

Oral Statement
Of
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Good morning Chairman Smith, Ranking Member Johnson, other Committee Members and Members of the Panel.

My name is Paula Tallal and I am a Research Scientist at the University of California San Diego and the Salk Institute for Biological Studies and Co-Founder of Scientific Learning Corporation, a **neuroscience-based educational** software business that has been **actively translating research aimed at remediating language and reading problems for almost 2 decades.**

I want to commend the Committee for raising visibility on Dyslexia in The READ Act.

Today I will testify to the fact that there is an epidemic of reading failure that we **have both the scientific evidence and novel interventions to treat effectively.** What we **do not have** is an effective “roadmap” for

implementing evidence-based tools and technologies on a broad scale, or a mandate for our schools to use these evidence-based advances to help the millions of struggling readers who desperately need our help.

The heartfelt message I wish to convey to you today is that **while failing to learn to read is not life threatening, it certainly can be life-destroying.**

So, thank you for the opportunity to speak with you this morning. I will briefly cover

some highlights of research on what I call the Language to Literacy Continuum

some highlights from our experience translating our research to classrooms over the past 20 years

And some specific recommendations for HR 3033.

I ask that my testimony and the supplemental materials that I have provided be entered into the record.

There is ample research that demonstrates that the factors that ultimately cause reading failure begin well before a child enters formal education. This research has shown that even in infancy the precursors to reading failure can be identified reliably in the form of slow and inconsistent auditory processing. This auditory processing constraint cascades over the early years of life disrupting the development of distinct phonological representations in the brain, oral language and ultimately, reading.

Processing the individual sounds (phonemes) inside of words is the *fastest* thing the human brain has to do. In order to learn to read a child must become aware that words are made up of individual sounds, and it is these *sounds* that the letters represent. This process is called “phonological awareness”. **Decades of research on dyslexia, has demonstrated that failure to become phonologically aware is at the heart of reading failure.**

Put simply, when it comes to auditory processing, children with language learning problems are operating on the equivalent of “dial-up” speed - while **good** language and reading skills require a child to operate on the equivalent of “high speed internet.”

Traditional tools for teaching reading, **regardless of how expertly and how often they are applied**, will not work for most struggling readers until these more foundational skills are remediated.

Throughout **life, but especially early in life**, the brain is **literally shaped anatomically and physiologically by experience**. This experience- driven organization of the brain is called “**neuroplasticity**”.

Understanding neuroplasticity, and the variables that drive it, has the potential to revolutionize interventions for struggling readers, by directly remediating their auditory perceptual, phonological awareness and language problems.

In 1994, I began a collaboration with Dr. Michael Merzenich, a world expert on neuroplasticity - with the goal of integrating advances in neuroplasticity and language learning disorders. In the ensuing 20 years both behavioral and neuroimaging studies have demonstrated that the foundational auditory processing and language skills known to lead to reading failure are **highly modifiable** and can be brought into the **normal range over a few months**, using intensive

neuroplasticity-based training exercises, **disguised as computer games.**

We Co-founded Scientific Learning Corporation to translate these research advances into practical classroom tools that could be broadly scaled and efficacy tested in real-world classroom. These evidence-based educational tools are distributed under the brand names Fast ForWord® and Reading Assistant® and have been used in over 12,000 U.S. schools, with as many as 70,000 students a week. The *cumulative* efficacy data obtained when school implement these programs rigorously is very positive, especially when compared longitudinally to students' previous performance.

Thomas Gibbs Elementary School in St. Mary's Parish, Louisiana is one of the many schools that have used Fast ForWord® and Reading Assistant®. Before implementing these new tools, only 19 percent of Thomas Gibbs 4th grade students scored basic or above in Language Arts on their State-wide achievement test, placing this school in the bottom quartile state-wide. After implementing Fast ForWord® by 2008, Thomas Gibbs school had moved into the top quartile State-wide, with 81 percent of students scoring basic or above in Language Arts.

So here is my NEWSFLASH: Decades of scientific research show that reading success relies on a solid foundation of rapid and consistent auditory processing and oral language (particularly phonological) skills, and that weakness in these two areas predispose a child to subsequent reading failure. Traditional reading approaches presuppose that a child has these foundational skills. But, research shows that this is just not the case. **Not providing educators with evidence-based tools to remediate the rapid auditory processing, phonological and other oral language skills that are well known to be precursors to reading failure, is equivalent to demanding that a builder construct the third floor of a school without having the tools to build a sufficiently strong first and second floor, and then wondering why the school keeps collapsing.**

I would like to close by offering some specific recommendations on HR 3033.

NSF recognized the gulf between scientific knowledge and translation of this knowledge into education practice 15 years ago and set out to bridge this gulf by creating six national “Science of Learning” Centers. I have been fortunate to be a Co-director of one of these Centers, The Temporal Dynamics of Learning Center at the

University of California, San Diego. The 10 years of funding of these Science of Learning Centers is coming to an end.

My first recommendation for H.R. 3033 is to capitalize on advances from these Centers to design professional development courses on the “New Science of Learning”, specifically as applied to early identification and remediation of learning impairments. This is an effective means to leverage existing Federal investments.

My second recommendation focuses on improving the translation method needed to bridge the gap between research scientists, school administrators, and classroom teachers - to translate data driven research into real world application for classroom use on a broad scale, including evaluation and assessment of impact of new curriculum, tools and technologies in the heterogeneous, “real-world” settings where children with language-based learning problems receive instruction.

In closing, I want to thank the Committee for allowing me the opportunity to share my research, translation efforts

and provide recommendations for consideration in the development and implementation of HR 3033:

As I mentioned at the beginning of my testimony, we have the scientific knowledge, and even some powerful new tools and technologies that have been translated broadly for classroom use based on that knowledge. Nonetheless, translation and dissemination into classrooms **on the scale needed to address our epidemic of reading failure** is painfully and frustratingly slow. What are urgently needed are actionable methods that result in turning the equivalent of a one-lane country road from the laboratory into the classroom into a bi-directional super highway, and in so doing to improve the prospects of millions of children with reading impairments for decades to come.