


Working Memory – You’re Nothing Without It!
Topics and Techniques for Parents

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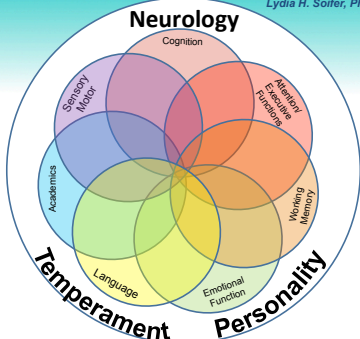
SEAC
June 14, 2022



LHS
Who is this Child?
Effective Teaching

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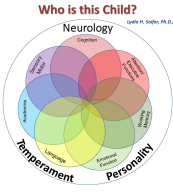
Who is this Child?
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Classroom Language Dynamics®;
Who is This Child?; Effective Teaching




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What is memory?

- The ability to use information from the past in the present.
- Three important aspects of memory
 - *Encoding* – through the senses and understood by the brain
 - *Storage* - now info/experience has to stored in the brain
 - Long term memory
 - Short term memory
 - *Retrieval*
 - Finding that memory!!



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Your Memory is Going Which one??

• Visual	* Short Term
• Auditory	
• Episodic	* <i>Working</i>
• Automatic	
• Procedural	* Episodic
• Motor	
• Associative	* Autobiographical
• Factual	
• Interpretive	* Semantic
• Recognition	
• Simultaneous	* Procedural
• Cumulative	
• Categorical	
• Sequential	

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Executive Functions and Self-Regulation

Executive Functions	Self-Regulation
– Inhibiting reactions	– Self-monitoring
– Restraining and delaying responses	– Self-evaluation
– Attending selectively	– Self-reaction (behavioral adjustment)
– Setting goals	
– Planning	
– Organizing	
– Maintaining and shifting set	
* <i>Working Memory</i>	

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What is Working Memory?


- Part of the information processing system
 - The way we make sense of what we hear, read
- If you can't hold onto it, then you can't do much with it!
- Working memory and language – great buddies!



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Also, Working Memory is...


- An Executive Function
- An ability
 - that allows you to work with information
 - without losing track of what you are doing
- Working memory holds information in place
 - So your brain can work with it *briefly*
 - Connect it to other information
- Important for organizing – which helps remembering



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Working Memory is...


- The capacity to **hold and manipulate information** in the mind over short periods of time (seconds)
- Responsible for **temporary storage and processing** of information
- A **mental workspace** necessary for a wide range of cognitive tasks
- **Not influenced** by prior learning or socio-economic factors
- **Different** than short-term memory



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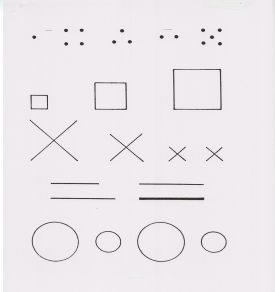
Working Memory and Attention


- WM and paying attention – a close relationship
- Aspects of attention important to WM
 - Focus for a sustained period of time
 - “How long is this period; this test; this chapter?”
 - Inhibit irrelevant information
 - *“Pay no attention to that man behind the curtain...”*
 - Shift attention between activities
 - “Turn off your math brain. Turn on your science brain.”



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Short term vs. Working Memory






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A WM Task or Challenge!

To multiply **67 x 43** in your head – requires:



- mental storage of two numbers while,
- arithmetic rules are retrieved from LTM and applied, generating
- partial solutions that must be stored while
- further calculations are made, and then
- successfully integrated to come to a solution




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Are there limits to Working Memory?

- In a word, “Yes!”
- Try this - **264 x 369 !!!**
- Amount that can be held is limited
- Limit is influenced by what is to be remembered
 - Units
 - Meaningfulness
 - Background noise
- Rehearsal boosts recall




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Working Memory in Everyday Life - It's Everywhere!

- Remembering someone's email address
- Asking for directions
- Incomplete recall – forgetting instructions
- Learning someone's name and keeping it in mind through the conversation
- Holding onto a phone number without writing it down
- Answering questions – or not!
- Doing mental arithmetic – making change
- Remembering the question while searching for the answer




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Working Memory and Learning

- Measures of WM capacity – excellent predictors of academic success
- Working memory overload impairs learning
- Some difficulties in reading and math are predictable by poor WM capacity
- Dyslexia, Dyscalculia and Language Impairment




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Working Memory in School – It's Everywhere!

- Recalling and tracking the steps in long division
- Doing mental arithmetic
- Remembering the question while searching for the answer
- Following multi-step directions
- Taking notes in class
- Holding together all the parts of a task – while doing the task!!
- Decoding
- Listening, reading comprehension, and math lapses
- Writing
- Task abandonment – I GIVE UP!!





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Working Memory in the Classroom

- Support for children with poor WM
- Direct instructional materials
- Memory (mnemonic) strategies





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What can you do as parents?*

- Pictures help (visualization)
- Keep instructions simple and brief.
- Repetition. Repetition. Repetition.
 - Repeat yourself
 - Have your child repeat back to you.
- Let your child teach you!
- Try some fun games.
- Chunk information into smaller pieces
- Make connections

*** Cautionary Tales**
Professional
Personal




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Basic Take Home Advice

- **Keep** instructions brief and simple
- **Repeat** instructions frequently
- **Ask** the child to repeat the instructions back to you
- **Underline** key words and phrases with your *voice*
- **Reduce** the amount of information by chunking
- **BE ALERT** to the complexity of directions you give
- **Teach and encourage the use of memory strategies!**

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Working memory is your brain's post-it note!"





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