Dyslexia:
Supporting Students, Working with Parents, Navigating the Environment

Maura L. Malone, Ph.D.

Dyslexia Consultant

Agenda

The Dyslexic Learning Profile

The Law and Dyslexia

The Role Teachers Play

Accommodations Are Important

Q&A

Educating our Teaching Professionals About Dyslexia

50% of Teachers

Dyslexia was never mentioned in any undergraduate teacher training programs

24% of Teachers

Had at least one lecture or more about dyslexia in undergraduate teacher training programs

26% of Teachers

Dyslexia was mentioned briefly in undergraduate teacher training programs

13-14% of Studetns

Is estimated that 13-14% of students in a typical classroom are dyslexic

Maura L. Malone, Ph.D.
Dyslexia Consultant

Source: 2017 Poll of 400 Teachers

Dyslexia…

Is an inherited trait

Can be observed as a structural brain difference

Affects language processing

Reflects confusion with directions

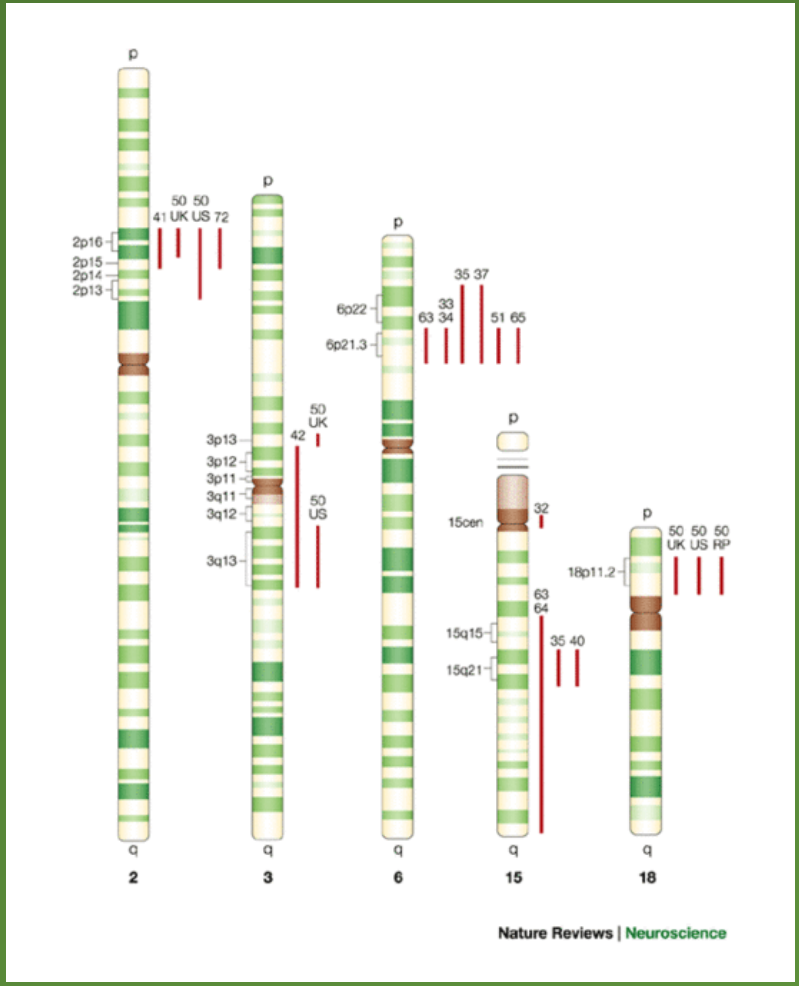
Compounds memory weakness

Source: Susan Barton, Barton Reading Systems

Maura L. Malone, Ph.D.
Dyslexia Consultant

Inherited Trait

Genetic Factors Play Large Role



Chromosome 2 Visual Memory for Words

Bring up the two dimensional words in their head

Chromosome 3

Chromosome 6 Phonemic Awareness

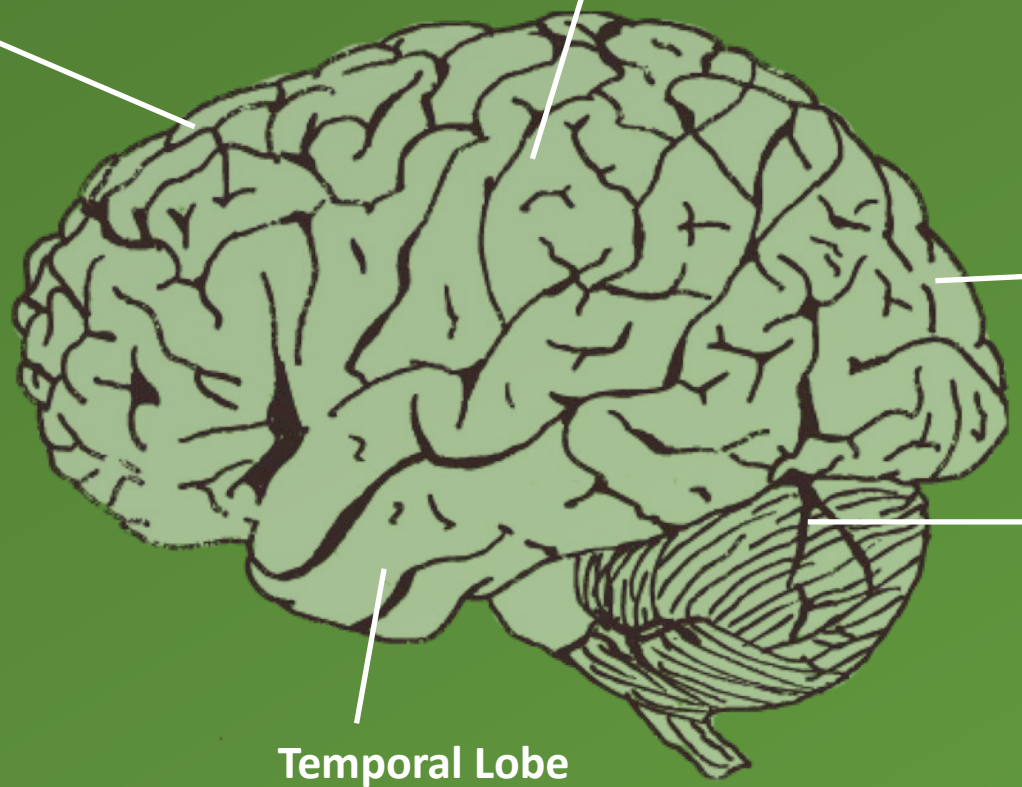
Hear and manipulate sounds in your head

Chromosome 15 Rapid Naming

Word retrieval

Chromosome 18

Structural Brain Difference



Parietal Lobe
Word Analysis

Frontal Lobe
Thinking

Posterior Occipital Lobe
Process Visual Information

Cerebellum
Automatic Heart Rate

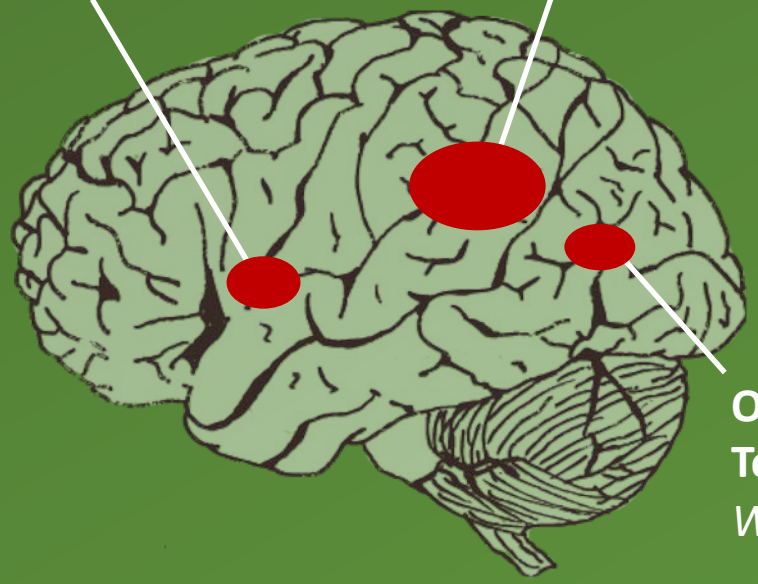
Temporal Lobe
Process Hearing

Maura L. Malone, Ph.D.
Dyslexia Consultant

Typical Reader

Broca's Area
Interior Frontal Gyrus
Articulation and Word Analysis

Parietal
Temporal Lobe
Word Analysis

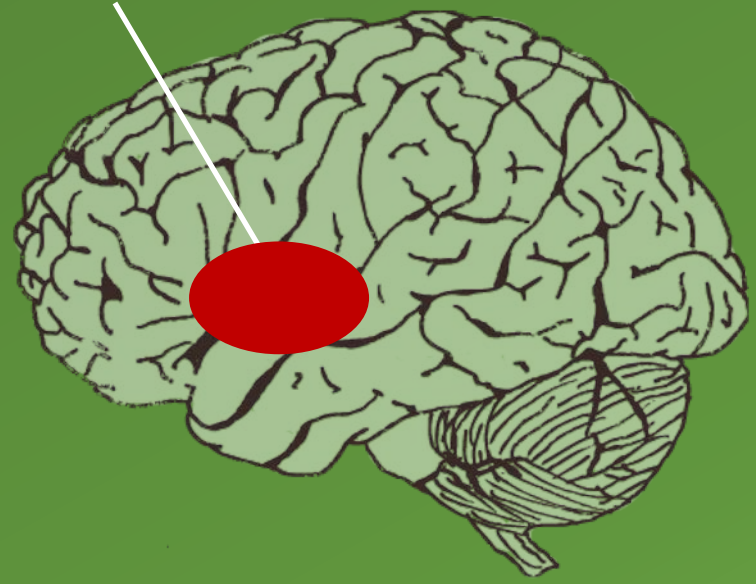


Occipito-
Temporal Lobe
Word Form

Development as a reader starts with Broca's Area then Parietal and Occipito-Temporal Lobes mature

Dyslexic Reader

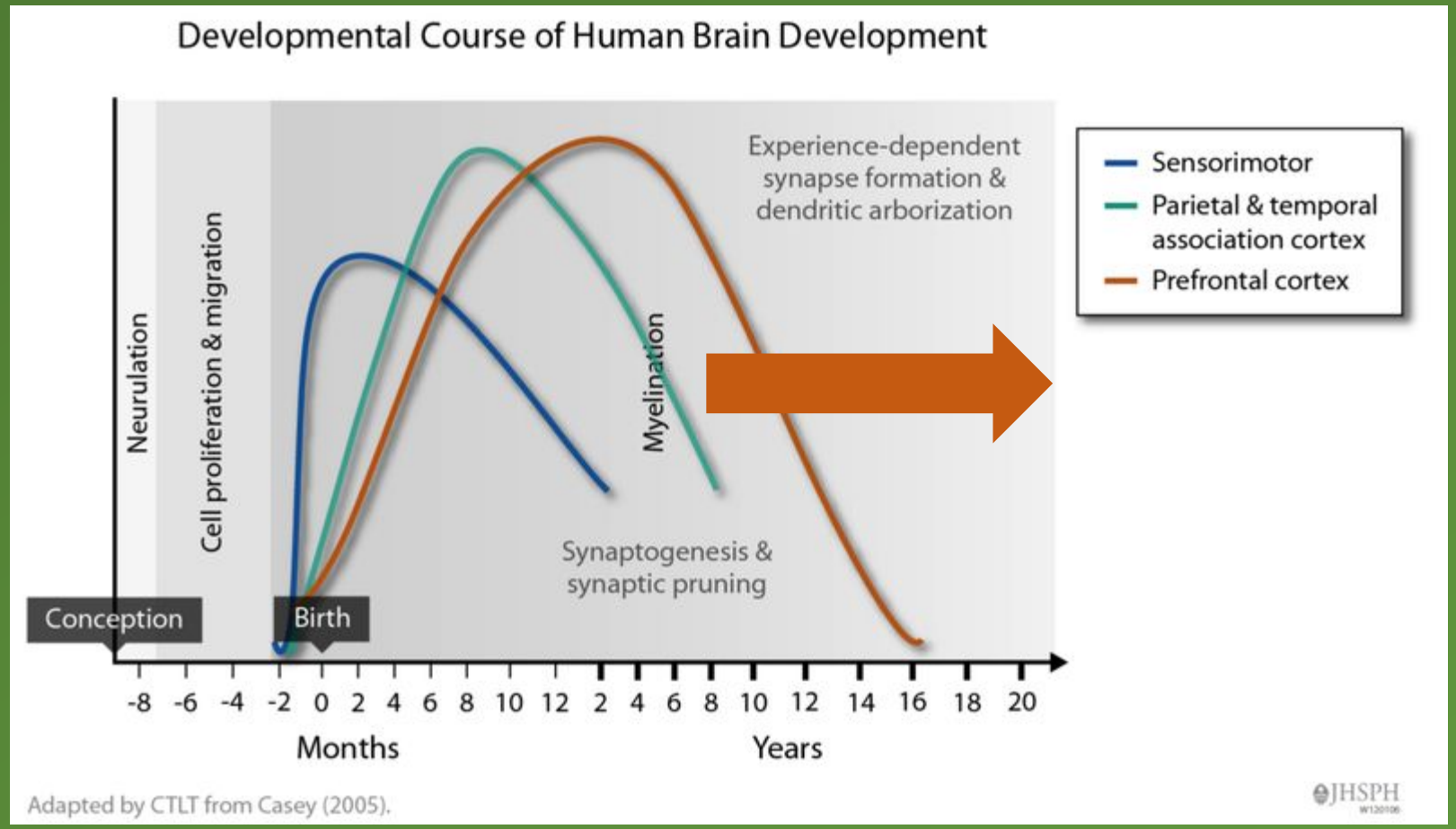
① **Broca's Area**
Interior Frontal Gyrus
Articulation and Word Analysis



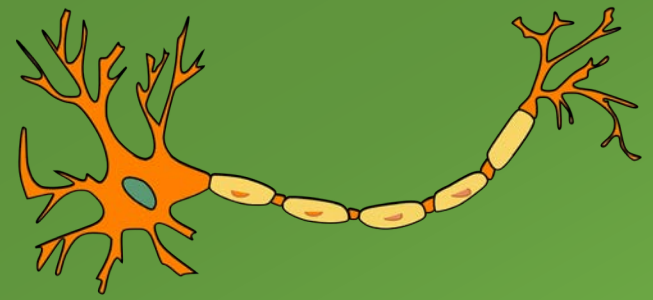
Broca's Area lights up first but gets stuck -- referred to as a "neural disruption"

Maura L. Malone, Ph.D.
Dyslexia Consultant

Dyslexia Delays Neural Connections Development



Cable axons in brain slower to develop which shifts development timeline to the right



Learning Profile

Working Memory	Cognitive system with limited capacity responsible for temporarily holding information available for processing
Processing Speed	Cognitive attribute defined as time it takes to do a mental task; may interfere with executive functions
Executive Function	Cognitive processes necessary for the cognitive control of behavior. Include attentional control, cognitive inhibition, inhibitory control, working memory, cognitive flexibility
Memory Overload	Brain has taken in more information than it is able to process
Social Emotional	General feelings of distress, well-being, includes quality of peer relationships Tend to be delayed 3-5 years, tend to feel things more intensely, tied to a heightened sense of intuit ability

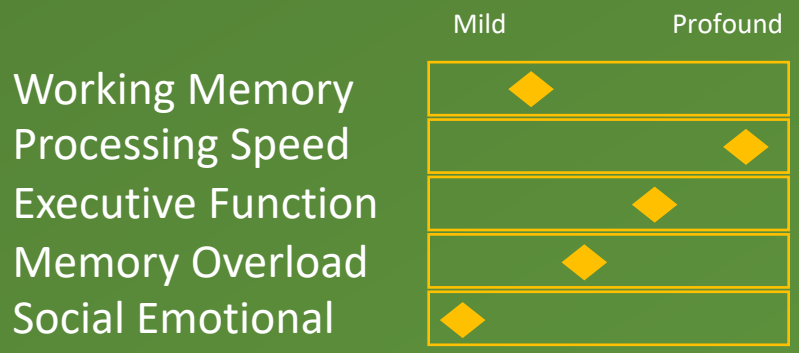
If You've Met One Dyslexic, You've Met One

No two dyslexics are alike

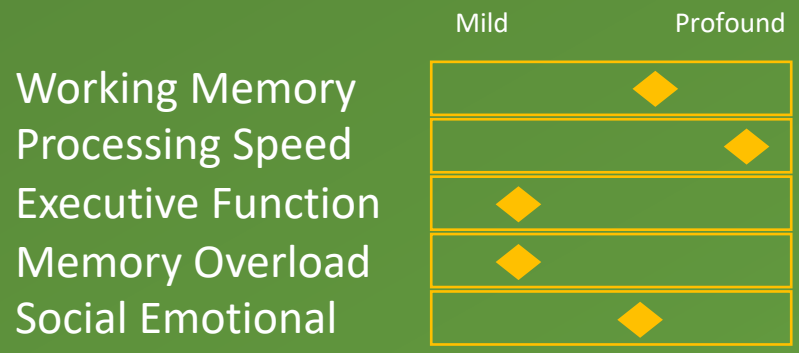
Each learning profile factor can range from mild to profound

Respond to the individual in front of us

Implications for accommodations and services



STUDENT A



STUDENT B

Maura L. Malone, Ph.D.
Dyslexia Consultant

Dyslexia Requires Changing How to Think About Timeline

Elementary School	Middle School	High School	College and Vocational Training	Early Career

Memory overload first appears

Learning to read → reading to learn

Workload demands new study skills

Building academic endurance

Analytical and abstract thinking

Organizational skills, punctuality, more complex writing

Support can continue through college and early career

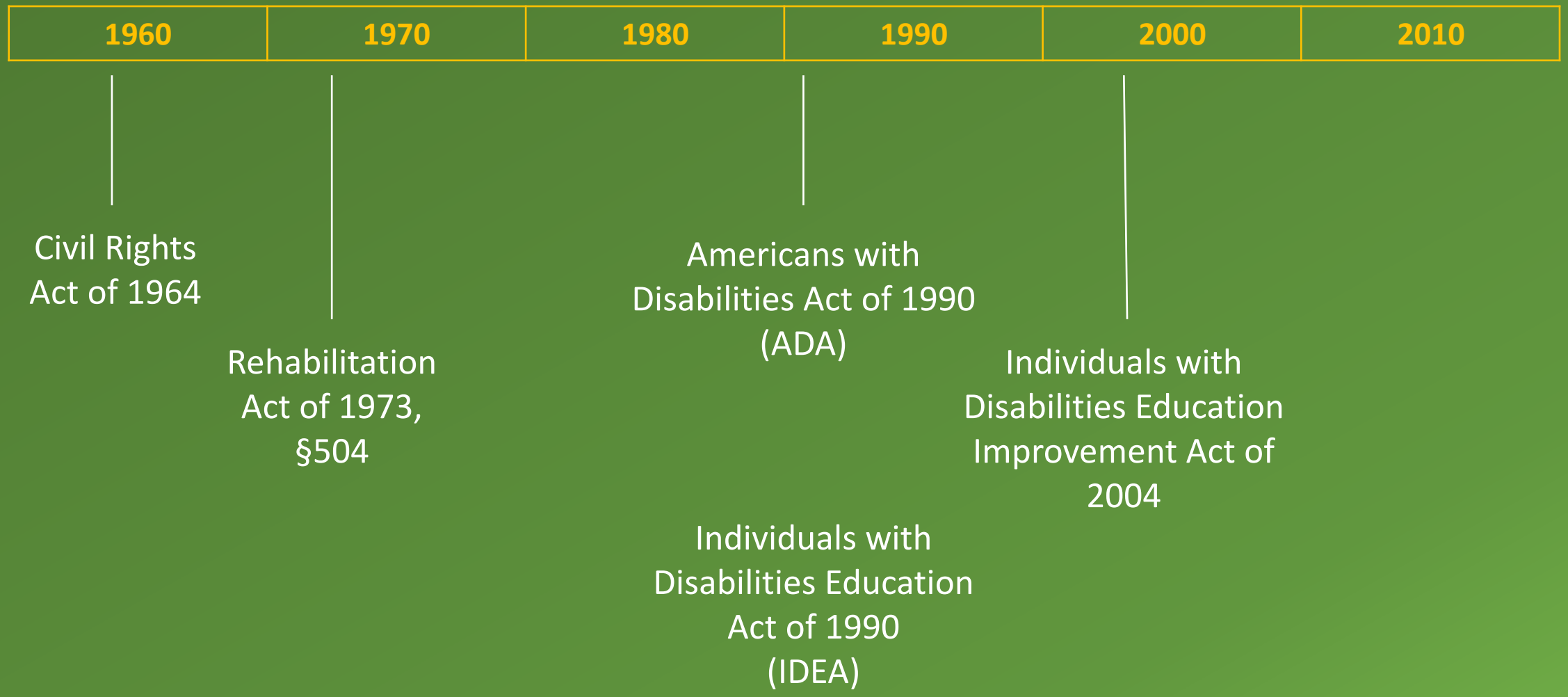
Recipe for success changes dramatically with transition from college to early career

Unique skills of dyslexics offer advantages that emerge and become relevant in their career

Parents can play critical role in identifying and encouraging unique strengths

Maura L. Malone, Ph.D.
Dyslexia Consultant

The Law and Dyslexia



Securing Accommodations

School observes student's disability or parents may request meeting

Parents may provide 3rd party medical diagnosis to the school as well as results of school testing

Student who does not meet the IDEA definition of specific learning disability may still have a learning disorder that substantially limits a major life activity

District decides whether to grant accommodations

504 Meeting may be just between parents and school official

IEP requires representative from each area (e.g. teacher, district, parent)

What Does "Substantially Limits" Mean

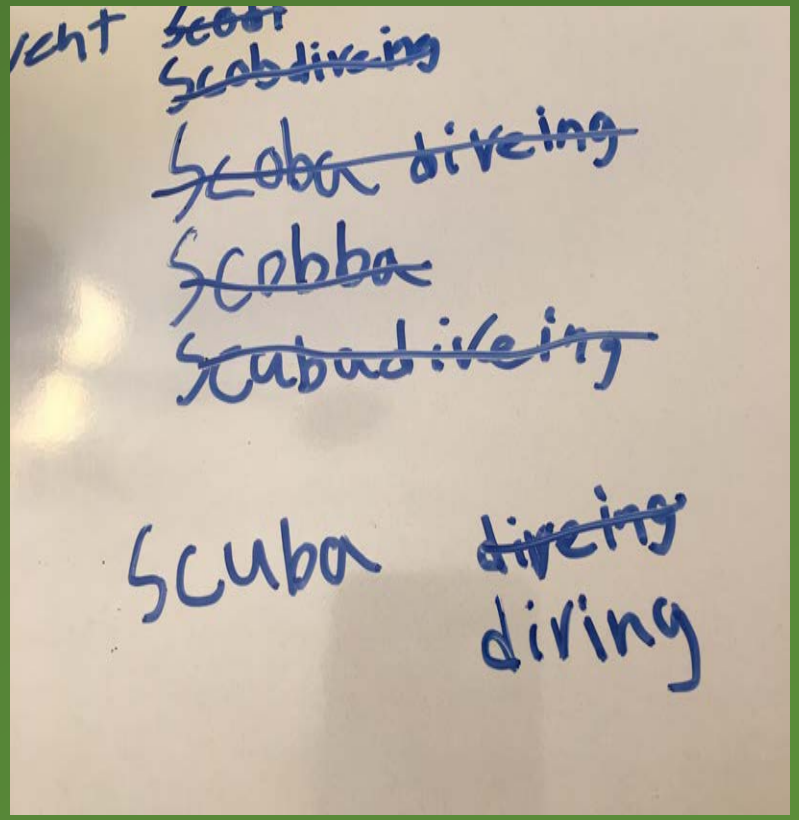
No formula or scale

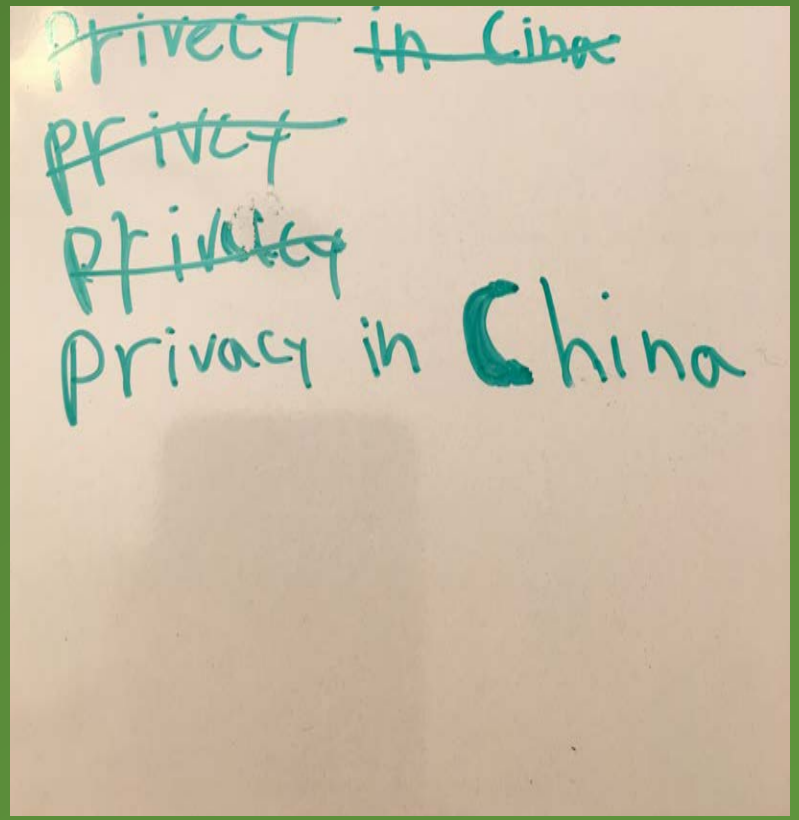
Compared to the average student at the same age or grade level

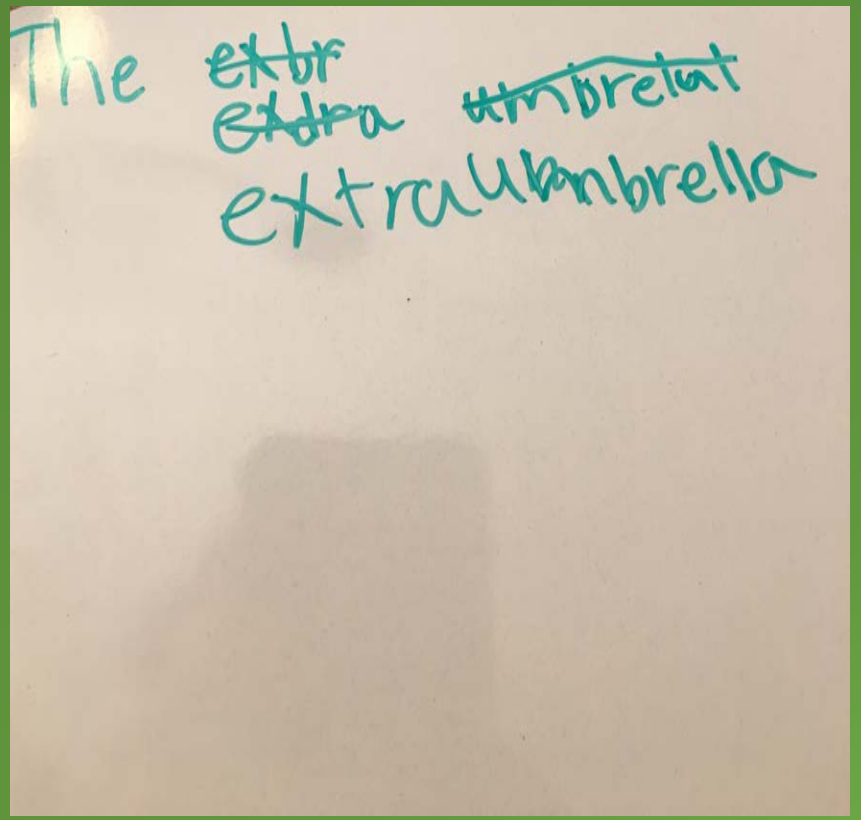
Not compared to the student's potential

Example:

Student is substantially limited if due to a learning disability the student's reading takes 50% longer to read a text as the average student in the same grade.


Scuba
diving


Privacy in China


The
extra umbrella

§504 Requirements for K-12 Schools

School districts required to provided Free Appropriate Public Education

- Identify the child's educational needs
- Provide regular or special education to satisfy the education needs just as well as it does for children without disabilities
- Development of an educational plan, referred to as a "504 Plan"
- Covers accommodations, services, and support

Parents have due process rights and private right of action; enforced locally or through Office of Civil Rights

Not Every Student With Disability Will Get a 504

Team considers whether the student needs a 504 plan to

(1) access the general curriculum

(2) at a level comparable to a non-disabled student in the general population

Students current performance can be source of conflict:

Passing grades and average standardized test scores may actually reflect extraordinary support at home to help the student learn and prepare

Success at current grade level may not be sustainable with increase in workload and difficulty

Individuals with Disabilities Education Act of 1990 (IDEA)

Reauthorization of Education for All Handicapped Children Act of 1975

Six main elements:

- **Individualized Education Plan (IEP)**
- Free Appropriate Public Education (FAPE)
- Least Restrictive Environment (LRE)
- Appropriate Evaluation
- Parent and Teacher Participation
- Procedural Safeguards

Individualized Education Plan (IEP)

Required document for each student found to be disabled

Prepared by an IEP Team that includes

teachers, administrators, special services personnel, and parents

Describes the student's present level of academic achievement

Specifies the services and accommodations to be provided to the student

Free Appropriate Public Education (FAPE)

Guaranteed by the IDEA – IDEA FAPE more detailed than §504 FAPE

Defined as special education and related services that are:

- Provided at the public's expense and under public supervision
- Meet the standards of the State educational agency
- Include appropriate education at preschool, elementary, secondary levels

Meets the unique needs of that one student and provides access to the general curriculum to meet the challenging expectations established for all children

Is not guaranteed to maximize a child's potential or provides a specific program

Woodcock-Johnson Norms

	Test requirement	*Abilities required*
LWI	Read single words or letters	Reading decoding
Reading Fluency	Read statements & answer yes/no while timed	Reading speed
PC	Read passages & identify missing word	Reading comprehension
Word Attack	Read nonsense words	Reading decoding Phonetic coding
Reading Vocabulary	Read words & provide meanings	Printed language comprehension
Sound Awareness	Provide rhyming words; Remove, substitute & reverse parts of words	Phonetic coding
Numbers Reversed	Reverse number sequence	WM; STM
Sound Blending	Blend sounds to form a word	Phonetic coding
Auditory WM	Reorder words & numbers in immediate awareness	WM; STM
Understanding Directions	Listen & follow sequential directions	Listening ability Auditory WM
Incomplete Words	Name spoken words missing a phoneme	Auditory processing Phonetic coding

WM = working memory. STM = short-term memory. PC = passage comprehension. LWI = letter-word identification.

Summary of Woodcock-Johnson Psycho-Educational Battery subtests

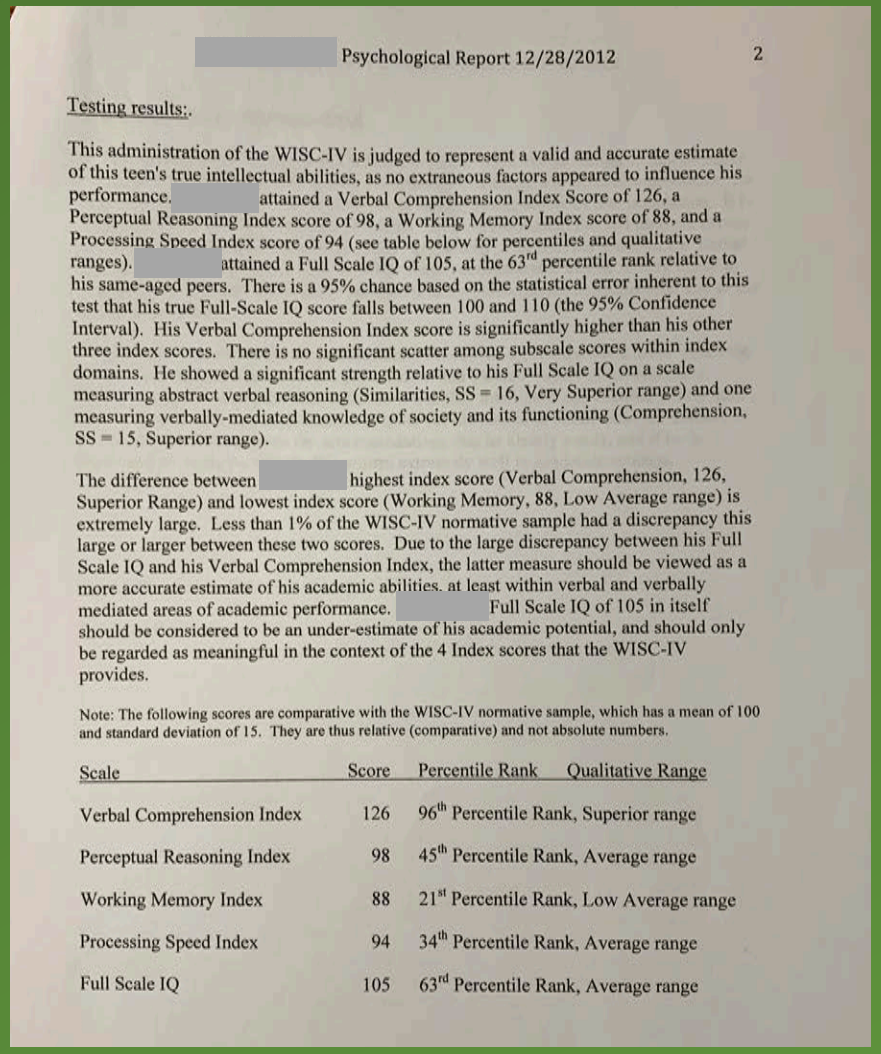
Cognitive abilities test developed in 1977 with most recent update in 2014

Important to evaluate student based on sub-tests and not just composite score

Important subtests:

- Phonological processing
- Orthographic processing
- Rapid naming
- Processing speed
- Working memory

Wechsler Intelligence Scale for Children (WISC)



[redacted] Psychological Report 12/28/2012 2

Testing results:.

This administration of the WISC-IV is judged to represent a valid and accurate estimate of this teen's true intellectual abilities, as no extraneous factors appeared to influence his performance. [redacted] attained a Verbal Comprehension Index Score of 126, a Perceptual Reasoning Index score of 98, a Working Memory Index score of 88, and a Processing Speed Index score of 94 (see table below for percentiles and qualitative ranges). [redacted] attained a Full Scale IQ of 105, at the 63rd percentile rank relative to his same-aged peers. There is a 95% chance based on the statistical error inherent to this test that his true Full-Scale IQ score falls between 100 and 110 (the 95% Confidence Interval). His Verbal Comprehension Index score is significantly higher than his other three index scores. There is no significant scatter among subscale scores within index domains. He showed a significant strength relative to his Full Scale IQ on a scale measuring abstract verbal reasoning (Similarities, SS = 16, Very Superior range) and one measuring verbally-mediated knowledge of society and its functioning (Comprehension, SS = 15, Superior range).

The difference between [redacted] highest index score (Verbal Comprehension, 126, Superior Range) and lowest index score (Working Memory, 88, Low Average range) is extremely large. Less than 1% of the WISC-IV normative sample had a discrepancy this large or larger between these two scores. Due to the large discrepancy between his Full Scale IQ and his Verbal Comprehension Index, the latter measure should be viewed as a more accurate estimate of his academic abilities, at least within verbal and verbally mediated areas of academic performance. [redacted] Full Scale IQ of 105 in itself should be considered to be an under-estimate of his academic potential, and should only be regarded as meaningful in the context of the 4 Index scores that the WISC-IV provides.

Note: The following scores are comparative with the WISC-IV normative sample, which has a mean of 100 and standard deviation of 15. They are thus relative (comparative) and not absolute numbers.

Scale	Score	Percentile Rank	Qualitative Range
Verbal Comprehension Index	126	96th Percentile Rank	Superior range
Perceptual Reasoning Index	98	45th Percentile Rank	Average range
Working Memory Index	88	21st Percentile Rank	Low Average range
Processing Speed Index	94	34th Percentile Rank	Average range
Full Scale IQ	105	63rd Percentile Rank	Average range

Intelligence test for children between the ages of 6 and 16

Subtests indicate abilities in discrete cognitive domains

Subtests used to identify learning disabilities

Example:

Verbal Comprehension at 96th percentile

Working Memory at 21st percentile

Maura L. Malone, Ph.D.
Dyslexia Consultant

	504 Plan	IEP
Overview	Services and changes to the learning environment for students to learn along with their peers	Individualized special education and services to meet student's unique needs
	Does not require academic improvement	Must result in educational benefit
Eligibility	Any disability that interferes with the child's ability to learn in a general education classroom	One or more of 13 disabilities that affect educational performance and/or the ability to learn and benefit from the general education curriculum
Evaluation	Families pay for an outside evaluation	Families can request school for an evaluation or pay for outside evaluation
Team	Team of people who are familiar with the child	Strict legal requirements for team including parents, teachers, specialists, district representative
Contents	No standard 504 plan; generally includes accommodations and services	Learning goals and services including: • Current level of performance • Annual education goals • Services, accommodations, and modifications • Plan for standardized tests

"The greatest stumbling block preventing a dyslexic child from realizing his potential and following his dream, is the widespread ignorance about the true nature of dyslexia."

Sally Shaywitz

The Role Teachers Play

IEP requires at least one teacher to be on the evaluation team; 504 does not require a teacher but they often are asked for input to the decision and plan

Effective contribution to evaluation:

Know and watch for dyslexic learning profiles

Seek insights from the student and parents

Be willing to "connect the dots"

Guard against bias in either direction

Example:

Addison's physical profile included very poor fine motor skills

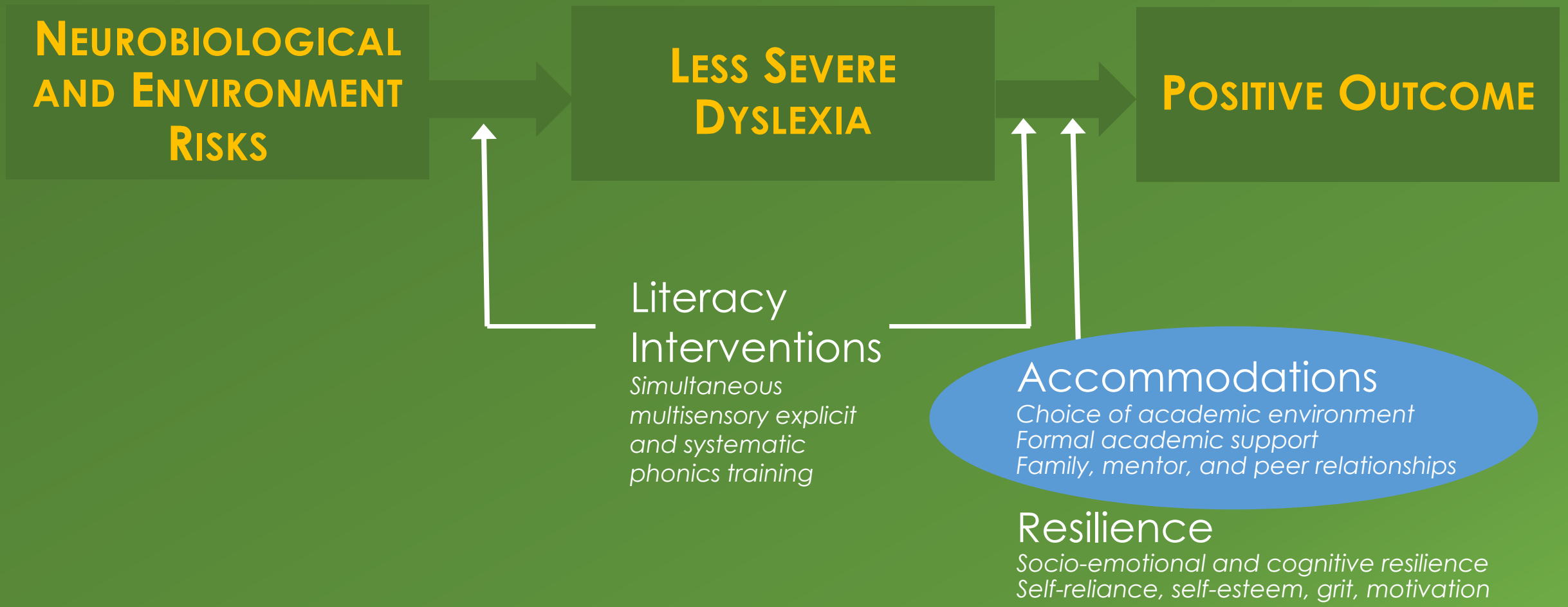
Difficulty in writing and filling out bubble forms for tests not obvious to teachers

Parents mentioned the disability to teachers as a part of conference

Only then did teacher notice that standardized tests took significantly more time and then advocated for 504

Dyslexia Support Model

Source: Fumiko Hoeft, MD, Ph.D



Menu of Accommodations and Modifications

Source: Consolidation of Multiple Examples

Materials/Book/Equipment

Alternative Text
Calculator Use
Computer Access
Consumable Workbook
Large Print Textbook
Manipulatives
Spell Check
Tape Recorder
Visuals: Supplementary
Worksheets Modified

Behavior Management

1-to-1 Reminders
Baseline Data
Behavioral Contract
Breaks Between Tasks
Chart Progress
Contingency Plan
Cue Expected Behavior
Daily Feedback to Student
Parent Sign Behavior Chart
Parent Sign Homework
Passive Physical Restraint
Proximity and Touch Control
Positive Reinforcement
Set/Post Class Rules

Tests/Quizzes/Time

Alternate Setting
Extra Credit Option
Extra Response Time
Extra Time – Projects
Extra Time – Tests
Extra Time – Written Work
Hands-on Projects
Limit Multiple Choice Options
Modified Tests
Objective Tests
Oral Testing
Pace Long-term Tasks
Prior Notice of Tests
Provide Study Guide for Test
Reduced Reading
Rephrase Test Questions
Short Sequenced Tasks
Shortened Tests
Simplified Test Wording
Student Writes on Test

Environment

Clear Work Area
Selective Seating
Study Carrel

Teaching Strategies

1-to-1 Oral Reminders
Auditory Presentation
Support with Visual Material
By-Pass for Written Output
Check Work in Progress
Computer Aided Instruction
Concrete Examples
Display Key Vocabulary
Extra Drill/Practice
Facial Clues/Gestures
Highlight Key Words
Immediate Feedback
Lecture Notes Provided
Manipulatives
Mimed Clues
Mnemonics
Monitor Assignment
Multisensory Approach
Number Line
Overlearning
Personalized Examples
Pictures/Charts
Preteach Content
Provide Models
Repeat Instructions
Review Directions

Organization

1 Paper At A Time Given
Extra Space on Papers
Give Daily Homework List
Study Outlines Provided
Pocket Folder for Work

Grading

Audit
Base Grade on Ability
Base Grade on IEP
Course Credit
Grade Effort Plus Work
Grade Improvement
Modified Grades
No Handwriting Penalty
No Spelling Penalty
Pass/Fail

Teaching Strategies (Con't)

Review Sessions for Tests
Student Restates Information
Visual Reinforcement
Vocabulary Word Bank
Visual Reminders

Common Services and Academic Modifications

	Services	Academic Modifications	Assistive Technology
Reading	Orton-Gillingham Instruction Structured Word Inquiry (SWI) Distraction Free Testing	Early Access to Readings Advanced Notice of Readings Additional Time on Tests	Audio Recordings of Books Text to Speech Technology Microsoft OneNote
Writing	Writing Matters™ Winston Grammar Distraction Free Testing	Verbal/Oral Assessments Use of Scribe No Penalization for Spelling Additional Time on Tests	Speech to Text Technology Electronic Dictionary
Math	Making Math Real™ Distraction Free Testing	Additional Time on Tests	Use of Calculator Multiplication Charts Formula Sheets
Classroom Instruction	Teacher Outline/Notes Access Peer Notetaker Access Extra Set of Textbooks at Home Written Assignment Directions	Modified Instruction including • Direct Instruction • Verbal and Visual • Checks for Understanding	Audiotapes of Lectures

Goal Setting for IEPs

IEP requires establishing goals for the student

By [Time Frame]

Write when the child will master the goal

Student will _____

Be specific about what skill the child will do

in _____ setting/context

Where will the skill be measured ? In the classroom ? In therapy ? In conversational speech ?

as measured by _____

How will progress be measured ? By teacher report ? By data collection ?

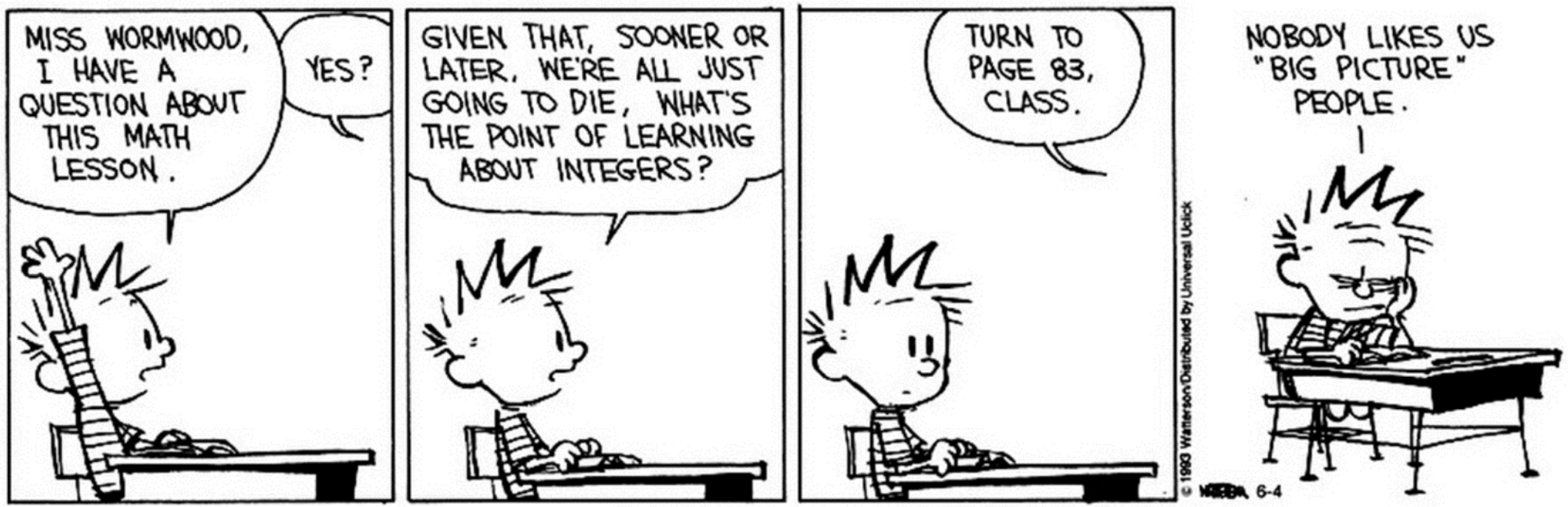
with _____ accuracy

Be specific with how accurate the child must be (e.g. 90%, 4 out of 5 trials)

with ____ supports

Can the child have any supports and still be considered to have met the goal (e.g. prompts, cues)

Source: A Day in Our Shoes


MISS WORMWOOD, I HAVE A QUESTION ABOUT THIS MATH LESSON.
YES?
GIVEN THAT, SOONER OR LATER, WE'RE ALL JUST GOING TO DIE, WHAT'S THE POINT OF LEARNING ABOUT INTEGERS?
TURN TO PAGE 83, CLASS.
© 1993 Watterson/Distributed by Universal Uclick
6-4
NOBODY LIKES US "BIG PICTURE" PEOPLE.

Dyslexia Friendly Classroom

Encouragement

Teach the Big Picture

Talk Things Over

Learn by Direct Experience

Learn with Pictures and Stories

Don't Over Correct

Allow Extra Time

Assistive Technology

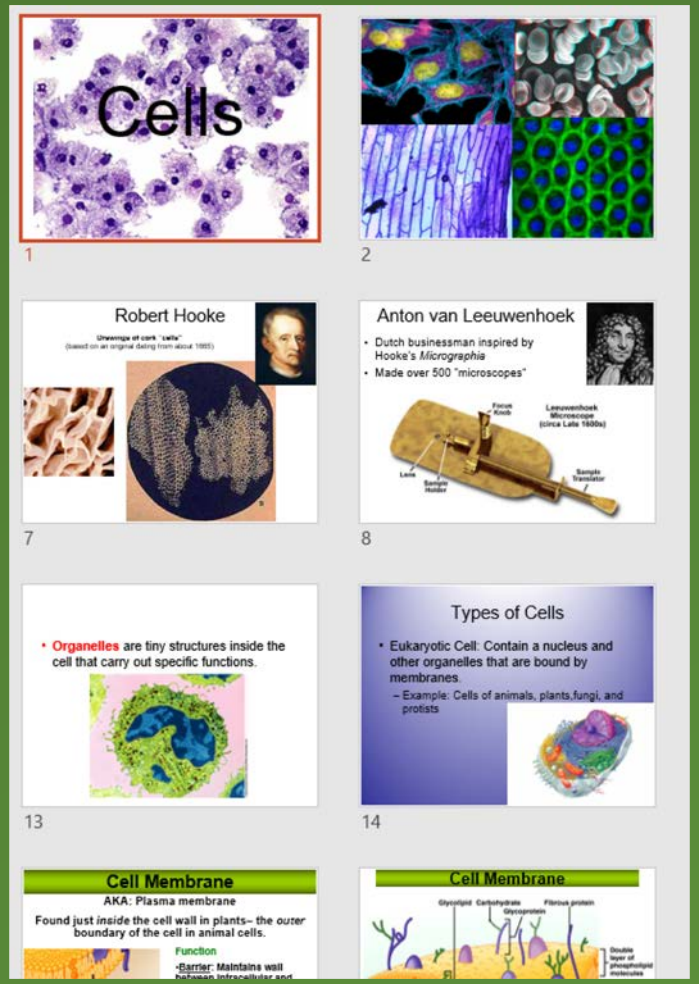
Break Information into Steps

Note-Taker

Work Open Book

Formula Card

Teacher Outline/Notes Access



Many teachers are now posting PowerPoint slides and outlines on classroom websites for all students

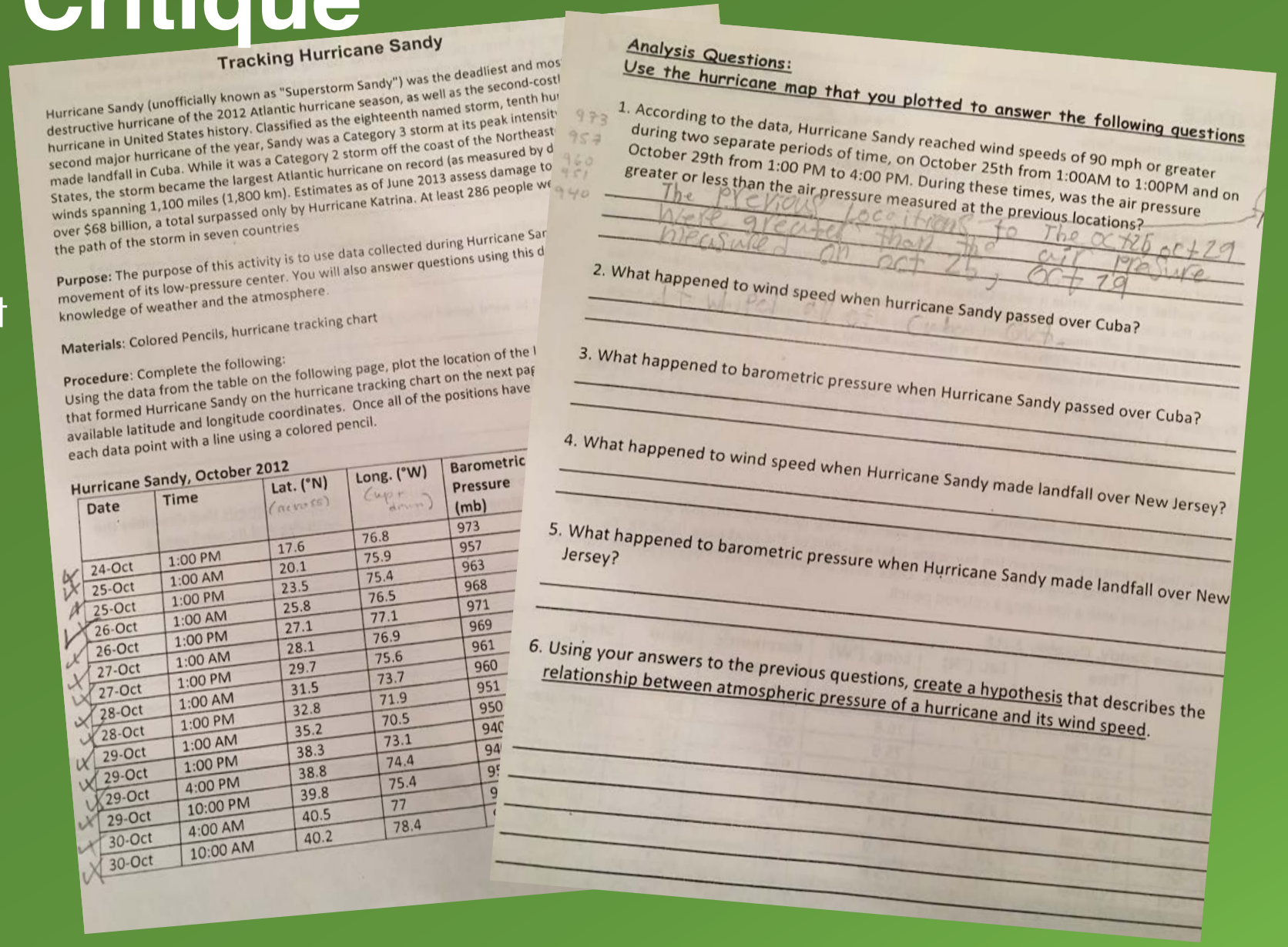
Sufficient to cover accommodation for Access to Teachers Outline and Notes

Assignment Critique

Assignment provides data table related to Hurricane Sandy and asks questions

Content is appropriate but execution creates additional challenges for dyslexic students

School policy or practice of printing assignments double-sided limits ability of students with weak working memory to complete assignment



Tracking Hurricane Sandy

Hurricane Sandy (unofficially known as "Superstorm Sandy") was the deadliest and mos
destructive hurricane of the 2012 Atlantic hurricane season, as well as the second-costl
hurricane in United States history. Classified as the eighteenth named storm, tenth hu
second major hurricane of the year, Sandy was a Category 3 storm at its peak intensity
made landfall in Cuba. While it was a Category 2 storm off the coast of the Northeast
States, the storm became the largest Atlantic hurricane on record (as measured by d
winds spanning 1,100 miles (1,800 km). Estimates as of June 2013 assess damage to
over $68 billion, a total surpassed only by Hurricane Katrina. At least 286 people we
the path of the storm in seven countries

Purpose: The purpose of this activity is to use data collected during Hurricane San
movement of its low-pressure center. You will also answer questions using this d
knowledge of weather and the atmosphere.

Materials: Colored Pencils, hurricane tracking chart

Procedure: Complete the following:
Using the data from the table on the following page, plot the location of the
that formed Hurricane Sandy on the hurricane tracking chart on the next pag
available latitude and longitude coordinates. Once all of the positions have
each data point with a line using a colored pencil.

Hurricane Sandy, October 2012

Date	Time	Lat. (°N)	Long. (°W)	Barometric Pressure (mb)
24-Oct	1:00 PM	17.6	76.8	973
25-Oct	1:00 AM	20.1	75.9	957
25-Oct	1:00 PM	23.5	75.4	963
26-Oct	1:00 AM	25.8	76.5	968
26-Oct	1:00 PM	27.1	77.1	971
27-Oct	1:00 AM	28.1	76.9	969
27-Oct	1:00 PM	29.7	75.6	961
28-Oct	1:00 AM	31.5	73.7	960
28-Oct	1:00 PM	32.8	71.9	951
29-Oct	1:00 AM	35.2	70.5	950
29-Oct	1:00 PM	38.3	73.1	940
29-Oct	4:00 PM	38.8	74.4	94
29-Oct	10:00 PM	39.8	75.4	95
30-Oct	4:00 AM	40.5	77	9
30-Oct	10:00 AM	40.2	78.4	

Analysis Questions:

Use the hurricane map that you plotted to answer the following questions

1. According to the data, Hurricane Sandy reached wind speeds of 90 mph or greater during two separate periods of time, on October 25th from 1:00AM to 1:00PM and on October 29th from 1:00 PM to 4:00 PM. During these times, was the air pressure greater or less than the air pressure measured at the previous locations?

2. What happened to wind speed when hurricane Sandy passed over Cuba?

3. What happened to barometric pressure when Hurricane Sandy passed over Cuba?

4. What happened to wind speed when Hurricane Sandy made landfall over New Jersey?

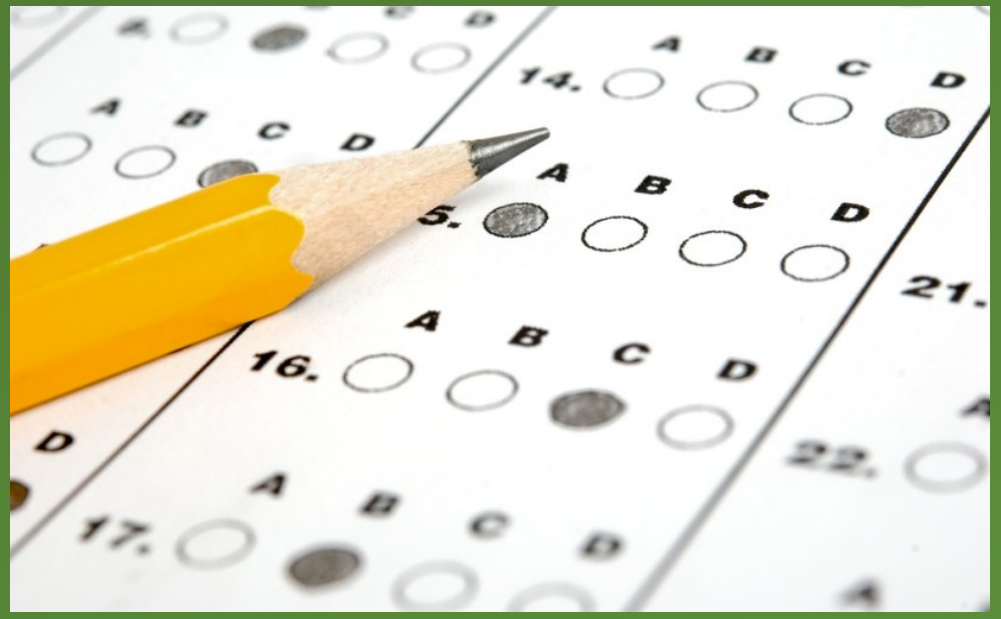
5. What happened to barometric pressure when Hurricane Sandy made landfall over New Jersey?

6. Using your answers to the previous questions, create a hypothesis that describes the relationship between atmospheric pressure of a hurricane and its wind speed.

Maura L. Malone, Ph.D.
Dyslexia Consultant

Distraction Free Testing

Extended Time on Tests



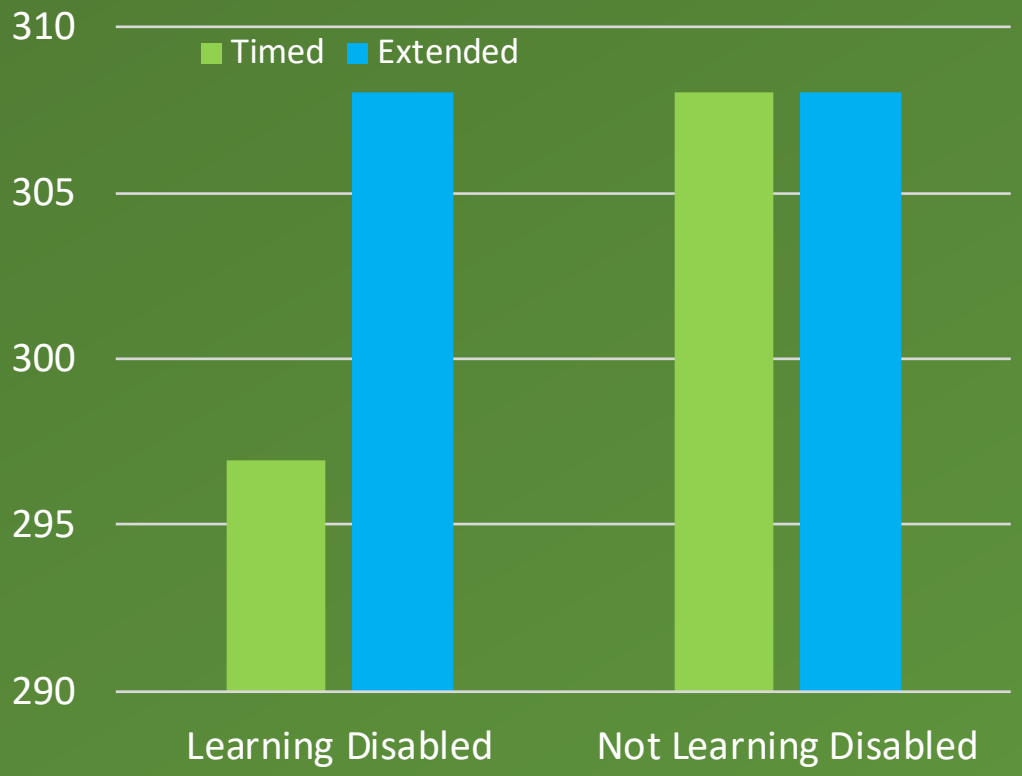
50% or 100% more time are common lengths of extended time for standardized tests

Many schools use 50% more time as the baseline for 504 plans

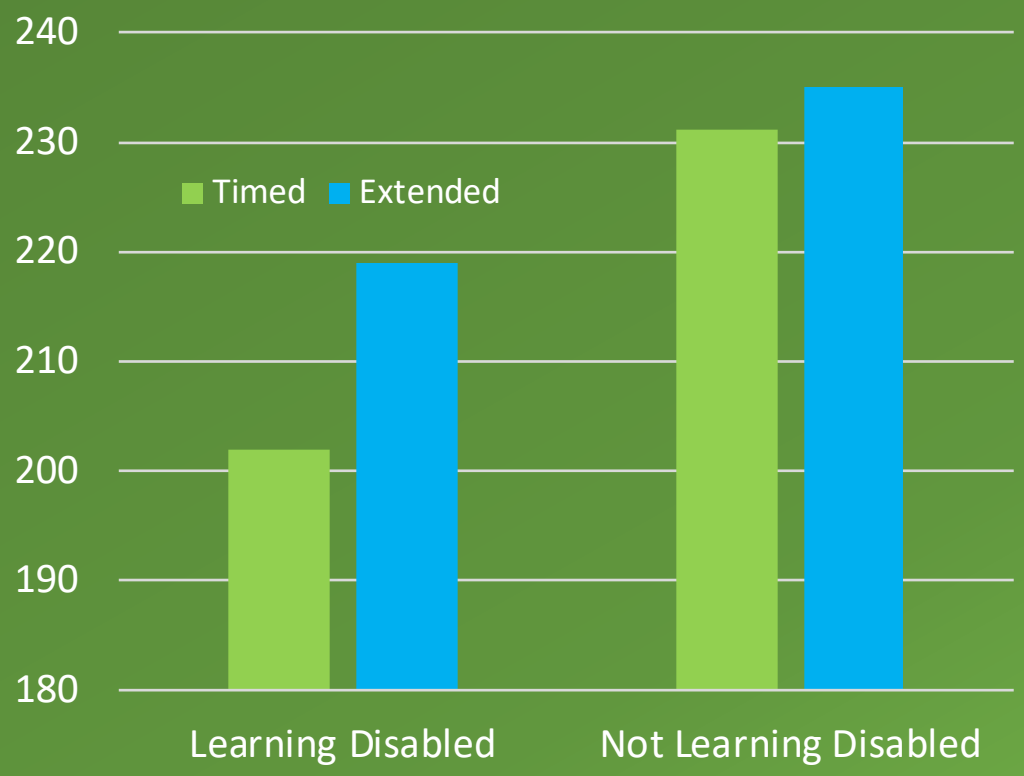
Extended Time Only Benefits The Learning Disabled

Extended time allows students to **fully read instructions and test questions**, and make sure their answers haven't included word, number, or symbol skips

Shoemaker & Mazurek (1998)



Ofiesh, Mather, Russell (2005)



Maura L. Malone, Ph.D.
Dyslexia Consultant

Assistive Technology

Source: Decoding Dyslexia Oregon

Informal Accommodation

Informal Accommodations are practices a teacher can take that are difficult to stipulate in a 504 or IEP

Keep Struggles Private

No spelling tests or spelling bees

No reading out loud

No peer editing

Modify Teaching Techniques

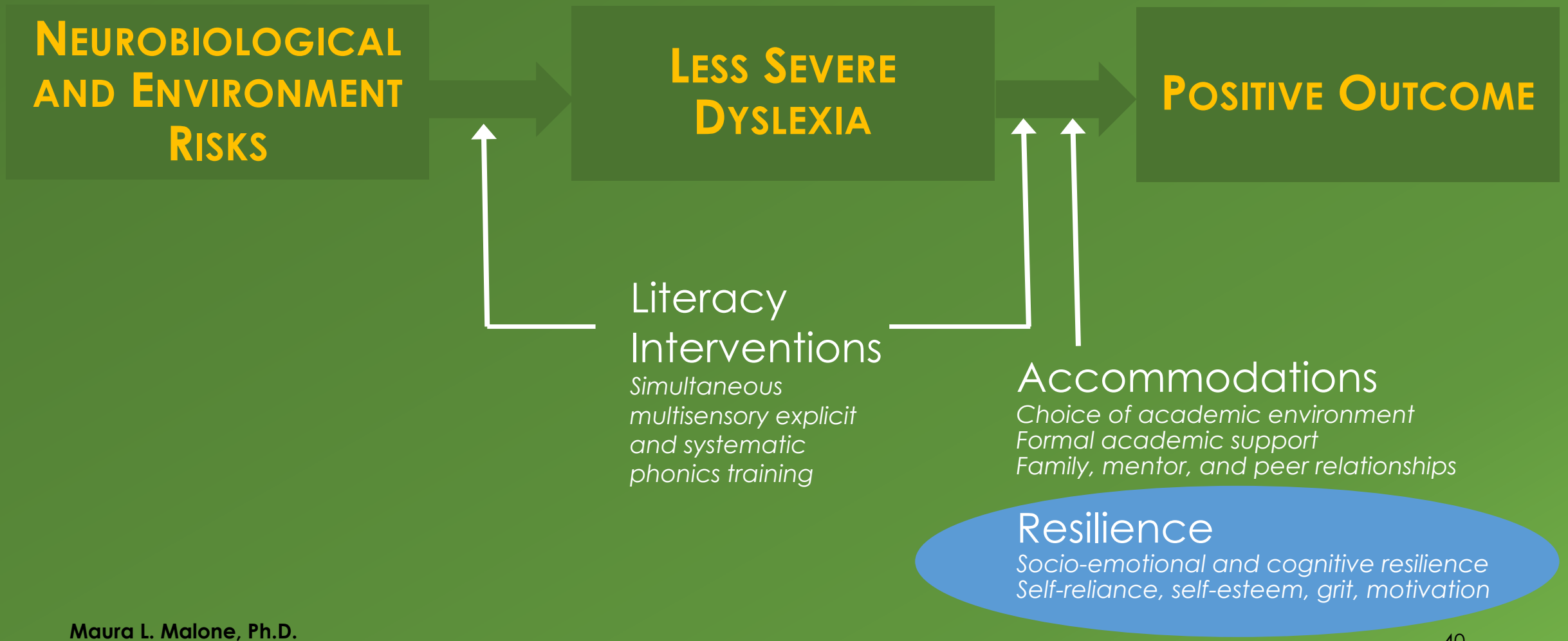
Introduce new topics with a strong narrative story

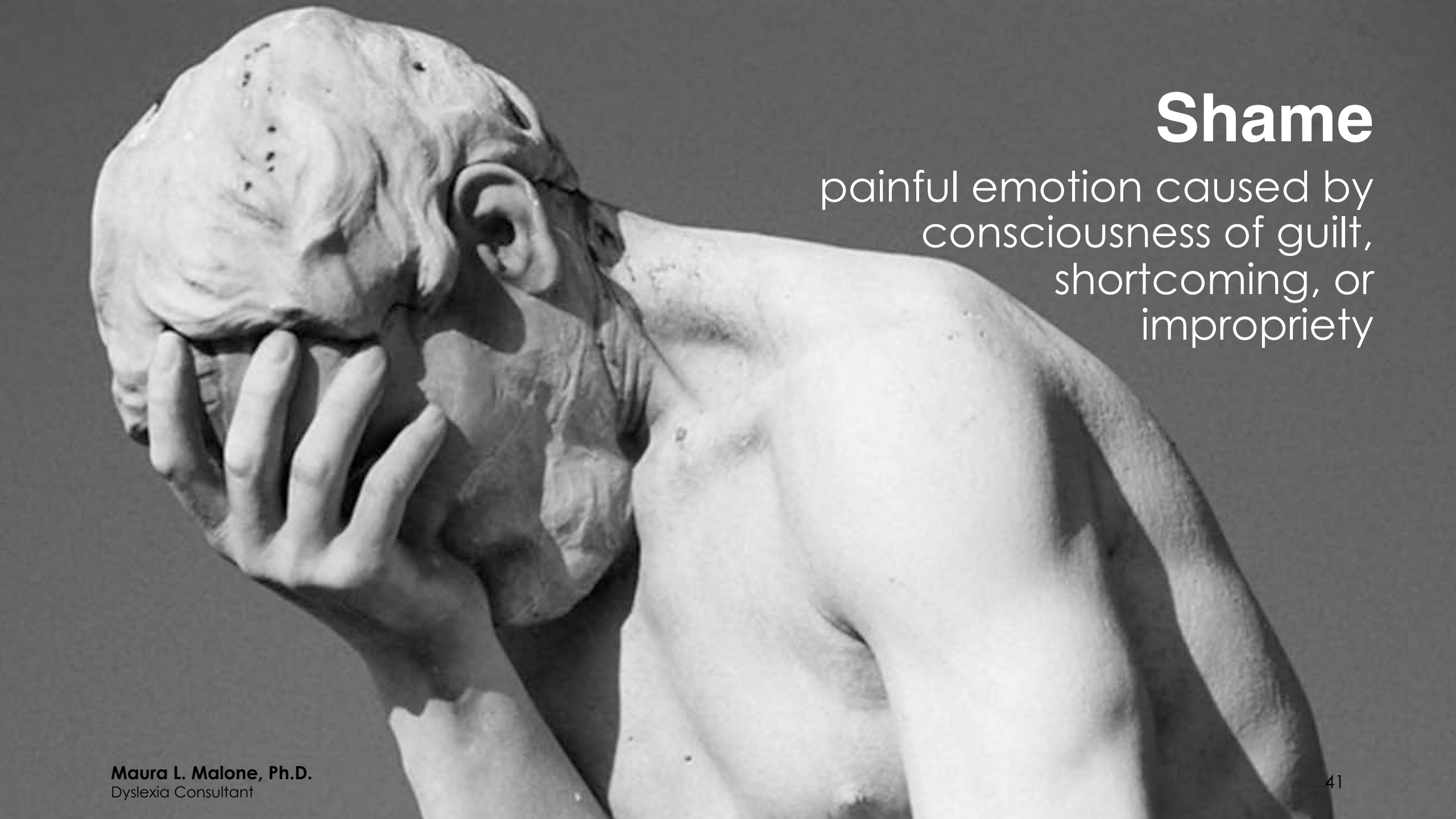
Use video and other visual media

Build general understanding first and then add detail

Dyslexia Support Model

Source: Fumiko Hoeft, MD, Ph.D





Shame

painful emotion caused by consciousness of guilt, shortcoming, or impropriety

Antidote to Shame

Cohesive narrative *that explains their cognitive style and its challenges and strengths*

Post Traumatic **Growth** Syndrome: Make sense of a trauma you have experienced will allow you to be resilient

Resilience

Grit
Angela Duckworth

Passion and **perseverance for long-term goals**

Individuals high in grit **maintain determination** and motivation over long periods despite adversity

Growth Mindset
Carol Dweck

Belief that talents and **abilities can be developed** through effort, good teaching, and persistence

Individuals with growth mindset more likely to **continue working hard despite setbacks**

Dyslexic Strengths

Material Reasoning

Interconnected

Narrative

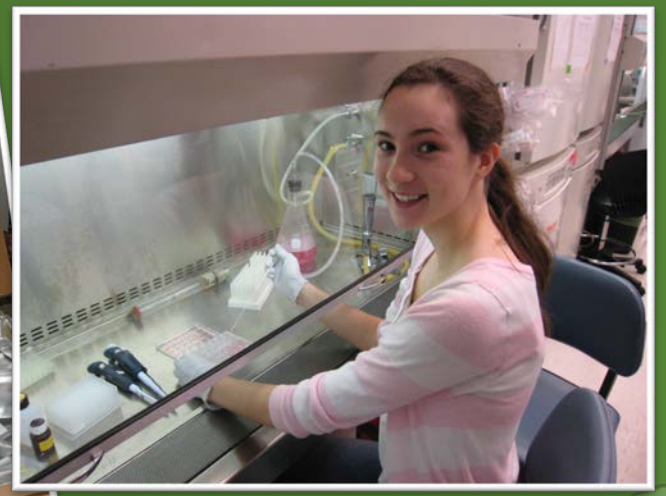
Dynamic

Many dyslexics have one or more of these strengths

Dyslexic population tends to have more of these strengths than the general population

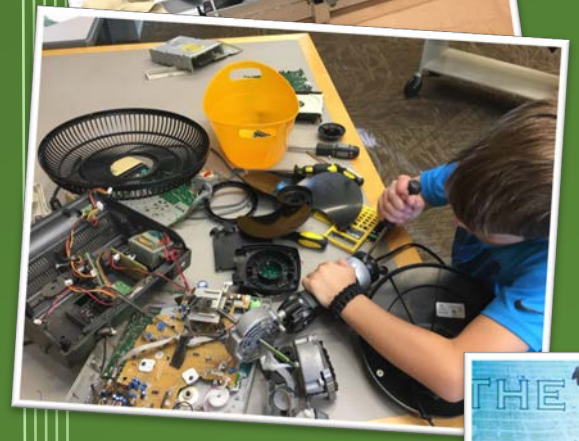
fMRI testing show strengths derive from connections among multiple parts of the brain; tend to be "late blooming" skills

Maura L. Malone, Ph.D.
Dyslexia Consultant



Engineering

The Arts



Entrepreneurship

Architecture

Maura L. Malone,
Dyslexia Consultant

"Dyslexics can be pigeonholed as stupid, their ideas dismissed over a simple mispronunciation or misspelling. As a dyslexic, I have felt shame, embarrassment and the need to hide my differences.

On the other hand, my diversity has helped me see creative and alternative ways to problem solve.

Sharing this insight with my peers in medical school will hopefully give them the same feeling of strength that arises, sometimes unexpectedly, from what makes us different."

Creighton University, School of Medicine
Application Essay
Matriculated Summer 2019

Maura L. Malone, Ph.D.
Dyslexia Consultant

"It would be difficult, if not impossible, to find any other disability affecting so many millions of children in the United States today, on which so much research has been done, so many thousand articles written and yet which so very little information concerning has reached the average teacher or physician to say nothing of parents and the public.

Careth Ellingson, 1963 Saturday Review

Thank You !

Maura Malone, Ph. D.

Dyslexia Consultant

mauralmalone@gmail.com

503.997.5075