

What You See - Visual Perceptual Difficulties in Children with Hemiplegia

*This Information Sheet has been written by **Pat Kennedy**. Pat is a Paediatric Occupational Therapist with a special interest in visual perceptual difficulties and a particular insight into the problems experienced by children with hemiplegia.*

The development of visual perception

Our brains are responsible for organising information that enters them. The development of visual perception relates to how the brain organises material that enters it, specifically through the eyes. The visual cortex, located at the back of the brain, must decide what to respond to and how to make sense of information very quickly. There are two stages: Stage 1 is the organisation of incoming information and Stage 2 relates that information to things the brain has already experienced. Although most children have their visual acuity (what they can directly see) and their ability to read from a chart assessed, most do not have their visual field (what they can see around them) tested.

What visual perceptual difficulties can children with hemiplegia face?

A visual field defect may mean a child cannot see what happens on one or both sides of them. Hemianopia, the loss of half the visual field, can affect the skills required for reading when letters need to be scanned across to make words and sentences. For example, a left Hemianopia will lose the beginning of every word and a right Hemianopia will lose the end of every word. People make cognitive maps all the time to decide what visual information to keep and what to discard; otherwise they would overload the brain. Children with hemiplegia seem to have difficulty deciding what to keep and what to discard. Sometimes they attend to minute peripheral details i.e. fail to discard irrelevant information, then miss the main points. Some children with hemiplegia may experience visual neglect which can cause them to ignore what happens on the affected side, unless they use another means of drawing attention to it. They may also stumble easily and be less prepared for movement.

What other problems can arise from visual perceptual problems?

What came over most clearly from this, albeit brief, introduction to the mechanics of visual perception was that perceptual problems can lead to emotional problems because of the fact that children tend to avoid the things they cannot do.

For example, holding paper down is hard when the affected arm is extended during writing. Clipboards rather than Blu-Tac allow paper to be manoeuvred into place allowing the child to make the 'work' work for them. There are computer programmes to help with sequencing work and to train the eye to track a moving object. Many children with hemiplegia who have visual perceptual problems are fundamentally disorganised, for example they can do picture matching but are spatially disorganised so that puzzles, whether in a frame or not, are often virtually impossible for them to do. (There are several tests that OT's and psychologists use to discover the extent and type of spatial difficulties).

What can teachers and parents do?

Teachers and parents need to be aware how tiring problem solving is for children with hemiplegia. Indeed some children may need to start from scratch ever single time they encounter the same problem. Children with hemiplegia constantly need to think about what they are doing and how they are going to do it.

Practical solutions

- Sitting square on to the board or face to face, not having to turn to attend to visual and verbal stimuli.
- Computer screens should be at eye level.
- For writing instruction and other practical organisational learning the teacher/LSA should sit alongside the child to enable them to have the same angle of vision.
- For children who are visually inattentive it is helpful to work face to face so that the child can see facial expressions, check eye gaze and eye movements.
- Display boards should be in the child's direct line of vision with the minimum opportunity for distraction, or adjusted for the child's restricted vision/field defects.
- In group work the child should be seated in the front or middle of the group.
- Ensure that the child has enough space on the desk or tabletop to work effectively (don't seat a left hander next to a right hander and vice versa)
- Pre-schoolers learn to write better on a well-stabilised vertical surface later on an angled surface might be better.
- Surfaces need a clear background for writing drawing etc. White boards are better than black or green.
- Plain tabletops might be more effective covered in off-white paper.

Problems with maths

Children with hemiplegia often cannot plot corners to make a square and find spacing/drawing of lines hard. Also peculiar to maths are problems in early arithmetic e.g. $1+2=3$ is a verbal skill whereas;

$$\begin{array}{r} 14 \\ +16 = \end{array}$$

is a visual spatial skill requiring the ability to carry numbers across the columns.

More practical solutions

- With younger children use sticky labels to construct bar charts
- When comparing blocks, bar charts or lining up etc use a line drawn on an acetate to divide blocks
- Use a black fine liner pen for stencils and maths drawings as it gives a clearer outline.
- At 16+ young people should be allowed to use photocopies for scientific drawings rather than attempt them freehand.

HemiHelp has a range of leaflets covering many of the areas touched on above, and also a Useful Names and Addresses List to help you contact other organisations.

HemiHelp

Camelford House,
89 Albert Embankment
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Helpline: 0845 123 2372
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