

## Case Study 3: 6 year old girl with Down syndrome

### **Report included:**

Lucy is a charming six-year-old girl with Down syndrome who has been wearing glasses to correct long-sightedness for four years. After a slow start she now has excellent compliance and wears her glasses full time. Lucy attends mainstream school and is thriving with the help of a classroom assistant. She has some hearing difficulties and moderate speech and language impairment but uses Makaton signs to supplement speech.

### **Summary of vision and visual function**

Lucy is significantly long-sighted and, like many children with Down syndrome, needs a bifocal spectacle lens to allow her clear distance and near vision. However, even with her spectacles in place she still has reduced high contrast vision compared to her visually and developmentally typical peers. Educational material will need to be of sufficient size for Lucy to access it easily. We recommend print and other material to be at least twice the threshold (smallest) size that a child can see in order that they are not working at their visual limit for any length of time. **I have enclosed images of an appropriate size and detail for Lucy's level of vision.**

Bifocals for near vision

Additionally, the amount of detail present should also be considered in addition to its size. Children with Down syndrome often have difficulties processing 'crowded' visual information and their visual performance and attention may reduce considerably when too much information is presented at one time. Isolated presentation of educational and play material is likely to maximise Lucy's visual interest, enjoyment and attention. This difficulty with 'crowding' is important for both distance and near vision tasks. Lucy may find distance learning (e.g. black/whiteboard work) most challenging because the further away the object of interest is, the more crowded the visual scene is. At near, it is relatively easier to isolate the object of interest.

In addition to reduced high contrast vision, Lucy does not see low contrast images as well as an average child of her age. The contrast of educational and play material against their background should be considered and reading and writing material should be high contrast. Rather than using an ordinary pencil, Lucy may find it easier to see her own writing/drawing if she uses a thick, dark marker or soft, dark pencil. Poor contrast sensitivity can also cause difficulty with recognising faces, identifying edges and contours and orientation in new environments. Lucy may find it helpful if her classroom assistant or the person collecting her at the school gate, or going with her to the park, wears a bright, distinctive coat or jacket so that she can readily identify them from any angle.

Explanation about poor contrast sensitivity

To summarise, education and recreational material should be;

- Large enough for Lucy's level of vision,
- High contrast (avoid faint, light coloured pencils and grey photocopied print)
- Uncrowded (not too much information presented or too many tasks on any one page)
- Presented at a close distance (ideally within 1m) to maximise visual attention.

### Technical details

Current spectacles: R +6.00 DS L +6.00 DS ADD +2.50DS

Refractive error: R +6.00 DS L +6.00 DS

Visual acuity with gls (Kay crowded picture test using Makaton signs)

@ 3m binoc 0.6 logMAR (6/24)

@33cm 0.6 logMAR

Contrast sensitivity (Cardiff contrast test): 25 (4%) below normal limits for age

Accommodation (dynamic retinoscopy at 25cm): reduced through distance portion; accurate through bifocal segment

Ocular posture with gls: straight to light and target distance and near

Stereopsis (with Rx): passed frisby stereo test at 600" crossed and uncrossed

Ophthalmoscopy: media clear, fundii normal as seen.

Seen by: AN Other, \_\_\_\_\_ Senior Optometrist

*Cc: Parents, School, Therapists, Paediatrician, General Practitioner*