Identifying Reading Disabilities: A Survey of Practitioners

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Abstract

Accurate and timely identification of reading disabilities (RDs) is essential for providing appropriate and effective remediation for struggling readers. However, practices for identifying RDs lack sufficient documentation within and across educational and clinical settings. The wide range of possible practices intended to identify struggling readers can render the field vulnerable to inconsistencies in how the needs of struggling readers are recognized and supported. To better understand the range of current practices used to identify RDs in school-age children, we created and disseminated a survey nationally, and analyzed data from 965 practitioners. The findings indicate lengthy timelines to identify RDs; substantial variability in the composition of assessment teams, identification criteria, and diagnostic labels; and notable opportunities for enhancing practitioner training experiences. This study aims to promote cross-contextual dialogue about the identification of RDs and their implications for students' educational experiences.

Keywords: assessment, at risk, evaluation & testing, reading, survey research

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An estimated 10 to 15% of U.S. school-aged children are identified with reading disabilities (RDs) (Shaywitz & Shaywitz, 2008; Vellutino et al., 2004; Vellutino & Fletcher, 2005), yet varying identification approaches across practitioners can impact who is identified, and how (Fletcher et al., 2007). Identification of RDs is based on legislative guidelines, practical resources, and the training professionals have received, each creating a potential source of variability (Klinger & Harry, 2006; Reschly & Hosp, 2004; Sánchez et al., 2010; Vellutino et al., 1996; Zehler et al., 2003). Limited research has explored identification approaches among practitioners in school and clinical settings. Without consistent identification approaches, practitioners may lack a shared understanding of what constitutes RDs and, consequently, how to address areas of challenge in education plans. These challenges can lead to inefficiencies in accessing necessary resources as well as significant confusion in the interpretation of RDs among stakeholders. Accurate and timely identification of RDs is essential for providing both appropriate and effective remediation for struggling readers.

Federal guidelines informing the identification process for RDs are drawn from the Individuals with Disabilities Education Act (IDEA; 2004). Under IDEA, reading disabilities fall under the category of specific learning disability (SLD). SLD is defined as:

a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. (IDEA, 2004, 20 U.S.C. §1401 [30])

IDEA guidelines for determining whether a child has a disability cannot be based on a single assessment or criterion; rather a four-step evaluation must be conducted that encompasses

a variety of strategies and assessment tools. These include determining: (a) whether a child is performing at grade-level; (b) whether a child is responding to scientific, research-based interventions and/or examining whether their evaluations and assessments indicate a pattern of strengths and weaknesses in academic performance, achievement, and intellectual development; (c) that lack of achievement is not due to a lack of appropriate instruction; and (d) that lack of achievement is not due to the influence of other factors, such as cultural factors, emotional disturbance, and environmental or economic disadvantage. Further guidance is not specified regarding defining achievement, response to intervention, adequate instruction, or the impact of socio-cultural factors.

State- and district-level policies and guidelines offer additional criteria to identify RDs. All U.S. states allow for the use of a Response to Intervention (RTI) approach which involves offering high quality evidence-based reading instruction to all students, screening all children for reading difficulties, providing evidence-based small group interventions to struggling readers while monitoring their performance, and referring children for assessment if they do not make adequate progress (Fletcher & Vaughn, 2009; Fuchs & Fuchs, 2006). Some schools use a multi-tier system of supports (MTSS), which is similar to RTI but also aims to extend its practices to address students' behavioral and/or emotional needs (Zirkel, 2017). Most states (about two-thirds) allow for use of the IQ/Achievement discrepancy criteria, which requires that a child's academic performance falls significantly below their IQ score, and at least one other method (National Center for Learning Disabilities, 2019). About a quarter of states allow for the use of the Pattern of Strengths and Weaknesses criteria, which involves identifying a cognitive deficit, such as phonological awareness or working memory, that theoretically underlies the child's academic difficulty, such as decoding or reading fluency (NCLD, 2019). Across these criteria,

there are multiple implementation options that are typically determined, ultimately, based on available resources in the education setting (Project FORUM, 2003).

Practitioners responsible for determining a student's eligibility for specialized instructional services use models of assessment that may be explicitly defined by the organization (e.g., school district, clinic) and/or be implicitly guided by each practitioner's training and expertise. Professionals who identify RDs include school-based practitioners (e.g., school psychologists) and clinic-based professionals (e.g., neuropsychologists). While few studies have explored the range of current identification practices used across U.S. schools, those that have been conducted have reported variability in: choice of assessments, cut-off points for test scores, pre-referral and/or progress monitoring approaches, magnitude of discrepancies between scores (when applicable), definition of adequate progress, and use of professional judgments (Mellard et al., 2009; Scruggs & Mastropieri, 2002). Variability in identification practices can lead to disparate numbers of children identified with RDs (Hollenbeck, 2007).

Theoretical frameworks offer a lens through which to evaluate the range of constructs included in RD evaluations. Frameworks parse reading into components (e.g., word reading, reading fluency, reading comprehension), and can include associated constructs important for contextualizing reading ability (e.g., working memory, attention, rapid naming, phonological processing, language). Broader language and cognitive skills are emphasized, in addition to reading skills, in theoretical models such as: multicomponent view of reading (Cain, 2009; Perfetti et al., 2005), componential model of reading (Joshi & Aaron, 2012), simple view of reading (Gough & Tunmer, 1986), direct and indirect effects model of reading (Kim, 2020).

Practitioners who are responsible for the identification of RDs have been formally surveyed in only a limited number of studies (e.g., Benson et al., 2020; Cottrell & Barrett, 2016;

Machek & Nelson, 2007; Maki & Adams, 2019; Maki et al., 2018; Nelson & Machek, 2007; O'Donnell & Miller, 2011; Unruh & Mckellar, 2013). These studies have primarily focused on the perceptions, practices, and training of school psychologists. These surveys have examined how the definition of RDs should be operationalized and perceptions about the role of cognitive testing in the identification of RDs (Benson et al., 2020; Machek & Nelson, 2007; Nelson & Machek, 2007), the role of the IQ/achievement discrepancy and RTI/MTSS models as applied to the identification of SLD more broadly (O'Donnell & Miller, 2011; Unruh & Mckellar, 2013), the relationship between attitudes and assessment practices in the identification of suspected RDs (Cottrell & Barrett, 2016; Maki et al., 2018), and overall school psychologists' SLD identification practices (Maki & Adams, 2019). A survey of school psychologists indicated that among children referred to them, problems with reading are the most frequent concern but these professionals self-report moderately low expertise regarding knowledge and abilities related to reading assessments (Nelson & Machek, 2007).

Across school districts and states there are different definitions, eligibility criteria, diagnostic processes, guidelines, and policies for identifying RDs in school settings (Maki et al., 2015; Reschly & Hosp, 2004). Typically, struggling readers are referred by their teacher to a team consisting of general and special educators, a school psychologist, school administrators, and/or other practitioners who meet to determine interim measures (Ysseldyke, 2001; Klinger & Harry, 2006). The team may decide to refer the student for a formal evaluation at which point data from a variety of standardized assessments, curriculum-based assessments, achievement tests, classroom observations, parent and teacher interviews, and/or other measures may be reviewed during a placement meeting. This meeting, referred to as an Individualized Education Plan (IEP) meeting, staffing meeting, or interdisciplinary team meeting, is usually attended by a

school psychologist, special education teacher, general education teacher, school-level administrator, district-level administrator, parent and/or the student under review (Klinger & Harry, 2006).

Limited research addresses diagnostic practices in clinical settings, such as private clinical practices, hospitals, and university-based clinics. Clinicians can diagnose reading disorders, although health insurance companies selectively cover the costs associated with diagnosis depending on practitioners and settings (Kamara, 2015). A complicating factor is the tendency of insurance companies to cover the cost of evaluations for medical/psychiatric purposes (e.g., tumors, traumatic brain injury, ADHD) but not for educational purposes (e.g., dyslexia) (Braaten, 2020). Reading disorders in clinical settings are classified under the specific learning disorder diagnosis in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5), which requires having: (a) a difficulty of at least six months despite targeted help in word reading, reading comprehension, spelling, written expression, numerical cognition, or mathematical reasoning; (b) academic deficits compared to same-age peers that cause problems in school, work, and/or everyday activities; (c) difficulties that began in childhood; and (d) that are not due to an intellectual disability, hearing or visual problems, a neurological condition, economic disadvantage, lack of instruction, or language background (American Psychiatric Association, 2013). The two types of reading disorders included in the specific learning disorder diagnosis are difficulties with word reading decoding and/or fluency (can also be named *dyslexia*), and difficulties with reading comprehension (APA, 2013). Under Section 504 of the Rehabilitation Act of 1973, children who are diagnosed with a specific learning disorder in a clinical setting would be legally entitled to receive accommodations in schools that receive public funding. To receive special education services, which include an individualized

educational program of support in addition to the kinds of accommodations provided under Section 504, children often need to undergo additional testing by school-based practitioners to ensure that they meet qualifications for a specific learning *disability* in accordance with IDEA (Mather & Wendling, 2012). School-based evaluations may take the external evaluation results into consideration when making an eligibility determination (Mather & Wendling, 2012). To date, limited studies examine the role of external evaluations in the identification of RDs, and the potential differences in labels used to characterize reading difficulties in school-based and clinic-based approaches.

Present Study

In this study, we administered a nationally disseminated survey in order to identify current practices associated with the identification of RDs. We examined: (a) who identifies and/or diagnoses RDs and what their roles are in this process; (b) the training that these practitioners have received relevant to this process; and (c) the current processes used by practitioners in educational and clinical settings to identify/diagnose RDs. Exploring practitioner experiences can promote cross-contextual dialogue about best practices and common constraints in identifying RDs. These efforts can in turn improve the accurate and timely identification of RDs, which is essential for providing appropriate and effective instruction.

Method

Participants

Recruitment

Practitioners (school- or clinic-based professionals with roles in identifying or diagnosing disabilities) were electronically invited to participate in the Reading Diagnostics Survey through multiple approaches. A recruitment email containing a link to the survey was sent to relevant

organizations' electronic mailing lists (e.g., SPELLTalk) and to reading assessment clinics across the U.S. with publicly accessible email addresses. The survey link was posted to relevant Facebook pages including Decoding Dyslexia, Wilson Language Training, the Stern Center for Language and Learning, and groups aimed at specific practitioners (e.g., Reading Specialist & Literacy Coaches, SLPs for Evidence Based Practice, Bilingual School Psychologists). Personalized recruitment emails were sent to school district administrators across Massachusetts, and a generic recruitment email was sent to administrators with publicly accessible email addresses across all U.S. public-school districts. The same message preceded the survey link across all recruitment approaches: "Are you a practitioner who identifies or diagnoses reading disabilities in school-age children in the U.S.? Volunteer 15 minutes to complete this online survey evaluating current practices." Anyone who clicked the survey link was eligible to participate, however if they indicated in their responses that they did not meet participant eligibility criteria (i.e., they were not U.S.-based practitioners responsible for identifying or diagnosing reading disabilities in school-age children), they were routed to the end of the survey and no subsequent data was collected from them. This study was approved by the Partners Institutional Review Board and Harvard University Committee on the Use of Human Subjects.

Sample

A total of 1,360 respondents consented to participate in the survey over a nine-month data collection period from July 2018 to March 2019. Those who did not meet participant eligibility criteria or completed less than 25% of the survey ($n=395$) were removed from the analysis, thereby yielding a final analytic sample of 965 practitioners. Demographic characteristics of the sample are reported in Table 1. Approximately 78% of respondents were (in order of response frequency): special educators, school psychologists, reading specialists,

professionals with more than one occupation, or speech-language pathologists (SLPs). School administrators, classroom teachers, and other diagnosticians (e.g., dyslexia therapists, educational diagnosticians) were also in our sample.

Approximately 90% of participants reported obtaining a higher education degree beyond a Bachelor's, with a Master's being the most commonly reported degree. Furthermore, 61% of participants reported working in their current occupation for 10 years or more, indicating that the sample primarily included those with substantial experience in their profession. Additionally, 83% of participants reported working primarily in school settings, while the remaining 17% reported working primarily in clinical (hospital or private practice) settings. About half of participants reported that their primary work location was in a suburban setting, while about a quarter reported a rural or an urban setting. Practitioners from all U.S. states except for North Dakota were represented in our sample, with about 40% located in the Northeast, 25% in the South, 18% in the Midwest, and 17% in the West. Most participants indicated experience working with elementary school students (81%), and few of them reported working exclusively with middle and/or high school students (12%). On average, participants reported that about half of the students on their caseloads had RDs ($M=55.7\%$, $SD=31.1$), although this response ranged from none to all.

Reading Diagnostics Survey

We developed the Reading Diagnostics Survey for open, online dissemination to explore the range of practices used to identify RDs among school-age children in the U.S. Qualtrics software (May 2020) was used to implement the survey in an easy-to-use environment compatible for use across device types. The entire survey consisted of 56 questions in total; however, here we present results from the 28 questions relevant to identification practices in the

general population of school-age children in the U.S. (included in the online Supplemental Materials). Only the first few questions, necessary to determine participant eligibility, were required; otherwise, participants were able to skip questions and still advance through the survey. The survey included questions on participant demographics, training experiences, assessment practices, identification criteria, diagnostic labels, and identification timelines. No identifying information was collected from participants. The survey took approximately 15 to 20 minutes to complete (Median=16.5 minutes). In addition to the answer options provided, most questions also included an “other” category and text entry box so that practitioners could input additional information. This option was intended to capture participants’ perspectives as closely as possible within a survey framework. The survey content and procedure were evaluated by experts in the field including professors of communication sciences and disorders, clinical practitioners, researchers, educators, and reading specialists. Based on feedback, several revised survey versions were piloted to improve clarity and content relevance prior to survey distribution.

Analysis

All analyses were conducted in Stata 15. Percentages reported in the results section are based on the number of participants who selected each response out of the total number of responses for that question. Open-text responses were coded by theme, and additional response categories were generated using the resulting codes. When appropriate, chi square tests of independence were also performed to explore whether the proportion of responses to each question differed by participant occupation, workplace urbanicity (rural, suburban, urban), or primary workplace setting (clinical vs. school). The results of such tests were only reported when they were statistically significant ($\alpha = .05$) following Bonferroni-correction for multiple comparisons using the procedure described by Beasley & Schumacker (1995).

Results

Q1. Practitioner Roles in Identifying RDs

Team Members

Participants were asked to report which practitioners in their setting typically serve as members of the team involved in identifying and/or diagnosing RDs. Participants most frequently reported that classroom teachers (69.8%, $n=507$), special educators (68.7%, $n=499$), school psychologists (67.9%, $n=493$), SLPs (63.4%, $n=460$), and reading specialists (48.2%, $n=350$) serve on the team. Other reported members included educational specialists (27.8%, $n=202$), literacy coaches (16.8%, $n=122$), ESL teachers (23.7%, $n=172$), clinical psychologists (11.0%, $n=80$), school administrators (6.3%, $n=46$), social workers or guidance counselors (3.9%, $n=28$), neuropsychologists (3.6%, $n=26$), pediatricians (2.6%, $n=19$), occupational therapists (2.5%, $n=18$), and neurologists (1.1%, $n=8$). This suggests that a wide variety of professionals are represented on teams that evaluate children for RDs.

Practitioners' Roles

To examine the roles of various practitioners involved in the identification process, participants were asked which practitioners directly conduct the assessments used to identify RDs in their setting. Participants reported that the following practitioners directly assess students for suspected RDs: school psychologists (57.3%, $n=409$), SLPs (51.4%, $n=367$), special educators (44.4%, $n=317$), reading specialists (25.5%, $n=182$), classroom teachers (21.6%, $n=154$), clinical psychologists (18.2%, $n=130$), educational specialists (14.7%, $n=105$), ESL teachers (9.1%, $n=65$), neuropsychologists (5.7%, $n=41$), literacy coaches (5.2%, $n=37$), neurologists (1.8%, $n=13$), pediatricians (1.3%, $n=9$), and other diagnosticians (7.8%, $n=56$). This finding suggests that school psychologists, SLPs, special educators, and reading specialists

are among the professionals most frequently tasked with conducting assessments to identify or diagnose RDs.

Participants who reported conducting some of the assessments ($n=574$) were asked which categories of assessments they personally conduct when assessing students for a suspected RD. Almost all school psychologists indicated that they conduct cognitive assessments (97.1%, $n=102$), and almost all SLPs indicated that they conduct language assessments (98.6%, $n=71$), while few others reported conducting these categories of assessments. While just two-thirds of school psychologists and 46% of SLPs reported conducting reading assessments as part of the identification process for RDs, over 88% of those across the other occupational categories reported doing so. Approximately three-quarters of special educators (81.3%, $n=139$), other diagnosticians (76.2%, $n=32$), and classroom teachers (72.2%, $n=18$) reported that they conduct the writing assessments used in this process, while about half of practitioners from all other occupations indicated that they do so. Taken together, these findings suggest that multiple professionals conduct reading and writing assessments to identify RDs, while cognitive and language assessments tend to be conducted by school psychologists and SLPs, respectively.

Q2. Practitioner Training

Participants' training relevant to identifying RDs is reported in Table 2.

Graduate School

A majority of participants indicated completing at least a single course on reading development (70.3%). Responses to this question differed by participant occupation ($\chi^2(28)=154.2, p<0.001$), such that school psychologists less frequently, and reading specialists more frequently, took multiple courses on reading development, than those in other professions. About half of respondents indicated that they completed at least a single course in language or

writing development. These responses also differed by participant occupation, such that SLPs more frequently reported taking multiple courses on language development ($\chi^2(28)=274.4$, $p<0.001$), and school psychologists less frequently indicated taking multiple courses on writing development ($\chi^2(28)=80.8$, $p<0.001$), than those in other professions. Lastly, approximately one third of participants reported that they took multiple courses on identifying RDs during graduate school, while about a half indicated that they took a single course or only attended lectures on this topic, and 14.5% responded that they did not receive any graduate training on this topic. Responses to this question also differed by participant occupation, such that SLPs generally reported receiving less, and school psychologists frequently reported more, graduate training on identifying RDs than those in other professions ($\chi^2(28)=78.1$, $p<0.001$).

Professional Development (PD)

About three-quarters of participants reported that they attended multiple workshops or conferences on reading development over the course of their career. Responses differed by participant occupation ($\chi^2(28)=55.4$, $p=0.002$), such that school psychologists less frequently, and reading specialists more frequently, reported attending multiple workshops or conferences on reading development during PD, as compared to the other practitioners. Over half of participants reported attending multiple workshops or conferences on language and writing development. Responses different by occupation ($\chi^2(28)=121.6$, $p<0.001$), such that SLPs generally reported receiving more PD training, and special educators and school psychologists reported receiving less PD training, on language development, than other practitioners. In addition, school psychologists generally reported receiving less PD training on writing development ($\chi^2(28)=77.7$, $p<0.001$), than those in other professions.

Lastly, over half of participants reported that they attended multiple PD workshops or conferences on identifying RDs; about a third reported attending a single workshop, multiple workshops, or a single conference on this topic; and 8.9% reported no PD training on this topic. Responses to this question differed by occupation ($\chi^2(28)=90.2, p<0.001$), such that classroom teachers more frequently, and school psychologists less frequently, reported receiving no PD on this topic than those in other professions. These results suggest that while many practitioners have received training relevant to this endeavor during graduate school and/or PD, some practitioners in this role have gaps in their training.

Practitioner Evaluation

Participants were asked to rate their confidence in identifying RDs in school-age children from 1 (least confident) to 10 (most confident). Responses ranged from 1 to 10 with a median response of 8 (IQR=7-9). The distribution of responses was roughly similar across primary work setting, so Kruskal-Wallis H tests were used to compare medians among practitioners who primarily work in school vs. clinical settings. Median confidence levels differed by primary work setting ($\chi^2(1)=57.5, p<0.001$), such that practitioners who primarily work in clinical settings indicated significantly higher confidence levels (Median=9, IQR=8-10) than those who work primarily in school settings (Median=8, IQR=7-9), even when excluding classroom teachers and school administrators from the analysis. Furthermore, positive correlations were observed between participants' reported confidence levels and their training on the identification of RDs during graduate school (Spearman's $r=0.169, p<0.001, df=704$) and PD (Spearman's $r=0.359, p<0.001, df=728$), such that more training was associated with higher reported confidence. These results indicate that while practitioners generally feel confident about identifying RDs, those who work primarily in clinical settings and those with more training on this topic, report higher levels

of confidence. Furthermore, when asked to rate how important it is to learn more about identifying RDs on a scale from 1, “Not at all important” to 5 “Extremely important,” a majority of participants provided a rating of 4 “Very important” (24.3%, $n=183$) or 5 “Extremely important” (64.4%, $n=484$), indicating that practitioners are open to learning more.

Q3. Measures and Procedures Used to Identify RDs

Constructs measured

Practitioners were asked to indicate the frequency with which they typically evaluate various constructs when assessing students for a suspected RD. Over three quarters of participants indicated that they always evaluate word reading (81.7%, $n=577$), reading comprehension (79.4%, $n=560$), and reading fluency (76.9%, $n=541$), while fewer than half of participants indicated they always evaluate grammar (41.2%, $n=285$) and pragmatics (22.6%, $n=150$), and between half and three-quarters of all participants indicated that they always assess vocabulary, language comprehension, rapid naming, phonological processing, phonics, pseudoword reading, spelling, and written expression. This finding is consistent with our previous findings that a large majority of respondents (86%) reported assessing reading, and that the team-based approach to assessment relying on a network of practitioners (see Q1: Team Members) is often essential for gathering information on a wide range of student skills. (See Supplemental Materials for survey data on specific assessments that practitioners report using.)

Reasons for Selecting Measures

Participants were asked the main reasons for selecting specific measures when assessing children for a suspected RD. A majority of participants (72.3%, $n=499$) indicated that they choose assessments based on their accessibility. Over half of the respondents (56.3%, $n=388$) reported that they select measures that they were trained to use. Other selected reasons included

ease of use (39.6%, $n=273$), quick administration (33.7%, $n=232$), obligation (26.6%, $n=183$), and affordability (16.1%, $n=111$). These reasons differed by practitioner setting ($ps<0.001$), such that those who primarily work in clinical settings less frequently indicated that they select measures based on accessibility and more frequently indicated that they select measures based on their validity and reliability. These findings suggest that clinic-based practitioners have more autonomy over the measures they select, while school-based practitioners primarily use measures available in their setting that they have been trained to use. Even so, this does not indicate that the measures used in school settings are less valid or reliable than those used in clinical settings.

Criteria for Identifying RDs

School-based practitioners were asked to indicate the qualification criteria used in their setting. Most participants (74.7%, $n=480$) selected more than one criterion, suggesting that practitioners may use multiple criteria simultaneously or may use different criteria depending on the circumstances. The most commonly reported criteria included failure to respond to intervention (63.1%, $n=406$), an IQ/Achievement Discrepancy (59.6%, $n=383$), and scoring a standard deviation or more below the population mean (42.8%, $n=275$). Of those who reported using RTI or MTSS, most participants reported using a failure to benefit from Tier 2 instruction (91.4%, $n=371$), while about half reported using a failure to benefit from Tier 1 (48.0%, $n=195$), and few participants reported using failure to respond to Tier 3 (4.2%, $n=17$). It can be challenging to interpret these results given that the definition of tiers within RTI/MTSS systems differs at the state level, however Tier 1 traditionally represents whole-class instruction, while Tier 2 typically consists of small-group instruction, and Tier 3 may represent small group instruction, individualized instruction, or special education depending on the context (Berkley et al., 2020). A majority of those who indicated using a standard deviation below the mean reported

that students needed to score below the cutoff on multiple measures (90.2%, $n=248$), while some indicated using a cutoff score on one measure (29.8%, $n=82$). When asked how many standard deviations below the population mean they typically use as a cutoff value, 16.3% ($n=38$) reported using 1 standard deviation, 44.4% ($n=103$) reported using 1.5 standard deviations, 33.9% ($n=79$) reported using 2 standard deviations, and 5.6% ($n=13$) reported using a different value. Less than 20% of participants ($n=116$) indicated that an external diagnosis is used in their setting. When asked who provides the external diagnosis, written-in responses included clinical psychologists, neuropsychologists, neurologists, pediatricians, and diagnosticians. A small percentage of participants reported using a PSW approach (9.3%, $n=60$); the small proportion was likely due to sampling error rather than being truly reflective of the prevalence of this approach, as participants from the overrepresented Northeast region of the U.S. were less likely to report using this approach than those from other regions ($\chi^2(3)=27.2, p<0.001$). Lastly, 6.6% of participants ($n=37$) wrote that they use other criteria, such as “team agreement” or “evidence of a double deficit.” These findings illustrate that the criteria used to identify SLD in reading vary across, and sometimes within, school settings.

We asked practitioners whether children determined to be economically disadvantaged would be eligible for an SLD designation provided that they otherwise met criteria for an SLD in reading. Most participants (84.7%, $n=648$) indicated that such children would be eligible, while 5.3% ($n=41$) indicated that they would not, and 9.9% ($n=76$) reported that they did not know. Of those who indicated that they would not be eligible for an SLD designation, 34.2% ($n=14$) indicated that they would be eligible for another designation, such as Developmental Delay or Other Health Impairment, 43.9% ($n=18$) said that they would not, and 22% ($n=9$) reported that they did not know. This finding suggests that economically disadvantaged children are often

eligible to receive special education services if they otherwise meet criteria for a SLD in reading, however they may be found ineligible to receive services in some settings.

Terminology Used for an Identified RD

Participants were asked to select the terms that they would consider using to label an identified RD. As illustrated in Figure 1, *specific learning disability* was the most commonly selected term, and *dyslexia* was the second most frequently selected term, to label identified RDs for both Kindergarten through second and third through twelfth grades. Interestingly, about half of participants indicated that they would use the term *developmental delay* with children in Kindergarten through second grade, however less than 10% indicated that they would use this term with children in third through twelfth grades. About half of the respondents indicated that they would consider using the terms *language-based learning disability*, *reading disability*, or *specific reading disability* with children in grades three to twelve, with a smaller percentage of participants indicating that they would use each of these terms with children in Kindergarten through second grade. Less than a third of participants indicated that they would use the terms *reading disorder* or *specific learning disorder* to describe an identified RD among children at any grade level. Responses differed by work setting, such that those who work primarily in clinical settings more frequently reported that they would consider using the terms *dyslexia*, *reading disorder*, *language-based learning disability*, and *specific learning disorder* across grade levels, and less frequently reported that they would use the term *developmental delay* with children in Kindergarten through second grade and the term *specific learning disability* across grade levels, as compared to school-based practitioners (Bonferroni-corrected $ps < 0.05$). These findings suggest that school-based practitioners often use terminology from IDEA (1997/2004) for identification of reading disabilities, while clinic-based practitioners more often use

terminology consistent with the DSM-5 (APA, 2013).

Participants were also asked whether school-based practitioners in their setting are permitted to use the label of *dyslexia*. Just over half of the respondents reported that practitioners in their setting are allowed to use the term *dyslexia* (56.0%, $n=419$), while about a third indicated that practitioners cannot (31.8%, $n=238$), and 12.2% did not know ($n=91$). The majority of participants who said that school-based practitioners could not use *dyslexia* indicated that they use *specific learning disability*, *reading disability*, or *learning disability* instead. When asked whether they believed that school-based practitioners should be able to use the term *dyslexia*, 79.3% of participants ($n=604$) said yes, 8.9% said no, and 11.8% said that they did not know. Of those who said that school-based practitioners should not be permitted to use this term, most indicated that they felt that the term was more appropriate for use in a clinical setting. As compared to all other practitioners, school administrators more frequently reported that they believed that school-based practitioners should not be permitted to use the term *dyslexia* ($\chi^2(14)=53.9, p<0.001$). These results indicate that a majority of practitioners believe that school-based practitioners should be able to use the term *dyslexia*, only about half of practitioners indicated that school-based practitioners are allowed to do so in their setting.

Timeline of RD Identification

Participants who work primarily in school settings were asked to estimate the typical time that it takes for a struggling reader to go through various stages of the RD identification process. When asked the typical time a student struggles with reading before being referred to an evaluation team, about three quarters of respondents (73.6%, $n=424$) reported between one and seven months, with only 2.3% ($n=13$) indicating less than a month, and 24.1% ($n=139$) indicating eight months or more. Once the child is referred, a majority of participants (89.1%,

n=509) indicated that it typically takes between two weeks and seven months for the child study team to deem testing appropriate. Over two thirds of respondents (69.6%, *n*=402) indicated that it takes between one and three months to complete such testing, with 7.8% of participants (*n*=45) reporting that it takes less than a month, and 22.7% (*n*=131) indicating that it takes four months or longer. A majority of participants indicated that it takes between two weeks and three months to review test results (84.5%, *n*=484); and similarly, most participants indicated that it takes between two weeks and three months for eligibility for special education to be determined (80.8%, *n*=463). Lastly, two-thirds of respondents (66.3%, *n*=381) indicated that it takes a month or less to implement changes to the child's education. These data suggest that it takes about thirteen and a half months (median=13.5 months, IQR=9-23 months) between the time a child struggles with reading to the time that IEP-based changes to the child's education are implemented.

Discussion

In this study, we identified current practices associated with the identification of RDs in the U.S. through a nationally disseminated survey. We examined: (a) the types of professionals who identify RDs and their roles in the process; (b) the relevant training that practitioners have completed; and (c) the approaches used to identify RDs. Results reveal the nature of variability in the composition of school assessment teams, practitioner training, and identification approaches/timelines. Findings emphasize common constraints in the identification of RDs and their implications for students' educational experiences, and the importance of cross-contextual dialogue regarding practices.

Practitioner Roles, Training, and Practices for Identifying RDs

Findings indicate that while practitioners often rely on assessments to identify RDs they

are trained to administer, the areas evaluated often depend on who is conducting the assessments. While a majority of practitioners directly assess reading skills, fewer reported also assessing the important broader language and cognitive components that underlie reading as these are commonly measured by other practitioners. Language and cognitive skills are equally important to assess in line with the componential model of reading (Joshi & Aaron, 2012), multicomponent view of reading (Cain, 2009; Perfetti et al., 2005), and the simple view of reading (Gough & Tunmer, 1986). While such models focus on specific aspects of or contributors to reading, integration amongst cognitive, language, and reading skills is critical to acquire a comprehensive and thorough picture of the underlying nature of an individual's reading difficulties (Kim, 2020; Vellutino et al., 2007). Encouraging findings showed that across professionals, assessments could include cognitive, language, reading, and writing constructs, though communication and collaboration across practitioners is important for synthesizing findings from separate evaluations. These findings emphasize the importance of promoting interdisciplinary and multidisciplinary assessment teams across clinical and/or school settings to ensure that practitioners are not only using current evidence-based and comprehensive assessments to identify and diagnose RDs in a timely manner, but are also administering the appropriate interventions for children to achieve educational success (Benson et al., 2020; Carter et al., 2009; Rosenblum et al., 2010; Wallach, 2014).

While many practitioners reported receiving relevant training during graduate school and/or through PD, which was associated with higher confidence levels in identifying RDs, some practitioners indicated significant gaps in their training. These results were further emphasized by most practitioners reporting it to be important for them to learn more about diagnostic processes related to reading. These results offer opportunities to focus on instructional factors;

ineffective instructional methods and lack of teacher knowledge have been identified as potential challenges (Joshi et al., 2009; Pittman et al., 2020; Vellutino et al., 2004). Providing continuous high-quality PD related to reading and language can provide practitioners with the necessary knowledge of concepts related to early reading instruction and intervention, which can be integrated into knowledge previously gained during preservice training (Joshi et al., 2009). Due to the critical roles graduate schools play in training students on using evidence-based assessments in school and clinical settings, it is imperative that such programs emphasize competency in utilizing evidence-based assessment approaches through courses, internships, and practicum opportunities. Practitioner training should also coincide with ongoing clinical practice and educational training in utilizing evidence-based assessment approaches for the identification and diagnosis of RDs (Benson et al., 2020; Lemons et al., 2016; Mellard et al., 2009; Scruggs & Mastropieri, 2002), including the administration and scoring of tests, and interpretation of scores.

Implications for Practice

Findings from this study can be considered in several ways to improve educational practice in support of individuals with RDs. The broad nature of legislative guidelines at the federal and state levels can decrease confidence in resulting identification decisions and the consistency of these decisions, particularly regarding subjective considerations (de Mesquita, 1992; Mather & Gregg, 2006; Reschly & Hosp, 2004; Scruggs & Mastropieri, 2002). For example, a current challenge in identifying RDs across all identification approaches is the complexity that is present with the use of arbitrary cut-off points (Francis et al., 2005; Watkins, 2009). To date, there is no widely accepted criteria for cut-off points for RD identification, resulting in large variations (Fletcher et al., 2007; Maki et al., 2015). In the PSW approach, cut-off points are determined using various methods, such as normative and ipsative cut-off points

(Hale et al., 2010); however, neither have been found to be meaningful (Miciak et al., 2014). Similarly, for the RTI/MTSS approach, performance below a certain percentile or level, or growth rate of one standard deviation below the norm have been utilized to determine insufficient response to intervention (Burns & Senesac, 2005; Fuchs et al., 2003); however, there is a lack of widely accepted criteria (Zirkel, 2017). It is important to facilitate communication among practitioners in clinical and school settings, and to improve the evidence-based guidance of RD identification through research-practice partnerships.

Variability in testing approaches and criteria can lead to disparate numbers of children identified with RDs depending on the measures used and the local guidelines that are being followed (Hollenbeck, 2007). In contrast, comprehensive profiles of a student's strengths and weaknesses can support development of appropriate intervention services (Barnard-Brak & Stevens, 2019; 2020; Smith, 2012). Practitioners use a variety of terms to label an identified RD, with the usage of these terms varying by setting and grade. While the U.S. Department of Education (ED) Office of Special Education Programs (2015) has encouraged state and local education agencies to use the term *dyslexia* in IDEA evaluations, eligibility determinations, and IEP documents, when appropriate, a third of practitioners surveyed in this study indicated that school-based practitioners could not use this label in their setting. These disparities may exist because there is no direct relationship between ED requirements and state laws that outline how schools should identify children with RDs; significant confusion can arise for stakeholders around the use of the specific term *dyslexia* and the nature of instructional support related to that term (NCLD, 2018). Ongoing dialogue among caregivers, professionals, and stakeholders to use terms similarly, and to understand the relation between terms being used, could serve to enhance the effectiveness and outcomes of IEP meetings.

Practitioners have reported a range of confidence levels regarding knowledge and abilities related to assessments of reading in this and related studies (e.g., Nelson & Machek, 2007). A potential reason for inadequate levels of expertise may be due to the changed nature of special education services associated with the evolving interpretation of the term *least restrictive environment* that places students with RDs in the general education setting (Rozalski et al., 2011). Reconsidering PD efforts to support in-service and pre-service practitioners with relevant knowledge and associated implications for practice can translate to more children with RDs having access to practitioners with adequate expertise for RD identification, diagnostics, and intervention. These efforts should range from understanding the underlying nature of reading abilities and related cognitive skills, countering myths (e.g., the myth that a brain scan can be used to diagnose dyslexia), selection and use of assessments to inform instruction, components of evidence-based reading interventions, use of assessment data to analyze response to intervention, and continued collaboration with parents, teachers, schools, and other stakeholders. Research has shown that providing PD that targets knowledge of the underlying nature of reading leads to positive changes in reading instruction and improvements in student's reading achievement (Al Otaiba et al., 2011; Foorman & Moats, 2004; Piasta et al., 2009). Increased student outcomes are reported when in-service practitioners are trained on how to monitor student's progress and use assessment data to individualize instructional decisions (e.g., Fuchs et al., 1991). These efforts can be implemented through practicums that focus on administering evidence-based assessments and interventions, and in-person and/or virtual induction and mentoring programs that connect practitioners with mentors to provide ongoing support, training, and resources for RD identification, diagnosis, and intervention. Reading growth among students is associated with greater number of years students are in classrooms with teachers who received

PD (e.g., Connor et al., 2014; McCutchen et al., 2002).

Limitations and Future Directions

Study limitations are primarily related to the recruitment approach. Given the non-random sampling approach, these results cannot be expected to generalize to all practitioners across school and clinical settings in the U.S. with experience diagnosing or identifying RDs. Specifically, participants from Massachusetts were oversampled, and medical professionals with roles in diagnosing RDs were underrepresented. Furthermore, due to an insufficient number of practitioners within each state, we were not able to analyze our results at the state-level. This study provides initial insight into the variation in such processes, though the resulting sample is not likely representative of diagnostic practices across all settings. Future directions extend to recruiting more representative samples of practitioners; conducting qualitative evaluations that include practitioner interviews; exploring the role of student-level characteristics (e.g., age, race/ethnicity, affect) and contextual factors (e.g., access to assessments, personnel categories); and exploring common co-occurring challenges (e.g., ADHD, math disability, anxiety).

Conclusion

Current guidelines are useful for setting constraints on the definition and procedures around identifying RDs and also allow for professional expertise to be applied and exercised with flexibility. However, the guidelines are also open to interpretation, underspecified, often dependent on a school or a district's resources for implementation, and reliant on assumed shared background knowledge of the practitioners. Overall, the results of this survey can contribute to cross-contextual dialogue regarding efficient practices and common constraints in current reading diagnostics. These efforts can help improve the accurate and timely identification of RDs, which is essential for providing appropriate and effective remediation for students.

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Table 1*Demographic Characteristics of the Sample*

Characteristic	% (n)	Characteristic	% (n)
Occupation		Years of Experience (cont'd)	
Special Educator	22.3% (n=215)	10 to 12 years	11.9% (n=115)
School Psychologist	18.2% (n=176)	13 to 15 years	10.2% (n=98)
Reading Specialist	13.7% (n=132)	16 years or more	39.0% (n=376)
More than one ^a	12.3% (n=119)	Primary Work Setting	
Speech-Language Pathologist	11.6% (n=112)	Public school	71.8% (n=693)
Other Diagnostician	11.3% (n=109)	Private Practice	15.9% (n=153)
School Administrator	6.6% (n=64)	Charter school	5.2% (n=50)
Classroom Teacher	3.9% (n=38)	Private school	2.6% (n=25)
Highest degree		Private special ed school	2.6% (n=25)
Bachelor's	8.5% (n=82)	Hospital	1.2% (n=12)
Master's	65.5% (n=632)	Urbanicity	
Certificate of Advanced Study	10.3% (n=99)	Rural	27.3% (n=263)
Research Doctorate (PhD, PsyD)	12.1% (n=117)	Suburban	48.5% (n=468)
Medical Doctor	1.7% (n=16)	Urban	21.9% (n=211)
Other ^b	1.1% (n=11)	Geographic Region	
Years of Experience in Occupation		Northeast	40.5% (n=388)
Less than 1 year	1.8% (n=17)	South	24.6% (n=236)
1 to 3 years	11.0% (n=106)	Midwest	18.1% (n=174)
4 to 6 years	12.7% (n=123)	West	16.8% (n=161)
7 to 9 years	13.1% (n=126)	Other U.S. territories	0.6% (n=6)

^a Participants were assigned to the “More than one” occupation category if they currently work in more than one capacity in addressing reading difficulties. ^b Participants in the “Other Diagnostician” occupation category included school educational specialists, dyslexia therapists, educational diagnosticians, neuropsychologists, clinical psychologists, and literacy coaches.

Table 2*Participants' Training Relevant to Identifying RDs in School-Age Children*

Amount of time in graduate work learning about...	None	Single Lecture	Multiple Lectures	Single course	Multiple courses	Total <i>n</i>
reading development	6.2% (<i>n</i> =55)	5.6% (<i>n</i> =50)	17.9% (<i>n</i> =160)	20.6% (<i>n</i> =184)	49.7% (<i>n</i> =443)	892
language development	11.4% (<i>n</i> =100)	13.2% (<i>n</i> =116)	22.2% (<i>n</i> =195)	19.6% (<i>n</i> =172)	33.6% (<i>n</i> =295)	878
writing development	11.7% (<i>n</i> =104)	11.6% (<i>n</i> =103)	27.6% (<i>n</i> =245)	21.7% (<i>n</i> =193)	27.4% (<i>n</i> =243)	888
identifying RDs	14.5% (<i>n</i> =129)	8.0% (<i>n</i> =71)	19.5% (<i>n</i> =173)	23.2% (<i>n</i> =206)	34.9% (<i>n</i> =310)	889
Amount of time in professional development learning about...	None	Single Session	Multiple Sessions	Single workshop or conference	Multiple workshop or conferences	Total <i>n</i>
reading development	2.3% (<i>n</i> =21)	2.7% (<i>n</i> =24)	16.1% (<i>n</i> =146)	4.3% (<i>n</i> =39)	74.6% (<i>n</i> =675)	905
language development	11.4% (<i>n</i> =103)	8.2% (<i>n</i> =74)	21.4% (<i>n</i> =193)	8.1% (<i>n</i> =73)	50.9% (<i>n</i> =460)	903
writing development	6.3% (<i>n</i> =57)	6.3% (<i>n</i> =57)	19.1% (<i>n</i> =173)	12.3% (<i>n</i> =111)	56.1% (<i>n</i> =508)	906
identifying RDs	8.9% (<i>n</i> =80)	5.9% (<i>n</i> =53)	16.3% (<i>n</i> =146)	9.5% (<i>n</i> =85)	59.4% (<i>n</i> =532)	896

Figure 1

Percent of Practitioners Who Would Be Willing to Use Each Term to Label an Identified RD in Kindergarten Through Second Grade (n=697) or in Third Through Twelfth Grade (n=758)