

Dyslexia Around the World: A Snapshot

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Today 195 countries exist in the world. The purpose of this review was to provide a global picture of the services and opportunities for individuals with dyslexia. The intent was not to provide an exhaustive review of each topic, but rather to provide examples of what is occurring in different countries around the world. Through an Internet search, available information was gathered for each country. Examples are provided to illustrate the wide range of available services, media sources, assessment practices, interventions, and attitudes regarding dyslexia around the world. Findings indicate that practices regarding dyslexia are influenced by a number of factors, including culture, the orthography of a language, policies, dyslexia awareness, teacher training, and the availability of assessments and interventions. Although many countries have taken proactive steps to improve the education and overall lives of individuals with dyslexia, in some countries, dyslexia is still not acknowledged or well understood and individuals with this reading disability are stigmatized.

Keywords: *Dyslexia, assessment, intervention, teacher knowledge*

Today, much of our information about a topic or subject is gathered from an internet search. Although the collected data may not always be accurate, the search is a quick, efficient way to learn about a topic and locate available resources. The purpose of this article is to explore the online presence of dyslexia and provide a snapshot into how dyslexia is viewed around the world.

Method

To accomplish this task, we entered each of the 195 countries' names with the key word "dyslexia" into a search engine. We then reviewed the first two pages of information that appeared for each country. Generally, results after the first two pages were only distantly related to our search and did not provide relevant information. The majority of results included such items as research

papers, newspaper articles, blog posts, and advertisements. Each result was logged on a chart categorized by country, type of website, and anything notable about the site. Any leads that were found from the original results were also investigated. For instance, a website on a school for those with dyslexia might have a resource page suggesting other websites and research articles. These sites, too, were also investigated. Through this process, commonalities were found among the results and we were able to categorize the acquired information into organizations, schools, and social media, such as Facebook pages; assessment practices; interventions; teacher knowledge; and the shame and misconceptions still associated with this reading disability. We then synthesized and summarized some of the key findings to provide an overview and illustrations of how dyslexia is perceived and addressed throughout

the world. Based on inconsistencies among information from different countries regarding many aspects related to dyslexia, we also compared information advertised in various internet sites to empirical data derived from peer-reviewed studies of dyslexia.

Organizations, Schools, and Social Media

Many countries had established organizations to increase dyslexia awareness and provide support to teachers and families. In many cases, these organizations also became members of a larger organization, such as the International Dyslexia Association (IDA) or the European Dyslexia Association (EDA). Another organization, Dyslexia International, focuses upon improving teacher training around the world.

International Dyslexia Association

The IDA is a U.S.-based, nonprofit organization dedicated to the advocacy of dyslexia. IDA was developed in the 1920s by Samuel T. Orton, founded in 1949, and is the oldest organization devoted to supporting individuals with dyslexia (<https://dyslexiaida.org>). IDA's mission is "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." They seek to achieve this goal through the development of standards for teachers, professional journals, hosting a yearly conference, and providing multiple resources to the community. IDA promotes evidence-based practices by supporting and disseminating relevant research.

The United States has 42 branches with 24 Global Partners around the world. Global Partners are international organizations that collaborate with IDA to support IDA's mission worldwide. Table 1 provides a list of the countries, organization titles, and web addresses of the participating Global Partners. IDA has over 10,000 members that include teachers, service professionals, parents, and individuals with dyslexia. IDA has an all-volunteer board of directors, Mission Initiative Teams, Task Forces, committees, and sub-committees each with specific goals and agendas. For instance, Educator Training, as well as Information & Support are two of the Mission Initiative teams. Advocacy and Media & Communication are two examples of task forces. In addition, the Global Partners Committee has developed an Institutional Accreditation process in which organizations worldwide can be recognized for having practices aligned with research and IDA's principles. A subcommittee of Global Partners is the Assessment Committee, which is currently developing a set of assessment standards that individuals can follow

worldwide to ensure the proper assessment and diagnosis of dyslexia.

European Dyslexia Association

The EDA is a non-governmental organization with 44 different member organizations from 25 European countries (<https://www.eda-info.eu>). This group was developed to encompass both national and regional associations that advocate for individuals with dyslexia. The EDA was founded in Brussels in 1987 and is legally established as a nonprofit organization. The EDA is dedicated to the mission of informing people and policy makers about how to support individuals with dyslexia by providing an appropriate education that helps individuals preserve their self-esteem. This association and its membership organizations provide training and advocacy for individuals with dyslexia, parents, teachers, and researchers. This organization is guided by the belief that all people with dyslexia are entitled to pursue education, training, and employment so they can reach their full potential. EDA notes on its website: "No Matter Which Country-No Matter Which Language-Dyslexia is Everywhere."

EDA incorporates both Effective members, which include the nine founder organizations, as well as Adherent members that include corporate bodies, as well as other entities. The Effective members are permitted to speak and vote at the General Assemblies, whereas the Adherent members can attend but cannot speak and vote. Table 2 lists the 21 Effective Members with their names and web addresses.

Dyslexia International

Throughout the different regions of the world, a number of initiatives are aimed at providing teacher training. One of the largest organizations that focuses on this purpose is Dyslexia International. With headquarters in Belgium, Dyslexia International is a nonprofit organization recognized by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Using a Scientific Advisory Panel comprised of well-known individuals with teaching, research, or practical experience in the field of dyslexia, Dyslexia International has developed several options for teacher training.

At the most accessible level, Dyslexia International provides free courses for teachers, such as Basics for teachers: Dyslexia—How to identify it and What to do (<https://www.dyslexia-international.org/ONL/EN/Course/Intro.htm>). These courses have been translated into a number of different languages and provide research-based information on the causes of dyslexia and the most up-to-date strategies that help struggling readers. To

Table 1
IDA Global Partners

Country	Organization	Website / Address
Australia	Australian Dyslexia Association AUSPELD	http://www.dyslexiaassociation.org.au http://auspeld.org.au
Austria	BALDT	http://lrs-therapeuten.org
Brazil	Brazilian Dyslexia Association	http://www.dislexia.org.br
Costa Rica	Centro de Dislexia de Costa Rica	http://dyslexiacenterofcostarica.org
Czech Republic	Czech Dyslexia Association	http://www.czechdyslexia.cz
Egypt	ADVANCE	http://www.advance-society.org
Ethiopia	FAILCD	http://fanaethio.org
Germany	Bundesverband Legasthenie und Dyskaikulie	https://www.bvl-legasthenie.de
Ghana	Campaign for Learning Disabilities	http://cledghana.org
India	Dr. Anjali Morris Education and Health Foundation Maharashtra Dyslexia Association Madras Dyslexia Association	http://morrisfoundation.in http://www.mdamumbai.com https://www.mdachennai.com
Ireland	Dyslexia Association of Ireland	http://www.dyslexia.ie
Israel	The Organization for Unlocking the Potential of Dyslexic Learners	https://www.guidestar.org.il/en/organization/580385714
Japan	Japan Dyslexia Research Association	http://square.umin.ac.jp/dyslexia
Jordan	Jordanian Dyslexia Association	P.O. Box 1932 11196, Amman-Jordan
Kenya	Dyslexia Organization, Kenya	http://dyslexiakkenya.org
Kuwait	Centre for Child Evaluation & Teaching	https://www.ccetkuwait.org
Latvia	Pro Futuro	http://www.disleksija.lv
Pakistan	Institute of Behavioral Psychology	http://ibpinternational.com
Philippines	Philippines Dyslexia Association	No. 28, 7 th Street, New Manila. Quezon City, Philippines
Singapore	Dyslexia Association of Singapore	https://www.das.org.sg
Spain	Madrid Dyslexia Association Project Difference - Universidad de La Laguna	http://www.madridconladislexia.org http://projectdifference.org
Taiwan	Taiwan Academy for Learning Disabilities (TALD)	http://c.nknu.edu.tw/TALD
Turkey	Turkey Dyslexia Foundation	http://ww1.turkiyedisleksivakfi.org
United Kingdom	Dyslexia Foundation	http://www.dyslexiafoundation.co.uk

reach a higher number of teachers with limited access to technology, Dyslexia International has also offered face-to-face teacher trainings in some of the most impoverished countries in the world. For example, in 2014, teachers in Ghana participated in a weekly intensive program delivered by Professor Linda Siegel. In order for a training to take place, the government of a country has to contact Dyslexia International, who will work with the government officials to develop and deliver the most appropriate program depending on the country's needs.

Other programs that have also been developed by Dyslexia International include World Dyslexia Forums, programs targeting Africa that focus on technology to increase literacy, and the e-Campus, which provides free resources for teachers and learners with dyslexia. These resources are supervised by the Scientific Advisory Panel and must cite or follow theories and methods that are scientifically proven and/or published in international, peer-reviewed journals. In addition, all resources must be free of charge.

Table 2
Effective Members of the European Dyslexia Association

Country	Organization	Website
Austria	Austrian Federal Dyslexia Association (OBVL)	http://www.legasthenie.org
	Styrian Dyslexia Association (STLL)	http://www.legasthenie-stll.com
	Initiative LEGA Vorarlberg (LEGA)	http://www.lega.at
Belgium	Belge, Association of Parents of Children with Learning Difficulties (APEDA)	http://www.apeda.be
Denmark	Danish Dyslexia Association	https://www.ordblindeforeningen.dk
Finland	Finnish Diverse Learners' Association (FINDER)	http://www.erilaistenoppijoidenliitto.fi
France	French Federation of Dys (FFDys)	http://www.ffdys.com
	French Association of Parents of Children with learning disabilities in written and oral language (APEDA)	http://www.apeda-France.com
Germany	German Dyslexia and Dyskalkulia Association (BVL)	http://www.bvl-legasthenie.de
Great Britain	British Dyslexia Association (BDA)	http://www.bdadyslexia.org.uk
	Dyslexia Scotland	http://www.dyslexiascotland.org.uk
Greece	Association of parents and guardians with children with dyslexia and learning difficulties of Thessaloniki and Northern Greece	http://www.dyslexia-goneis.gr
	Hellenic Dyslexia Association	http://www.dyslexia.gr/cms
Ireland	Dyslexia Association of Ireland (DAI)	http://www.dyslexia.ie
Italy	Italian Dyslexia Association (AID)	http://www.aiditalia.org
Lithuania	Lithuanian Dyslexia Association	http://www.disleksija.ku.lt
Luxembourg	Dyslexia and Special Education Needs (DYSPEL)	http://www.dyspel.org
Malta	Malta Dyslexia Association (MDA)	https://www.facebook.com/MaltaDyslexia Association
Netherlands	National Parents association Balans (UC on Association Balans)	http://www.balansdigitaal.nl
Norway	Dyslexia Norway	http://www.dysleksinorge.no
Poland	Polish Dyslexia Association	http://www.ptd.edu.pl
San Marino	San Marino Dyslexia Association (ASD)	https://it.facebook.com/AssociazioneSammaringeseDislessia
Slovenia	Bravo Association for helping children and adolescent with specific learning difficulties (BRAVO)	http://www.drustvo-bravo.si
Spain	Catalan Association of Dyslexia (ACD)	http://www.acd.cat
	Dyslexia Canary Islands and other Learning Difficulties	http://www.dislecan.es
	Asociación Dislexia y Familia	http://www.disfam.org/disfam
Sweden	The Swedish National Dyslexia Association (FMLS)	http://www.dyslexi.org
Switzerland	Swiss Dyslexia Association (VDS)	http://www.verband-dyslexie.ch

Schools, Centers, and Clinics

Many countries have schools, centers, or clinics that are dedicated to providing an appropriate education to students with dyslexia. Some of these countries include the United States (e.g., AIM Academy, which originally stood for Academy in Manayunk, Athena Academy, Beacon College, Eton Academy, Hillsprings Academy, Lab School, Landmark, Odyssey School, Park Academy), England (e.g., Appleford School, Calder House School, Chiltern Tutorial School, Fairley House School, Frewen College, Knowl Hill School, Mark College, Moon Hall School, Unicorn School), and the United Arab Emirates (e.g., Lexicon Reading Center, Taleem Training and Skill Development Center) have numerous schools that serve students with dyslexia. Table 3 provides examples of schools, centers, and clinics in several countries.

Social Media

Facebook and other social media outlet pages are also common. In some instances, these pages were developed

by a local organization or parents of children with dyslexia. Table 4 provides examples of Facebook pages and Twitter Handles. Facebook pages and Twitter discussions are helping spread awareness about dyslexia. Specifically, Facebook pages are creating a platform for individuals dealing with dyslexia to come together in order to share and find resources. Twitter discussions are also engaging individuals in meaningful international discussions about dyslexia, such as in 2005, when the organization Decoding Dyslexia (@DDCalifornia) tweeted about a new California dyslexia law being passed. Table 4 provides some examples of the organizations with a social media presence.

Assessment

Assessment practices vary considerably around the world. Some countries have many practitioners who perform comprehensive assessments for dyslexia, whereas others have no practitioners and no standardized instruments. Assessment is also influenced by the country's definition of dyslexia, the country's language, as well as the

Table 3
Examples of Schools, Clinics, and Centers around the World that Serve Students with Dyslexia

Country	School
Bahamas	Blairwood Academy
Bahrain	Children's Academy Bahrain
Brazil	St. Nicholas School
Canada	Fraser Academy
China	Weining Dyslexia Education Center
Costa Rica	Dyslexia Center of Costa Rica
Czech Republic	Dys-Centre in Prague
Egypt	Lighthouse Learning Center
England	Nunnykirk Centre for Dyslexia
Lebanon	Lebanese Center for Special Education
Luxembourg	dys-positiv, dispel
Namibia	Edublox (Australian Based Company)
New Zealand	SPELD NZ
Nigeria	Dyslexia Nigeria
Norway	Skagerak International School
Philippines	Wordlab
Puerto Rico	Multisensory Reading Centers of Puerto Rico
Scotland	Prestwick Academy
Singapore	Winstedt School
South Africa	Gow School for Dyslexia
Switzerland	International Psychology Services
Thailand	St. Andrews International School
Trinidad & Tabago	The Morris Center
Uganda	Center for Lifelong Learning
United Arab Emirates	Dyslexia Dubai and Learning Difficulty Clinic
United States	Landmark School
Wales	Tomorrow's Generation Launchpad
Zimbabwe	National Institute for Learning Development Zimbabwe

types of assessment instruments that are available. Several countries have developed their own measures of dyslexia, whereas others have translated and adapted measures that were developed in other nations. Some have also developed online assessments.

Definitions and Correlates of Dyslexia

Many of the countries include a definition of dyslexia on their websites. One difference among the definitions of various countries is the cognitive and linguistic factors that are included as the correlates and/or root causes of dyslexia. The definition that is used by a country is significant because it can dictate the extent and type of assessments that are used in an evaluation. For example, the IDA definition clearly specifies that the reading and spelling difficulties "...typically result from a deficit in the phonological component of language" (Lyon, Shaywitz, S., & Shaywitz, 2003). Thus, within the United States, an evaluator may limit the diagnosis of dyslexia to phoneme awareness when a student may really be having problems with something else, such as mastering orthographic patterns (Brady, 2019). Many other countries have embraced the IDA definition, but others have included additional factors. For example, the EDA definition indicates that dyslexia may be "...caused by a combination of difficulties in phonological processing, working memory, rapid naming, sequencing and the automaticity of basic skills."

Studies in many countries have supported the finding of several cognitive correlates of dyslexia. For example, Peng, Wang, Tao, and Congying (2017) conducted a large meta-analysis (81 studies including 9,735 Chinese children) that compared students with reading difficulties to typically developing age-matched controls. Overall, the children with reading difficulties had lower scores on measures of rapid naming, orthographic knowledge, working memory, and morphological awareness. Similarly, in a study of 1,305 Arabic-speaking children, Asadi, Khateb, Ibrahim, and Taha (2017) found that memory and orthographic knowledge contributed to reading accuracy and fluency, while phonological awareness contributed mainly to accuracy, and rapid naming mainly to fluency. One must, however, consider the linguistic demands of the language (e.g., in both Chinese and Arabic, readers have to use a combination of skills to read and write words, including breaking up words into sounds, but also memorizing characters and using morphology and semantic clues). Thus, in these languages, an assessment would often include measures of visual or working memory. In other languages, such as Spanish, rapid naming appears to be a key factor that helps identify students at risk for dyslexia. In a study with 116 first-grade Spanish-speaking children, the best

predictors of reading accuracy for words and pseudowords were phonemic awareness, phonological memory, and alphanumeric rapid naming, whereas reading speed was best predicted by alphanumeric rapid naming (González-Valenzuela, Díaz-Giráldez, & López-Montiel, 2016). In line with the findings of this type of research, an IDA Fact Sheet on universal reading screening for K-2 students recommends that assessments should include measures of rapid automatic naming, phonological memory, and nonword repetition (IDA, 2017).

Assessment Instruments

Several of the countries' websites had links or descriptions of dyslexia tests that they had developed. Some countries have developed screening measures, whereas others have created more in-depth assessments. In some countries developing assessments has been challenging due to the use of numerous regional languages. Researchers in some countries have translated commonly used tests from other countries into their own languages. Several countries have also developed computerized reading and writing tests. Below are some examples of regional dyslexia assessments.

Danish Dyslexia Test. In 2012 in Denmark, the Danish Ministry of Education commissioned researchers at the Centre for Reading Research (University of Copenhagen) and the Danish School of Education (Aarhus University) to create a dyslexia test that could be used to assess all students from grade 3 (age 8) through university levels. The test was released in 2015 and is now used by all 98 local authorities through all levels of education. The major goals are to identify dyslexia at an early age, as well as all ages, so that targeted interventions can be provided to increase and reduce social problems.

The measure consists of two phonological coding tests that are each timed for one minute: a measure of nonword spelling (find the appropriate spelling) and a measure of pseudo-homophone reading (find the word that sounds like a real word). The same version of the computerized test is administered to all ages. A large research study of all ages ($N = 1264$) demonstrated that the test discriminates between those receiving special reading support and those who do not (Poulsen, Elbro, Møller, Juul, Petersen, & Arnbak, 2016). More information about this assessment can be found at the Centre for Reading Research, University of Copenhagen, the Ministry of Education website, and the website: <https://humanities.ku.dk/collaboration/impact/a-dyslexia-test-for-all-school-levels/>.

Malay. Lee (2008) developed a ten-test instrument to help identify students with dyslexia in Grade 1 that was administered to 117 students. The official language

Table 4
Examples of Countries with Organizations with Social Media Presence

Country/Organization	Facebook	Twitter
Botswana <i>Special Needs Association of Botswana</i>	www.facebook.com/Support-For-Learning-Botswana-1576079345976466	
Canada <i>Dyslexia Canada</i>	www.facebook.com/dyslexiacanadaorg	@DyslexiaBC
Costa Rica <i>Dyslexia Costa Rica</i>	www.facebook.com/dyslexiacr	
Cyprus <i>Cyprus Dyslexia Association</i>	www.facebook.com/Cyprus-Dyslexia-Association-169744216596	
Indonesia <i>Dyslexia Parent Support Group</i>	www.facebook.com/BicaraDisleksia	
Ireland <i>Dyslexia Ireland</i>	www.facebook.com/DyslexiaIreland	@DyslexiaIreland
Jamaica <i>Jamaica Dyslexia Association</i>	www.facebook.com/JamaicaDyslexiaAssociation	
Kuwait <i>Kuwait Dyslexia Association</i>	www.facebook.com/q8dyslexia	@Kuwait_Dyslexia
Malaysia <i>Dyslexia Malaysia</i>	www.facebook.com/dyslexia.malaysia	
Malta <i>Malta Dyslexia Association</i>	www.facebook.com/MaltaDyslexiaAssociation	
Norway <i>Dysleksi Norge</i>	www.facebook.com/DysleksiNorge	@DysleksiNorge
Puerto Rico <i>Asociación Puertorriqueña de Dislexia</i>	www.facebook.com/apdprinfo	
Scotland <i>Dyslexia Scotland</i>	https://www.facebook.com/DyslexiaScot	@DyslexiaScot
Senegal <i>Arcadia Dyslexia Africa</i>	https://www.facebook.com/Arcadia-Dyslexia-Africa-724777757549259	
Singapore <i>Dyslexia Association of Singapore</i> <i>Singapore Dyslexia Resources</i>	https://www.facebook.com/DysSG https://www.facebook.com/SingaporeDyslexiaResources	@dysSG
Sudan <i>Dyslexia Sudan</i>	https://www.facebook.com/dyslexiasuda	
Thailand <i>Dyslexia in Thailand</i>	https://www.facebook.com/Dyslexia-in-Thailand-821106654607651	
Turkey <i>Turkish Dyslexia Association</i>	https://www.facebook.com/Turkishdyslexia	
Uganda <i>Dyslexia Advocacy Uganda</i>	https://www.facebook.com/suubik	
Ukraine <i>Dyslexia in Ukraine</i>	https://www.facebook.com/Dyslexia.in.Ukraine	
United Arab Emirates <i>UAE Emirati Dyslexia</i>	https://www.facebook.com/UAE.Dyslexia	
United Kingdom <i>British Dyslexia Association</i>	https://www.facebook.com/bdadyslexia	@BDAdyslexia
United States of America <i>International Dyslexia Association</i> <i>Decoding Dyslexia (AZ; available in each state)</i> <i>Learning Disabilities Association of America</i>	https://www.facebook.com/DyslexiaIDA https://www.facebook.com/DecodingDyslexiaAZ https://www.facebook.com/LDA of America	@DyslexiaIDA @DDAZ16 @LDAAmerica
Yemen <i>Dyslexia Friends in Yemen</i>	https://www.facebook.com/YemenDyslexia	
Zimbabwe <i>Dyslexia and Learning Difficulties Support Zimbabwe</i>	https://www.facebook.com/Dyslexia-and-Learning-Difficulties-Support-Zimbabwe-123618837805986	

of Malay is Malay (Bahasa Melayu), a transparent orthography. Children in first grade learn to read both in Malay and English. The test included the following measures: Letter Naming (naming 18 letters), Word Reading (reading 50 words), Non-word Reading (reading 20 non-words), Spelling (spelling 25 items), Passage Reading (reading two passages), Reading Comprehension (answering comprehension questions about the passages), Listening Comprehension (listening to two passages and answering questions), Phonological Awareness-Elision (saying a nonword and then deleting syllables and phonemes), Rapid Letter Naming (naming letters quickly), Verbal Short-Term Memory (repeating digits in order), and Non-Verbal Reasoning (completing various matrices). Although phonological awareness was the best predictor of word reading skills followed by rapid naming, a four-factor solution was extracted. Factor 1 is described as phonological decoding; Factor 2 as phonological naming (both untimed and timed letter naming); Factor 3 as comprehension (both listening and reading comprehension); and Factor 4 as short-term memory. Lee noted that despite the differences in orthography, marked similarities existed in the theoretical reading-related constructs of dyslexia in both Malay and English.

Japan. In a study from Japan, a test battery was created to explore dyslexia characteristics in Japanese Kana (Ogawa, Fukushima-Murata, Kubo-Kawai, Asai, Taniai, & Masataka, 2014). The writing system of the Japanese language has three main scripts: Kana (Hiragana and Katakana), Kanji, and Romaji and is based on both phonograms and ideograms. The two syllabaries each represent all of the sounds in the Japanese language. The test included four abilities: analysis of phonological structure (isolating sounds and segmenting sounds), letter-to-sound conversion (six reading tests and six writing tests), visual information processing (figure-ground perception and spatial relations), and eye-hand coordination (drawing lines). Twelve children with reading impairments were administered the tests. Results indicated that students had different cognitive profiles despite all having reading and writing difficulties. Although Kana was easy to break into phonological units, the students had trouble linking letters to their individual sounds. In addition to this measure, the Japan Dyslexia Society lists that one of its activities is to develop a Japanese dyslexia test (Retrieved from <http://www.npo-edge.jp/about/englishpage/>).

Indonesia. An Indonesian comprehensive test battery for identifying students with early reading difficulties and dyslexia in Grades 1 and 2 was developed by Japs, Borleffs, and Maassen (2017). Standard Indonesian, which is spoken by over 160 million people, has a highly transparent orthography with only one grapheme having two possible

pronunciations. The test attempted to measure: the reading-related cognitive and linguistic factors that underpin dyslexia, the unexpected nature of dyslexia, and relevant reading and writing skills. The cognitive tests consisted of seven measures: phonological awareness (phoneme deletion), rapid automatized naming (RAN digits, letters, and colors), verbal memory (forward and backward digit span), and verbal fluency (name as many words as you can that begin with a /s/sound). To measure the unexpected nature of dyslexia, a matrices reasoning task and timed arithmetic task were administered. The reading and writing tests included measures of word reading, nonsense word reading, spelling, and an orthographic choice task. The results differed for students in Grade 1 and 2. The phoneme deletion task correlated with decoding fluency in Grade 1, but not in Grade 2, whereas the RAN tasks were more highly related to reading in Grade 2. As with other transparent orthographies, basic decoding skills are mastered early so that the importance of phonological awareness decreases and the relevance of speeded tasks, such as RAN, increases.

India. In a large, ambitious project, the National Brain Research Centre under the leadership of Nandini Chatterjee Singh and her team, developed the Dyslexia Assessment for the Languages of India (DALI). This project was supported by the Cognitive Science Initiative of the Department of Science and Technology of the Government of India and was normed with 4,840 children in classes 1-5. Although additional languages are under development, DALI is currently available in four different regional languages: Hindi, Marathi, Kannada, and English. The battery has a Junior Screening Tool (classes 1-2) and a Middle Screening Tool (Classes 3-5) available for teacher use. An additional eight tests are designed to be used by psychologists. Both the screening tools and assessment batteries are available at no cost at <http://14.139.62.22/DALI/index.php>

Netherlands. Researchers in the Netherlands developed the protocol for dyslexia diagnosis and treatment (Protocol Dyslexie Diagnostiek en Behandeling, 2013). For the purpose of dyslexia assessment, children must demonstrate serious reading problems (below the 10th percentile) in reading accuracy and fluency, as well as poor spelling abilities combined with two low scores on the following processing skills: accuracy and speed of phonological processing, accuracy and speed of sound-letter mapping, and speed of naming digits and/or numbers (Protocol Dyslexie Diagnostiek en Behandeling 2.0, 2013). A widely used test to establish this criteria is the Dyslexia Screening Test (Dutch version: DST-NL), which measures literacy skills, RAN, working memory, phonological awareness, reading ability, and spelling ability. Children in the Netherlands periodically participate in this assessment

and are determined to be “at risk” for dyslexia or are diagnosed with dyslexia in order to receive treatment and accommodations.

Translated Assessments

Some researchers in countries have translated tests that are widely used as part of a comprehensive dyslexia assessment in other countries. As examples, in Jordan, Abu-Hamour, Mattar, and Al-Hmouz (2018) translated and renormed parts of the Woodcock-Johnson IV (WJ IV) (Schrank, McGrew, & Mather, 2014) into Arabic. Certain tests from the WJ IV battery are often used in the United States in a comprehensive evaluation for dyslexia (Proctor, Mather, & Stephens, 2015). In Iran, Pouretamad, Khatibi, Zarei, and Stein (2011) developed a reading test to assess the prevalence of dyslexia in monolingual Persian students based upon the *Neale Analysis of Reading Ability*, which was developed in England (Neale, 1989).

Computerized Assessments

Other researchers in countries have developed computerized reading and writing tests that are used to help diagnose dyslexia. One example is the Brazilian-Portuguese computerized reading and writing assessment battery (BALE) (Macedo, Capovilla, Diana, & Covre, 2002). The seven tasks on the BALE assess aspects of oral language, as well as reading and writing both words and nonsense words. One study compared 28 students with dyslexia to a group of age-matched controls and a group of reading-level matched controls (Toledo Piza, de Macedo, Miranda, & Bueno, 2014). The students with dyslexia had lower nonsense word reading, slower reading speeds, and lower spelling scores than the younger readers. Another example is the EVALEC, a French measure of reading-related skills (phonemic awareness, syllable awareness, RAN, and short-term memory) and reading (three oral reading and one silent reading test) (Sprenger-Charolles, Colé, Béchennec, & Kipffer-Piquard, 2005).

One additional example is Logos, which was developed by Professor Torleiv Høien of Logometrica. This online assessment has a version for Grades 1-2 (13 subtests) and Grades 3-5 (17 subtests), and includes a variety of measures, such as phonological awareness, rapid naming, verbal short-term memory, and word reading. It is available in English, Danish, Norwegian, and Swedish and assesses both accuracy and reading speed as well as provides implications for intervention (Retrieved from <https://logometrica.com/om-oss>).

Interventions

A number of websites from various countries included links or descriptions of specific reading interventions. In

some cases, these interventions have then been adopted and adapted by other countries. For example, the Dyslexia Association of Singapore (www.das.org.sg) has developed a method, the Main Literacy Programme, that is derived from the results of the National Reading Panel (2000), as well as the basic principles of Orton-Gillingham. Although perhaps not as well known in the United States, the Davis method, has a large international presence. In addition, some countries have collaborated to implement innovative intervention projects. Below are some examples of interventions being used throughout the world.

Australia

The Australian Dyslexia Association does not endorse one method, but rather states that a Multisensory Structured Language intervention that provides direct, explicit, systematic instruction to students is essential (<http://dyslexiaassociation.org.au/what-treatment-is-appropriate>). One example of such a system in Australia is MultiLit (“Making Up Lost Time In Literacy”), a research initiative of Macquarie University (<http://www.multilit.com>) that began in 1995. The goal of the program is to provide direct, systematic, individualized reading instruction for “low progress readers.” Numerous products and professional workshops are available. Research supports the efficacy of the interventions (e.g., Wheldall, Wheldall, Madeline, Reynolds, & Arakelian, 2017).

Canada

Canadian neuroscientist, Dr. Maureen Lovett, and her team developed Empower™ Reading, a language remediation program that encompasses decoding, spelling, vocabulary, and comprehension components. The program, designed for students with dyslexia, contains 110 lessons and includes five strategies for decoding and spelling words. The remedial lessons are an hour daily and it takes about a year to complete the program. Teacher mentoring and professional development are also provided. The program is offered at the Hospital for Sick Children in Toronto and has been implemented with over 20,000 children in 30 school districts in Ontario. As of 2016, it is also being used in India. Additional information and research results are provided at <http://www.sickkids.ca/empower/index.html>

Finland

Among alphabetic languages, Finnish is one of the most transparent languages, having only 30 graphemes with consistent sounds to master. The Jyväskylä Longitudinal Study of Dyslexia has been funded by the Academy of Finland to follow 100 children at risk for developmental dyslexia. As part of this project, a computer intervention

program called GraphoGame was developed to facilitate reading development. Professor Heikki Lyytinen began development of this program in the early 1990s. From 2008, this program has been funded by the Ministry of Education and Culture and provided to all Finnish children at no charge. Over 270,000 children have played this game ranging from beginning readers who are working on letter-sound correspondences to more advanced readers who need assistance with reading fluency. The program saves players' logs that can then be analyzed to determine specific areas of difficulty. Implementation of this game is now underway in 30 different countries, including Africa (Lyytinen, Erskine, Hämäläinen, Torppa, & Ronimus, 2015).

Malaysia

In a number of countries, children are screened for dyslexia and then referred to special centers for intensive academic interventions and small group instruction. For example, children in Malaysian schools who fall behind in reading, despite adequate instruction, are assessed for dyslexia using assessment tools, such as the battery developed by Lee (2008) and then recommended for special interventions. Interventions usually include explicit phonics instruction and even a recommendation for temporary transfer to a school run by the Dyslexia Association of Malaysia. This transfer is for a period of approximately three months in order to receive intensive small group interventions. Children may remain in the centers for longer periods of time if they need further intervention or if their parents and teachers believe the placement is beneficial.

Malta

Many countries around the world are taking advantage of technological advances in order to provide interventions for children with dyslexia. In Malta, as part of the One Tablet Per Child initiative funded by the government, children were provided with reading intervention programs and games that focus on explicit phonics instruction (Reljic, 2015). One specific game, Words Matter, was developed by researchers at the University of Malta. The game guides students through activities in an encouraging and engaging manner. The program, aimed at students aged nine through 11, provides students with explicit phonics teaching that can be completed independently and at the appropriate reading skill level.

Davis Method

One surprising finding regarding interventions was the widespread, international use of the Davis method. Davis Dyslexia Association International describes and provides

the following professional services: Davis™, including Davis™ Dyslexia Correction, Davis™ Symbol Mastery, Davis™ Orientation Counseling, Davis™ Attention Mastery, Davis™ Math Mastery and Davis™ Reading Program for Young Learners. These programs are provided by persons who are trained and licensed as Davis Facilitators or Specialists. There are at least five websites linked to this methodology. Providers exist all around the world in over 40 countries (See www.davismethod.org for a map of countries with the numerous practitioners providing these services).

In addition to English, services are also provided in 30 different languages, including Spanish, Danish, Russian, French, Italian, Dutch, and German. The cover of the book, *The Gift of Dyslexia*, states, "The World's Most Widely Used Method of Correcting Dyslexia and Other Learning Problems" (Davis & Braun, 2010). Although the Davis method appears to be the world's most widely used method, it is clearly not the world's most evidence-based intervention method.

The basic assumption of this method is that individuals with dyslexia have special visual-spatial talents and are creative, imaginative, conceptual thinkers. They think mainly in pictures, rather than in words. The authors believe that although a gift, this type of thinking causes distortions when reading and individuals become disoriented when reading words that they cannot picture. This disorientation then makes reading and writing more difficult (p. 13). The method is then designed to teach individuals how to use their unique way of thinking to overcome their dyslexia. The basic training is for children 8 years and older and is typically provided over five consecutive days. Examples of activities in the therapy include doing alignment exercises to turn off the disorientations; creating uppercase and lowercase letters, punctuation marks, and words from clay; reciting the alphabet forward and backward; and mastering trigger words, the most common words in the English language. A program is also available for young readers.

In trying to locate efficacy studies that support the use of this method, most of the cited research involves studies with small sample sizes, single case studies, and anecdotal reports from both parents and clients. The existing studies are summarized on the Davis™ website: dyslexia.com. In a blog post on February 24, 2008, Liz Ditz, a dyslexia consultant, described two fundamental issues that concerned her about this method (http://lizditz.typepad.com/i_speak_of_dreams/2008/02/a-civilized-dis.html). First, the method was invented in the 1980s and does not incorporate new research from brain imaging, and second, there are no independent, objective evaluations of its efficacy. She further noted that in order

for the program to have credibility, it would be necessary to review results from a randomized, controlled study that had a sufficiently large number of participants, included pre- and post-treatment reading measures, and compared three groups: a known program that trains phonological processing and decoding skills, the Davis Method, and a control group. The results would need to demonstrate that the Davis Method was superior in improving reading, as measured by the pre- and post-treatment measures. We could not find any studies of this nature. Several theoretical assumptions about the Davis Method have yet to be verified, including (a) that the reading and spelling problems are caused by disorientation; (b) that individuals with dyslexia think with pictures, not words; (c) that the mental function that causes dyslexia is both a gift and a talent; (d) that individuals with dyslexia are more creative than the average person and have superior visual-spatial abilities; and, (e) that the therapy actually resolves dyslexia. Believing that dyslexia is a special gift or talent may, however, at least in the short-term, have a positive impact on self-esteem as many parent testimonials indicate. Recently, a panel of researchers and practitioners gathered to discuss the unique neurocognitive profile of people with dyslexia. They concluded that the purported visual-spatial strengths and talents in non-verbal areas may exist in some individuals with dyslexia, but there is still a lack of well-designed research to explore this issue (Gilger, 2017).

Collaborative Projects

An interesting finding was the existence of several collaborative intervention projects between one country and another. Typically, these projects have been funded by large grants from organizations or governments. Below are some examples of such partnerships.

Chile. Funded by a grant from the Economic and Social Research Council, the University of Oxford and the University of Chile partnered to provide a reading intervention program to children on Robinson Crusoe island, a small island with 800 inhabitants that is 667 kilometers west of Chile. The inhabitants have an unusually high prevalence of speech and language impairments. The United Kingdom research team included Dr. Dianne Newbury and Professor Maggie Snowling from the University of Oxford and Professor Charles Hulme from the University College London. The University of Chile team included Professor Pia Villanueva, Professor Zulema de Barbieri Ortiz, and Professor María Angélica Fernández. The project was intended to run from February 2016 to September 2018. The central goal of the project was to provide a literacy intervention that would be effective with isolated, rural, and indigenous populations.

The following link provides a description of this project: <https://www.psy.ox.ac.uk/research/snowling-group/wellcome-reading-and-language-project/language-and-reading-intervention-chile>

Guyana. In 2013, the Australian Government funded a Literacy and Numeracy intervention program for students from the Trafalgar/Union Community on the West Coast of Berbice. This program was designed to address the needs of students with dyslexia, dysgraphia, and/or dyscalculia. The intervention was described as a “great success.” Retrieved from <https://www.kaieteurnews.com/2013/11/17/special-education-needs-specialist-sherwin-fraser-is-a-special-person/>

Honduras. Lindamood-Bell from the United States has been working with Escuela Internacional (EIS) in San Pedro Sula and La Lima, Honduras (EIS) since 2005. Initially, their staff provided training workshops to the teachers. In 2011, a partnership was formed that included teacher training, mentoring, and consulting, as well as implementation of their various programs with 247 children for an average number of 150 hours. A video that describes this partnership is available at: <https://youtu.be/C7fFoPwwQY>

Thailand. The organization, Dyslexia Thailand has partnered with a main stream school in the United States and a learning center to form Orton-Gillingham (OG) based programs. Originally developed in the United States, OG is an approach to teaching reading and writing that is explicit, systematic, multisensory, and phonics-based. The Berkley International School in Bangkok provides a 6-week residential program. Teachers from this school are trained at the Kildonan School in New York and provide individualized, OG instruction. At the Village Education Center, Dyslexia Programme teachers are trained by Dyslexia Thailand and provide interventions that consist of teaching letter and letter combinations in a specific order, explicit instruction of letter-sound strings, spelling rules, high frequency words, decoding skills, metacognition, and sentence and text level skills as students progress. More information is available at (<http://www.dyslexiainthailand.com//solutions-in-bangkok.php>).

The above provides examples of some of the services and strategies being used around the globe. While OG, the Davis method, and Lindamood Bell were the most commonly found interventions, the most prevalent theme regarding interventions was the lack of them. Most articles, blogs, and postings were about parents not having anywhere to get help and assistance. Many countries do not have schools that provide interventions or teachers who are trained in how to use interventions. Families with financial means often send their children to other countries

to receive help but for many struggling readers around the world, appropriate interventions are unavailable.

Teacher Knowledge

Another common topic found within the blog posts, articles, and websites reviewed was the difficulty in finding teachers within schools who understood the support and instruction needed for children with dyslexia. Further investigation revealed a number of research articles supporting a lack of teacher knowledge about dyslexia. The results of a few of these studies are described below.

Great Britain

Several research studies have taken place in England, Scotland, and Wales. Patterns of participant confusion about the meaning and treatment of dyslexia persist throughout. For example, Bell, McPhillips, and Doveston (2011) asked English and Irish teachers to identify fundamental areas of difficulty for students with dyslexia. The English teachers believed problems with memory, processing, and visual skills to be the greatest underlying problems. Only two teachers mentioned phonological awareness skills as a significant difficulty. Most Irish teachers selected memory as the most significant difficulty. The other 42 responses were mixed among co-existing difficulties, processing difficulties, attention difficulties, and social emotional difficulties.

In another study, Washburn, Binks-Cantrell, and Joshi (2013) examined pre-service teacher knowledge in both the US and UK. Of the 70 English participants, the majority of pre-service teachers believed that visual deficits were the major cause of dyslexia, rather than phonological impairments. Most teachers seemed to understand that environment is not a cause of dyslexia, as well as the fact that dyslexia exists in all languages.

Kuwait

In the one study found to have been completed in this region, 75 Kuwaiti school teachers were surveyed on their knowledge of dyslexia (Aladwani & Al Shaye, 2012). The survey results indicated that teachers lacked preparation for working with students with dyslexia. Forty-three percent of the teachers had not taken any, or only one, workshop on dyslexia, and 33% had never read a book pertaining to dyslexia. Most teachers rated themselves as only moderately knowledgeable about dyslexia. Teachers with higher education levels were significantly more prepared to support students with dyslexia. Interestingly, no differences were found between a teacher's level of preparedness and the length of time teaching.

Peru and Spain

Soriano-Ferrer, Echegaray-Benoga, and Joshi (2016) investigated Spanish-speaking teacher knowledge in a study of 513 pre- and in-service teachers from Peru and Spain. They discovered that in-service teachers had greater knowledge overall than pre-service teachers, with pre-service teachers having more misconceptions than in-service teachers. In-service teachers scored higher in the areas of general information about the origins and outcomes of dyslexia and symptoms and diagnosis. No significant differences existed between the two groups in the area of treatment. Specific item analysis indicated that 75-80% of all of the teachers understood that dyslexia was language based.

Portugal

In Portugal, 50 teachers participated in a survey (Carvalhais & da Silva, 2010). The results indicated that 74% of the teachers felt they had never received support to work with students with dyslexia, even though nearly half of the teachers were already working with such students. Moreover, 66% of the teachers never received any training about dyslexia. The researchers suggested the need to evaluate and possibly revise both teacher preparation programs and in-service teacher support for preparing and training teachers in Portugal to help students with dyslexia. In another study exploring teacher knowledge and awareness of dyslexia, 100 teachers completed a survey with simple, closed ended questions (Leite, 2012). Conclusions from this study revealed that regardless of level of experience and training, the majority of teachers did not have even basic knowledge to screen, evaluate, or provide interventions for students with dyslexia.

United States

In a 2010 study, Ness and Southall surveyed 287 pre-service teachers. Only 2% of participants defined dyslexia as a language-based learning disability with the majority attributing difficulties to visual problems. Almost half (40%) described dyslexia as reading or writing words out of order or in the wrong direction. Nineteen percent felt they could not provide any instructional support to students with dyslexia and one-third felt that they were not well prepared. Similarly, Washburn and colleagues (2011) investigated teacher knowledge of basic language constructs and dyslexia in 185 kindergarten through fifth-grade teachers from two different states. Ninety-one percent of the teachers believed seeing letters backwards is a characteristic of dyslexia, and 71% felt colored overlays and lenses could help those with dyslexia (Washburn et al., 2011). Nearly all of the teachers (87%) felt that teachers

do not receive intensive training to support students with dyslexia. In the 2013 U.S./UK Washburn et al. study, 101 teachers from the U.S. demonstrated confusion about the symptoms and treatment of dyslexia. For example, many teachers believed that tinted lenses and colored overlays would help those with dyslexia. The U.S. participants did, however, understand that environment does not cause dyslexia and that dyslexia occurs in all languages.

Thorwarth (2014) completed a small study measuring teacher knowledge and professional development. The majority of the 26 general and special education teachers and speech pathologists felt comfortable working with students with dyslexia, although less than 1/3 were taught about dyslexia in their teacher training programs. The majority who had been taught about dyslexia received their knowledge from professional development and seminars. A correlation was found between comfort and knowledge; the greater understanding an educator had of dyslexia, the more comfortable she or he felt. Confusion about dyslexia as a visual problem was once again predominant among participants and many believed those with dyslexia see numbers and letters backwards. Educators were also confused about the specific symptoms of dyslexia.

Globally, teachers demonstrated inaccurate understanding about the characteristics and origins of dyslexia, as well as the types of evidence-based interventions needed to support students (Cunningham, Perry, Stanovich, & Stanovich, 2004; Gwernan-Jones & Burden, 2010; Kerr, 2001; Kirby, Davies, & Bryant, 2005; Wadlington & Wadlington, 2005; Washburn, Joshi, & Binks-Cantrell, 2011). Moreover, educators worldwide conveyed feelings of unpreparedness to work with students with dyslexia and many expressed a desire for more support and training (Aladwani & Al Shaye, 2012; Carvalhais & da Silva, 2010; Gwernan-Jones & Burden, 2010).

Producing better prepared and more knowledgeable teachers is the most important educational challenge today (Joshi & Binks-Cantrell, 2020).

Shame and Misconceptions

The most disturbing finding was that in some countries where dyslexia is still not well understood, students are punished physically as well as chastised for their reading difficulties. When examining the prevalence of dyslexia in Bangladesh, Muzahid, and Sarwar (2015) found that both teachers and parents displayed "...negative attitudes towards dyslexic children manifested in the form of insults, exclusion, psychological pressure, and physical violence" (p. 1327). One example of the adversity students with dyslexia face is described by a Namibian mother in an article reported by *The Namibian* (Kangootui, 2015). She described that when she discovered that her 17-year-old son

could not read and write at the level of his peers, she would beat and scold him out of frustration. (See <https://www.namibian.com.na/index.php?id=139135&page=archive-read>). She said, "I thought he was stubborn and did not want to devote sufficient time to his studies. It was frustrating, but until he wrote me a letter in which he wrote about his frustration and that he was not a stupid child; but that he needed help and knew he can become successful in life, it dawned on me that I had a unique problem on my lap" (p. 10).

In another example in China, Yiwen (2018) described the trials of one young student: "When Xiaogu entered primary school, Su, his mother, spent thousands of yuan to send him to a cram school, but the family saw little improvement. Su started to lose patience. She scolded Xiaogu for his disappointing exam scores and admits to beating him when he wrote characters incorrectly. Xiaogu could not understand why he struggled so much in something his peers could easily master. His aversion to schoolwork grew. Eventually, he stopped trying altogether, submitting blank exam papers even though he could have answered some of the questions." Xiaogu was then tested at the Weining Dyslexia Education Center and diagnosed with dyslexia. Although the signs were present in kindergarten, his teacher attributed his difficulties to "laziness." Liang Yueyi, a teacher at this Center, told a reporter from Sixth Tone (an online publication of contemporary news in China) that although an understanding of dyslexia is much higher in the city of Shenzhen than in most Chinese cities, the results from community research indicated that only 25 percent had ever heard of it. When asked what the term referred to, some thought it described "people without hands." Others had heard of the term but did not think that dyslexia occurred in Chinese.

Another problem prevalent globally is a lack of public awareness that leads to students not receiving the interventions they need. In Korea, because awareness is so low, many students with dyslexia are not diagnosed. Kim Ae-hwa, a Special Education Professor at Dankook University explained to the *Korea Herald* that because of cultural prejudice, parents do not want to admit that their child has a disability. Instead, they let their child struggle through the curriculum without getting proper intervention. As a result, the students then get labeled as "stupid" or "lazy" and their self-esteem suffers (Sang-ju, 2013).

Even in countries where awareness of dyslexia is far more common, misconceptions still exist. For example, in Canada, Rousy (2016) reported that a mother of children with dyslexia was told, "Not all children go to university, and it looks like yours aren't going to." Alexander-Passe (2015) interviewed 29 adults with dyslexia who

attended school in England. He found that all participants experienced childhood trauma and still harbored anger and resentment toward their childhood teachers who they felt did not understand their learning difficulties. Most of the participants were not diagnosed in a timely fashion.

Similarly, in the *Luxembourg Times* (2015), a parent described her struggles as she tried to have her son's dyslexia recognized by schools, calling her experience "a scandal." (See <https://luxtimes.lu/archives/23427-luxembourg-s-dyslexia-taboo>). After several years failing school due to major difficulties with basic reading and writing, schools continued to deny any testing or interventions. The family had to pay for private interventions in order to finally establish a diagnosis of dyslexia. Since then, Luxembourg's Grand Duchess Maria Theresa has strived to change the attitudes toward dyslexia, given her own experience with a son with dyslexia. In 2016, she sponsored the first International Forum on Learning Disabilities, where expert speakers helped educate the general population, as well as the teachers working with children at schools. Through her involvement, the Duchess has helped pass legislation, including a law creating the function of "School Mediator" at the Ministry of Education. The School Mediator ensures that schools are following special education law, including provisions for students with dyslexia (e.g., a laptop), and also reviews complaints from parents regarding their children's experience when asking for assistance from a school in the diagnosis and treatment of dyslexia.

Tanner (2009) conducted a qualitative study with 70 adults using interviews and focused discussions in Australia over three years during a Technical and Further Education (TAFE) course that was designed specifically for adults with dyslexia. She describes what she calls the "conundrum of failure." This conundrum includes the oppressive attitudes found in both schools and society that devalue individuals who struggle with literacy, and also affects their life choices. Some of the adults spoke of frustrated teachers who would ask questions, such as, "Why can't you read? I don't know what else to do" (p. 7). Most expressed feelings of being perceived as stupid or dumb or that they had failed because they were not bright enough. Many teachers attributed blame to the student, and they often suggested that he or she was not trying hard enough. In a qualitative study in Greece, the negative experiences of a small group of university students were attributed to the consequence of seeing dyslexia as the problem of the individual, rather than of one of society (Stamplotzis, Tsitsou, Plesti, & Kalouri, 2015).

Many students diagnosed with dyslexia are often confronted with the attitude that dyslexia is not real and is just an excuse for laziness. Even royals are not free from

this type of teasing and humiliation. For example, Prince Carl Philip of Sweden, his father King Carl XVI Gustaf, as well as his older sister Crown Princess Victoria all have dyslexia. When the prince stumbled while announcing one of the winners at a sports awards event in 2013, the local media referred to him as being "stupid and unintelligent." (See <https://www.ibtimes.com/prince-carl-philip-sweden-talks-being-dyslexic-his-struggle-reading-writing-2229464> and <http://dyslexiahelp.umich.edu/success-stories/carl-phillip>). Crown Princess Victoria, heir to the throne, recalls how her classmates would laugh at her when she read aloud, and question her intelligence. (See <https://homeschoolingwithdyslexia.com/dyslexia-success-story-princess-victoria-sweden/>).

Although they experienced difficulty at times, the outcomes of these royals can be seen as 'success stories.' Perhaps their ability to overcome the challenges they faced had to do with their position in society. Many students with dyslexia who actually make it through elementary and high school into higher education come from families who can allocate economic resources and are able to dedicate time and energy into getting the help their children need. These parents often have to pay for private assessments, special schools, and tutoring, and they also have to fight teachers and governments that do not recognize dyslexia. For example, in Pakistan, although research suggests that about 5.37% of students have dyslexia (Ashraf & Majeed, 2011), the government provides no support for these students. According to an article by *Outlook Pakistan* (2017), the only option for these students is for their parents to pay for expensive "dyslexia institutions," which leaves about 70% of these students without any options for help. (See <https://www.outlookpakistan.com/health-issues-dyslexia-in-pakistan/595/>).

For individuals with dyslexia, a common theme that still exists in many parts of the world today is teasing, emotional bullying, humiliation, and misunderstanding, both within and outside of the school environment. Unfortunately, the individuals who contribute to the humiliation are often unaware of the lifelong impact of their comments and criticisms (Tanner, 2009). In addition, many individuals with dyslexia suffer because their disability is still hidden and has not been recognized, diagnosed, and properly addressed.

Limitations

This study has several limitations. First and foremost, the findings were based upon an internet search. Unlike the research studies we cited, information on the web often changes rapidly. It is also likely that other countries have in place supports for students with dyslexia, but since at

the time of our search, we did not find an online presence, they were overlooked. Findings from certain websites led us to newspaper articles which are often subjective, as well as only certain research studies which then may not be representative of the total body of existing studies regarding a topic. In addition, internet searches rely on a number of factors, such as the geographic location, online history, owned domains for keywords being searched, and language of the person conducting the search. For example, the Davis™ Method website owns the domain dyslexia.com, and thus is likely to be part of almost any internet search for dyslexia. They also have an extensive list of countries within their website, so they were likely to appear in nearly all of our searches. In addition, all of the online searches were conducted in English. Although most websites today can automatically be translated to English, it is likely that we missed some relevant information because it was only available in the native language of a country. We were able to include some sources that were only available in other languages, but other resources were too difficult to translate and evaluate. Another limitation involves the depth of information being provided. Specifically, given the plethora of information, for all of the topics, we only provided examples, rather than an exhaustive list of all the resources and studies available.

Conclusions

Dyslexia has a strong online presence. Around the world, numerous organizations and schools provide support for parents, educators, and individuals with dyslexia. Although the quality and availability of assessments vary from country to country, one universal factor that emerged is that the selected cognitive assessments should measure more than just phonological processing or a large number of students will be excluded who should receive services (Brady, 2019). Thus, across all languages, there is not one single cause of dyslexia and multiple factors must be considered (Fletcher, Lyon, Fuchs, & Barnes, 2019). A further consideration is that diagnostic accuracy is also affected by the presence of poverty, disadvantage, a lack of opportunity, and language and dialectal variations (Washington & Lee-Jones, 2020).

Many countries are basing their practices on established knowledge derived from peer-reviewed studies, yet others appear to be using advertised practices that are not backed by scientific research. In addition, countries still exist where students are not identified and do not receive evidence-based early interventions. Despite the clear evidence supporting the need for systematic phonics instruction, controversy still exists regarding the teaching of phonics and the role that phonics should play in reading instruction. Thus, both teachers and parents require

information about the need for systematic, explicit reading and spelling instruction. Teachers around the world also feel under prepared to help students with dyslexia. As a final thought, our efforts must increase to promote universal understanding of dyslexia among both teachers and parents, so that children are not punished or chastised for their difficulties learning to read and spell. Instead, they should be understood, supported, and helped.

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