

# Working Memory

---

*Is your child not remembering information long enough to use it?*

---



Is your child:

- Forgetting the next steps when building a model airplane?
- Not seeming to listen to directions?
- Saying, “I can’t do math in my head; I have to write it down to solve it?”
- Asking you to repeat yourself a lot?
- Having trouble following the instructions to build a model?
- Needing to use notes, reminders, calendars, and Post-its?
- Finding visual reminders and checklists very helpful or necessary?
- Performing well on written work but having difficulty solving multi-step problems or conducting science experiments?

## **LET'S TALK ABOUT IT**

---

Some children seem to have trouble remembering information and then doing something with it. They might have trouble with multi-step directions. They might struggle with solving problems if the steps aren’t written down. It may be that your child cannot hold a number of different facts in his head while simultaneously working on through steps to solve a problem.

Some examples of challenges of this nature include

- Trying to copy information from the board
- Following multi-step directions
- Listening to the teacher talk about today's schedule
- Completing assignments in the correct order
- Taking random numbers and putting them in sequential order
- Hearing a word problem
- Extracting the important data
- Performing mental calculations

When children hear information and manipulate it in their heads to use it right away, they are utilizing a memory process called working memory.

Holding information in one's head while performing some manipulation of the information is a simple way to think of working memory. A number of reasons can explain why challenges with working memory occur, and these will be discussed below in our clinical section.

**A classic working memory task is the 'old school' challenge of recalling a phone number. Those of us who are now adults remember looking up a phone number in the phone book, holding the 7 digits in our heads and then dialing them on the rotary phone. This task is a classic example of working memory.**

Children don't need to do this task today, but they might have to remember math problems in their heads while they solve them or remember their schedule and figure out what time reading will be held. The time between hearing the information and either writing it down or actually carrying out the task relies on working memory.

Working memory deficits are common in children, particularly those with slow processing speed or with attention deficits. It is important to keep in mind that needing to write things down does not necessarily mean a child has a clinically significant deficit. If you see challenges with working memory impacting your child's grades in school or decreasing his or her confidence, it is important to look into it, perhaps with an evaluation.

## **CLINICAL DESCRIPTION**

---

The ability to recall, manipulate and use information is called *working memory*. Working memory can be impacted by challenges with processing information or challenges with attention. Research shows that working memory is highly related to attention and to executive functions that include our ability to plan and organize information.

The underlying problem when your child cannot remember information long enough to use it is likely to involve one of the following aspects: *organization, planning, working*

*memory challenges, processing speed and/or attention.* Often individuals with significant problems in one or more of these areas may meet criteria for Attention Deficit Hyperactivity Disorder (ADHD). Attention and memory are closely related in this context.

**Organization** is a part of executive functioning [2, 3, 4]. Organization refers to the ability to keep track of a number of different things and to remain organized, not forgetting to complete a task.

**Planning** is also a part of executive functioning [2, 3, 4]. Planning refers to the ability to plan out a series and sequence of moves one step at a time. For example, “I need to get my math homework, my math book, my planner, and then make sure to write down my assignments. I need to put those all into my backpack.”

**Working memory** is “the shortest duration of information storage” and refers to the ability to hold things in memory for a short amount of time, perhaps 20 to 30 seconds, and to act on that information [1]. Working memory is an important part of our ability to inhibit a response and to sustain attention (Barkley in Kroncke et al. 2016). Intact working memory will allow a child to hold numbers in his head long enough to solve the math problem.

**Processing speed** is related to the speed at which an individual can take in and process information. A person with slow processing speed may have difficulty when information is provided quickly or when an environment is busy with a lot of extra information that the individual is also having to process, such as the hum and activity of a crowded classroom.

**Attention** means the ability to focus long enough to complete a task or activity without becoming distracted by other things going on around you. *Sustained Attention* includes the ability to focus on something even if the task is very boring and is without an immediate reward. If an activity is interesting to your child, such as playing Minecraft or reading a book about trains, paying attention will come more easily. If your child is reading a math textbook, unless he or she adores math, the task may quickly become boring. Without the ability to sustain attention, your child’s mind will wander [2, 3, 4].

## **WHAT TO DO IF YOUR CHILD CAN’T REMEMBER DIRECTIONS**

---

If your child has challenges with working memory, the following strategies may help.

**Use visuals.** Try graphic organizers, outlines and checklists.

**Write it down.** Have your child write things down and work problems on paper instead of trying to solve them in his or her head. Some children who struggle with working memory may be very good at math when they can see the problem and have the details in front of them.

Use number models and pictures. Having the child write a number model and draw a picture of the problem can help a great deal.

Use to do lists and handwritten planners. Many people struggle to remember. Adults will often say, "I need to write that down in my planner, or I will forget."

**Know thyself.** One important thing you can do as a parent is to teach your children to recognize their own needs, including their learning strengths and weaknesses. Many younger children, particularly those with ADHD or learning problems, may try to do work and solve problems in their heads. This is the path of least resistance but is not the best strategy

Metacognition refers to being able to think about your own learning processes [5]. If your child struggles with metacognition, he or she will need to get used to writing things down and using scratch paper, rather than relying on his memory.

**Set up for success.** Make sure your child is studying at a desk, far away from the television or distracting siblings. Try working in 30 minute segments with a short stretch or snack break in between. Require your child to first working out problems on scratch paper before finalizing answers, and review work with an adult for accuracy and completion.

## **SIMILAR SYMPTOMS**

---

*If your child is struggling with a similar problem, not directly addressed in this section, see the list below for links to information about other related symptom areas.*

- Attention problems (Focusing): difficulty with attention will often lead to challenges holding information in working memory [2]
- Perseverating: challenges changing tasks due to excessive interest or focus on a certain topic. This challenge is common in ASD and can impact a child's ability to follow directions and tendency to become distracted
- Executive Functions (Organizing): difficulties related to planning, sequencing, organizing information and carrying out a task in a timely manner [2, 3, 4]
- Processing speed: difficulties in fluency of cognitive processing. A child may not hear or encode information if he or she is processing very slowly. It may be important to provide verbal and visual reminders and to repeat directions as otherwise he or she may seem to forget.

## **POTENTIAL DISABILITIES**

---

*Children who have significant problems in this area may have any of the following potential disabilities. \*Note, this information does not serve as a diagnosis in any way.*

See the 'Where to Go for Help' section for professionals who can diagnose or provide a referral.

- [Attention Deficit Hyperactivity Disorder \(ADHD\)](#): challenges sustaining attention, distractibility, impulsivity, and, at times, slow processing speed that can all impact remembering and carrying out a task like mental math
- [Autism Spectrum Disorder](#): restricted interests or behaviors; hyper focus; challenges with shifting attention and sometimes with sustaining attention; executive functioning challenges are common in autism
- [Learning Disabilities \(Educationally Identified Disabilities\)](#): dysgraphia, dyslexia, dyscalculia; processing challenges lead to performance in one or more academic areas that is below grade level and is not consistent with other areas of strength

## **WHERE TO GO FOR HELP**

---

*If your child is struggling with this symptom to the point that it is getting in the way of his learning, relationships, or happiness, the following professionals could help; they may offer diagnosis, treatment, or both.*

- [CLEAR Child Psychology](#): to obtain a *customized profile* of concerns for your child, or to *consult live* with a psychologist
- [Executive Functioning Coach/ Tutoring \(Tutors & Coaches\)](#): to work on the child's academic weaknesses and/or work completion, planning and organization; nice to take this role off the parent
- [School Psychologist](#): to determine learning needs based on the child's neuropsychological profile; perhaps an IEP, 504 plan or RTI is warranted to help your child
- [Psychologist or Neuropsychologist](#): to consider a full assessment and to consider possible symptoms in a mental health and/or behavioral context
- [Psychiatrist](#): to prescribe and manage psychotropic medication for inattention, impulsivity; stimulant medication for ADHD is effective in a high percentage of children with focus and impulsivity challenges

*These professionals may recommend the following tests for this symptom:*

- [WISC-V](#): assessment of intellectual abilities, which can help us understand cognitive processing and determine what interventions may work best. It will be helpful if your psychologist pays particular attention to working memory tasks and visual and verbal skills (Psychological or School Psychological evaluation)
- [WIAT-III, WJ-IV](#): academic assessments in components of reading, writing, math, and oral language can help us understand learning processes and see the impact of any executive functioning, processing speed or attention deficits on learning (Neuropsychological, Psychological, or School Psychological evaluation)

- TOL-2, CTMT, WCST, TOVA, NEPSY: assessment of executive function may help to determine the skills and resources a child has, such as the ability to plan, organize, and attend (Neuropsychological evaluation)
- ADOS-2: assessment of social communication; children with autism may have challenges with working memory or attention

## LEARN MORE

---

[1] Kroncke, Anna P., & Willard, Marcy & Huckabee, Helena (2016). *Assessment of autism spectrum disorder: Critical issues in clinical forensic and school settings*. Springer, San Francisco.

Springer: <http://www.springer.com/us/book/9783319255026>

Amazon: <https://www.amazon.com/Assessment-Autism-Spectrum-Disorder-Psychological/dp/3319255029/>

[2] Barkley, Russell A. (2013). *Taking charge of ADHD, 3rd edition: The complete, authoritative guide for parents*.

Amazon: <https://www.amazon.com/Taking-Charge-ADHD-Third-Authoritative/dp/1462507891/>

[3] Dawson, Peg & Guare, Richard (2009). *Smart but scattered: The revolutionary “executive skills” approach to helping kids reach their potential*.

Amazon: <http://www.amazon.com/Smart-but-Scattered-Revolutionary-Executive/dp/1593854455/>

[4] Dawson, Peg & Guare, Richard (2010). *Executive skills in children and adolescents: A practical guide to assessment and intervention, second edition*.

Amazon: [https://www.amazon.com/Executive-Skills-Children-Adolescents-Second/dp/1606235710?ie=UTF8&ref\\_=asap\\_bc](https://www.amazon.com/Executive-Skills-Children-Adolescents-Second/dp/1606235710?ie=UTF8&ref_=asap_bc)

[5] Reid, Robert, & Leinemann, Torri Ortiz & Hagaman, Jessica L. (2006).

*Strategy instruction for students with learning disabilities, second edition*.

Amazon: <https://www.amazon.com/Instruction-Disabilities-Special-Needs-Lienemann-Paperback/dp/B010WI4TBA/>

### For kids:

Esham, Barbara (2015). *Mrs. Gorski, I think I have the wiggle fidgets. (New edition) (Adventures of everyday geniuses.)*

Amazon: <https://www.amazon.com/Gorski-Fidgets-Adventures-Everyday-Geniuses/dp/1603368175/>

Smith, Bryan & Griffen, Lisa M. (2016). *What were you thinking? Learning to control your impulses (Executive function)*.

Amazon: <https://www.amazon.com/What-Were-You-Thinking-Learning/dp/1934490962/>

Cook, Julia (2006). *My mouth is a volcano.*

Amazon: <https://www.amazon.com/My-Mouth-Volcano-Julia-Cook/dp/1931636850/>

Stein, David Ezra (2011). *Interrupting chicken.*

Amazon: <https://www.amazon.com/Interrupting-Chicken-David-Ezra-Stein/dp/0763689033/>

**Image credit:**

Description: boy making model airplane made of wood...

Image ID: #138945497

By: EvgeniiAnd

How-to-help-a-child-with-short-term-memory-problems

Previously licensed on: June 6, 2017

Stylized by Katie Harwood exclusively for CLEAR Child Psychology



[www.cleape.com](http://www.cleape.com)