed legislation within the last five years (Youman & Mather, 2018). Despite some variation from state to state, common themes in recent dyslexia legislation include an increased emphasis on intervention and screening procedures, the adoption of multi-tiered systems of support, the use of explicit instruction, and changes to teacher preparation and training (Gearin, Turtura, Kame'enui, Nelson, & Fien, 2018).

Universal screening is used to identify students who are at-risk for future academic difficulties and is a key component of prevention-oriented approaches in early education. Screening assessments in education work much like measuring blood pressure during a doctor's visit to screen for heart disease. Effective screening assessments are typically administered at routine intervals, and can accurately predict students' future performance given only core instruction, allowing educators to intervene with confidence and provide support early before significant academic deficits, including dyslexia, develop. Critically, reducing the prevalence of dyslexia symptoms requires targeted intervention, ideally as early as possible (Fletcher, Lyon, & Barnes, 2018).

Part of what makes screening for reading difficulties both important and challenging is that reading is a complicated process. Although reading seems automatic to proficient adult readers, young readers need to acquire a wide range of skills and knowledge to become fluent readers. These skills include learning to identify letters and words in print, associating sounds with those letters and words, and retrieving the meaning behind them. They also include making inferences and other higher order skills. To read proficiently, these processes need to occur automatically and accurately for the reader to build an understanding of what is read. For students with dyslexia, the challenge comes with the processes involved in reading words quickly and accurately.

Consequently, screening for reading difficulties requires multiple measures depending on where readers are in their development. Many states reflect this in their screening requirements. For example, Alabama requires that kindergarten dyslexia screening includes measures of a) letter naming skills, b) letter sound skills, c) phoneme segmentation skills, and d) nonsense word fluency skills (Alabama State Board of Education, 2016). In Grades 1 and 2, Alabama requires that screening include a) accuracy of word reading, b) spelling skills, c) phonemic decoding efficiency skills, and d) sight word reading efficiency. Other states have similar requirements. Responding to these demands for dyslexia screening has left many districts and schools uncertain as to what distinguishes dyslexia screening procedures from other universal reading screening systems already in place, and whether their existing reading assessments adequately meet all the testing requirements in their state.

Despite the distinction between universal screening for general reading difficulties and dyslexia screening, they are closely related. Both procedures utilize many of the same screening measures and are intended to identify at-risk students in need of early intervention supports. However, because dyslexia represents one specific form of reading difficulty, dyslexia screening requirements often put greater emphasis on measures more closely aligned to its primary symptom - word reading difficulty.

What is Dyslexia?

Amidst the variations in terminology, most professionals consider dyslexia to be synonymous with word-level reading disability (Fletcher, Lyons, Fuchs, & Barnes, 2018), and the most common form of learning disability. However, with the resurgence of the term “dyslexia” has come a heightened awareness of its neurobiological origins that manifest as reading difficulty. The definition of dyslexia developed by the International Dyslexia Association (IDA) and commonly adopted by a majority of states describes it as:

“...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.” (Lyon, Shaywitz, & Shaywitz, 2003)

Considerations for Screening Tools

The scope of assessments used in reading education has become increasingly diverse in recent years, due in part to innovations made in assessment research and the increasing emphasis on early intervention to prevent students’ academic difficulties. In particular, curriculum-based measures (CBMs) have seen widespread use due to their versatility both to identify students at-risk for reading difficulties and to monitor student progress and response to instruction. A key characteristic of CBM measures is their practical utility: they are typically brief and easy to administer, score, and interpret (Glover & Albers, 2007). Because screening assessments must be given routinely to all students in a school, the efficiency of CBMs make them a good candidate for universal screening. Indeed, the majority of states with dyslexia screening requirements have approved the use of CBMs either for screening in specific areas or for dyslexia screening more broadly, and 17 specifically mention the use of DIBELS in their screening guidelines.

Independent of the type of assessment schools chose to use, most states require that dyslexia screening encompass a number of critical skills shown to underlie dyslexia risk:

- Phonological awareness – the ability to recognize and manipulate the sound structure of language.
- Rapid automatized naming – the ability to quickly retrieve information from phonological memory.

- Alphabetic principle – the ability to associate letters with sounds to read words.
- Word reading – the ability to fluently and accurately read words using sound-symbol correspondences and sight word recognition.

Dyslexia risk refers to when a child’s skills indicate potential difficulty in learning to read and, thus, the need for support in learning. Importantly, a child’s need for intervention supports to prevent future reading difficulty does not indicate a definitive diagnosis of dyslexia. Assessment data in each of the areas listed can provide unique information about a student’s reading development, potential risk for dyslexia, and areas in need of support. As a result, schools should select a comprehensive screening battery in the early grades to ensure students with poor performance in any of these skills are properly identified for reading risk and intervention.

DIBELS® 8th Edition for Dyslexia Screening

In developing DIBELS 8th Edition (DIBELS 8; University of Oregon, 2018), the University of Oregon Center on Teaching and Learning (UO CTL) made significant efforts to ensure the measure is able to meet state-level screening requirements for both dyslexia and universal reading screening, thereby helping to maximize testing efficiencies for schools. To support this new use of DIBELS, research and development included two related steps.

First, DIBELS 8 introduces Word Reading Fluency (WRF), a measure of word reading ability, and includes revised versions of the Letter Naming Fluency (LNF), Phonemic Segmentation Fluency (PSF), and Nonsense Word Fluency (NWF) subtests to improve their ability to screen for deficits commonly associated with dyslexia risk, such as phonological awareness, rapid naming ability, and alphabetic principle. UO CTL also expanded the validity evidence collected for DIBELS 8 subtests to support their use in dyslexia screening.

To understand how these measures can be used to screen for dyslexia risk, it is important to UO CTL’s goals when creating these revisions. As a screening system, the original and primary intent of DIBELS is to identify all students who are at-risk for reading difficulties, in hopes that all struggling students can access the instructional supports they need to become proficient readers. With emerging demand for dyslexia screening tools, the researchers made modifications to existing subtests to better capture students at-risk in areas associated with dyslexia without sacrificing DIBELS functionality as a predictive measure of overall reading achievement. That is, DIBELS 8 does not include any “dyslexia-specific” subtests that are intended to be used to inform diagnostic assessments. Instead, the measures are intended to allow educators to efficiently screen students for deficits in important skills that are associated with future risk of both dyslexia and reading difficulty more broadly.

The University of Oregon also collected validity data specifically for the purpose of understanding the utility of DIBELS 8 as a screener for dyslexia. Validity data is required for each inference made from a test score about a student. When a new purpose or inference is defined, such as dyslexia screening for DIBELS 8, then additional evidence supporting that purpose or inference is required. In its validation research, UO CTL collected evidence regarding

LNF as an indicator of rapid naming ability, PSF as an indicator of phonological ability, NWF as an indicator of decoding, and WRF and ORF as indicators of word reading to determine their suitability in screening for dyslexia risk. Critically, UO CTL does not claim that this evidence supports the use of DIBELS 8 in dyslexia diagnosis, but rather only for its use in screening for dyslexia risk.

Table 1 shows the recommended uses for DIBELS 8 subtests related to screening for dyslexia risk. Each of the listed DIBELS subtests corresponds to specific skill deficits commonly associated with dyslexia. LNF and PSF are recommended as primary screening tools for dyslexia risk from the middle of kindergarten through the beginning of Grade 1. Beyond the beginning of Grade 1, although LNF and PSF remain adequate predictors of specific difficulties in rapid naming and phonological awareness, preliminary evidence suggests that NWF may be a superior predictor of phonological awareness and an effective predictor of RAN by the end of Grade 1 and beyond, although more research in this area is needed.

Table 1. DIBELS 8 Subtest Alignment with Dyslexia Screening Areas

	Rapid Naming Ability	Phonological Awareness	Alphabetic Principle	Word Reading
LNF	+			
PSF		+		
NWF			+	
WRF				+
ORF				+

Screening for Rapid Naming Ability

Rapid Automated Naming (RAN) refers to the ability to quickly name familiar, visually presented stimuli such as letters, digits, objects, or colors. DIBELS 8 currently supports screening for RAN deficits using LNF.

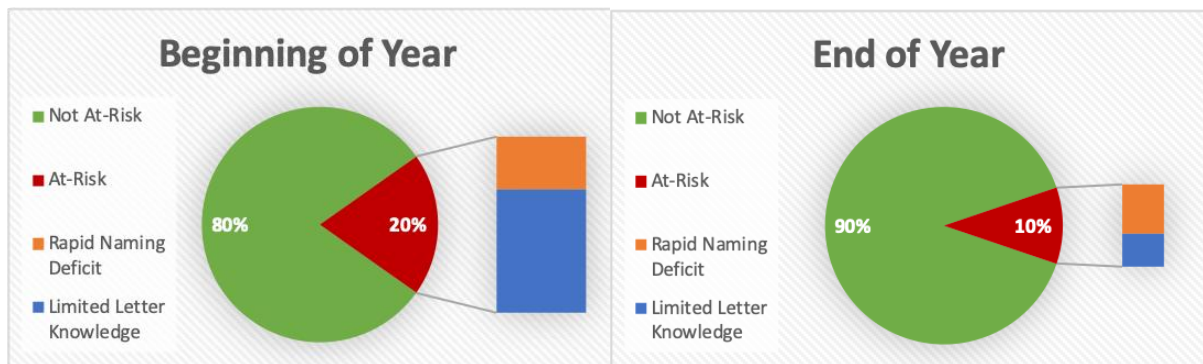
DIBELS 8 Letter Naming Fluency (LNF) is a standardized, individually administered subtest that is used as a general indicator for reading risk. Students are presented with a page of upper- and lower-case letters and are asked to name as many letters as they can in one-minute. A student's score represents the total number of correct letter names.

LNF has been included over the years as a standard subtest among DIBELS editions due to its effectiveness in assessing overall reading risk at school entry. In DIBELS 8, LNF administrations have been extended through Grade 1 to expand its use as a primary indicator of rapid naming ability. UO CTL validated LNF against rapid naming measures in the Comprehensive Test of Phonological Processing – 2nd Edition (Wagner, Torgesen, Rashotte, & Pearson, 2013) and found that DIBELS 8 fall cut-scores for risk identified more than 90% of kindergarten and first grade students who had rapid naming deficits at the end of the year. This suggests that LNF is a suitable indicator of rapid naming ability during kindergarten and Grade

1, potentially reducing the need for schools to administer additional measures to meet these requirements.

LNF becomes a notably stronger indicator of rapid naming ability as students progress into their kindergarten year. This is because, as shown in Figure 1, students identified as at-risk using LNF at the beginning of kindergarten include both students who enter school with limited letter knowledge as well as those with a potential rapid naming deficit. However, as students become more familiar with their letter names during the school year, letter knowledge becomes better equated across the population of students. As a result, performance variations among students are more defined by rapid naming ability, and at-risk students on LNF are more likely to be those with a rapid naming deficit.

Figure 1. Illustration of changing deficits underlying risk on LNF



Phonological Awareness Screening

As one of the most common deficits associated with dyslexia, measures of phonological awareness are an important part of dyslexia screening procedures during the early grades. Phonological awareness refers to the ability to recognize and manipulate the sound structure of language, which allows students to link these sounds to printed sound-spellings. DIBELS 8 uses a phoneme segmentation task as its primary indicator of phonological ability, but screening batteries can also include blending, phoneme elision or deletion, and onset/rime tasks.

Phonemic Segmentation Fluency (PSF) is a standardized, individually administered subtest that assesses students' ability to identify the individual phonemes of a word presented verbally. For example, if a test administrator provided the word "cat," a complete response would be "/c/ /a/ /t/." A student's final score represents the total number of correct phonemes produced in one minute.

As with LNF, the screening schedule for DIBELS 8 PSF has been extended through the end of first grade, allowing educators to monitor their students for phonemic awareness deficits across kindergarten and first grade. To accommodate this expanded use, PSF forms were redesigned to include items that progress in difficulty. Items at the beginning of PSF forms are now restricted to two phonemes but progress up to six phonemes by the end of first grade forms.

UO CTL validated PSF against the CTOPP-2 measures of phonological awareness and found it to be a suitable predictor of overall phonological ability in kindergarten and the fall of first grade. By the end of first grade, PSF no longer remains an adequate indicator of phonological awareness as measured by the CTOPP-2. In part, this is due to students' phonological abilities "outgrowing" the phoneme segmentation task and the omission of its comparable task (i.e., Phoneme Isolation) in the CTOPP-2's older age norms. However, PSF monitoring is still encouraged and remains incorporated in the DIBELS screening schedule as it remains a necessary skill in phonological development.

Alphabetic Principle/Decoding Screening

Nonsense Word Fluency (NWF) is a measure of students' fluency with the alphabetic principle and ability to decode unfamiliar words. Students are presented with a sheet of nonsense words and asked to either verbally produce the whole word (/lat/) or the individual sounds of the word (/l/ /a/ /t/). By scoring both types of responses, NWF provides an estimate of students' knowledge of sound-spelling patterns and their ability to blend those sounds into words.

NWF includes only nonsense words and is thus considered a "pure" measure of alphabetic principle, because students cannot rely on sight word knowledge to complete the task. Nonsense fluency tasks are essential to properly identifying students with decoding difficulties since some students, including those with dyslexia, are capable of developing a sufficient sight word vocabulary for their deficits to go unnoticed on measures utilizing real words. Although some students that rely on this compensatory strategy may meet reading expectations during the early grades, in time, these students are likely to struggle as they begin to encounter more complex spelling patterns.

In DIBELS 8 NWF, educators are now afforded the opportunity to monitor students' decoding ability through the end of Grade 3. This was accomplished by incorporating more complex phonics patterns into NWF forms in first through third grade, thus extending its screening window and expanding its instructional relevance. Concurrent validity evidence for NWF's use as a decoding screener is only available at the end of Grades 1 and 2. However, our current evidence indicates that NWF meets Swets' (1992) criteria as an excellent screening tool when validated against an external measure of decoding ability (i.e., the TOWRE-2 Test of Word Reading Efficiency – 2nd Edition; Torgesen, Wagner, & Rashotte, 2012).

Using NWF for RAN and PA Screening

NWF is not traditionally used as a screening measure for either rapid naming or phonological awareness deficits. However, the task engages both of these abilities because to perform well; students need to quickly retrieve letter sounds from memory and blend these sounds to produce a nonsense word. Thus, UO CTL is examining the utility of using NWF as an alternative indicator for RAN and PA skills in Grade 1 and beyond. When validated against the CTOPP-2 rapid naming and phonological awareness composites, preliminary evidence suggests NWF may demonstrate adequate screening accuracy for use in the beginning of Grade 1 and good screening accuracy at the end of Grade 1. However, given that NWF is a more indirect measure of RAN

and PA abilities, UO CTL currently does not recommend use for such deficits until further evidence is accrued.

Word Reading Ability Screening

Word-level reading difficulty is the central defining feature of dyslexia, meaning that word reading screeners are an integral part of assessing dyslexia risk in the early grades. With the addition of Word Reading Fluency (WRF) to DIBELS 8th Edition, DIBELS now offers a measure of word reading ability in all grades, and two such measures in Grades 1 through 3.

DIBELS 8 WRF assesses students' ability to read words from a list. Students are presented with a list of real words and are tasked with verbally identifying them. WRF forms include both decodable and non-decodable high-frequency words. A student's final score represents the number of correctly identified words in one minute. DIBELS 8 Oral Reading Fluency is a measure of students' fluency and accuracy with connected text. Students are given a passage and are asked to read aloud for one minute. Their final score represents the number of words read correctly within one minute.

UO CTL validated both WRF and ORF as measures of word reading ability against the TOWRE-2 (Torgesen, Wagner, & Rashotte, 2012). End of year concurrent validity evidence in Grades 1 and 2 suggests that both measures are highly accurate screening tools for predicting risk. Although both WRF and ORF are capable screening tools, their dual use in DIBELS 8 can flexibly suit different screening requirements and provide different perspectives into a student's word reading ability. Whereas WRF emphasizes single-word recognition, ORF taps general reading fluency and can report a student's level of risk in reading accuracy.

Summary

Schools across the U.S. continue to engage with new dyslexia-specific screening requirements, which are often layered on top of existing universal screening procedures for general reading achievement. There is significant conceptual overlap between universal screening for dyslexia and general reading difficulties. However, a versatile assessment system should provide both relevant information about a student's risk for reading disorders like dyslexia and be capable of monitoring every students' path to reading proficiency.

DIBELS is continuously evolving and aims to provide the technical adequacy educators need to make effective decisions while simultaneously offering the flexibility to meet a variety of demands faced by schools. With DIBELS 8, UO CTL made refinements to improve its functionality as a universal screening and progress monitoring tool for literacy development and overall reading achievement. Additionally, the researchers have worked to ensure that many of the DIBELS subtests are validated as measures for critical dyslexia screening areas. Updated validity evidence has now been established for LNF as an indicator of rapid automatized naming, PSF as an indicator of phonological awareness, NWF as an indicator of decoding ability, and WRF and ORF as measures of word reading ability.

Consistent with standard DIBELS use, UO CTL recommends that educators primarily use DIBELS performance data to support their early prevention and intervention systems. Evidence-

based reading interventions can effectively improve the reading skills of at-risk children (Denton et al., 2010), highlighting that designations of dyslexia risk status should be foremost treated as a signal to intervene rather than to diagnosis in these early grades.

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