

Sequential Reasoning

Is your child unsure how to solve problems step-by-step?



Is your child:

- Unsure how to put those ducks in a row?
- Having trouble understanding multi-step instructions?
- Failing to follow math procedures?
- Unorganized?
- Having difficulty deciding what to do first, second, and third?
- Not following the plot-line of a story?
- Unable to complete projects in sequential order?

LET'S TALK ABOUT IT

Can't get those ducks in a row? In other words, put things in sequential order? Some children struggle with following procedures or step-by-step instructions. They may get frustrated when they are asked to perform a series of steps without a visual checklist or frequent prompts. Your child's teacher may say that your child 'seems lost', 'never finishes his work', or 'doesn't follow directions'. In math, sometimes the child fails to

show his work on the problem. In writing, her paragraphs may be out of order, such that her writing doesn't make sense. Your child may get low grades in school for 'organization' or 'conventions', even though the content of his writing may be okay. This difficulty is particularly a problem with multi-step directions both at home and at school. The child may do the last thing on the list but forget the first two. When asked 'Can you go brush your teeth, put your shoes on, and get in the car?' the child responds by slowly sauntering to the car, one shoe on, no tooth-brush in sight. Some children with these difficulties have trouble telling stories that make sense. A child with this symptom may read a short story, and then upon a re-telling, tell the ending first, and then a smattering of details. The listener may be left asking, "Wait, what are we talking about?"

CLINICAL DESCRIPTION

Clinically, these problems are referred to as deficits in 'sequential reasoning' or 'sequential processing'. This skill requires the following abilities to work well together: *comprehension*, *monitoring*, and *working memory*.

Comprehension: It could be that your child does not understand the procedures in the first place. This difficulty would be a cognitive or receptive language problem.

Monitoring: Your child may have trouble making plans or keeping track of how he or she is doing on a task, often clinically referred to as '*self-monitoring*'. Monitoring is the ability to recognize when you are on track in your efforts [1,2]. For example, a child with good self-monitoring can say, "I am about halfway through my homework. I did my math and reading; I just have some writing left, and I'm done".

Working Memory: problems can be evident if your child has trouble holding information in his or her mind and often forgets the last part of instructions. Working memory is the ability to hold information in your mind while performing a mental operation on it [1,2]. With multi-step directions, your child would have to be able to remember the second and third steps while performing the first step. Thus, your child may not be able to follow directions because he doesn't remember them.

WHAT TO DO IF YOUR CHILD STRUGGLES WITH SEQUENCING

If you suspect your child has poor sequential processing, it would first be important to consult with a [School Psychologist](#) or Clinical [Psychologist](#) and have an IQ test. An IQ test such as the KABC looks directly at sequential processing. The WISC-V would have a measure of Working Memory (explained above).

Executive Functioning: a full psychological evaluation may be necessary in order to directly assess attention, working memory, planning, and sequential processing.

Visual Sequence Instruction: When reading books aloud or preparing for a book report, draw out the visual sequence of the story. Use a story board approach or a comic strip to show the actions of the characters. For expected behaviors and routines, provide a First, Then board. This board uses dry erase or other changeable medium to show the First step in the task and the next step in the task. When chunking assignments, the teacher could put 'Do 3 problems on math page' as First and then write 'Take a break' on Then. For children with challenging behaviors, the First Then board can show the expected behavior (First), and then the anticipated reward (Then).

Modeling & Teaching Strategies: If your child indeed has poor sequencing skills, it will be important to learn to use strategies [1-4]. Children who struggle to plan and organize the sequence of steps needed to solve a problem tend to require explicit teaching in strategy use.

Think aloud: One way to teach strategy use is to model strategies as a parent when you are solving problems. This technique is often referred to as a 'think aloud'. For example, "Okay, I want to bake a cake. First, I will get my recipe out. Then, I will get all the ingredients, measuring tools, and mixing bowl. Next, I will pre-heat the oven...". In this way, the child is seeing a problem-solving approach.

Graphic Organizers: Another appropriate intervention is to talk to the teacher about providing your child with visual checklists and graphic organizers. Often, through this type of 'scaffolding', children can begin to develop their sequential processing skills.

School Consultation: Finally, if your child's skills are very low in terms of sequential processing, a consultation with the school may help. A 504 plan or IEP may be necessary. Both the 504 and the IEP can provide accommodations such as 'extra prompting and process time' and 'provide visual checklists and graphic organizers'.

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.

- [Verbal comprehension](#): problems with following a sequence of instructions may be related to poor understanding of verbally presented information
- [Auditory processing](#): problems with following a sequence of instructions may be related to difficulty accurately hearing and understanding verbal information
- [Metacognition](#): problems with following a sequence of instructions may be due to poor executive functions in terms of meta-cognitive strategies
- [Self-Monitoring](#): problems with following directions may be due to poor self-monitoring, or the inability to adequately track one's own progress on a task
- [Intelligence](#): problems with following a sequence of instructions may due to deficits of overall cognitive ability

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.

- [Dyslexia or Specific Learning Disability in Reading \(Educationally Identified Disabilities\)](#): challenges with reading that have underlying sequencing problem
- [Dysgraphia or Specific Learning Disability in Writing \(Educationally Identified Disabilities\)](#): challenges with writing can stem from sequencing problem
- [Dyscalculia or Specific Learning Disability in Math \(Educationally Identified Disabilities\)](#): challenges with mathematics may relate to sequencing problem
- [Depression](#): challenges with depression may lead to slower processing speed, which can impact sequencing and overall cognitive functioning; also, depression lowers motivation, which can impact following directions and sequencing information
- [Autism Spectrum Disorder](#): challenges with social skills that are associated with ASD can be associated with problems with problem solving, planning, and sequencing
- [Intellectual Disability](#): challenges with overall intelligence can lead to problems with sequencing information
- [AD/HD](#): challenges with attention, focus, and executive functions may lead to problems with sequencing information

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
- [Psychologist or neuropsychologist](#): to consider symptoms in a mental health context
- [School psychologist](#): to potentially test IQ or to consider academic issues (generally only in the context of an IEP evaluation – parents cannot necessarily request an IQ test from the school psychologist)

These professionals may recommend the following tests for this symptom:

- [Beery VMI](#): a test of visual-motor integration
- [CTMT](#): a test of planning, sequencing, and processing speed
- [KABC-II](#): a test of cognitive ability (IQ)

- [TOVA-II](#): a test of attention
- [WISC-V](#): a test of cognitive ability (IQ)
- [WIAT-III](#): a test of academics (Achievement)

LEARN MORE

[1] 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/>

[2] 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

[3] 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/>

[4] Mather, Nancy & Goldstein, Sam (2015). *Learning disabilities and challenging behaviors: Using the building blocks model to guide intervention and classroom management, third edition.*

Amazon: <https://www.amazon.com/Learning-Disabilities-Challenging-Behaviors-Intervention/dp/1598578367/>

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Teach-your-child-directions

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