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The Hincks-Dellcrest Centre.

Visual Processing Problems

Summary: One of the main senses people rely on to make sense of the world is our visual sense. Visual processing problems are when the brain has problems making sense of what it sees. It can cause all manner of problems with school, work and home. A person might become overwhelmed when there is too much visual information to process, such as in a messy or cluttered classroom or public place. The person may lack visual awareness, e.g. being unable to find something even though it's right in front of them. They may struggle with visual tasks, e.g., learning to read, write and math. It may be confused with other issues, such as inattention or laziness. The person might even be diagnosed with attention deficit hyperactivity disorder (ADHD), yet the usual treatments, such as strategies and medications, do not work. The good news is that visual optometrists can help assess and provide recommendations for visual processing problems. Various accommodations and modifications may help at school, work and home.

Overview

Visual processing problems occur when the brain makes sense of visual information. As a result, people become overwhelmed in making sense of what they see. And because we rely mainly on eyes and visual sense, visual processing problems can cause significant stress and problems with learning, school and work.

Any of the Following?

Visual overload:

- Does the person get overwhelmed when there is too much visual information? E.g. a classroom with too much clutter or stuff on the walls? Busy places with lots of people? Messy or cluttered rooms?

Lack of visual awareness:

- Does the person seem to be unaware of their visual environment? E.g. bumping into things? Looking for something in the fridge, and not realizing its right in front of them? Struggles with doing puzzles, Where's Waldo, or other visual activities?

Visual distraction

- Are there troubles focusing on visual tasks, e.g. at home or school?
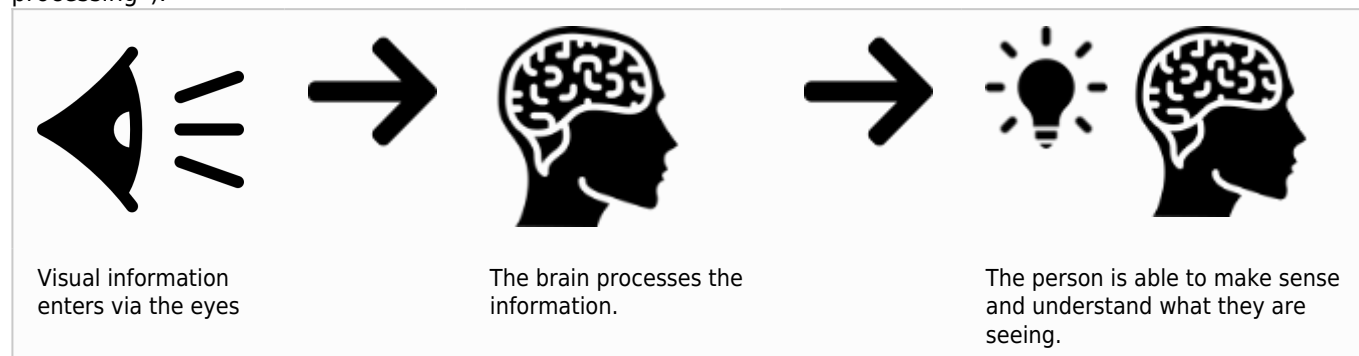
Visual memory problems

- Do they have difficulties remembering what they've seen or read? Troubles with reading or spelling?

If you have answered YES to one or more of the above, read on to learn more about visual processing.
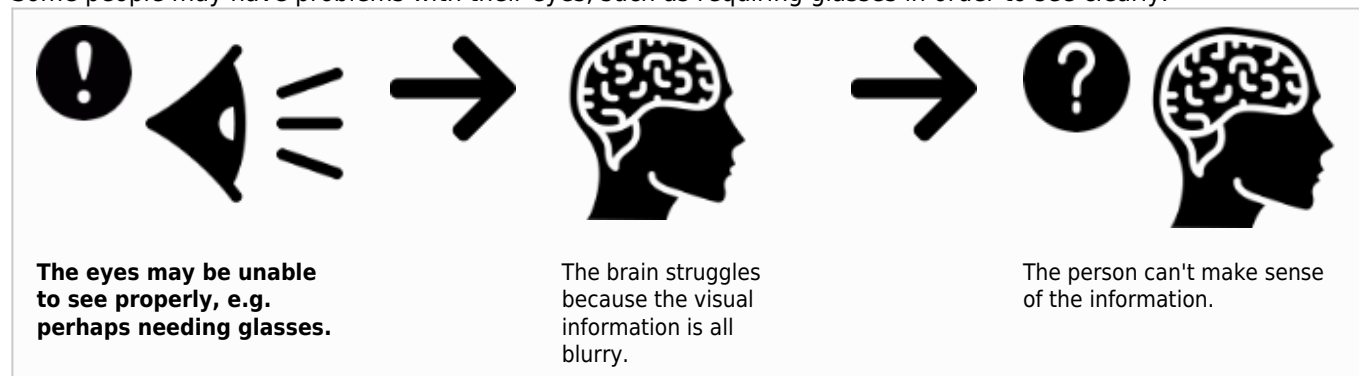
Introduction

The visual sense is perhaps one of our most important basic senses and allows us to sense and perceive the world around us.
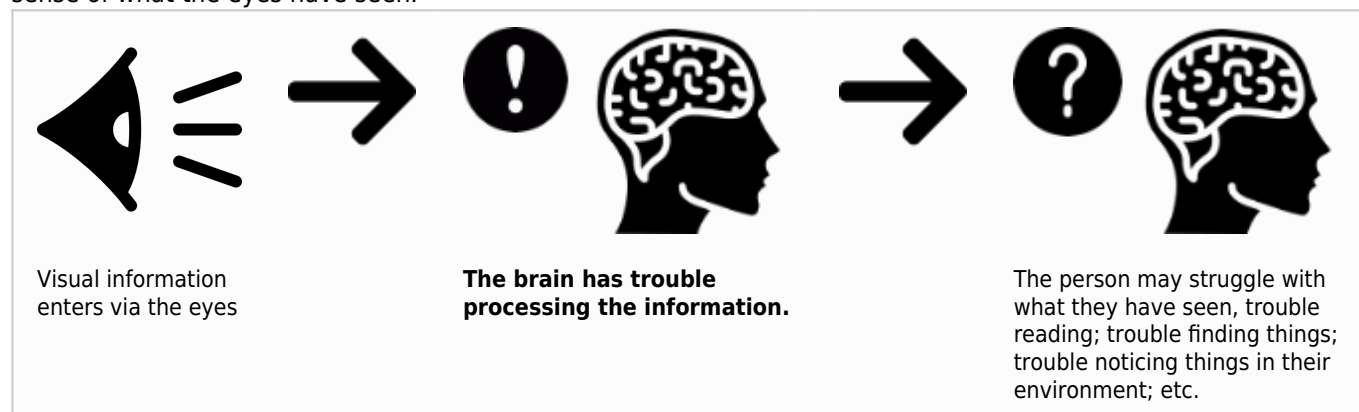
Our visual system receives information from the world (via the eyes), and then the brain has to process it ("visual processing").

Visual information enters via the eyes	The brain processes the information.	The person is able to make sense and understand what they are seeing.

This process works automatically for most people, but there are many challenges that can happen along the way. Some people may have problems with their eyes, such as requiring glasses in order to see clearly.

The eyes may be unable to see properly, e.g. perhaps needing glasses.	The brain struggles because the visual information is all blurry.	The person can't make sense of the information.

Visual processing problems are when the person's eyes can see normally, but the brain has difficulties making sense of what the eyes have seen.

Visual information enters via the eyes	**The brain has trouble processing the information.**	The person may struggle with what they have seen, trouble reading; trouble finding things; trouble noticing things in their environment; etc.

Visual Processing Can Cause Many Problems

Problems with visual processing can lead to many challenges:

- Attention problems
  - Trouble paying attention to visual tasks.
  - Being distracted or overloaded by too much visual information, e.g. even watching movies, videos or TV, might lead them to be inattentive or simply not interested.
- Lack of visual awareness
  - Troubles seeing or noticing things in the environment that others might, e.g. bulletin boards, posters on walls, or something they are looking for in the fridge.

- Bumping into things because the person doesn't notice them.

- School and academics, such as
  - Troubles with reading and writing, which may seem unusual because their oral and verbal skills tend to be stronger.
  - Reading problems
    - Skips words or entire lines when reading or reads the same sentence over.
    - Troubles reading out loud.
    - Troubles remembering or understanding what they have read.
    - Reverses or misreads letters, numbers and words.
  - Math problems
    - Frequently ignores function signs, skips steps, confused by formulas, especially by those that are similar.
  - Troubles copying notes from a board.
  - Troubles writing within lines or margins.
- Home and life skills
  - After a challenging day at school, the child may come home stressed and frustrated.
  - May struggle with aspects of home life, whether it is finding things at home, keeping things organized, noticing things in their environment, matching their socks, learning their phone number, etc.
- Eye fatigue
  - They may complain that their eyes get tired or sore when reading or looking at things.
- Frustration from others
  - Educators and parents may become frustrated as it is hard to understand why the student is struggling.
- Emotional problems
  - All the accumulated stress from struggling to achieve what comes naturally to others, combined with frustration from teachers and adults, may contribute to anxiety, stress and depression.
  - The student may become so stressed out by visual learning tasks that they react with "fight or flight", i.e. getting angry and frustrated with visual tasks or becoming anxious and avoiding them.
- Misdiagnosis:
  - The 'inattentive' student may be labelled as having attention-deficit hyperactivity disorder (ADHD), and treatments will be only partially helpful if they do not address the underlying visual processing issue.
  - Or they might be labelled as being lazy and unmotivated.

Any Difficulties in These Visual Academic Areas?

		YES	NO
Visual discrimination issues	Does your child mix up letters, such as confusing d or b, or p and q?		
Visual figure-ground discrimination issues	Troubles identifying a shape or character from the background? Troubles finding specific information on a page?		
Visual sequencing issues	Troubles telling the order of symbols, words or images? Troubles when having to write answers on a different sheet? Skip lines when reading? Reverse or misread letters, numbers and words?		
Visual-motor processing issues	Troubles with writing within lines or margins? Bumping into things? Trouble copying from a book?		

Long- or short-term visual memory issues	Difficulties recalling what they've seen or read? Troubles with reading or spelling?
Visual-spatial issues	Problems knowing where things are in space? Troubles judging how far things are away from them, or from each other? Tend to get lost easily? Troubles reading maps? Trouble judging time?
Visual closure issues	Troubles identifying an object if you can only see part of the object? E.g. troubles knowing something is a truck if it's missing the wheels? Troubles knowing a word if a letter is missing?
Letter and symbol reversal issues	Switching letters or numbers when writing? Being older than age 7, and making letter substitutions when reading? Troubles with letter formation, i.e. writing letters of the alphabet in the way they are taught to?

What Causes Visual Processing Problems?

The exact causes are unknown. Perhaps in some cases, the person's brain is wired somewhat differently. Factors include:

- Low birth weight and prematurity at birth;

- Mild traumatic brain injuries.

In many cases, people appear otherwise healthy.

How Common are Visual Processing Problems?

It is unknown how many people have visual processing problems because it has not been very well studied.

However, because not many people (including professionals) know about it, it is under-recognized and under-diagnosed. It likely contributes to many children, youth and adults having troubles with learning (such as attention and reading) contributes to their stress and learning problems.

Visual processing problems might not be apparent when a child is younger because there are fewer visual demands. It is often more noticeable as they enter school, where visual demands increase

Wondering about Visual Processing Problems?

Wondering about visual processing problems?

- Start by seeing the **primary care provider** (e.g. family physician, pediatrician) to ensure there are not any obvious medical problems contributing.
- The primary care provider might then recommend the following to ensure that there aren't any problems with the eyes.
  - **Optometrist:** An optometrist can do an eye evaluation and treat certain issues. Typically, they are the ones who would do an eye exam and recommend glasses if required.
  - **Ophthalmologist:** An ophthalmologist is a type of doctor that treats (medical) problems related to the eyes.

Are the eyes fine, but there are still problems with visual issues?

- Professionals that might be able to help:
  - **Behavioural optometrist:** This is a type of optometrist that can explore if there are visual processing issues. They may recommend treatments such as vision therapy. This may involve various eye exercises or devices such as prisms and lenses.

- **Neuropsychologist:** Are there complicated problems with learning? Are there medical issues that may have affected the brain? If so, a neuropsychologist might be helpful. A neuropsychologist is an expert in learning issues and the brain. They can perform a series of tests to see how your child's visual issues affect their development.

Treatment / Management of Visual Processing Problems

There is no simple cure or medication for visual processing problems.
Some optometrists may recommend vision therapy, which may involve:

- Teaching exercises using lenses, prisms and filters at the optometrist's office.
- Practicing those exercises at home.

School Accommodations and Modifications

The optometrist will help make recommended accommodations and modifications at school for the Individualized Education Plan (IEP).
Here are some examples of accommodations, however each student is unique and thus these would need to be customized for each student.

Accommodations for Students With Visual Processing Problems

Do's

Has visual information been given to the student?

- Check to see if the student understands what has been shown to them.
- Ideally, the student would let you know if they don't understand, but this can be difficult for students.

Use other senses in addition to visual, e.g. oral/auditory.

- Read out aloud any visual instructions (e.g. schedules, questions) (as opposed to just showing the student).
- Allow oral reports (as opposed to just written responses).
- Use audiobooks
- Record class lectures.
- Allow the use of text-to-speech software.

Provide the student with copies of notes.
Provide a note-taker (e.g. ask other students if they can share their notes with the student).
Give the student more time for processing and understanding when teaching, as well as when testing.
Reduce visual overload, by

- Keeping a classroom with less clutter, e.g. fewer posters on the walls.

- Using clean, simple, minimalistic design principles to create handouts/learning materials with simple directions, lots of white space, without visual clutter.
- Instead of a photograph, consider using a simple flat icon or infographic type design.
- Instead of adding an unnecessary decorative image, consider leaving it out.

Have you given the student long written directions?

- If so, try to give a <u>simple</u> diagram/image to summarize the information.
- Give cheat sheets or summary sheets.

Reduce visual distractions when working on a worksheet

- Example
  - Only having one math problem on a page;
  - Having a way to "mask" / "hide" problems they aren't working on at the time.

○ Fold the worksheet in a way that shows the active problem, and hides the other problems;
○ Use blank pieces of paper, blank index cards, or sticky notes to cover up the other material;

Doing a math problem?

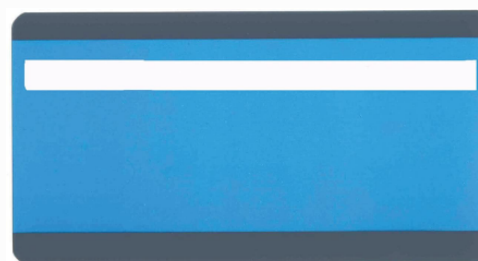- Provide graph paper (or lined paper to be used sideways) to help line up math problems.

Is the student doing reading tasks?

- Give them a 'reading guide strip' such as:

• "FingerFocus Highlighter"

• "Ashley Products Cut-Out Window Tracker Reading Guide"

• Coloured overlays designed for dyslexia, visual stress to help with reading.

• Allow them to use a highlighter to use to highlight information while reading.

Provide a slant board (or three-ring binder) to bring work closer to the student's visual field.

• Example: Zieler Easywriter

• Homemade option using a 3-ring binder plus a clipboard

Doing arts/crafts tasks?

• Using scissors? Have loop scissors available to make it easier to control cutting and follow a line.

• Using glue sticks? Provide coloured glue sticks to use on white paper, e.g. UHU stick goes on blue and dries to clear.

Don'ts

- Don't rely mainly on the visual sense, e.g. don't rely mainly on giving visual/written instructions.
- Visual accommodations
  - Allow the student to provide an oral report instead of writing down their answers.
  - Is the student being asked to write down answers? Allow the student to submit answers on separate sheets of paper rather than on one sheet in small spaces.
  - Teach the student how to fold a test paper, use sheets of paper or large sticky notes to hide extraneous material, and thus focus on the question they are working on.

Testing Accommodations

Visual accommodations

- Allow the student to provide an oral report instead of writing down their answers.
- Is the student being asked to write down answers? Allow the student to submit answers on separate sheets of paper rather than on one sheet in small spaces.
- Teach the student how to fold a test paper, use sheets of paper or large sticky notes to hide extraneous material, and thus focus on the question they are working on.
- General accommodation
  - Provide extended time on tests.
  - Provide a quiet(er) place to take their tests, e.g. resource room.

What Can Parents Do for Visual Processing Problems?

There are many exercises that parents can do to help their child's visual processing skills. Try to do at least 15-minutes a day, and build it into their daily routines.
Visual strategies.

- Write out schedules.
- Write out instructions, and break things down into numbered steps.
- Use large, clear letters.
- Consider using colour-coding.

Practice visual skills.

- Doing puzzles, starting with simpler puzzles then going to more complex.
- Reading "Where's Waldo?" or similar books.
- Completing letter, number, or word searches
- Play "I Spy" games (i.e. I see something red and round)
- Hidden picture type puzzles

Practice ball skills (which require visual skills)

- Start with rolling a ball back and forth -- simpler.
- Throw a ball back and forth -- more advanced.
- Kick a ball back and forth.
- Start with large balls at a slow speed, and move up to smaller balls and faster speeds.

Sorting practice

- Sort objects by one attribute (size, colour, or shape).
- Sort by 2 or more attributes.
- Make patterns with beads, small toys or household objects and have your child copy them
- Place several items on a tray in order, cover it up and mix the items up. See if your child can remember to put them in the correct order.

Visual memory games

- Play memory games that you can buy from a store, like Simon, Mastermind or Loopz.
- Make your own memory game, for example:
    - Put a small number of objects on a tray.
    - Let your child look at the objects for a minute or so.
    - Cover up the objects, such as with a towel.
    - Ask your child how many objects they can remember without looking.
    - Over time, make it more complicated such as
    - Give your child less time to remember things;
    - Put more objects;
    - Consider removing an object at a time, and ask if they can tell what is missing. Do this until all objects are gone.

Strategy Games

- Play games that have pieces that can moved in certain directions, e.g. Checkers, Chess, Sorry (™), etc.

Visual activities

- Do origami.
- Building toys such as Lego are very visual. Try creating something and see if they can copy you.
- Find a simple picture in a magazine and fold it in half. Glue it on a piece of paper. See if your child can finish drawing the other side of the picture.
- Find a simple picture in a magazine and fold it in half. Glue it on a piece of paper. See if your child can finish drawing the other side of the picture

Where to Find Help?

To find help, look for professionals who have experience working with those with visual processing problems, such as:

- Optometrists
- Occupational therapists

Ask specifically if they have expertise with visual processing disorders. Unfortunately, visual processing disorders are not very well known. Whereas many if not most primary care providers might not be aware of them, even many optometrists may also not be aware.

For More Information

Understood.org has great information about visual processing problems

https://www.understood.org/en/learning-attention-issues/child-learning-disabilities/visual-processing-issues/understanding-visual-processing-issues
https://www.understood.org/en/school-learning/partnering-with-childs-school/instructional-strategies/at-a-glance-classroom-accommodations-for-visual-processing-issues
LD Online
http://www.ldonline.org/article/6390/

About this Document

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