SUPPLEMENTAL TESTIMONY

for the U.S. House of Representatives
Committee on Science, Space, & Technology

Statement of:

Barbara A. Wilson, M.Ed.
Co-founder and President

Wilson Language Training, Oxford, MA
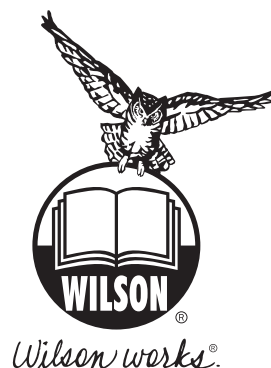
September 30, 2015

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WHY EARLY IDENTIFICATION AND INTERVENTION?

For individuals with dyslexia, early identification and instruction from a well-trained teacher using an effective program can be life changing. They can alter the course of one's educational attainment, self-esteem, and future career and personal goals, since the struggles for students with dyslexia affect not just their English/language arts class, but all aspects of life inside and outside of school.

Research has shown us that students who are identified early and receive appropriate multisensory structured language instruction will make gains in the early years of their education (Ritchey & Goeke, 2006). Furthermore, we have learned that early intervention can produce increased activation in key brain areas for reading (Shaywitz et al., 2004). Therefore, prevention and early intervention programming in a multi-tiered system is critical.

Students with dyslexia who go undiagnosed or do not receive the appropriate intervention, may be able to use their intelligence to figure out how to "work around" their disability and mask their challenges for a while. But, eventually, the inability to read catches up with them. As the student progresses through school, text that they encounter every day grows increasingly difficult, requiring a very high level of reading, and as we have seen time and again, without the ability to read, a student's self-confidence plummets.

In addition to reading difficulties, dyslexia may also present itself with weaknesses in the way information is processed, stored, and retrieved. Individuals may have issues with memory, processing speed, time perception, organization, and sequencing. As demands in high school, college, and career increase, late identification of dyslexia only compounds the challenges these individuals face.

Inability to read well past third grade requires the use of accommodations in order for students to keep up with their classmates. These children require an adult advocate, and are at the mercy of the system for providing the necessary accommodations. But while accommodations help a child access content presented in class, the inability to read the material independently still limits the range of interaction that the child can have with the content.

When students are diagnosed in adolescence, finding the time to squeeze the necessary intensive instruction into a school schedule can be logistically very challenging. This challenge is compounded by the increasing period of time it takes overall to teach these students to read. Research has shown that it takes four times longer to improve a student's skills in fourth grade than it does in kindergarten (Hall, 2011). Shaywitz noted that, "A child with a reading disability who is not identified early may require as many as 150-300 hours of intensive instruction (at least ninety minutes a day for most school days over a one-to-three-year period) if he is going to close the reading gap between himself and his peers. And of course, the longer identification and effective reading instruction are delayed, the longer the child will require to catch up" (2003, p.259). Guthrie also noted that, "Although (reading) fluency may be learned in 100 hours, it requires more like 50 months to gain sufficient knowledge to bring students to grade level in reading" (Torgesen et al., 2007, p.130). Early screening and intervention to limit the number of years that students are falling behind in reading and accessing grade-level content, and in feeling unsuccessful, would help reduce the time consuming intensive instruction that must be scheduled during the school day.

The specific, intensive instruction these students need requires the specialized skills of a highly trained teacher. Middle and high schools are often reluctant to or unable to find the resources and time to make it happen. Also, this kind of instruction limits the time the student could be spending on other academic or non-academic endeavors (e.g., learning content, developing relationships with peers). While we know that we can teach older students to read and write in middle and high school or as adults, we also know it will take longer and be more challenging than it would have been had the student been identified in primary school and received the appropriate instruction then.

Older students and adults who should have but were not given the opportunity to benefit from an intensive intervention may face serious challenges in their lives. For one, low literacy levels affect a person's educational, personal, and career opportunities because poor literacy skills increase the odds that the person will drop out of high school, and research points to a connection between high dropout rates and high incarceration rates, high unemployment rates, and low income (NYS Center for School Safety, 2009; Sum, Khatiwada, & McLaughlin, 2009).
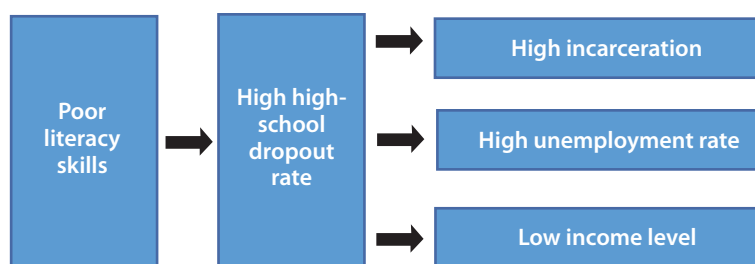
People who have poor literacy skills may be adversely affected in the following ways:

- Career options are limited if you cannot read; it is challenging to get a job that does not require some level of reading and writing.

- Accessing information in daily life is also difficult if you cannot read (emergency information, general life information about opportunities in your community, etc.).

- Options for traveling are limited if you cannot read street signs.

- Low literacy's effects cost the U.S. $225 billion or more each year in non-productivity in the work force and loss of tax revenue due to unemployment (ProLiteracy.org).

- Students who do not read proficiently by the third grade are 4 times likelier to drop out of school (Hernandez, 2011).

- Among those with the lowest literacy rates, 43% live in poverty (ProLiteracy.org).

- 2/3 of students who cannot read proficiently by the end of 4th grade will end up in jail or on welfare (Teach for America, 2012).

- Over 70% of America's inmates cannot read above a 4th grade level (Teach for America, 2012).

- Approximately 75-90% of juvenile offenders are estimated to have a learning disability (Mentor & Wilkinson, 2005); and approximate 80% of those with a learning disability have dyslexia (American Academy of Pediatrics, 2009).

These statistics are sobering on their own, but we also know that there is a social and emotional toll that is not represented in these statistics. Social and emotional problems can develop when a person is consistently faced with an inability to meet expectations at school, at work, and at home, and these problems affect not only the child or adult with a low literacy rate, but also their teachers, their co-workers, and their family.

Working closely with public schools and districts across the country for almost thirty years, I have learned that there are two keys to successfully teaching students with dyslexia to read:

> (1) intensive MSL instruction; and
> (2) effective implementation practices.

WHAT IS INTENSIVE MSL INSTRUCTION?

Individuals with dyslexia need specific, intensive instruction utilizing an Orton-Gillingham based approach, also referred to as Multisensory Structured Language (MSL) instruction. This instruction can be enhanced through other curriculum and technology tools.

MULTISENSORY STRUCTURED LANGUAGE (MSL) INSTRUCTION

The Orton-Gillingham based approach to literacy instruction refers to the structured, sequential, multisensory techniques established by Dr. Samuel T. Orton, Ms. Anna Gillingham, and their colleagues (Orton, 1937; Gillingham & Stillman, 1977). This approach is now referred to more globally as Multisensory Structured Language (MSL) instruction. The body of instructional practices that comprise MSL instruction is very important for individuals with dyslexia.

In MSL instruction, learning incorporates visual, auditory, and kinesthetic-tactile pathways simultaneously to enhance mastery of the language structure involved with reading and writing. In addition, instruction is intensive, direct, systematic and cumulative, diagnostic, and both synthetic and analytic (i.e., students learn how to take parts of language structure and put them together, or given the whole, break it into its parts).

The MSL approach to instruction helps students understand the structure of the language in a very systematic way. Students learn the sound system of the language and build up from there to include syllable, word, sentence, and paragraph structure gradually and with mastery. Mastery is one key to MSL instruction—at each step along the way, students need to internalize the knowledge and skills that have been taught and be able to apply those automatically and fluently so that they no longer labor over individual words, freeing up cognitive capacity for comprehension. Another key is diagnostic instruction. A teacher who has been well trained in MSL instruction understands how to shape a lesson based on a student's abilities and needs, focusing on those areas where a student needs particular help. The reading program I authored, the Wilson Reading System® (WRS), is an example of an MSL program.

Brain scans have demonstrated that effective intervention can rewire the brain. The Wilson Reading System was used in one study that demonstrated that use of the program with a qualified instructor led to improved reading ability and changed students' brain activity. Researchers found improvement in brain function as well as rewiring of the brain to function similarly to that of a good reader (Keller & Just, 2009; Meyler, Keller, Cherkassky, Gabrieli, & Just, 2008).

INTENSIVE INSTRUCTION

Intensive instruction is a component of MSL instruction, but its importance for students with dyslexia merits further discussion. Intensive instruction can be characterized by a reduced group size along with or separately from an increase in the amount of instructional time (Wanzek & Vaughn, 2007; Vaughn, Wanzek, Murray, & Roberts, 2012). Other characteristics of intensive instruction would also include diagnostic instruction (Wanzek & Vaughn, 2007), more explicit and systematic instruction, increased opportunities for feedback, and integration of strategies to support cognitive processes (Vaughn et al., 2012).

First, intensity of instruction can be increased by reducing group size or boosting the amount of instructional time, or both. A student with a mild form of dyslexia might benefit from being in a group of 4 or 5 other students, meeting 3 times per week, for 45 minutes. However, students with greater needs will need smaller group or one-on-one instruction, and may require daily instruction for 60-90 minutes. A study by Torgesen et al. (2001) showed students who had daily, intensive instruction for one school year made significant gains. Furthermore, 3 years later, 40% of these students no longer needed an IEP.

Intensive instruction is a big commitment for teachers and schools. The schedule must accommodate enough time to deliver each lesson as designed, and must provide enough lessons per week and over time to be effective. This is not a quick fix. Students may need 100 lessons or more in a one-on-one or small-group setting. They may need to work with a well-trained teacher for 2-3 years to address all the skills needed to become a proficient reader.

Intensity of instruction can also be increased by amplifying the focus on giving students the tools they need to support their own cognitive processing (Vaughn et al., 2012), and by including three components common to the most effective interventions: explicit instruction, systematic instruction, and opportunities for feedback and student response (Swanson, Hoskyn & Lee, 1999). It is also crucial that intensive reading instruction involve a diagnostic approach—lessons designed and delivered to meet the specific needs of the student(s) (Wanzek & Vaughn, 2007). In order to accomplish this, Vaughn et al. (2012) recommends that teachers:

- assist their students in cognitive processing by taking care to "think-aloud" in order to show students the process used when approaching a new text;

- provide explicit instructions and explain in detail their expectations to students;

- scaffold learning of complex tasks;

- progress from smaller to larger units, or from easier to more difficult sounds and word types;

- give students many opportunities to respond (which also aids the teacher in monitoring student learning and understanding); and

- give students frequent feedback and practice in order to implement the feedback so that errors do not have time to take root.

SUPPLEMENTAL TOOLS

Students' individual needs can be met through a combination of core MSL instruction along with supplemental tools. For example, we know that students with dyslexia vary widely in their cognitive

profiles. Some have strong oral comprehension and will benefit from audiobooks while they learn to read, whereas those with poor oral comprehension likely will not. Those with poor orthographic memory have difficulty learning words that are irregular and do not follow the English language system, and will need tools that help them with that. Some students easily master these words. An array of tools to support these various areas of need would be useful.

Technological innovations in recent years have been helpful in the delivery of instruction. Leveraging the reach of a mobile device, the computing power and connectivity of the cloud, and advanced data analytics, apps can be developed that are adaptive, customizing the learning experience to students' specific needs by adjusting to the user's strengths and weaknesses. This provides for rich and interactive learning experiences that can go more in depth than traditional methods, while giving teachers the control and support they need. Adaptive technologies/software offer the prospect of allowing students to continue to learn and reinforce skills that they need before moving on to more complex skills.

These tools, however, do not eliminate the need for a highly trained dyslexia specialist to work with an individual with dyslexia. These specialists are still necessary in order to understand the type of instruction a student requires, identify an appropriate intervention program, understand whether that program is working, think diagnostically about what to do when it is not working, and know how to provide the motivational support and educational guidance that technology tools cannot provide.

WHAT ARE EFFECTIVE IMPLEMENTATION PRACTICES?

Despite the many national, state, and local policies to improve the reading performance of students across the country, we have not seen significant improvement. But our failure is not with a lack of understanding of how students acquire reading skills, even for students with dyslexia. It is with the implementation of what we know works. Implementation science practices will help us to be successful in teaching students with dyslexia.

In a recent white paper I co-authored with Dr. Michelle Duda for Literate Nation (*Using Implementation Science to Close the Policy to Practice Gap*), we discuss the importance of policymakers attending to research from implementation science in order to increase the odds that policies will affect classroom or school practice in the expected way (Duda & Wilson, 2015). The point we share from implementation science is that selecting an effective intervention to improve a condition is not sufficient to reliably achieve one's intended outcome. We must also utilize effective implementation methods and provide enabling contexts in order to achieve the desired and expected outcomes (Fixsen, Blase, Duda, Naoom, & Van Dyke, 2010). This is what the National Implementation Research Network (NIRN, 2013) refers to as the Formula for Success:

Effective Interventions	X	Effective Implementation Methods	X	Enabling Contexts	=	Intended Outcomes
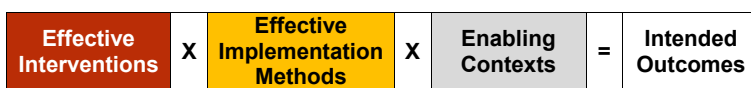
(Fixsen, Blase, Duda, Naoom, & Van Dyke, 2010)

When selecting an intervention for students with dyslexia, we must choose one that has research studies behind it to show that it is effective. However, we can reliably achieve the same successful results with

our students only if the intervention is implemented the way it was designed and tested. That means it is necessary to have knowledgeable, well-trained teachers and the necessary support from school and district leaders.

TEACHER KNOWLEDGE AND SKILLS

Both teacher knowledge and the practical ability to apply this knowledge in a real-life setting are crucial (Hattie, 2012). To successfully teach students with dyslexia, teachers much have an in-depth knowledge about reading instruction, including the structure of the English language—meaning its phonology, morphology, and orthography. But, they must also be able to take this knowledge and successfully instruct a student who does not easily learn it. The second part is critical. Without that, teachers have knowledge but not the skill to succeed. Imagine conducting surgery only from book-knowledge about the body rather than from actual clinical experience operating on a patient.

Knowledgeable, skilled teachers are able to:

- anticipate and plan for difficulties that students are likely to encounter with new concepts;
- identify when an individual student needs assistance;
- understand at a deeper level the reasons for individual student success and failure on a given task;
- understand what assistance a student requires in order to learn to improve their reading skills;
- adapt their teaching to make their instruction more successful for the individual student;
- diagnose individual learning problems; and
- set new achievable goals (Hattie, 2012).

Important for students with dyslexia, expert teachers believe these students can learn, are able to perceive their knowledge gaps, and then apply the right instruction to improve students' outcomes. In 2015, Wilson Language Training surveyed teachers who had just completed Level I Certification in the Wilson Reading System® while teaching a student with a significant reading disability. We found that:

- Teachers reported that the training substantially increased their knowledge of each of the five components of reading (phonemic awareness, phonics, vocabulary, fluency, and comprehension). Before the training, 49-64% of teachers reported that their knowledge of each was good or excellent (percentage varied by reading component). After training, nearly all teachers (97-99%) felt that their knowledge in each of these five areas was good or excellent.
- Teachers also reported a substantial increase in their ability to teach each of the five critical components of reading. Prior to training, 51-63% reported that their ability in each of the five components of reading was good or excellent. After training, this percentage soared to 97-98%.
- When asked about the impact of training, 94% of teachers reported that our intensive training offered a big or enormous impact on their teaching of reading and spelling.

Recognizing the importance of teacher knowledge and skills, the International Dyslexia Association (IDA) created the *Knowledge and Practice Standards for Teachers of Reading* to identify what all teachers of reading should know and be able to do in teaching their children to read (IDA, 2010). Teachers working with students with dyslexia must have even greater knowledge than average classroom teachers, so the IDA has one version for regular classroom teachers and a separate version specifically for dyslexia

specialists. These teachers must understand the neuroscience behind dyslexia, how dyslexia presents with any particular student, and knowledge of the instructional methods necessary for success (i.e., structured literacy approach, background in the structure of the English language, reading components, scaffolding instruction, release of responsibility).

EDUCATOR TRAINING

While we have identified the knowledge teachers must have and the skills they must be able to apply when working with students, how do we support teachers in acquiring these? One aspect of effective implementation is training. But, we have much to learn about how to implement effective professional development. For example:

- Quick day-long or even week-long workshops are convenient, but do they truly have an impact without further follow-up, training and support?

- Online courses can provide the knowledge base, but is that sufficient?

- Are blended learning solutions utilizing both online and in-person training effective?

- When teachers work over a period of time with a student under supervision, what are the results?

- Can the practical experience be done in a short amount of time, or is it needed over a longer period of time?

- How can we ensure that professional development is purposeful and disciplined?

From my experience over 30 years, I have learned that teachers working with individuals with dyslexia need a clinical teaching experience (practicum) to be able to take book-learning and knowledge and translate that into practical application in the classroom. The practicum should be under the supervision of an experienced individual who has taught people with dyslexia how to read, and has attained a deep level of knowledge and experience. The Academy of Orton-Gillingham Practitioners and Educators (AOGPE), Wilson Language Training (WLT) and training programs accredited by the International Multisensory Structured Language Education Council (IMSLEC), each provide a training that incorporates both the knowledge and supervised practical experience to prepare them for working with students with dyslexia. Hiring teachers with a certification from one of these organizations, or from the Academic Language Therapy Association (ALTA), provides a level of assurance that these teachers have received the right preparation for working with students with dyslexia.

Wilson Language Training has been recognized by Learning Forward (formerly the National Staff Development Council) as one of the programs for inclusion in their 2005 research-based initiative, *What Works in K-12 Literacy Staff Development*. What makes professional learning from WLT different from most professional learning experiences is that we are committed to incorporating the principles of implementation science (Fixsen, et al., 2005) and research by Joyce and Showers (2002) into our professional learning plans. Through my extensive work in the public school setting, I have learned about the challenges of operating within it. To best support these educators and ensure that the students receive the necessary instruction, Wilson integrates the principles of implementation science as we work closely with schools and districts to provide a systematic implementation of the program and associated professional learning that builds capacity at multiple levels of the system and promotes deep implementation and sustainability over time.

ORGANIZATIONAL SUPPORT

Another aspect of effective implementation is organizational support. In this context, it includes the allocation of sufficient time for instruction, appropriate grouping of students for instruction, sufficient duration of the intervention, and access to the necessary materials. Students with dyslexia need an effective intervention program that is implemented as it was designed to be, since it is that implementation that has demonstrated evidence of effectiveness.

Scheduling of time. One of the most challenging aspects for schools and teachers is the scheduling of instruction. Too often, students do not have sufficient instructional time. For example, they might get 30 or 40 minutes, 3 days per week when they need much more. As a result, progress is slow. Having teachers and administrators who truly understand the needs of students with dyslexia can help with the scheduling issue.

Appropriate grouping. Another challenge is scheduling the student in an appropriate group or, if needed, in one-on-one instruction. Too often, students are scheduled in their special education classes with other students who might be at different levels of instruction or be receiving help in math or other areas at the same time. As with appropriate scheduling, having teachers and administrators who truly understand the needs of students with dyslexia can help with the grouping issue.

Duration of intervention. As mentioned earlier, if students are not identified early, it becomes more time consuming to teach these students to read. The time it takes also depends on several factors previously discussed such as teacher proficiency, fidelity of implementation, the student profile as determined by an evaluation, and intensity of instruction. For struggling adolescent readers, Guthrie noted that may take as long as 50 months to bring them up to grade level in reading (Torgesen et al., 2007, p.130). This requires a school to make a long-term commitment to the child and the allocation of necessary resources.

Access to necessary materials. Students must have full access to the full intervention program. If they are not able to utilize the full set of materials as they were designed to be used, then they are not benefiting from the full power of the program.

Even if teachers are well trained, if these organizational factors are not put in place, students will not benefit. Ensuring that our teachers have the proper knowledge and skills, undergo training to become highly skilled teachers, and have the organizational support necessary to implement a program as designed requires the support and commitment of leadership at each level of the system—school, district, state, and federal.

CONCLUSION

While identification and early intervention are effective ways to combat dyslexia and its potentially devastating effects, intensive MSL instruction that is effectively implemented can remedy reading problems from our youngest to our oldest students. This is critical, since the incidence of dyslexia in the general population is very high, affecting up to 20% of the population (The Yale Center for Dyslexia & Creativity).

In public schools, 80-90%[1] of children receiving support through special education programs have difficulties with reading. Of students diagnosed with a learning disability, approximately 80%[2] to 90%[3] have reading difficulties. In fact, reading is the subject most likely to be the cause of special education referrals for both elementary and secondary school students.[4] And the disturbing reality is that students identified with a reading disability in third grade do not appear to outgrow this problem; more than 70% continue to have this status throughout their school years.[5]

With statistics like these, it is clear that something needs to be done to improve reading outcomes. However, despite the prevalence of dyslexia in the U.S., funding for research in this area is low, especially in comparison to autism spectrum disorder and ADHD. Affecting approximately 10 times the population of autism, and slightly more individuals than ADHD, dyslexia receives only about $27 million in research funding, compared with $851 million for Autism spectrum disorder and $532 million for ADHD (Bishop, 2010).

Low literacy rates negatively affect the school, work and personal lives of both children and adults, resulting in low self-esteem and income levels, and high unemployment and incarceration rates. The good news, however, is that it is never too late to learn to read. Research has shown that the plasticity of the human brain (children and adults) makes it possible to learn to read at any age.

In order to ensure that we have even more success stories, additional research to demonstrate that it is not too late for older students and adults, as well as to identify the instructional and implementation factors necessary to reach these older individuals, is important. It would also be useful to further demonstrate the benefits of early identification and instruction, and its impact on the brain and learning. It is also true that while we know a great deal about how to teach individuals with dyslexia, it is worthwhile to continue to investigate new ways to do this.

- Are there more efficient and effective ways than what we are doing now? For example, is there a blended solution with technology tools and teacher proficiency that will allow us to scale up successful instruction?

- What types of differentiated instruction are most beneficial to students with dyslexia given that their cognitive profiles vary?

- What tools are effective in addressing students' individual differences?

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[1] Lerner, 1989, cited in Fletcher, Lyon, Fuchs, & Barnes, 2007, p.105.
[2] Gersten, et al., 2001; and Lerner, 1993.
[3] Kavale and Reese, 1992, cited in Fletcher, et al., 2007, p.105.
[4] Kavale and Reese, 1992.
[5] Fletcher, et al., 2007.

Also, given my experience, it seems that much more can be learned about implementation science in regard to individuals with dyslexia. Further research must be done into the best kinds of professional development for teachers and the enabling context that will allow them to effectively implement their practices. We must continue to ask these questions:
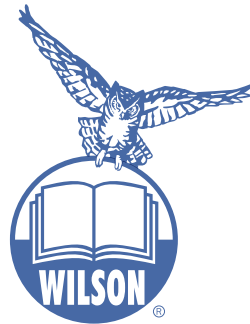
- What kind of professional development do teachers and administrators need to help children with reading struggles?

- How do we support ongoing teacher training?

- What specific components of professional learning are necessary for impact?

- What are the specific conditions needed to further improve the effectiveness of professional learning and for scaling up and sustaining effective professional learning?

- What organizational structures need to be in place in order to help students with dyslexia succeed?

There are often gaps in the in-depth training that is necessary for teachers to succeed, which must be addressed through our policies and practices. We will only be able to effectively reduce the negative statistics associated with low literacy levels when we have created effective policies which promote best practices as supported by research. Both children and adults with reading challenges deserve targeted instruction that allows them the opportunity to experience the world through the eyes of a reader, and teachers and administrators deserve to have access to the tools and research necessary to deliver on the promises of education in the United States.

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