VISION CONSIDERATIONS WHEN DESIGNING AAC SYSTEMS

Determine communication distance and comprehension of gestures and body language

At what distance can the child recognize faces/ see and comprehend expressions and body language

Some ways of testing:

1. Hiding Heidi: helps you get an objective measure of the distance at which details of low contrast are best perceived

2. Play "copy face" games – blinking, pursing lips, opening and closing the mouth repeatedly, raising eyebrows

3. Play "copy gestures" games – open and close hands, hold out a finger, simple gestures like shrugging shoulder, phone call, come and so on.

4. Look at ability to scan, maintain eye contact, sustain gaze, as all these help you understand how easy it is for the child to attend and,

5. Look at ability to maintain gaze while you are speaking and while the child is speaking or communicating

If the effort is too high, the child will get less information, even if the child is able to see expressions and gestures in the first three situations.

Determine visibility of the symbol system

Can the child see object, picture, drawing, photograph, symbol system, writing …

Things that influence visibility and some ways of testing them:

1. Size, distance and tolerance of crowding:

Acuity testing at near with typical symbol charts: when selecting a good size for use in a communication system, remember to note what is seen with no difficulty rather than what is just discerned

If there is a significant difference between single symbol acuity and line acuity or the line acuity and 50% and 25% spacing on line, the child may have issues with tolerance of crowding.

Acuity testing with gratings or objects: detection is simply enough vision to see that something is there but not necessarily what it is.

Test first for size and then for spacing.

Spacing between the symbols to be seen can be difficult for children who have issues with crowding and also those who cannot scan efficiently. Use outlined forms, "coloured windows" around the words, underlining, or placing out of sequence, as ways of helping keep the different symbols distinct for the child.

2. Colour and Contrast: Colour vision deficiencies are inherited, often related to the perception of red, red – green, and much less frequently blue – yellow. Important to know as these are often coding or highlighting colours in communication charts and because children will be less able to use

Dr. Namita Jacob, 2013

colour as the primary identifier between similar forms (e.g.: orange and apple). Colour on materials such as plastic and thick areas of colour are easier to distinguish. Colour can be formally tested using Ishihara or Farnsworth Panel tests, but require some participation from the child such as naming or matching or pointing.

Contrast: Contrast is determined by the difference between the light reflected from two adjacent surfaces and is therefore also influenced by the amount of visible light. When contrast drops our ability to see detail (visual acuity) is reduces unless we come closer or make things bigger. Children with many visual conditions can have trouble with contrast sensitivity, so that even a shadow on a page can reduce contrast enough to make the images disappear!

10M Lea symbol and number charts to test contrast sensitivity: tell you very simply if the child has issues with contrast sensitivity and helps to get an idea of what distance, what size, what contrast is still easily distinguished by the child.

Play with objects and backgrounds: once you are sure that a child can see and recognize an object of a certain size, change the background to reduce contrast and see if it makes a difference. Remember, detection or even recognition of a familiar object is not the same as being able to see detail.

Determine ability to visually process 2 dimensional forms and images

Visual processing of images takes place in different places in the brain. It is important to test each separately since one can be damaged while the others are not. This will help determine what kind of symbols you will use in the communication system.

Simple shape to outline of form: match geometric shapes to line drawing, filled drawings and coloured drawings, first the same size and then smaller (can use Lea System for example)

Object to outline: perceiving the outline of the cup as a cup is a perceptual challenge and should be tested for separately

Pictures or photographs: this is also a distinct category – perception of faces – recognition of people and expression; seeing action in pictures

Determine position of viewing (usually done after or along with the physical access assessment)

To determine the position of symbols and the position of the device itself, test the child in the position they will be in when accessing the device to see: How easily the child is able to scan or shift gaze and whether some directions are easier than others

Other considerations include - Which body part or method of access will the child use? In what position must the child be for activation? Is the point of activation is different from the place of response?

Dr. Namita Jacob, 2013