

Non-Verbal Reasoning

Is your child having difficulty with patterns and logical reasoning?



Is your child:

- Perplexed by problems?
- Shying away from building with blocks, or making models?
- Crying over the instruction booklets for Lego sets?
- Having a harder time learning to do math problems?
- Preferring letters over numbers?
- Liking reading books more than reading graphs?
- Struggling when trying to build things?
- Preferring to act in a play rather than do a science experiment?

LET'S TALK ABOUT IT

It's a fact. Some of us like words more than numbers or pictures. A more visual brain is required for activities like building models, reading graphs, or finding your way around a building. Measuring, diagramming, and taking data also fall into this category. If these activities are harder for your child, he may be more of a verbal type of learner and will likely require different instruction in school. Although non-verbal, children may use *verbal mediation* to solve non-verbal puzzles. For example, a child might say, 'first I will

do the edge pieces, then the similar colored pieces, and then I will complete the puzzle.’ However, even though some verbal strategies help, these tasks are essentially non-verbal. Generally, children who struggle with non-verbal problem solving have a harder time in math [2]. Math problems rely on the brain’s ability to form mental models, to visually represent concepts, and to understand how objects fit together.

CLINICAL DESCRIPTION

Clinically, these skills are in the category of *non-verbal problem solving* or *perceptual reasoning*. A good way to understand this form of intelligence is offered by neuropsychologist Dr. Helena Huckabee;

“Nonverbal reasoning is thinking without words”.

On an IQ test, non-verbal tasks include building with blocks to make a printed design, discerning patterns, and determining how to balance a scale. These tasks are measures of non-verbal reasoning skills. Like doing a Rubik’s Cube, you have to ‘see it’.

Children who are very strong in non-verbal reasoning skills often find it difficult to explain their thinking on a math test. They can mentally see the answer without necessarily talking through the problem. On the other hand, children with weaker visual processing or non-verbal intelligence may find that talking through the logical steps is the only way to effectively solve a math problem.

On an IQ test, non-verbal reasoning is measured through tests, such as Block Design, Matrices, Pattern Construction, Pictorial Analogies, Copying, Matrix Analogies, Geometric Sequencing, Triangles, Face Recognition, and Geometric Categories [4]. Even without knowing what all these tests are, it is clear from their names that the person being tested has to look at something and make a logical determination about it.

In non-verbal IQ tests, the individual is required to visually scan pictures, shapes, or puzzles, and to decide what comes next in a series or completes a puzzle. The key factor is that the person taking the test is generally solving a problem visually without the requirement of a verbal response.

For example, the examiner might ask your child to ‘point to the picture that completes this pattern’. These tests are generally more appropriate for English Language Learners. Some research indicates that non-verbal tests are less culturally biased than verbal tests, although it is generally considered impossible to take out all cultural influence from any test. Non-verbal IQ tests have been proposed for individuals with hearing loss and ‘speech-language impairments’ [4]. Some IQ tests are entirely non-verbal; whereas, others simply have a non-verbal index score. In either case, the point of these tests is to assess the child’s intelligence without the confounding effect of language ability.

WHAT TO DO IF YOUR CHILD HAS TROUBLE SOLVING PROBLEMS

If you suspect your child has difficulty with non-verbal reasoning, it would first be important to consult with a [School Psychologist](#) or Clinical [Psychologist](#) and have an IQ test to confirm. School psychologists typically only administer IQ tests as part of an evaluation for special education. If your child is not being considered for specific services, it will be necessary to consult a clinical psychologist instead.

In terms of strategies for someone who struggles with non-verbal skills, the following is recommended:

- In order to play to your child's strengths, it can be helpful to *assign meaning* to all non-verbal tasks. Tell the child how this number relates to something in real life. For example, if there were three swings on the playground and two friends were already on a swing, how many would be left?
- Or, go out to the swings on the playground and give the child a chance to *experience* this 'problem'.
- Tell stories to bring meaning to non-verbal images. When looking at a map, tell the child a story about what happened in these different regions. These stories should have feelings, sights, and sounds. The use of stories will allow the child to put context to visual or graphic representations.
- If your child's skills are very low in terms of non-verbal skills, a consultation with the school may help. Academic testing may be required if your child's math skills are low. A 504 plan or IEP may be necessary if your child struggles in math, science, or technology.

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.

- [Spatial](#): children who struggle with non-verbal reasoning may have difficulty reading a map or solving visual puzzles
- [Intelligence](#): children who struggle with non-verbal reasoning may have difficulty with non-verbal reasoning or other types of problem solving
- [Fluid reasoning](#): children who struggle with non-verbal reasoning may have difficulty understanding new concepts in school

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.

- Dyscalculia ([Educationally Identified Disabilities](#)): children with a learning disability in mathematics generally have problems with non-verbal reasoning
- [Intellectual Disability \(Educationally Identified Disabilities\)](#), may be diagnosed clinically as well): children with a low IQ generally have problems with nonverbal reasoning

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)
- [Physical therapist and/or Occupational Therapist \(OT\)](#): to look at fine and gross motor

These professionals may recommend the following tests for this symptom:

- [MVPT-4](#): assesses areas of visual perception
- [WISC-V](#): assesses overall intelligence. Subtests that measure non-verbal skills include: Block Design, Matrix Reasoning, Coding, Figure Weights, Visual Puzzles, and Picture Span. Scores below 80 on Nonverbal would be very concerning. Scores between 80-85 mean likely this area is an issue. Scores 85+ would indicate nonverbal skills are okay. Even if score is above 85, a large discrepancy between processing and other areas of IQ could be present that could indicate nonverbal may still be a weakness area, causing some distress.
- [WIAT-III](#): assesses academic areas such as: reading, writing, or math

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] Eide, Brock & Eide, Fernette (2006). *The mislabeled child: How understanding your child's unique learning style can open the door to success*.

Amazon: https://www.amazon.com/dp/B000Q9IWXW/ref=dp-kindle-redirect?_encoding=UTF8&btkr=1#nav-subnav.

[3] Sattler, Jerome (2014). *Foundations of behavioral, social, and clinical assessment of children*.

Amazon: <https://www.amazon.com/Foundations-Behavioral-Clinical-Assessment-Children/dp/0970267126>

[4] DeThorne, Laura, Schaefer, Barbara (2014) *A guide to nonverbal IQ measures*. American Journal of Speech-Language Pathology. (13), pp.275-290.

Link: <http://courses.washington.edu/sop/GuidetoChildNonverbalIQMeasures.pdf>

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Child-problem-solving

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