



Is Your Child a Visual-Spatial Learner? Are You a Visual-Spatial Learner?

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Introduction

The Gifted Development Center began as The Gifted Child Testing Service on the campus of the University of Denver in June of 1979. Since that time, over 2,000 families have made use of our services. During the first few years I began to notice a curious pattern on test scores. Some children could do the visual-spatial tasks on the IQ test several years above their age level, but they could not pass very simple auditory-sequential tasks at much lower age levels. The visual-spatial tasks included counting arrays of blocks in which some are hidden, following complex sets of directions, copying an abstract design from memory, creating a plan of search for a missing object, and making complex patterns out of blocks. The auditory-sequential tasks involved repeating a series of numbers, repeating

a long sentence accurately, naming the days of the week, doing mental calculations and similar items. I quickly realized that the students' greatest successes were in items presented visually, and most of their errors were with items presented auditorally. Sometimes the discrepancies between their auditory and visual processing were enormous.

In attempting to understand the visual-spatial learning style, I organized an interdisciplinary visual-spatial learning study group. One key participant in the group is well known to you, Dr. George Dorry, an ADDAG Board member and frequent contributor to the ADDAG newsletter. We spent months trying to discern which factors were related to giftedness and which applied across the IQ continuum. We noted a tremendous overlap between my description of visual-spatial learners who have auditory-sequential processing difficulties and the syndrome of ADHD. "Sequential" is the opposite of "spatial", and we realized that visual-spatial strengths stem from high intelligence, but the nonsequential learning style fits the whole spectrum of ADHD children. Therefore, many of the recommendations we have developed for gifted visual-spatial learners can be expected to prove useful to most children with ADHD.

In reading this article, however, keep in

mind that not all non-sequential learners have the abstract reasoning, spatial strengths and ability to visualize typical of the visual-spatial learner, and not all spatial learners are impulsive, distractible, or hyperactive. Where children fit both sets of descriptors, they are probably *both* ADHD and visual-spatial learners.

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What is a Visual-Spatial Learner?

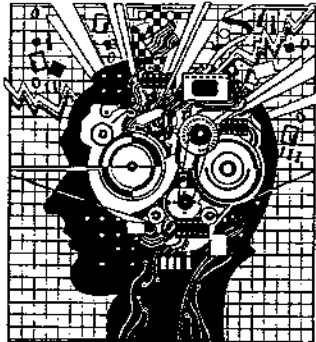

A visual-spatial learner is a student who learns holistically rather than in a step-by-step fashion (Silverman, 1989b) He or she finds it far easier to comprehend complex patterns of relationships than to memorize unrelated facts. Visual imagery plays an important role in the student's learning process. Because the individual is processing primarily in images rather than words, ideas are interconnected (imagine a web). Linear sequential thinking—the norm in American education—is particularly difficult for this person and requires a *translation* of his or her usual thought processes, which often takes more time.

Some visual-spatial learners are excellent at auditory-sequential processing as well. Many highly gifted children use both processes with equal facility. However, the majority of visual-spatial learners we have found have major discrepancies between these two processing systems. They are gifted in visual-spatial abilities but deficient in auditory-sequential skills (Silverman 1989a). This leads to a complex set of problems often resulting in underachievement. In traditional learning environments, a mismatch usually exists between the student's learning style and the instructional methods employed by the student's teachers. The major differences between sequential and spatial learners are shown in Table 1.

Visual-spatial learners who are most asynchronous in the development of their spatial and sequential skills appear to have the most serious classroom adjustment problems.

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Table 1:

	
Sequential Learner	Spatial Learner
Step-by-step learner Learns by trial-and-error Analytic thinker	Whole-part learner Learns concepts all at once Systems thinker (sees complex relationships)
Excels at computation	Excels at mathematical reasoning
Follows oral directions well	May be inattentive in class; needs to be shown
Learns phonics easily	Needs sight/whole language approach
Good at spelling	Needs to visualize spelling Hates rote memorization; excellent with abstractions
Good at rote memorization	Slow processor; timed tests should be avoided
Rapid processor; good at timed tests	Handwriting difficult -- may be illegible; should use a keyboard
Good handwriting; neat	Organizationally impaired
Well organized	Learns complex systems quickly; struggles with easy work
Progresses sequentially from easy to difficult material	Prefers to develop own methods of problem solving
Learns from models	Learning is usually permanent; turned off by repetition
May need repetition to reinforce learning	Arrives at correct answers without taking steps
Can show work easily	Good at geometry/physics Creatively or technologically gifted
Good at biology/foreign language Academically talented	

By way of contrast, auditory-sequential learners who lack spatial skills often experience success in the traditional classroom.

Most students are fairly synchronous in their development; that is, they do not have dramatic discrepancies between strengths and weaknesses. They are more in-sync internally and more in-sync with the instructional mode and expectations of the classroom. But visual-spatial learners usually feel out-of-sync with everyone, as if they were placed on an alien planet.

Overexcitabilities

Creatively gifted children tend to experience life with great intensity. It is this intensity that makes them exciting

to teach; it also can be their greatest obstacle to successful adjustment. The term "overexcitability" (OE) was coined by Kazimierz Dabrowski (1938) to describe the intensity observed in creative individuals from birth through maturity. A more precise translation of Dabrowski's term is "superstimulability", meaning that the child is wired to react more strongly to different forms of stimulation. The overexcitabilities can be thought of as an abundance of physical, sensual, creative, intellectual and emotional energy which can result in creative endeavors as well as advanced emotional and ethical development in adulthood (Lysy & Piechowski, 1983; Piechowski, 1979).

Visual-spatial learners manifest most or

all of the overexcitabilities. Heightened sensory awareness makes it difficult for them to focus their attention. They become physically irritated by clothing labels or sock seams; distracted by the nearly imperceptible flickering of fluorescent lights or the whispering of classmates; carried off in flights of fantasy by their active imaginations; overstimulated by their own intellectual curiosity and understimulated by the pace of classroom instruction; and intensely affected by the emotional climate of the classroom and their relationships with classmates. A history of ear infections appears to exacerbate these overexcitabilities, making it even harder for these children to concentrate. They exhibit enormous discrepancies between their strengths and weaknesses (e.g. high math reasoning ability coupled with low computation skills; excellent reading comprehension coupled with poor word attack skills). They are hard for teachers to understand and to reach.

Creativity or ADHD?

It is difficult to distinguish between highly creative children bursting with overexcitabilities and gifted children with ADHD. Hallowell and Ratey(1994) have found a tendency toward creativity in people with ADHD, and they consider the creative person with ADHD a "separate subtype" (p.176) of attentional disorders. Their description of "hyperreactivity" of the person with ADHD sounds remarkably like a description of overexcitabilities:

[B]ombarded by stimuli from every direction...people with ADD live with chaos all the time... For all the problems this might pose, it can assist the creative process.

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In order to rearrange life, in order to create, one must get comfortable with dis-arrangement for awhile. (pp.176-177)

A third element that favors creativity among people with ADD is... the ability to intensely focus or hyperfocus at times... the term "attention deficit" is a misnomer. It is a matter of attention inconsistency. While it is true that the ADD mind wanders when not engaged, it is also the case that the ADD mind fastens on to its subject fiercely when it is engaged. A child with ADD may sit for hours meticulously putting together a model airplane. An adult may work with amazing concentration when faced with a deadline. (p.177)

A fourth element contributing to creativity is what Russell Barkley has called "hyperreactivity" of the mind. Hyperreactivity is more common among people with ADD than is hyperactivity. People with ADD are always reacting. Even when they look calm and sedate, they are usually churning inside, taking this piece of data and moving it there, pushing this thought through their emotional network, putting that idea on the fire to burn, exploding or subsiding, but always in motion. Such hyperreactivity enhances creativity because it increases the number of collisions in the brain. Each collision has the potential to emit new light, new matter, as when subatomic particles collide. (p.178)

Assessment

A thorough diagnosis by a specialist in the area of ADHD who also understands the characteristics of giftedness is necessary to sort through the overlap of symptoms and determine when a young person should be diagnosed as having ADHD. As there are few practitioners with both sets of expertise, the most prudent course of action is to work with

a *collaborative team* of individuals with different expertise. At the Gifted Development Center, we ascertain the areas and degrees of giftedness and screen for ADHD. Children who fit most of the descriptors of ADHD receive further evaluation by a psychologist who specializes in ADHD. This psychologist consults with the teacher and works with the child's pediatrician to prescribe and monitor medications. Through this consultative model, there is less chance that ADHD will be misdiagnosed or the child's giftedness will remain undetected and unaddressed.

The most accurate means of assessing a visual-spatial learner is through comprehensive psychological assessment by a competent professional who is aware of the distinctive pattern of this learning style. Children who exhibit strong visual-spatial abilities combined with auditory-sequential weaknesses are considered visual-spatial learners.

Strategies for Teaching Visual-Spatial Learners

Visualization is the key to reaching visual-spatial learners. Their imaginal OE provides them with excellent visualization skills. Children can be taught to spell by having them concentrate on a word until they can create a strong visual image of it. Have them do something wild and crazy with the word in their imagination and then place the word in space where they will be able to access it again when they need it. Then have them spell the word backwards. If they can spell the word backwards, then a clear image has been created. Next, the word should be spelled forwards and written once to bring the psychomotoric modality. Visualization can be used as an aid in other subject areas as well.

Children with many overexcitabilities

learn best when they are allowed to use several modalities at once. Present information visually as well as auditorally, and involve psychomotor activity whenever possible: acting out a concept, manipulating objects, drawing a picture, etc. They are whole-part learners, so give them the big picture first. Gifted visual-spatial learners are more likely to succeed at difficult, complex tasks than at simple, sequential tasks (e.g., they may grasp algebra before their times tables). When they have trouble understanding a simple idea, try making the concept more complicated! If they grasp complex concepts, but have difficulty with easy sequential tasks, give them *advanced work* even if they have not mastered the easier work.

They are not step-by-step learners, so allow them to construct methods and solutions to problems in their own way, and do not insist that they "show their work." Teach to their strengths and teach them ways to compensate for their weaknesses. If they have difficulty with eye-hand coordination and speed, allow them to complete their written work on a computer. Tape recorders can assist children who have difficulty attending to lectures.

Avoid timed tests. It takes visual-spatial learners longer to translate their images into words, and motoric sequencing and speed may be impaired. If they must take timed test, have them compete against their own past record rather than against other, more sequential students. Students who have pronounced weaknesses in processing or motor speed should be assessed within three years of their college board exams so that arrangements can be made for them to take these exams untimed.

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Visual / Spatial...

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Visual-spatial learners learn best with teachers who show that they really care about them, who are willing to adapt their teaching styles, who have a good sense of humor, and who get the students emotionally involved in the subject matter.

Many gifted visual-spatial learners become smarter as they get older; they are late bloomers (Silverman 1989a). They need the most support during elementary school where the focus is often on rote learning and sequential instruction. These children are often better equipped to deal with the greater cognitive demands of high school than with the simple, sequential learning of the earlier grades.

School need not be a nightmare for visual-spatial learners. With appropriate accommodations, they can be the most creative, excited students in the classroom. They need to be appreciated for their strengths. When anyone truly appreciates them, they blossom. ♦

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