IDA Assessment Guidelines

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June 2021

Executive Summary

Over one hundred years ago, the term dyslexia was coined by a German ophthalmologist by the name of Berlin. Since then, research evidence suggests that the prevalence of dyslexia affects from 1.5% to 11% of the population (Wagner et. al. 2020). Researchers all around the world have been working hard to develop better ways of identifying dyslexia as well as developing effective methods for providing intervention for students with dyslexia (Snowling et. al., 2020). Along those two important domains -- assessment and intervention--there have also been serious efforts around the globe directed at initiatives to raise awareness of dyslexia and provide training for all those involved in caring for students with dyslexia.

Despite noticeable efforts and research developments, there are no generally accepted guidelines for the assessment of dyslexia in English or other languages that are based on research evidence and mirrored in good practice. The proposed document, Assessment Guidelines, is an attempt to provide such a framework for dyslexia assessment in English, with the ultimate goal of adapting it to multiple languages and orthographies. This document can therefore be used as the foundation for guiding good practice when considering dyslexia assessment. It can also provide a benchmark whereby existing dyslexia assessment practices and services can be compared and measured for efficiency.

The document supports the view that, regardless of the environment in which the dyslexia assessment is conducted (i.e., the language of assessment, educational context, and societal norms) there are still some common core elements that can be used as general guidelines to inform dyslexia assessment practices around the world. That is, there is a *structure or 'architecture' to the evaluation* of a person with literacy challenges, including dyslexia and *basic skills and functions* that must be assessed. This assessment guidelines are based on the definition of dyslexia approved by the IDA Board in 2002¹ as well as the ones

¹ https://dyslexiaida.org/definition-of-dyslexia/

provided by the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)² and the NIH.³ Furthermore, we considered the Assessment Standards (Standard 3) delineated in the Knowledge and Practice Standards for Teachers of Reading (KPS) published by IDA in 2018. An important consideration when designing these guidelines was ascertaining the goal of any assessment. It is the opinion of the members of this workgroup that evaluating *all* of the contributing factors that can impact literacy is necessary in order to address an individual's needs. This is consistent with the way that school systems in the US provide intervention services after expanding the model of Response to Intervention (RtI) to a multitier system of support (MTSS). The purpose of this change was to offer a more comprehensive approach to provide broader, tiered supports in academic, social and behavioral domains

Given the definition of dyslexia and the review of good diagnostic practices it was the decision of this workgroup that an appropriate assessment should include documentation not only of the factors that define dyslexia (deficits in phonemic awareness and automatized naming) but to also include exclusion criteria factors and comorbid conditions that can impact the clinical presentation. All of these factors should be considered when evaluating individuals for dyslexia. Thus, assessing items, such as attention, oral language skills, general cognitive abilities, executive functions, behavioral/emotional disorders, health and family history should be an integral part of a comprehensive evaluation of an individual with symptoms of dyslexia and other disorders.

Background and Rationale

The International Dyslexia Association (IDA) is a non-profit organization that was established in 1949. First called Friends of the Orton Society then later changed its name to the International Dyslexia Association. IDA's home office is based in Townsend, Maryland with national affiliates (called Branches which are located in the United States and Canada) as well as Global Partners (which are non-profit

² 2013, DSM-5 Pages 66-68

³ https://www.ninds.nih.gov/Disorders/All-Disorders/Dyslexia-Information-Page

organizations around the world that concern themselves with the issue of dyslexia in their respective communities and share the mission of IDA). IDA is the largest and oldest non-profit organization dedicated to the cause of dyslexia globally. Its annual dyslexia conference is the most well-attended in the world and its membership base is equally diverse.

One of the Global Partners of IDA, the Centre for Child Evaluation & Teaching (CCET) in Kuwait has requested from the Global Partners Committee the development of a set of guidelines against which their assessment services can be measured and evaluated. In Kuwait, the government supports students with learning disabilities including dyslexia and CCET felt that having the backing of IDA in the form of an official approval for its assessment services would ensure that CCET is in alignment with best research practices in dyslexia assessment. The IDA Global Partners Committee approved the request because it is closely aligned with the IDA Vision of disseminating scientific-based information regarding dyslexia worldwide. Since the assessment of dyslexia is closely aligned with the definition of dyslexia and provides the first practical step towards receiving intervention for dyslexia, the Global Partners Committee assigned a working group to start putting together a document to form the basis for global dyslexia assessment guidelines. Members of this working group are the authors of this document.

Dyslexia Definition and Prevalence

Dyslexia is an inherited trait (Grigorenko, 2001, Van Bergn et. al., 2010). The incidence of dyslexia varies significantly around the world (Hulme, Snowling, 2016). Scientific publications provide varying statistics of the prevalence of dyslexia ranging from 1.5 to 11% (For a full review and rationale regarding those varying statistics, refer to Wagner et. al. 2020). It is evident that there are both structural

and functional brain anomalies in persons with dyslexia (Galaburda, 1989; Hoeft et. al., 2006, Benasich, & Fitch, 2012, Baily et. al., 2018); it is also evident that dyslexia has a genetic basis (Grigorenko et. al. 1997). Differences in the phonology and orthography of a language and how different countries define and evaluate dyslexia can have an impact on these statistics (for an experimental study explaining this, kindly refer to McBride et. al. 2021 which provided examples of word recognition and word writing from different scripts, including Chinese, Arabic, Persian, and English). Reading, spelling, writing, and language abilities exist on a continuum, as described in the IDA's Knowledge and Practice Standards for Teachers of Reading. Decades of research and national test scores confirm that reading problems commonly occur and affect many individuals around the world. Data provided by the National Assessment of Educational Progress (NAEP)⁴ in the U.S. reveals that approximately one-third of fourth graders' reading skills fall in the Below Basic classification and such low literacy levels will prevent them from meeting the expectations of grade-level academic work. Adult literacy problems are also common, affecting one in four who have average or higher intelligence but have not been able to attain a functional literacy level.

Although there are many existing definitions of dyslexia proposed by various international organizations, (i.e., the British Dyslexia Association, the World Health Organization, The World Federation of Neurology, The Health Council of the Netherlands or the American Psychiatric Association to name but few), in this document, we focus on the definition adopted by the IDA (2002)⁵.

"Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction.

⁴ <u>https://dyslexiaida.org/dyslexia-assessment-what-is-it-and-how-can-it-help-2</u>

Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge."

Research on Dyslexia Assessment

The assessment of dyslexia is very closely linked to its definition; indeed, this is the reason many researchers called for an operational definition of dyslexia (Rack, 1997, Turner, 1998, Bell et. al, 2003, Mather & Wendling, 2012; Shaywitz & Shaywitz, 2020, Snowling et.al., 2020). Everatt and his colleagues (2002) explained that informed early assessment of potential areas of difficulties and strengths is important in the effort to support the individual with dyslexia. Early identification leads to more effective outcomes in remediation, particularly reading and writing (Washington et. al. 2020). A failure to recognize difficulties can often lead to the child becoming anxious or depressed and suffering serious losses in self-esteem, confidence, and motivation (Giovagnoli, et. al. 2020). Objective assessment procedures and tools are therefore essential for practitioners in both their initial identification of those at risk and their formation of individual education plans. Various available screening and assessment tools have been developed to aid this process.

Since the reauthorization of IDEA by the US Congress in 2004, Response to Intervention (RtI) has been promoted as the main method of assessment, instruction, and intervention services provided for students at risk for dyslexia and other learning disorders. RTI offers three tiers of educational support services to students experiencing academic difficulties and designates personnel to deliver the educational support services in each tier. In addition, RTI gathers and analyzes data to inform intervention and related educational decisions. Subsequently, multi-tier system of support (MTSS), a more comprehensive approach was developed to provide broader, tiered supports in academic, social and behavioral domains. RTI is a component of MTSS. In order to provide appropriate identification of students at risk for reading challenges, RTI requires

universal screening of for risk factors in all students entering the educational system. In addition, RTI stipulates the provision of effective, evidence-based academic intervention to those 'at risk' students identified during universal screening. RTI requires progress monitoring through brief assessments at prescribed intervals to assess the student's response to the intervention. Thus, the RTI diagnostic approach bases the identification of dyslexia on the student's failure to respond to evidence-based instruction and intervention provided as a component of a tiered approach to intervention. When a student demonstrates unsatisfactory progress and fails to meet grade level expectations after the provision of RtI, he or she can then be described as experiencing 'unexpected underachievement' and may then meet criteria for a diagnosis of dyslexia. In the "hybrid dyslexia identification process" proposed by Miciak and Fletcher (2020) as part of MTSS, they suggest using reading and spelling as specific markers for dyslexia in students who have failed to respond to evidence-based reading instruction. In addition, the authors' model recommends a comprehensive LD evaluation as part of the RTI model to rule out other considerations as the primary cause for a student's lack of response to intervention. The "hybrid dyslexia identification process" rules out several other factors, including lack of, or poor instruction before determining if a student has dyslexia.

In theory, the approach of RTI offers a rational process to early identification and intervention of in children at risk for dyslexia. However, current implementation of RTI in the US is not demonstrating a measurable difference in the outcome of students identified by this process. Balu, et. al. (2015) published a study that provided evidence that first grade students attending schools that implemented RTI demonstrated a worse academic performance than those in schools using other models. Analysis of this study's data by Fuchs & Fuchs (2017) revealed that a major reason for the failure for the RTI model was the lack of fidelity of implementation as

supported by research. Therefore, if the instruction offered to students through RTI is not provided with fidelity or sufficient intensity, this may result in the wrong diagnosis. As noted above by Miciak and Fletcher (2020 poor instruction and remediation is one of the exclusion criteria for diagnosing a student with dyslexia.

Historically, dyslexia was diagnosed by a discrepancy between cognitive potential, or IQ; the practice of using IQ–achievement discrepancy definitions of dyslexia as criteria for accessing provision in education services has been widely criticized on logical, empirical and equal opportunities grounds (Siegel 1989; Stanovich & Stanovich, 1997). Researchers who argued against the IQ-Reading discrepancy criteria view such a discrepancy as based on an outdated and indefensible construct (IQ) which does not differentiate between the reading skills of different groups of poor readers, and which has no obvious implications for differential teaching strategies. Researchers who support the use and validity of IQ measurements and their application in dyslexia assessments point to data indicating that psychometric assessment generally, and IQ measurement in particular, have made great progress. Many studies have replicated the validity and the reliability of employing IQ measures when identifying dyslexia. They argue that removing IQ measurement from the assessment process will lead to less reliable procedures. (For a full review of both opposing views regarding the dyslexia-IQ debate, see Elbeheri & Everatt, 2009).

Although a large number of researchers now view the use of IQ-reading discrepancy criteria in dyslexia definition and assessment as inappropriate, not everyone has the same opinion regarding the use of non-verbal reasoning and reading discrepancy in dyslexia testing. Miles (1994) argues that tests of reading and of intelligence and the use of discrepancy and exclusionary criteria are not so much wrong as in need of modifications. Some researchers argue that just because IQ-achievement discrepancy is not adequate, it does not mean that it is irrelevant to learning differences (Berninger 2001). Although it is now clear that there are some serious doubts and problems associated with the use of IQ-reading discrepancy in defining

dyslexia, the abandonment of IQ as an exclusionary criterion has not gained wide acceptance. This, as Catts & Kamhi (1999) argue, is not surprising given that "normal or above normal intelligence has always been a defining characteristic of dyslexia" (Catts & Kamhi, 1999, p. 62).

Another argument for the continued use of IQ in dyslexia assessments is the lack of consensus about an alternative (for a review regarding issues with alternatives, kindly refer to Vaughn & Fuchs, 2003). For example, some have suggested that it might be possible to replace or supplement traditional IQdiscrepancy with other types of more relevant discrepancies such as single word reading and listening comprehension (see Malatesha & Aaron, 1982). However, such alternative discrepancy methods have rarely been accepted in educational circles. The main alternative, therefore, which has gained some level of acceptance is to continue to use the IQ test, but rather than using it as a way of simply measuring global IQ, utilizing it as a way of measuring sub-skills that may be diagnostically related to dyslexia and hence to arrive at a better understanding of the areas of strengths and weaknesses of the individual being assessed.

Methodology

To address the world-wide need for uniform assessment guidelines for dyslexia, the IDA Global Partners formed a sub-committee to develop Assessment Guidelines, a set of defined criteria which guide the process of dyslexia assessment globally. The goal of this project is to develop evidence-based Assessment Guidelines first in English and subsequently other languages once we validated the processes and general principles of assessment in English. We envisioned that the Assessment Guidelines will be used to inform and standardize comprehensive assessment practices for the identification of dyslexia. Furthermore, the Assessment Guidelines can assist institutions seeking accreditation from IDA to meet a set of principles for the assessment of dyslexia. The Working Group sub-committee was led by Dr. Eric Tridas, a developmental pediatrician with more than 35 years of experience with assessment of learning disabilities, including dyslexia and related disorders. The members reside in four different U.S. States and one country in the Middle East and include experts in dyslexia, reading/writing assessments and evidence-based language instruction. Some have authored universal screening protocols and contributed to the design of reading assessment instruments.

This Working Group developed the IDA Assessment Guidelines in four stages, beginning in the fall of 2017. The <u>First Stage</u> of the process was to develop a framework for the Assessment Guidelines to include the whole person in an organized manner. The <u>Second Stage</u> of the process was to develop an Assessment Matrix (Table 2: Standardized Tests of the Assessment Guidelines), a tool to identify succinctly the essential skills of the Assessment Guidelines based on our current understanding of dyslexia and reading / writing processes. The <u>Third Stage</u> involved a pilot test of the Assessment Matrix. The <u>Fourth Stage</u> involves presentations to the IDA National Board and the IDA Scientific Advisory Board in order to obtain their feedback and recommendations. This paper is part of the <u>Fourth Stage</u>. The <u>Fifth</u> <u>Stage</u> will be the publication and dissemination of the Assessment Guidelines.

First Stage: Identify the Essential Components of the Assessment Guidelines

While the Global Partners workgroup was considering the various components of the Assessment Guidelines, it became clear that a unified list of definitions for the assessment of dyslexia was necessary so that readers and users of this document are informed of what and how each term is clearly used in the Assessment Guidelines. Appendix 1 is therefore important to consult while going through this document because it contains a detailed list of definitions to aid our understanding for the following section of the document which involves the assessment components.

The Assessment Guidelines suggest two major components in the evaluation of students with dyslexia: The structure and the content. The structure/process of the evaluation consists of the four main elements discussed below. Underneath each element, we also highlight examples of the content that can be included along with its research references.

Part 1 - History. In order to accomplish this, the history section of the report should provide a broad description of the main concerns. This is the qualitative part of the dyslexia assessment process and informants can be: Parents, teachers and the individuals being assessed themselves. The methods during this process can be: Direct interview or questionnaires. Questionnaires can be: Descriptive or standardized. Other elements include an educational history, which can provide a timeline of literacy related challenges, starting with preschool and ending with the difficulties the student is experiencing in their current educational placement. Information regarding potential signs and symptoms of deficits in phonological processing should be documented, starting in the preschool years (Rimrodt & Lipkin, 2011). Furthermore, there should be documentation of developmental milestones, particularly those related to language development, as have been shown to impact reading (Rimrodt & Lipkin, 2011). A family history of learning challenges should be provided given the heritability of dyslexia and other neurodevelopmental disorders. Given the high frequency of coexisting conditions, the history should include inquiries about symptoms related to ADHD, anxiety, and other neurodevelopmental and mental health disorders (Grigorenko, 2001). The history should also contain a general description of the student's health and social history.

The history section of the dyslexia assessment process addresses the chief complaint (i.e., the reasons for requesting the evaluation in the first place.) It seeks to provide an educational history of the individual and establish onset and duration of the observed symptoms. It also elaborates in a typical day in the life of the individual being assessed and attempts to assess his/her impairment with daily activities. The history also sheds light on their peer interactions, the issue of discipline and behavior management, health history, as well as family and social history. Teachers of the individual being assessed have an important role to play in the assessment process as they can provide details regarding the current areas of concern at school (i.e., both academic/developmental as well as relevant information pertaining to the behavioral, social interaction and health of the individual being assessed.)

Questionnaires completed by teachers may collect annectodal data in a systematic and consistent fashion which can then be compared with findings from the history obtained from parents of the individual being assessed. This qualitative component of the Assessment process is carried out by conducting an initial face-to-face or a virtual interview with parents and it uses questionnaires to obtain background information. Such questionnaires and interviews tend to cover the basic elements to be assessed in the history which are: Main concern(s), Educational History, Coexisting problems, Neurodevelopmental, Behavioral/Emotional, Sleep/Medical, Birth, General Health and Family and Social History.

The History section of the Assessment Guidelines ideally contains the following items:

- 1. Main Concern(s)
- 2. Educational History
- 3. Behavior/Emotional History
- 4. Peer Interactions/Social skills

- 5. Sleep
- 6. Health
- 7. Family History
- 8. Social History

The main concern(s) section should succinctly describe the reasons for requesting the evaluation. The examiner should elicit the main symptoms that triggered the request for the assessment (not just a diagnostic concern, e.g., "My child needs an evaluation for dyslexia" vs. "My child has trouble reading," or concerns about decoding, speed and accuracy.) The educational history should provide a description of when the symptoms were first observed, the problems experienced over time and how they present themselves currently. It may also include a history of delays in early language milestones and literacy difficulties in preschool or kindergarten. Evidence of difficulties with word attack, fluency and spelling should be documented. The educational history can provide a description to the student's performance on writing, math skills and content subjects (if applicable) and also record any coexisting neurodevelopmental problems. Attention is an important factor to consider when collecting information regarding the history of the case and should include developmental milestones and current language functions. Current fine and gross motor control skills, executive functions and any coexisting behavioral/emotional problems should be described. This section should provide information related to social/emotional factors such as internalizing symptoms, externalizing symptoms, atypical symptoms and social interaction skills. In addition, sleep history and pertinent medical problems, should be documented. Sleep History can include sleep onset, sleep maintenance and sleep hygiene. Pertinent medical problems may include: Encopresis, enuresis and chronic medical conditions. Other medical history may also include birth related factors

such as prenatal (pregnancy) complications, labor and delivery problems and neonatal (Newborn) health concerns. Past medical history may include information related to chronic illnesses, history of hearing problems, chronic ear infections, myringotomy tubes, hospitalizations and surgeries, accidents with loss of consciousness or significant head trauma or allergies. Family History and Social History should include information related to parents' age, occupation, educational degrees, history of learning or behavior problems, as well as siblings' age, history of learning or behavior problems. It may also include information related to close relatives, history of learning or behavior problems, environmental stressors, marital issues/divorce, birth of a child, death of a close relative, health problems in close relatives, change/move of residence or change in jobs and financial difficulties.

Part 2 - Administration of Standardized Tests, Error Analysis and

Behavioral/Emotional Observations. Next, the evaluation should list the standardized and qualitative instruments administered, a description of the tests and subtests and their results. The second component of the guidelines consists of the foundational skills that must be included in the assessment of dyslexia in English-speaking students.

The Assessment and Administration of Standardized Tests section of the Assessment Guidelines ideally contains the following items:

- 1. Cognitive
- 2. Phonological Awareness
- 3. Rapid Automatic Naming
- 4. Fluency
- 5. Print Awareness
- 6. Working Memory

- 7. Decoding
- 8. Spelling
- 9. Oral Language
- 10. Text Comprehension
- 11. Writing

Error analysis can be a valuable component of an evaluation. In countries where there are no standardized instruments to evaluate students, this type of approach can help make objective observations that can provide explanations for the student's difficulties. For example, a one-minute passage reading fluency measure can help assess reading speed, accuracy, prosody and comprehension. Structured behavioral observations conducted in the classroom can provide critical information about a student's attention, impulse control, organizational skills, behavior/emotional regulation and socialization.

Part 3 - Formulation of diagnoses and explanations for the challenges the student is experiencing. It is necessary for the process of dyslexia assessment and the reports documenting such a process to include dedicated sections that provide rationale for making specific diagnoses and a description of the qualitative and quantitative findings that explain the challenges experienced by the person being evaluated. This should be followed by an interpretation of the findings that led to the specific diagnosis(es), including the description of the skills and functions that are impacting the student's learning. The Formulation of Diagnosis section of the Assessment Guidelines can therefore ideally contain the following items:

- 1. Diagnosis(es)
- 2. Cognitive Processing
- 3. Achievement

- 4. Behavioral/Emotional
- 5. Social interactions
- 6. Medical
- 7. Social/Environmental

Part 4 - Recommendations to address the needs of the student identified in the

assessment. Given the significant number of comorbidities associated with dyslexia, Gigorenko, et al., (2020) recommends that the assessment be comprehensive in its approach. The assessment should therefore provide recommendations to address the student's academic, behavioral/emotional, environmental, or medical needs. The Recommendation section of the Assessment Guidelines ideally contains the following items:

- 1. Educational
 - a. Remediation
 - b. Accommodations
- 2. Psychological
 - a. Behavior Modification
 - b. Cognitive Therapy
- 3. Medical
 - a. Medication
- 4. Environmental
 - a. Physical Facility Accommodations
 - b. Change of Educational Setting

Second Stage: Assessment Matrix

The Working Group agreed to align accepted reading development theories with the definition of dyslexia established by IDA as stated earlier in this paper. The goal was to identify as many possible components of reading and writing to be potentially evaluated in standardized and non-standardized ways. The members decided to develop an Assessment Matrix, using English language as a model, and then adapt the Matrix for the other five official languages adopted by the United Nations – Arabic, Chinese, Spanish, Russian and French.⁶

The authors examined how the definition of dyslexia, defined earlier in this paper, was aligned to reading development theories. Therefore, the Simple View of Reading (SVR) (Gough and Tunmer, 1986) theory was considered as one of the possible frameworks for the assessment guidelines. SVR describes decoding and comprehension as necessary skills for skilled reading. Hollis Scarborough (2001) expanded upon SVR and developed a framework known as the Reading Rope. Scarborough described the foundational skills for decoding and included phonological awareness (syllables and sounds), decoding (symbol-sound correspondences) spelling (sound and symbol correspondences) and word recognition. Language comprehension skills were described as including background knowledge (facts, concepts), vocabulary (word breadth and depth), language structures (syntax, semantics), verbal reasoning (inference making, metaphors, problem solving), and literacy knowledge (print, genres, text structures). Other published research documents that orthographic and morphological awareness are as critical as phonological awareness to the development of literacy (Berninger & May 2011). That is why a multiple deficit approach is important when studying and diagnosing a complex disorder such as dyslexia (McGrath et al., 2011).

⁶ Three of the five members are native speakers of other languages, including Spanish and Arabic.

Based on the previously described definition of dyslexia, the Assessment Matrix included various types of phonological awareness skills. These include the ability to discriminate sounds, recognize and produce rhyming words, as well as the ability to blend, segment, delete, and manipulate syllables and phonemes. Research indicates screening measures for at-risk readers in the early grades are most successful when they include assessment of the following areas: Phoneme segmentation, blending, and manipulation tasks; letter naming fluency; letter sound association; phonological memory, including nonword repetition; oral vocabulary; and word recognition fluency (Snowling, 2000; Shaywitz, 2003; Uhry, 2005; Fletcher, Lyon, Fuchs, & Barnes, 2007; Compton, et al., 2010;). Reading disabilities have subtypes which include a phonological component of the language (Morris, et al., 1998). Additionally, rapid automatic naming has been described as a skill related to reading disabilities such as dyslexia (Denckla and Cutting, 1999). The Assessment Matrix suggest measuring rapid color, object, digit, and letter naming.

The Working Group decided that the IDA definition specified the need to measure reading accuracy, reading fluency, reading vocabulary, comprehension and spelling in addition to the core deficit of phonological awareness, thus identifying dyslexia from a multi-factorial lens and not only considering a single deficit to explain it (see Yeatman et. al. 2017 and Compton, 2020 for further elaboration on this concept). Additionally, the Working Group agreed that the necessary components include determination of other cognitive abilities and assurance of effective classroom instruction. The secondary characteristics for vocabulary and background knowledge would also need to be explored as measures for reading and writing abilities. The Assessment Matrix also includes reading accuracy and fluency. The Matrix ask examiners to consider word reading accuracy and describe the types of errors as omissions, mispronunciations, or substitution errors. Tasks can include the ability to understand symbolsound correspondences and the ability to read monosyllabic and multisyllabic words. Additionally, the *Assessment Matrix* suggest observing individual's ability to read words with morphemes or compound words as students with dyslexia may omit parts of the word as they read. The Assessment Matrix also includes measuring an individual's reading fluency skills. Tasks suggested for measurement include: Words read correctly per minute, and the ability to use appropriate phrasing and intonation based upon punctuation within the text.

Reading also requires cognitive skills such as working memory. Baddeley (1992) describes working memory as holding information in the mind and mentally working with it. Working memory deficits are associated with difficulties with reading comprehension and mathematics (Gathercole et al, 2007). Digit span forward and backward can assist in gaining insight into working memory as will the ability to follow multi-step directions. The Assessment Matrix recommend that examiners asses each of these tasks.

Reading comprehension is the end goal of reading. An individual must have sufficient oral language skills to comprehend text. Therefore, the Assessment Matrix recommends that examiners measure both receptive and expressive vocabulary skills. Additionally, the ability to understand figurative language and retell or summarize information can assist the evaluator in determining how well the person understands the text. Each of these skills are indicated in the Assessment Matrix.

Decoding skills would need to be increasingly automatic and the language comprehension skills more strategic for the attainment of skilled reading. Skilled reading was

defined as the fluent execution of and coordination of word recognition and text comprehension. Scarborough's model for reading development was therefore consulted while developing our framework for the assessment guidelines, as it aligns very well with the reading difficulties and the sub-skills related to dyslexia. Each of the essential skills are indicated on Table 2: Standardized Tests of the Assessment Guidelines.

Table 1. IDA Dyslexia Assessment Guidelines		
First: History		
1. Main Concern(s)		
2. Educational History		
3. Behavior/Emotional History		
4. Peer Interactions/Social skills		
5. Sleep		
6. Health		
7. Family History		
8. Social History		
Second: Standardized Tests		
9. Cognitive		
10. Phonological Awareness		
11. Rapid Automatic Naming		
12. Fluency		
13. Print Awareness		
14. Working Memory		
15. Decoding		
16. Spelling		
17. Oral Language		
18. Text Comprehension		
19. Writing		
Third: Formulation		
20. Diagnosis(es)		
21. Cognitive Processing		
22. Achievement		
23. Behavioral/Emotional		
24. Social interactions		
25. Medical		
26. Social/Environmental		
Fourth: Interventions		
27.Educational		
a. Remediation		

b. Modifications
c. Accommodations
28. Psychological
a. Behavior Modification
b. Cognitive Therapy
29. Medical
a. Medication
30. Environmental
a. Physical Facility Accommodations
b. Change of Educational Setting

To elaborate on some of the components above, the table below provides deeper levels of analysis for some of the areas mentioned in the table above:

Table 2: Standardized Tests of the Assessment Guidelines	
Overall Cognitive Abilities	
Oral Language Comprehension	
Language Skills	
Grammar/Syntax	
Vocabulary	
Inferencing	
Executive Functions	
Attention	
Working Memory	
Comprehension Monitoring	
Background Knowledge	
General	
Topic specific	
Genre & Text Structure	
Visual Spatial Abilities	
Processing Speed	
Working Memory	

Digit Span (forwards/reversed)		
Visual Sequential		
Multi-step directions		
Achievement Tests		
Word Attack Skills		
Decoding		
Sound Symbol Correspondence		
Phonological Awareness		
Word Discrimination		
Rhyme Recognition		
Rhyme Production		
Syllable Blending		
Syllable Deletion		
Syllable Segmentation		
Onset Rime		
Phoneme Recognition		
Phoneme Blending		
Phoneme Segmentation		
Phoneme Deletion		
Phoneme Manipulation		
Sight Word Recognition		
Orthographic Knowledge		
Matches words with pictures		
Letter recognition		
One-syllable words		
Multisyllabic words		
Affixes		
Roots of words		
Fluency		
Rapid Automatized Naming		
Color		
Object		
Number		

	Letter
R	ate
	Words per minute
	Hesitations >3 seconds
A	Accuracy
	Substitutions
	Omissions
	Mispronunciation
Р	rosody
	Groups words into meaningful phrases
	Punctuation
	Intonation
Readi	ng Comprehension
]	Language Skills
0	Grammar/Syntax
1	Vocabulary
I	nferencing
]	Executive Functions
A	Attention
V	Working Memory
0	Comprehension Monitoring
]	Background Knowledge
(General
Γ	Topic specific
(Genre & Text Structure
Spelli	ng
S	ound-Symbol Correspondence
C	One-syllable words
	Orally
	Written
N	Iultisyllabic words
	Oral
	Written

English Spelling rules	
Writing	
Fine Motor	
Pencil grip	
Motor sequential memory	
Manuscript	
Cursive	
Visual Spatial	
Word Spacing	
Letter orientation	
Writing mechanics	
Capitalization	
Punctuation	
Sentence structure	
Paragraph structure	
Cohesion	

While we appreciate that not every single assessment for dyslexia in English will address all of the aspects detailed in the table above, we expect that the majority of these skills are evaluated in order to arrive at a conclusion that the dyslexia assessment is thorough and inclusive. The quality of any such assessment can therefore be evaluated based on the above criteria and one can ascertain whether such an assessment is comprehensive or inclusive enough to reflect international standards in the field of dyslexia assessment.

Members of the Working Group requested feedback for the Assessment Matrix from several experts in language assessments for feedback and adjusted the final Assessment Matrix based on these recommendations.

Third Stage: Pilot Study. The <u>Third Stage</u> involved a pilot study of the Assessment Matrix during an April 2019 onsite visit to the Centre for Child Education and Teaching (CCET, the original requester of the Assessment Guidelines) in Kuwait. Two members of the Global Partners workgroup travelled and piloted the work before submitting a follow-up report to the rest of the committee detailing their findings. The Working Group members presented a symposium at the IDA's 70th Annual Conference (November 7-10, 2019) entitled "Anatomy of the Evaluation of the Student with Dyslexia: Global Perspectives." Internationally respected experts who attended the symposium provided valuable feedback which was then collated and incorporated into the Assessment Guidelines during the first half of 2020.

Two members of our workgroup (Gad Elbeheri and Eric Tridas) conducted an onsite, three-day pilot study visit at the Assessment Unit of the Centre for Child Evaluation and Teaching (CCET) in Kuwait City, Kuwait from 7th till 9th April 2019. The goal of the visit was to pilot the Assessment Guidelines Subcommittee's work thus far by considering both: Content and Process of the Assessment Guidelines.

The CCET Assessment Unit performs comprehensive evaluations in English and Arabic using standardized instruments. One of the members of our workgroup, Gad Elbeheri, is fluent in Arabic and an expert in the assessment of dyslexia. This enabled our team to test the model we proposed for the structure of the evaluation and the functions and skills to be assessed as detailed on the matrix in both languages. The team reviewed evaluation reports and documents, interviewed CCET staff and clients and observed evaluations. Using the Assessment Matrix, the team was able to summarize the following findings:

History. CCET staff gathers a through history through questionnaires and parent interviews. However, at least half of the interviews are conducted over the phone. No data is gathered from the teachers as most of them refuse to complete their questionnaire. Their questionnaires did not include questions about current developmental functioning. **Standardized Tests.** The CCET conducts evaluations in English and Arabic. They have a psychologist administer the IQ and phonological processing test and the Educational Specialists administer the remaining tests. They subsequently prepare a report which includes a summary of the history, each of their findings, including the diagnosis, and their interpretation of the tests. CCET developed their own standardized instruments in Arabic that measure phonological processing, working memory, reading, writing and mathematics. Two of the tests are similar to the Comprehensive Test of Phonological Processing and the Gray Oral Reading Test. CCET has also developed a working memory test (visual and auditory). Additionally, they evaluate handwriting, when necessary. CCET administers the WISC III in Arabic and just purchased the WISC IV adaptation. They need a good assessment of written language which they do not currently have nor include in the evaluation process. The team observed staff performing evaluations during the visit through one-way mirrors and video screens as cameras were placed above the testing table. The evaluators demonstrated excellent technique and obviously were experienced in the administration of standardized tests.

Formulation. CCET provides a diagnosis and a good summary of the findings in an introductory document. However, they do not always include a differential diagnosis or describe comorbid conditions. There seems to be a particular reluctance to list a neurobehavioral diagnosis, such as ADHD, even though they are aware of the symptoms. This maybe more of a cultural issue.

Treatment Plan. The evaluators provided excellent recommendations to address the specific challenges that were identified in the evaluation, including references and websites for parents to visit. There were limited recommendations for medical and/or psychological interventions. It was our impression that this was a culturally related issue.

The above feedback was provided to the Director of the Assessment Unit and to other relevant CCET staff. Findings of this pilot visit provided some validation to the proposed guidelines, including the components of the evaluation process, as well as the functions and skills to be assessed in the comprehensive assessment of persons with dyslexia and related disorders.

Limitations and Next Steps

The pilot project in Kuwait also highlighted limitations of this project. Primarily, the lack of implementation in multiple settings and languages. While the guidelines were successfully implemented in Kuwait, the components of the assessment guidelines were based upon English language research, and assessment practices in English speaking countries. Pilot testing must be completed in other settings and languages to ensure that our findings can be replicated worldwide.

The <u>Fourth Stage</u> for the sub-committee includes a review of the Assessment Guidelines by IDA Scientific Advisory Board. Once reviewed, the Global Partners Assessment Workgroup plans to pilot the assessment guidelines with other Global Partners after receiving approval from the IDA Board of Directors. One potential outcome of this process is that the format of these guidelines can be adapted to the assessment of dyslexia in different languages.

Additionally, while in Kuwait, the necessity for an efficient, online documentation collection process was realized. Much of the information that was gathered in-person can be collected online before meeting with organizations/individuals seeking accreditation. This would allow for stronger and cost-effective standardized procedures. This Global Partners workgroup intends to establish a systematic, online application process, which will allow for standardization of applicants worldwide and lower the operational costs of the process.

Conclusion

The International Dyslexia Association has had great success in the establishment of a Program Review for teacher education programs and Institutional Accreditation Process for Global Partners. As has been requested through members of the IDA Global Partners, it is now critical that IDA establish an accreditation process for the assessment tools and procedures used to identify individuals with dyslexia. The authors of this paper, and all members of the IDA Global Partners Committee, have taken the initial steps in developing general guidelines to inform dyslexia assessment practices that we hope can ultimately be used around the world. With review from the IDA Scientific Advisory Board and approval from the IDA Board of Directors, this important project can be advanced through pilot studies with additional Global Partners and the establishment of an online documentation process. A worldwide accreditation process for the assessment and identification of individuals with dyslexia upholds IDA's mission, "to create a future for all individuals who struggle with dyslexia and other related reading differences so that they may have richer, more robust lives and access to the tools and resources they need."

Appendices

Appendix 1: Assessment Definitions

Term	Definition
Accuracy-Mispronunciations	The incorrect pronunciation of a word or words during a reading.
Accuracy-Omit Words	The deletion of a word while reading a text.
Accuracy-Substitutions	The replacement of one word with another during reading.
Background Knowledge	Using what you already know about information contained in a
	text to increase comprehension.
Before and After Tasks	The ability to follow verbal or written information which requires
	the understanding to complete a task prior or subsequent to
	another task.
Capitalization	Ability to use capital letters when appropriate in the language.
Cohesion	Ability to demonstrate transitions of subjects or thoughts in a
	natural and smooth manner.
Cohesive Devices	The ability to connect thoughts in writing
Compound words	Words composed of two or more smaller words; it may or may not
	be hyphenated depending on its part of speech and conventions of
	usage.
Compound Words (Orally)	Words composed of two or more smaller words.
Compound Words (Written)	Written words composed of two or more smaller words; it may or
	may not be hyphenated depending on its part of speech and
	conventions of usage.

Term	Definition
Decoding	Ability to read and determine the pronunciation of a word by
	noting the position of the vowels and consonants.
Digit Span Backwards	The ability to listen to a series of numbers and repeat them in
	reverse order.
Digit Span Forwards	The ability to listen to a series of numbers and repeat them.
Drafting/Revising	Ability to create a composition and then receive feedback and
	correct/improve the original composition.
Fluency	The ability to translate print to speech with automaticity, correct
	intonation and prosody that allows the reader to focus on meaning.
Homophones	Words that sound the same but are spelled differently. (their,
	there and they're)
Individual Morphemes	Smallest unit of meaning in a language. For example, prefixes are
	an affix that can be attached to the beginning of a base word and
	can change the meaning of the word. A suffix is an affix that is
	added to the end of the word to create a word with a different form
	or use. A base word is a word that can stand alone or have an
	affix added to it.
Inference	A conclusion based on evidence and reasoning.
Irregular words	Words that have an unexpected spelling, either because its
	orthographic representation does not match its pronunciation or
	because it contains an infrequent orthographic representation of a
	sound.

Term	Definition
Irregular words	Words that have an unexpected spelling, either because its
	orthographic representation does not match its pronunciation or
	because it contains an infrequent orthographic representation of a
	sound.
Letter Sound Correlations	Paired association of the letter and the letter sound or sounds
Listening Comprehension	Listening comprehension encompasses the multiple processes
	involved in understanding and making sense of spoken language.
Match written words with pictures	Ability to match or relate the written word with the corresponding
	picture that represents that word.
Multi-Step Directions	The ability to listen to auditory tasks that require following a
	sequence in more that 2 steps.
Multisyllabic words	Words that contain more than one syllable.
Multisyllabic Words (Orally)	Auditory recognition of words that contain more than one syllable.
Multisyllabic Words (Written)	Read words that contain more than one syllable.
One syllable words	A spoken or written unit that contains one vowel sound and has
	meaning in a language.
Onset	The initial consonant or consonant cluster before the first vowel in
	a syllable.
Oral Language	The system through which we use spoken words to express
	knowledge, ideas, and feelings.
Oral Language	The system through which we use spoken words to express
	knowledge, ideas, and feelings.

Term	Definition
Oral Spelling	Ability to verbalize the correct spelling of a word
Paragraph Structure	Ability to understand that paragraphs should have a structure.
	Narrative, Expository, Persuasive, Compare and Contrast to name
	a few.
Parts of Speech	Ability to understand that words can function as nouns, verbs,
	adjectives, adverbs, prepositions, conjunctions etc
Pencil Grip	The ability to hold a pencil with a thumb and index finger and top
	of middle finger
Phoneme Blending	Combining two or more sounds to create a syllable or word.
Phoneme Deletion	Removing one or more phonemes from a word.
Phoneme Manipulation	The ability to modify, change, or move an individual sound in a
	word
Phoneme Recognition	Ability to identify the smallest unit of sound in speech.
Phoneme Segmentation	Breaking down a word into each individual sound.
Phonological Awareness	Knowledge of and sensitivity to the phonological/sound structure
	of words in a language.
Print Awareness	Children's appreciation and understanding of the purposes and
	functions of written language.
Print or Cursive/ Upper or Lower	Ability to form print and/or cursive letters
Case	
Prosody- Group Words into	A managements where since of seconds into an application for the second se
Meaningful Phrases	Appropriate phrasing of words into meaningful units.

Term	Definition
Prosody-Intonation	The pattern or melody of pitch changes revealed in connected
	speech.
Prosody-Punctuation	The accurate interpretation of pauses, stops, exclamation and
	questions while reading a text.
Punctuation	Ability to use written markings which for example demonstrate
	the end of a thought, a question, or a pause or excitement.
Rapid Automatic Naming	A speed naming task in which an individual is asked to quickly
	name a series of letters, colors, pictures of objects or numbers that
	are repeated randomly.
Rapid Color Naming	A speed naming task in which an individual is asked to quickly
	name a series of colors that are repeated randomly.
Rapid Digital Naming	A speed naming task in which an individual is asked to quickly
	name a series of numbers that are repeated randomly.
Rapid Letter Naming	A speed naming task in which an individual is asked to quickly
	name a series of letters that are repeated randomly.
Rapid Object Naming	A speed naming task in which an individual is asked to
	quickly name a series of objects that are repeated randomly.
Rate: Hesitation Over Three	A pause longer than three seconds during the reading of a text that
Seconds	interferes with fluency.
Rate: Words Per Minute	How many words per minute a student is able to read, in either a
	text or during a Rapid Automatic Naming exercise.

Term	Definition
Recognize Front of Book	Ability to differentiate between the front cover, right side up, as
	compared to other parts of the book.
Recognize Letters	Ability to identify printed letters.
Recognize Morphemes	The ability to identify base words, prefixes, and suffixes.
Recognize Words	Understanding that a group of letters creates a word and determine
	that words create complete thoughts or sentences.
Recognize Written Name	Ability to recognize the printed name.
Rhyme Recognition/Rhyme	The ability to identify and later create rhymes.
Generation	The ability to identify and later create mymes.
Rime	The vowel and final consonant in a syllable.
Sentence Combining	The ability to place 2 or more complete thoughts into one
	sentence.
Sentence Structure	Understanding how words can form various types of sentences.
Sound-Symbol Correspondence	The paired association between written letters or symbols and
	their corresponding sounds.
Spacing	Ability to sequence letters/symbols with appropriate spacing.
Spelling	The process or activity of transcribing the auditory signal into
	writing or naming the letters or symbols of a word.
Spelling Generalizations/Patterns	Ability to spell words by understanding and incorporating the
	common spellings of specific sounds which may change
	depending on their position within words.

Term	Definition
Spelling Patterns	Ability to spell words by understanding and incorporating the
	common spellings of specific sounds which may change
	depending on their position within words.
Spelling Rules	In English there are five major spelling rules that indicate when a
	letter should be doubled, dropped or changed.
Summarizing- Retell	To give a brief statement that contains the main points of a text.
Syllable Blending	To join two or more syllables to create a word.
Syllable Deletion	To remove a syllable from a word.
Syllable Segmentation	To break a word down into its syllables.
Text Type: Informational or	A paragraph or paragraphs that have a main idea, details and
Expository Structures	supporting details.
Text Type: Narrative Structures	A paragraph or paragraphs that have a beginning, middle and end
Verbal Reasoning	The ability to understand and problem solve
Visual Sequence Matching	The ability to look at a series of letters, words, pictures and find
	the two that are the same or related.
Vocabulary-Figurative Language	Language that uses words or expressions with a meaning that is
	different from the literal interpretation.
Vocabulary-Single Words	The knowledge of words and their meanings and how they can be
	used.
Vocabulary: Figurative Language	Language that uses words or expressions with a meaning that is
	different from the literal interpretation.
Word Discrimination	The ability to identify specific words in speech

Term	Definition
Words with Morphemes	Words that contain a base word, prefix and/or suffix.
Working Memory	Memory that lasts only briefly, has rapid input and then
	manipulation for output, is limited in capacity and depends
	directly on stimulation for its form.
Write Alphabet in Sequence	Ability to write the entire alphabet in the correct order.
Write Letters	Ability to write printed letters.
Write Name	Ability to use letters to write their own name.
Written Spelling	Ability to write the correct spelling of a word.

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