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 with 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 see 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 seems 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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EYES ON TRACK CLUE SHEET

Symptoms of Poor Vision Perception

Observe Student in the Classroom and Check Appropriate Box

Student's Name: _____ Date of Observations: _____

Performance Symptoms:

- ❑ Letter reversals (b,d,q,p)
- ❑ Number reversals
- ❑ Repeatedly confuses right/left direction
- ❑ Word reversals (saw/was; on/no)
- ❑ Grips pencil too tightly/poor grip (thumb crossed over fingers)
- ❑ Poor handwriting
- ❑ Poor spacing when writing
- ❑ Uses other hand as "spacer" to control spacing when writing
- ❑ Writes uphill or downhill
- ❑ Orients drawings/writing poorly on page
- ❑ Poor shape recognition/difficulty copying shapes
- ❑ Confuses similar words
- ❑ Failure to recognize same word in next sentence
- ❑ Poor visualization/spells words based on sounds only
- ❑ Poor comprehension/unable to describe what has been read
- ❑ Difficulty with sports/poor motor skills
- ❑ FRUSTRATION WITH SCHOOL WORK

Occupational Therapy Classroom Strategies for Visual Perceptual Deficits

Student Name:_____
Therapist Name:_____ **Date:**_____

Visual Scanning

□ Writing on an angle (slant board) or binder may help increase visual field.
□ Try high contrast settings on word processor to decrease harshness of screen.
□ Encourage the use of a highlighter in workbooks or student copies to visually identify important information and assist in tracking. Try an erasable highlighter (available in whiteout section of Staples) to highlight in school owned textbooks.
□ Photocopy onto colored paper if available, colors such as medium blue and green tend to work well.
□ Place reading material under a colored report cover
□ Encourage the use of a word window (cut from a manila folder) or line guide while reading or following text.
□ If overhead lighting is interfering with work, student may need to wear a visor or sunglasses.

Visual Closure

□ Use different colors to see visual differences in strokes.
□ Use multisensory method to reinforce awareness of closure-tracing, sky writing rhymes, highlighting.

Figure Ground

□ Minimal distractions on board and desk
□ Ask student to retrieve items in the classroom decrease verbal prompts
□ Use a red marker or highlight area where answer should be written
□ Make a screen that blocks out all but the math problem or activity and move the cutout as the child completes the activities on the page.

Poor Copying Skills

□ Use a sticker to mark top left hand corner where student should start until this becomes a habit.
□ Provide a copy of notes to highlight as given, require that something has to be written so that the student does not lose interest and can keep up with the work.
□ Place desk in the "front view" positioning of the board when grouping desks.
□ Place student to the front of the room near the board to reduce intermediary visual distractions for board copying

Visual Memory

□ Use a letter strip on the student's desk to help with recalling letter formation.

□ Have student combine letter sounds with motor patterns for forming letters. Have him say the letters, then write the letters.
□ For word recall, have student try to remember 3-4 letters at a time before writing the words on paper. Encourage the student to repeat letter sequences to himself.

Visual Spatial

□ Graph paper can help with spacing of letter or math problems.
□ Turn writing paper on its side to assist with lining numbers up vertically.
□ Use raised line paper for boundaries, glue may also be used to make raised line paper.
□ Number the lines to assist the child in remembering the downward progression for writing.
□ Construct a writing frame by cutting out a rectangle from poster board and place it over paper during writing to remind student of outer boundaries of the writing area.
□ Allow student to use a rectangular cardboard cut out to follow a reading passage.

□_____

□_____

VISUAL/PERCEPTUAL SKILL DEVELOPMENT

Visual perceptual skills determine the way children perceive shapes and forms visually. Difficulties with visual perception are not easily "fixed". These problems can often be lifelong. Often, it is best to teach a child to compensate for these difficulties. Things like rechecking class work for letter or number reversals, letter formation or working with materials from the desktop are common strategies for compensation. Some of the areas that affect handwriting and other classroom functions are skills such as matching shapes and forms, remembering forms or designs, recognizing shapes that are different, recognizing a form despite change of size and/or orientation, remembering sequence of forms and recognizing parts of a whole.

There are many activities that incorporate the above skills. This is only a list of suggestions for activities. Parents are encouraged to participate in the learning process and to be creative. The important thing to keep in mind with these activities is to create success and have fun. Learning occurs through the process of the project, not through the product achieved.

- Quilt patterns: triangle, square, diamond shapes cut from construction paper and positioned on squares to form a "quilt". Make several different squares incorporating the same color patterns. Let your child design his/her own quilt square; have them copy others.
- Find objects/words in hidden pictures; "I Spy" or similar books are a good resource.
- Use clay ropes to follow letter forms or designs; or use pipe cleaners or play dough snakes.
- Trace letters on sheet protector or dry erase board with dry erase markers; erase with tissue. This also works with erasable crayons or grease pencil.
- Complete dot to dot designs; start with dots one inch apart and progress further. Complete the picture: draw half the picture and have child complete the rest. Following a maze with pencil/marker
- Play "what's missing" by drawing simple pictures (face, house, car) with a part missing and have your child draw in the missing part.
- Juggling: start with scarves or fabric pieces and progress to small items. Don't plan on progressing past juggling two items. This is a good activity for crossing mid line, eye-hand coordination and visual tracking.
- Make pictures with colored rice, dried beans of varying colors, or interesting textured spices from your cupboard; glued onto construction paper.
- Commercial games available: Guess Who, Simon, Light Bright
- Memory games: place several small objects in a paper bag, have child feel the object inside the bag, guess what it is, and place it on the table top. Replace in the bag and have child list the items in the bag without peeking.
- Save frozen juice lids and make your own memory game using matching stickers on the back.
- Play the age-old pass the tray game: place several items on the tray and let child look at it for 10 seconds and then hide it; have the child recite or write a list of objects on the tray.

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