

Visual Perception Related to School
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Visual attention – problems in this area may lead to difficulty with correct letter formation, punctuation, and capitalization.

Visual-motor – This affects eye-hand coordination activities such as handling writing utensils; creating art projects; putting together puzzles; building with blocks; eating neatly; tying shoes; writing neatly and evenly; drawing geometric symbols; copying for a nearby or distant source; remaining within boundaries when writing or coloring; performing threading activities (will usually bring the needle to the thread)' performing mazes, dot-to-dot, and tracing activities; and catching or hitting a ball.

Position in space makes it difficult for the child to plan actions in relation to objects around him/her; difficulty with spatial concepts such as “in, out, on, under, next to, up, down, in front of;” difficulty differentiating between “b, d, p, q;” leads to poor sight vocabulary; contributes to difficulty reading charts, maps and diagrams; results in inconsistent symbol reversals and transposing numbers or letters, and losing place on a page; difficulty finding what is being looked for, attending to a task, remembering left and right, math computations if more than one digit; and forgets where to start reading. Some strategies include:

- Use visual cues (e.g., colored dot) to indicate place on a map or chart, or puzzle pieces.
- Draw directional arrows to help with directions or placement (e.g., for letter formation).
- Wear something on one arm to indicate direction (e.g., watch on left arm to indicate left direction).
- Allow oral arithmetic.

Visual discrimination refers to a child's ability to differentiate between objects and forms. It gives us the ability to notice subtle differences and to identify if something does or does not belong. For example, this skill is important for identifying and exchanging money, and matching and sorting objects. A deficit in this area may contribute to problems in dressing (i.e., matching shoes or socks), correcting errors in school work, distinguishing similarities and differences in the formation of letters (i.e., letter reversals) or objects, discriminating between size of letters and objects, and matching two dimension to three dimension such as alphabet letters. Visual discrimination is a reading readiness skill that is taught a lot in preschool and kindergarten, so many students do best in this subtest as they've had a lot of practice.

Visual memory reflects the child's ability to store visual details of what has been seen in the short-term memory. If details aren't stored, there will also be difficulty accurately recalling, and in some instances reproducing, all of the characteristics of a given item. Functionally, a visual-memory deficit may make reproducing figures (letters, numbers, shapes or symbols) from memory causing the child to mix lower and uppercase letters. Deficits also influence copying from a text or chalkboard, replicating information on worksheets and tests, comprehending reading, dialing a phone number, remembering sight words, transferring learned words from one medium to another, remembering what was read, reproducing figures from memory. The child would tend to copy only one letter or number at a time from the board, and would benefit from a visual model of the text to be reproduced (e.g., model placed on desk or on sheet above on the page that child has to copy from, alphabet strip on desk, mini word-wall on desk, etc.). Subsequent storage of visual information in the long-term memory is important for performance areas including community mobility – identifying familiar surroundings such as a neighborhood or school campus and successfully navigating one's way through them.

Visual-spatial relations refers to a child's ability to orient his body in space and to perceive the position of objects in relation to himself/herself or other objects. Therefore, a child will have difficulty in determining reversals in letters or numbers, confusion in sequencing letters in a word (e.g., was/saw), writing from left to right (trouble with left/right in general), using consistent spacing and sizing of letters, aligning numbers, writing on the line, writing within the margins, adopting to space on a worksheet or on a form, scissor skills, dressing ability, skill in recognizing concepts of up and down, on top of, around, etc., copying a design, reproducing shapes in relation to one another, miscalling words when reading, and ability to make judgments in moving his/her body around a room (child may bump into objects/people or knock over items). Spatial relationships also seem to reflect sensory integration issues. If a child does poorly in this subtest, they may have vestibular and body in space issues.

Visual form constancy reflects a child's ability to recognize forms, letters, or words regardless of their orientation (i.e., if a form were upside down, sideways, inverted, etc.). A deficit in this area would make reading difficult as the child might not recognize familiar letters when presented in different styles of print (fonts, size, or color); result in being slower to master the alphabet in numbers; lead to difficulty recognizing errors; cause confusion between "p, q and g", "a and o", "b and d"; making a transition from printed letters to cursive letters; assuming the size of objects regardless of their distance; looking at things from an angle; understanding volumetric concepts such as mass, amount and quantity; and recognizing things that should be familiar when environmental conditions change. An issue with visual form constancy also reflects attention and focus, which makes it difficult to complete seatwork.

Visual sequential memory reflects a child's ability to recall a series or sequence of forms. Functionally, this skill would influence a child's ability to sequence letters or numbers in words or math problems, remember the alphabet in sequence, copy from one place to another (e.g., from board, from book, from one side of the paper to the other), spell, perform math, retrieve words with reversals or when out of order, and remember order of events after reading (which affects reading comprehension). The child would also tend to forget assignments and forget steps that are shown in an activity.

Visual figure-ground refers to the ability to locate and identify shapes and objects embedded in a busy visual environment, or the ability to attend to one activity without being distracted by other surrounding stimuli. A child with a deficit in this area may have difficulty attending to a word on a printed page due to his/her inability to block out other words around it, difficulty filtering out visual distractions such as colorful bulletin boards or movement in the room in order to attend to the task at hand, difficulty sorting and organizing personal belongings (may appear disorganized or careless in work), over attend to details and miss "big picture", or overlooks details and misses important information (e.g., word recognition, locating one object within a group, finding place on the page or skips pages and sections, noticing punctuation), difficulty copying from the board and may omit segments of words, difficulty recognizing misformed letters and uneven spacing, difficulty with hidden picture activities, may lack visual search strategies, have difficulty locating a friend on the playground or finding a specific item in a cluttered desk. An issue with visual figure ground also reflects attention and focus, which makes it difficult to complete seatwork. Some strategies include:

- Minimize distracting elements in the classroom: use a clean chalkboard, especially if the student is expected to copy from the board; help him/her keep the desktop clean; have him/her sit up front or use a study carrel if necessary; keep the classroom decorations simple; and keep worksheets clean and free of clutter.
- Use visual and tactile cues: use a brightly colored mat or piece of construction paper under paper to write/draw on; use a red marker to outline coloring, maze, or cutting activities; use writing paper with colored lines or raised-line paper.
- Adapt activities: prepare worksheets with only one problem, work item or sentence per page; cut out a rectangle to present one word or problem at a time; when working on puzzles, present one piece at a time; use colored acetate overlays for reading material; for writing activities, place a strip of construction paper or card stock under the line being written and teach student to move the paper down as lines are completed; use writing strips to practice writing.

Visual closure reflects a child's ability to look at an incomplete shape, object or amount, and fill in the missing details in order to identify what it would be if it were complete. This skill requires abstract problem solving. Functionally, visual closure impacts a student's ability to write, to use worksheets or test forms that are poorly photocopied, copy something if he/she cannot see the complete presentation of what is to be copied, complete partially drawn pictures or stencils, spell, complete assignments, complete dot-to-dot worksheets or puzzles, identify mistakes in written material, perform mathematics (including geometry), and solve puzzles. The child tends to leave out parts of words or entire words, and leaves out parts of worksheets. Some strategies include:

- Have a completed project placed near the student, as well as step-by-step instructions to complete a novel project.
- Arrange seat placement right in front of the chalkboard, dry erase board, or overhead projector.
- Present cleanly photocopied worksheets and test forms.
- Give student a "helpful hint" about mistakes in order to give him/her a second chance to correct some of the errors, due to his/her difficulty recognizing errors in written material.

Visualization - a child with poor visualization skills may reverse letters, and have difficulty aligning numbers in columns for math, forming letters because he/she is unable to visualize them, spelling because he/she cannot picture the words in their minds (he/she may need to rely on spelling rules), and may have reading comprehension problems.

Depth perception - copying from the chalkboard may be difficult.

Note: Visual closure is the most closely aligned to cognitive ability. Many children with low to borderline IQs will have a low visual closure score without any other visual-perceptual deficit. Visual closure is also related to saccades, which is needed for reading and other non-reading tasks.

References:

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