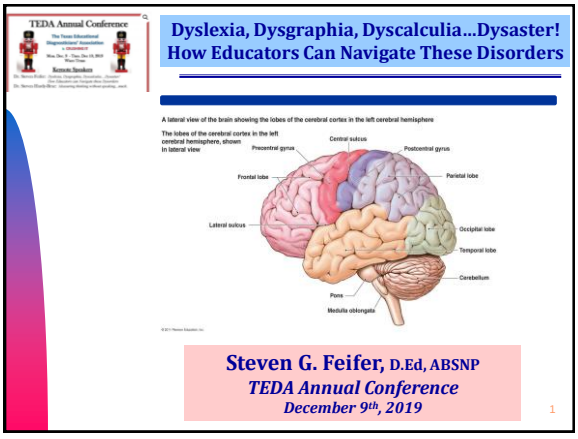
TEDA Annual Conference
Dyslexia, Dysgraphia, Dyscalculia…Dysaster!
How Educators Can Navigate These Disorders
A lateral view of the brain showing the lobes of the cerebral cortex in the left cerebral hemisphere
The lobes of the cerebral cortex in the left cerebral hemisphere, shown in lateral view
Central sulcus
Precentral gyrus
Postcentral gyrus
Frontal lobe
Parietal lobe
Lateral sulcus
Occipital lobe
Temporal lobe
Cerebellum
Pons
Medulla oblongata
Steven G. Feifer, D.Ed, ABSNP
TEDA Annual Conference
December 9th, 2019
1

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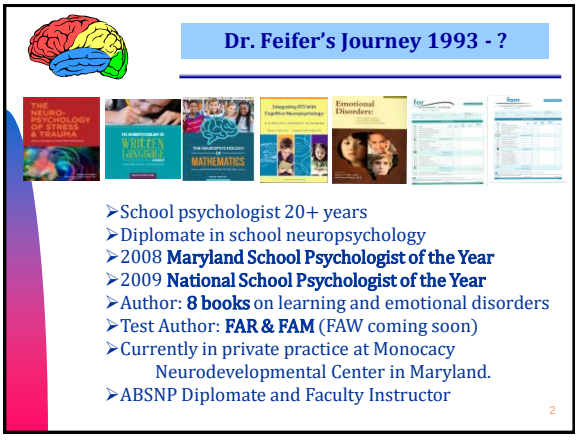

Dr. Feifer's Journey 1993 - ?
THE NEURO-PSYCHOLOGY OF STRESS & TRAUMA
WRITTEN LANGUAGE
MATHEMATICS
Emotional Disorders:
➢School psychologist 20+ years
➢Diplomate in school neuropsychology
➢2008 Maryland School Psychologist of the Year
➢2009 National School Psychologist of the Year
➢Author: 8 books on learning and emotional disorders
➢Test Author: FAR & FAM (FAW coming soon)
➢Currently in private practice at Monocacy Neurodevelopmental Center in Maryland.
➢ABSNP Diplomate and Faculty Instructor
2

2

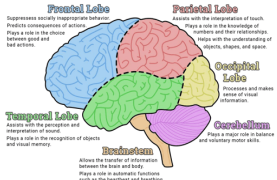

Where is your finish line?
TOUCHDOWN
10 20 30 40 50 40 30 20 10
IQ SCORE
(1990's)
Qualification
(Administrative Psychologist)
Interventions
(Clinician)
3

3

School Neuropsychology

- ***Neuropsychology:*** **An analysis of learning and behavior which examines *brain-behavior* relationships. The underlying assumption is that the brain is the seat of ALL behavior; therefore, knowledge of cerebral organization should be the key to unlocking the mystery behind most cognitive tasks.**

The Human Brain



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Dispelling Neuromyths

Macdonald, K., Germine, L., Anderson, A., Christodoulou, J., McGrath, L. (2017). **Dispelling the Myth: Training in Education or Neuroscience Decreases but Does Not Eliminate Beliefs in Neuromyths.** ***Frontiers in Psychology,*** 8, 1314.

1. **VAK Learning Styles**
2. **Dyslexia and Reversals**
3. **Mozart Effect**
4. **We use just 10% of our Brains**
5. **Sugar causes ADHD**
6. **Right vs Left Brain Learners**

General Public……..(m=68%)
Educators …….. (m=56%)
High Neuroscience Exposure…(m=46%)

5

5

Defining Dyslexia

- *"Dyslexia is characterized by difficulties with **accurate** and / or **fluent** word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge."*

  - International Dyslexia Association

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Four Universal Truths of Reading

1. In all word languages studied to date, children with developmental reading disorders (dyslexia) primarily have difficulties in both recognizing and manipulating phonological units at all linguistic levels (Goswami, 2007).

Lowest Incidence:		Highest Incidence:	
Slovakia	1-2%	China	5-8%
Italy	1-5%	United States	5-10%
Czech Republic	2-3%	Russia	10%
Britain	4%	Israel	10%
Poland	4%	Finland	10%
Belgium	5%	Nigeria	11%
Greece	5%	Australia	16%
Japan	6%	India	20%

(Smith, Everatt, & Salter, 2004)

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Four Universal Truths of Reading

2. The English language *is not* a purely phonological!

- 1 letter grapheme: c a t. The sounds /k/ is represented by the letter 'c'.
- 2 letter grapheme: l ea f. The sound /ee/ is represented by by the letters 'e a'.
- 3 letter grapheme: n igh t. The sound /ie/ is represented by the letters 'i g h'.
- 4 letter grapheme: th r ough. The sound /oo/ is represented by the letters 'o u g h

- The English language includes over 1,100 ways of representing 44 sounds using a series of different letter combinations (Uhry & Clark, 2005). In Italian there is no such ambiguity as just 33 graphemes are sufficient to represent the 25 phonemes.
- Therefore, 25% of words are phonologically irregular (i.e. "debt", "yacht", "onion", etc..) or have one spelling but multiple meanings –*homonyms*- (i.e. "tear", "bass", "wind", etc.)
- *Summary*: We need to develop orthography!!

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The Problem with English Orthography?

IF THE GH SOUND IN ENOUGH IS PROUNCED "F"
& THE O IN WOMEN MAKES THE SHORT "I" SOUND
& THE TI IN NATION IS PRONOUNCED "SH"
THEN THE WORD

"GHOTI"

IS PROUNCED JUST LIKE


"FISH"


WELCOME TO THE ENGLISH LANGUAGE

9

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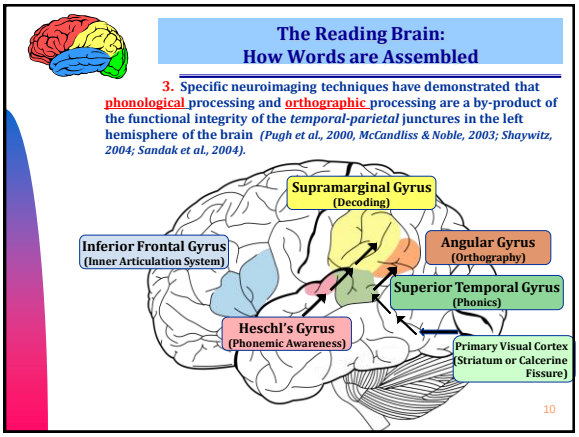
The Reading Brain:
How Words are Assembled
3. Specific neuroimaging techniques have demonstrated that phonological processing and orthographic processing are a by-product of the functional integrity of the temporal-parietal junctures in the left hemisphere of the brain (Pugh et al., 2000, McCandliss & Noble, 2003; Shaywitz, 2004; Sandak et al., 2004).
Supramarginal Gyrus
(Decoding)
Inferior Frontal Gyrus
(Inner Articulation System)
Angular Gyrus
(Orthography)
Superior Temporal Gyrus
(Phonics)
Heschl's Gyrus
(Phonemic Awareness)
Primary Visual Cortex
(Striatum or Calcerine Fissure)
10

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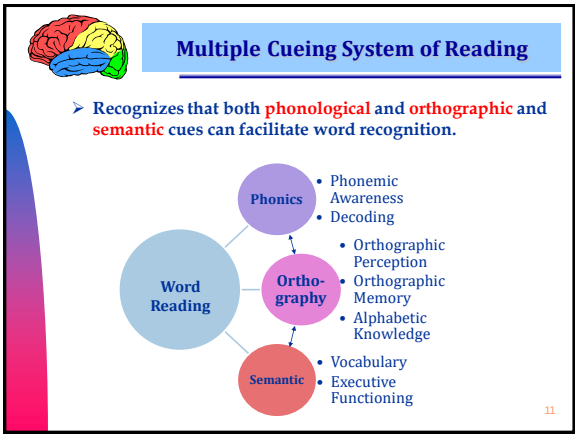
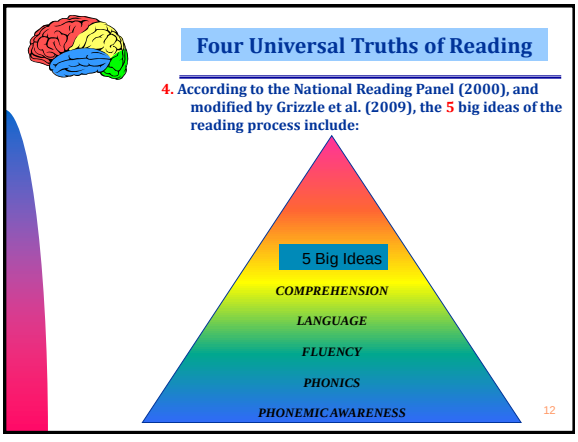

Multiple Cueing System of Reading
Recognizes that both phonological and orthographic and semantic cues can facilitate word recognition.
Word Reading
Phonics
Phonemic Awareness
Decoding
Ortho-graphy
Orthographic Perception
Orthographic Memory
Alphabetic Knowledge
Semantic
Vocabulary
Executive Functioning
11

11


Four Universal Truths of Reading
4. According to the National Reading Panel (2000), and modified by Grizzle et al. (2009), the 5 big ideas of the reading process include:
5 Big Ideas
COMPREHENSION
LANGUAGE
FLUENCY
PHONICS
PHONEMICAWARENESS
12

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Four Subtypes of Reading Disorders

(1) Dysphonetic Dyslexia – difficulty sounding out words in a phonological manner.

(2) Surface Dyslexia – difficulty with the rapid and automatic recognition of words in print.

(3) Mixed Dyslexia – multiple reading deficits characterized by impaired phonological and orthographic processing skills. Most severe form of dyslexia.

(4) Comprehension Deficits – mechanical side of reading is fine but difficulty persists deriving meaning from print.

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Keys to Intervention

- The younger the child, the better the outcome.
- The *"at-risk"* child responds best to small group instruction (3:1), with phonological awareness training being combined with explicit phonics.
- Older children respond better to "top down" instruction using morphological cues and multi-faceted literacy models.
- Frequency of instruction (4-5 days per week) was more effective than sporadic instruction.
- All schools should have 4 intervention programs:
  1. Traditional Structured Phonics (Fundations, Language Foundations, etc.)
  2. Non-traditional phonics (Lips, Horizons, O-G, Wilson)
  3. Fluency (Read Naturally, Great Leaps, etc.)
  4. Comprehension (Soar to Success, Lindamood V&V)

* Comprehensive Literacy Programs- Tier II (Read 180, LLI, etc.)

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far™ feiferassessmentofreading™

Steven G. Feifer, D.Ed., ABSNP

- A neurodevelopmental assessment of reading
- Pre-K to College (Ages 4-21)
- Diagnoses 4 subtypes of reading disorders
- Includes the FAR-S dyslexia screening battery
- Traditional achievement tests tell **WHERE** a student is functioning, diagnostic achievement tests tell **WHY!**
- Puts the **"I"** back in **IEP's**!!!

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far™ feiferassessmentofreading™

Structure of the FAR

Index	Subtest	Grade range	Approximate administration time in minutes
Phonological Index (PI)	Phonemic Awareness (PA)	PK to college	5 to 10
	Nonsense Word Decoding (NWD)	Grade 2 to college	2
	Isolated Word Reading Fluency (ISO)	K to college	1
	Oral Reading Fluency (ORF)	K to college	2 to 3
	Positioning Sounds (PS)	PK to college	3 to 4
Fluency Index (FI)	Rapid Automatic Naming (RAN)	PK to college	2
	Verbal Fluency (VF)	PK to college	2
	Visual Perception (VP)	PK to college	1
	Orthographical Processing (OP)	K to college	8
	Irregular Word Reading Fluency (IRR)	Grade 2 to college	1
Comprehension Index (CI)	Semantic Concepts (SC)	PK to college	5 to 8
	Word Recall (WR)	PK to college	4
	Print Knowledge (PK)	PK to Grade 1	4
	Morphological Processing (MP)	Grade 2 to college	7
	Silent Reading Fluency (SRF)	Grade 2 to college	8

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far™ feiferassessmentofreading™

Fundations	FAR INTERPRETIVE REPORT WRITER: Targeted Reading Programs
Alphabetic Phonics	A multisensory phonological approach to reading that is an extension of the traditional Orton-Gillingham model. There are 11 fast-paced activities embedded within each lesson to develop automaticity with phonics skills.
Read Well	A top-down reading and language arts solution that emphasizes a mixture of instruction to the class as a whole, smaller groups, and individual student practice.
Lexia Primary Reading	A self-paced computer-based program that helps students develop reading skills. The program identifies when students would benefit from additional support, and automatically notifies the teacher with individualized feedback and recommendations.
Fast Forword Language to Reading	A scientifically-based 8-12 week reading intervention that boosts students' reading levels by one or two grades. Focuses on phonemic awareness, phonics, fluency, comprehension, and vocabulary.
Voyager Time Warp Plus	A summer reading intervention that encompasses 80 hours-worth of material. Phonemic awareness, phonics and word analysis, fluency, vocabulary, and comprehension are covered thoroughly through daily practice.
System 44	Teaches foundational reading skills to students Grades 3+. This computer-based platform encourages students to think critically and interact with the text as they learn phonics and comprehension.
Academy of Reading	An intervention program that helps students with phonemic awareness, phonics, fluency, vocabulary, and comprehension. This online program includes real-time reading assessments and progress monitoring.
Words Their Way	A developmental spelling, phonics, and vocabulary program with numerous activities geared toward developing orthographic knowledge. Sorting, constructing a word wall, and creating a word study notebook are essential components of the program.

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Five Quick Facts About Written Expression

1. Most students rely on writing, either e-mail, text messages, word processing, or other computerized technology to communicate.
2. According to NAEP, 54% of 8th graders and 52% of 12th graders perform at a ***Basic*** level in written expression.
3. Males score ***significantly*** lower than females on standardized assessments of written language (NAEP, 2011).
4. Downward extension of our curriculum whereby reading and written language skills being emphasized in kindergarten.
5. Writing remains one of the most challenging skills to teach with in our students.

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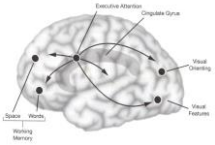
Cognitive Constructs Involved with Written Language



Attention

- Poor planning
- Uneven tempo
- Erratic legibility
- Inconsistent spelling
- Poor self monitoring
- Impersistence

BRAIN REGION **- Anterior Cingulate Gyrus**
****Effort control and top-down attention***

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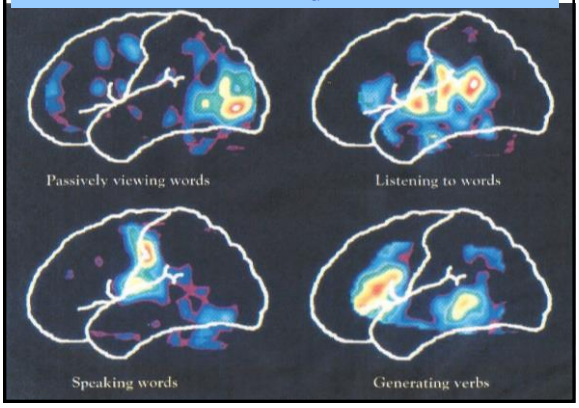
THE WRITING BRAIN



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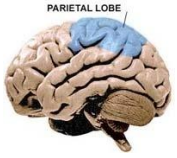
Cognitive Constructs Involved with Written Language



Spatial Production

- Poor spatial production
- Poor visualization
- Poor margination
- Organization problems
- Uneven spacing
- Poor use of lines

BRAIN REGION **- Right Parietal Lobe**

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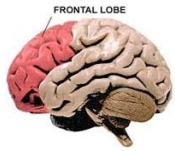
Cognitive Constructs Involved with Written Language

Sequential Production



- Poor connected writing
- Letter reversals
- Organizational deficits
- Lack of cohesive ties
- Deficits in working memory, especially with ADHD kids, leads to poor sequential dysfunction.

BRAIN REGION **- Left Prefrontal Cortex**

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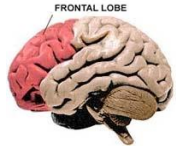
Cognitive Constructs Involved with Written Language

Working Memory Skills



- Poor *word retrieval* skills
- Poor spelling
- Poor grammar rules
- Loss of train of thought
- Deterioration of continuous writing
- Poor elaboration of ideas
- Cortical mapping of language is ***distributed*** throughout brain *(i.e. nouns vs. verbs)*

BRAIN REGION **- Semantic memories stored in Temporal Lobes. Retrieved by Frontal Lobes**

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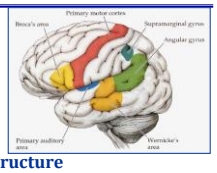
Cognitive Constructs Involved with Written Language

Language



- Poor vocabulary
- Lack of cohesive ties
- Poor grammar
- Simplistic sentence structure
- Left hemisphere stores language by converging words into semantic baskets; right hemisphere excels in more divergent linguistic skills (simile and metaphor)

BRAIN REGION **- Left Temporal Lobe**

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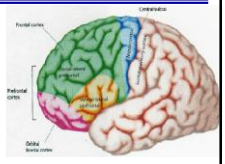
Cognitive Constructs Involved with Written Language



Executive Functioning

- Organize and plan ideas
- Self monitor
- Task initiation
- Sustain attention to task
- Verbal retrieval fluency
- Cognitive flexibility to shift from one topic to another.

BRAIN REGION **– Dorsolateral Prefrontal Cortex**

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Executive Functioning and Written Language

Classification	Writing Dysfunction
(1) Initiating	* Poor idea generation * Poor independence
(2) Sustaining	* Lose track of thoughts * Difficulty finishing * Sentences disjointed
(3) Inhibiting	* Impulsive/Distractible
(4) Shifting	* Perseverations * "Stuck" on topic

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Executive Functioning and Written Language

Classification	Writing Dysfunction
(5) Poor Organization	* Frequent erasers * Forget main idea * Disjointed content
(6) Poor Planning	* Poor flow of ideas * Lack of cohesive ties
(7) Poor Word Retrieval	*Limited word choice * Simplistic sentences
(8) Poor Self Monitor	* Spelling miscues * Sloppy work * Careless errors

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Cognitive Constructs Involved with Written Language

Motor Output Speed

Grade Levels	Handwriting Speed
Grade 1	15 -32 letters per minute
Grade 2	20 -35 letters per minute
Grade 3	25 -47 letters per minute
Grade 4	34 -70 letters per minute
Grade 5	38 -83 letters per minute
Grade 6	46 -91 letters per minute

BRAIN REGION **– Basal Ganglia** (Pollack et al., 2009)

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3 Subtypes of Written Language Disorders

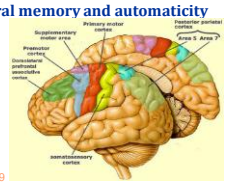
(1) Graphomotor Dygraphias - apraxia refers to a wide variety of motor skill deficits in which the voluntary execution of a skilled motor movement is impaired.

a) Premotor cortex plans the execution of a motor response.

b) Supplementary motor area – guides motor movement

c) Cerebellum - provides proprioceptive feedback.

d) Basal Ganglia – procedural memory and automaticity of handwriting.



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(2) Dyslexic Dysgraphias: Spelling Miscues

a) Dysphonetic dysgraphia - the hallmark feature of this disorder is an inability to spell by *sound* due to poor *phonological* skills. There is often an over-reliance on the visual features of words when spelling.

b) Surface dysgraphia - a breakdown in the *orthographic* representation of words. Miscues made primarily on phonologically irregular words.

c) Mixed Dysgraphia - characterized by a combination of both *phonological* errors and *orthographical* errors depicting faulty arrangement of letters and words.

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3 Subtypes of Written Language Disorders

(3) Executive Dysgraphias - an inability to master the implicit rules for grammar which dictate how words and phrases can be combined. Deficits in *working memory* and *executive* functioning in frontal lobes hinders syntax!

- Word omissions
- Word ordering
- Incorrect verb usage
- Word ending errors
- Poor punctuation
- Lack of capitalization
- Oral vs. written language discrepancy

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Feifer Assessment of Writing (FAW)
Spring, 2020

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Research Based Interventions
(Graham & Perin, 2007)

(1) Writing Strategies *(effect size .82)*
(2) Summarization (*effect size .82)*
(3) Collaborative Writing *(effect size .75)*
(4) Specific Product Goals *(effect size .70)*
(5) Word Processing *(effect size .55)*
(6) Sentence Combining *(effect size .50)*
(7) Prewriting *(effect size .32)*
(8) Inquiry activities *(effect size .32)*
(9) Process Writing Approach *(effect size .32)*
(10) Study of Models *(effect size .25)*
(11) Writing for Content Learning *(effect size .23)*

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EmPOWER – Dr. Bonnie Singer

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Self Monitoring Strategies

COPS strategy **– a directional proof-reading strategy where the student re-reads their passage four times prior to completion.**

1) *Capitalize* the first word of each sentence.

2) *Organize* the information by reviewing topic sentences and double check paragraph breaks. separations.

3) *Punctuation* miscues must be reviewed.

4) Spelling miscues must be reviewed.

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What is a Math Disability?

Dyscalculia** – children with specific math-related deficits, including : a) Learning and retrieving mathematical facts **(Language Retrieval)

*b) Executing math calculation procedures **(Working Memory)***

*c) Basic number sense and concept development **(Executive Functioning)***

*d) Visualizing magnitude representations. **(Visual-spatial Reasoning)***

Math Learning Disability (MLD) - a generic term referring to children whose math performance in the classroom is substantially below age- and grade-level expectations. Often used when there is unexpected underachievement.

* Up to 20% of school age children have MLD or persistent difficulty with math (Iuculano et al., 2015)

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The Neural Machinery of Mathematics

Language Skills: (temporal lobes)

- Most Asian languages have linguistic counting systems past *ten* (*ten-one, ten-two, etc)* whereas English deviates from base-10 system (Campbell & Xue, 2001).
- In English counting system, decades come first then unit *(i.e. twenty-one)* or sometimes this is reversed *(i.e. fifteen, sixteen, etc…)*
- Chinese numbers are brief *(i.e. 4=si, 7=qi)* allowing for more efficient memory. By age four, Chinese students can count to 40, U.S. students to 15.
- U.S. kids spend 180 days in school
  South Korea children spend 220 days in school
  Japan kids spends 243 days in school

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The Neural Machinery of Mathematics

Working Memory Skills: (Baddeley,1998)

- *Phonological Loop* - holds and manipulates acoustic information. Housed in *left temporal lobes*.
- *Visual-Spatial Sketchpad* - holds visual, spatial, and kinesthetic information in temporary storage by way of mental imagery. Housed along inferior portions of *right parietal lobes.* Extremely important in mathematics.
- *Central Executive System* - command post for controlling two slave systems. Allocates attention resources whereby two cognitive tasks can be executed. Primarily housed in *frontal lobes.*
  - Central executive system becomes very inefficient when a student feels anxiety and stress.

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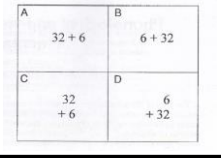
Horizontal Vs. Vertical

(Trbovich & LeFevre, 2003).

- Solving problems in a vertical format required the use of more visual resources, particularly the visual-spatial sketchpad of working memory.
- Solving problems in a horizontal format required more phonological resources resulting in *slower* performance.



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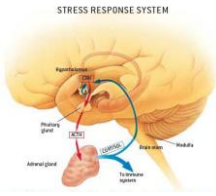
Math Anxiety



Cortisol – a glucocorticoid (glucose-cortex-steroid) that regulates the metabolism of glucose in the brain. A balance or homeostasis of cortisol is needed for optimal brain functioning. Too much *(Cushing's Syndrome)*...too little *(Addison's Disease)*.

- Stress & anxiety impacts body by lowering immune system, and also by reducing sleep.
- Stress and anxiety alters amygdala to PFC connections leading to impairments in executive functioning (Berens et al., 2017).
- Anxiety impacts cognition and learning by way of working memory (Dowker et al., 2015)

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The Truth About Math Anxiety: Do We Have a Math Phobia?

Implicit Messages:

"Oh not to worry Billy, I was never that good in math either."
"Wow, are you taking Algebra II....that is sooooo hard!"
"Hey Ritchie...it doesn't matter if you do not understand your math homework, you will never use this stuff in real life."

CAUSES OF MATH ANXIETY:

- Timed tests
- Pop quizzes
- Being called upon to write a math problem on the board
- Speeded skill drills and classroom competitions
- Teaching too quickly before concepts are consolidated
- Unit tests that cover too much information
- No visual cues
- Poor instruction
- Classroom climates that prevent students from asking questions
- Stressing teacher's own algorithm

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The Neural Machinery of Mathematics

Executive Functioning Skills: (frontal lobes)

- Executive control mechanisms are a set of directive processes such as planning, self-monitoring, organizing, and allocating attention resources to effectively execute a goal directed task.
- Executive functioning dictates "*what to do when*", a critical process in solving word problems.
- Executive functioning allows students to choose an appropriate algorithm when problem solving.

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The Neural Machinery of Mathematics

EXECUTIVE DYSFUNCTION	BRAIN REGION	MATH SKILL
• *Selective Attention*	• *Anterior Cingulate/ Subcortical structures*	• Poor attention to math operational signs • Place value mis-aligned
• *Planning Skills*	• *Dorsal-lateral PFC*	• Selection of math process impaired • Difficulty determining salient information in word problems

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The Neural Machinery of Mathematics

EXECUTIVE DYSFUNCTION	BRAIN REGION	MATH SKILL
• *Organization Skills*	• *Dorsal-lateral PFC*	• Inconsistent lining up math equations • Frequent erasers • Difficulty setting up problems
• *Self-Monitoring*	• *Dorsal-lateral PFC*	• Limited double-checking of work • Unaware of plausibility to a response.

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3 Subtypes of Math Disabilities

(1) *Verbal Dyscalculia Subtype*:
Main deficit is the automatic retrieval of number facts which have been stored in a linguistic code.

- **Over-reliance on manipulatives when problem solving.**
- **Multiplication and addition often impaired.**
- **Poor at math fluency tests.**
- **Math algorithms often preserved.**
- **Often have learning disabilities in language arts as well.**

Key Constructs: Language & Verbal Retrieval Skills

45

3 Subtypes of Math Disabilities

(2) *Procedural Dyscalculia Subtype*:

- A deficit in the ability to count, order, or sequence numbers.
- Difficulty recalling the algorithm or sequence of steps when performing longer math operations.
- Confusion with long division and place value.
- Retrieval of math facts such as single digit addition, subtraction, and multiplication, as well as magnitude comparisons often preserved.
- Only partial development of "*number sense*"

Key Constructs: Working Memory and Anxiety

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3 Subtypes of Math Disabilities

(3) Semantic Subtype (Visual-Spatial)

- A deficit with non-symbolic representations of math including estimation skills, aligning numbers in columns, magnitude representations, and pattern recognition skills among objects (right hemisphere).
- In the left hemisphere, impacts visual inferencing of verbal information. This may impact applying visual strategies to verbally mediated problems. For example,

"A laboratory used 120 fence posts in an experiment comparing two types of paint. Six fewer than twice as many fence posts were painted with paint A as were painted with paint B. How many fence posts were painted with paint A? Paint B?"

Key Constructs: Visual-Spatial processing

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Steven G. Feifer, DEd

- A neurodevelopmental assessment of mathematics
- Pre-K to College (Ages 4-21)
- Normative sample included 1,061 students
- 19 subtests in complete battery
- Diagnoses **3** subtypes of math disorders
- Includes the FAM-S dyscalculia screening battery
- Total Fam index score and **3** math index scores:
  - a) Procedural subtype
  - b) Verbal subtype
  - c) Semantic subtype
- **Qualification Level:** S or B

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Structure of the FAM

Index	Subtest	Grade range	Approximate administration time
Procedural Index (PI)	Forward Number Count (FNC)	PK to college	5 minutes
	Backward Number Count (BNC)	K to college	5 minutes
	Numeric Capacity (NCA)	PK to college	3 minutes
	Sequences (SEQ)	PK to college	5 minutes
	Object Counting (OC)	PK to Grade 2	5 minutes
Verbal Index (VI)	Rapid Number Naming (RNN)	PK to college	1 minute
	Addition Fluency (AF)	K to college	1 minute
	Subtraction Fluency (SF)	K to college	1 minute
	Multiplication Fluency (MF)	Grade 3 to college	1 minute
	Division Fluency (DF)	Grade 3 to college	1 minute
	Linguistic Math Concepts (LMC)	PK to college	6 minutes
Semantic Index (SI)	Spatial Memory (SM)	PK to college	5 minutes
	Equation Building (EB)	Grade 3 to college	4 to 6 minutes
	Perceptual Estimation (PE)	PK to college	5 minutes
	Number Comparison (NCO)	PK to college	2 minutes
	Addition Knowledge (AK)	K to college	2 minutes
	Subtraction Knowledge (SK)	K to college	2 minutes
	Multiplication Knowledge (MK)	Grade 3 to college	2 minutes
	Division Knowledge (DK)	Grade 3 to college	2 minutes

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Evidenced Based Math Programs

1. ***Lindamood Bell "On Cloud Nine"*** **– helps children visualize number concepts and develop math reasoning skills.**
2. ***Fraction Face-Off*** **– a game where students are in teams to earn fraction money by understanding part-whole interpretations.**
3. ***Number Worlds*** **– intended for 1st -8th grades to supplement daily math instruction. Students take placement test. Recommended 45-60 min/day.**
4. ***Dreambox Learning*** **– grades K-6 online learning program that focuses on numbers, place value, and developing number sense.**
5. ***EnVision Math -*** **Alligned with common core for students K-6. Includes daily assessments (Pearson).**
6. ***I Can Learn Algebra -*** **designed for more inner city and students in grades 6-12. Computer based and consists of 130 lessons and 45 hours of instructional video.**

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FAM Interpretive Report Writer

- Teach students to think in *"pictures"* as well as *"words"*.
- Adopt a curriculum such as *"Math Investigations"* which allows students to select their own algorithm.
- Attach number-line (vertical) to desk and provide as many manipulatives as possible when problem solving.
- Teach skip-counting to learn multiplication facts.
- Teach base-10 counting strategies.
- Teach estimation skills to reinforce magnitude representations.
- Have students write a math sentence from a verbal sentence.
- Develop a FNWS and BNWS to *ten*, *twenty*, and *thirty* without counting back.
- Construct incorrect answers to equations and have students discriminate correct vs. incorrect responses.
- Reinforce the language of math by re-teaching quantitative words such as *more, less, equal, sum, altogether, difference, etc...*

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Texas Educational Diagnosticians

Steven G. Feifer, D.Ed., ABSNP
Licensed Psychologist

Workshops: feifer@comcast.net

Books: www.schoolneuropsychpress.com
@schoolneuropsychpress

Tests: FAR- 2015 FAM- 2016 FAW - 2020
Psychological Assessment Resources

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