

# **The Low Vision Examination**

## **The Initial Assessment**

- **The aims and results of a low vision examination are different to those of a ‘normal’ sight test.**
- **It is important to have access to all the spectacles and Low Vision Aids (LVAs) the patient has.**
- **Time must be allowed to obtain a more detailed case history.**
- **The use of high illumination techniques such as slit-lamp and ophthalmoscopy should not be used until after visual assessment has taken place.**

# General Observation of the Patient

- **Does the patient appear to be bothered by bright lights?**
- **Can the patient navigate themselves to your consulting room?**

**General mobility?**

**Guidance**

- **Physical infirmities – e.g. hand tremor**
- **Eccentric viewing**

# Case History

- **Most important part of the low vision examination**
- **Establishes what each patient needs and wants**
- **Probably going to take a little more time than a conventional History & Symptoms and the Px should not feel rushed.**
- **Start with the easy stuff: name, DOB, Address etc.**

## **1. Duration/Onset of condition.**

**‘When did you start having difficulties managing with your current spectacles’**

## **2. Stability of the the condition**

**Is the condition constantly changing?**

- frequently change LVAs**
- variable magnification**

### **3. Patient's knowledge of the condition and prognosis**

**Nature of visual loss?**

**Congenital/acquired ?**

**Preferred eye ?**

### **4. Ongoing hospital treatment/monitoring**

**Any Px that has not had an ophthalmological assessment should be referred.**

**Medical/Surgical intervention can often be a treatment option**

## **5. Current Visual Status**

**What spectacles and/or LVAs the Px is currently using.**

**Are they useful**

**Determine current Rx and magnification of any LVAs used**

**i) What is the smallest print the Px can read?**

**iii) Are they able to watch TV?**

**v) Can they recognise faces at a distance?**

**vii) Can they see well enough to get around unassisted?**

## **6. Registration Status**

**Registration should be encouraged whenever possible**

## **7. Education/employment**

**Major factor in defining the Px's requirements**

## **8. General Health & Medication**

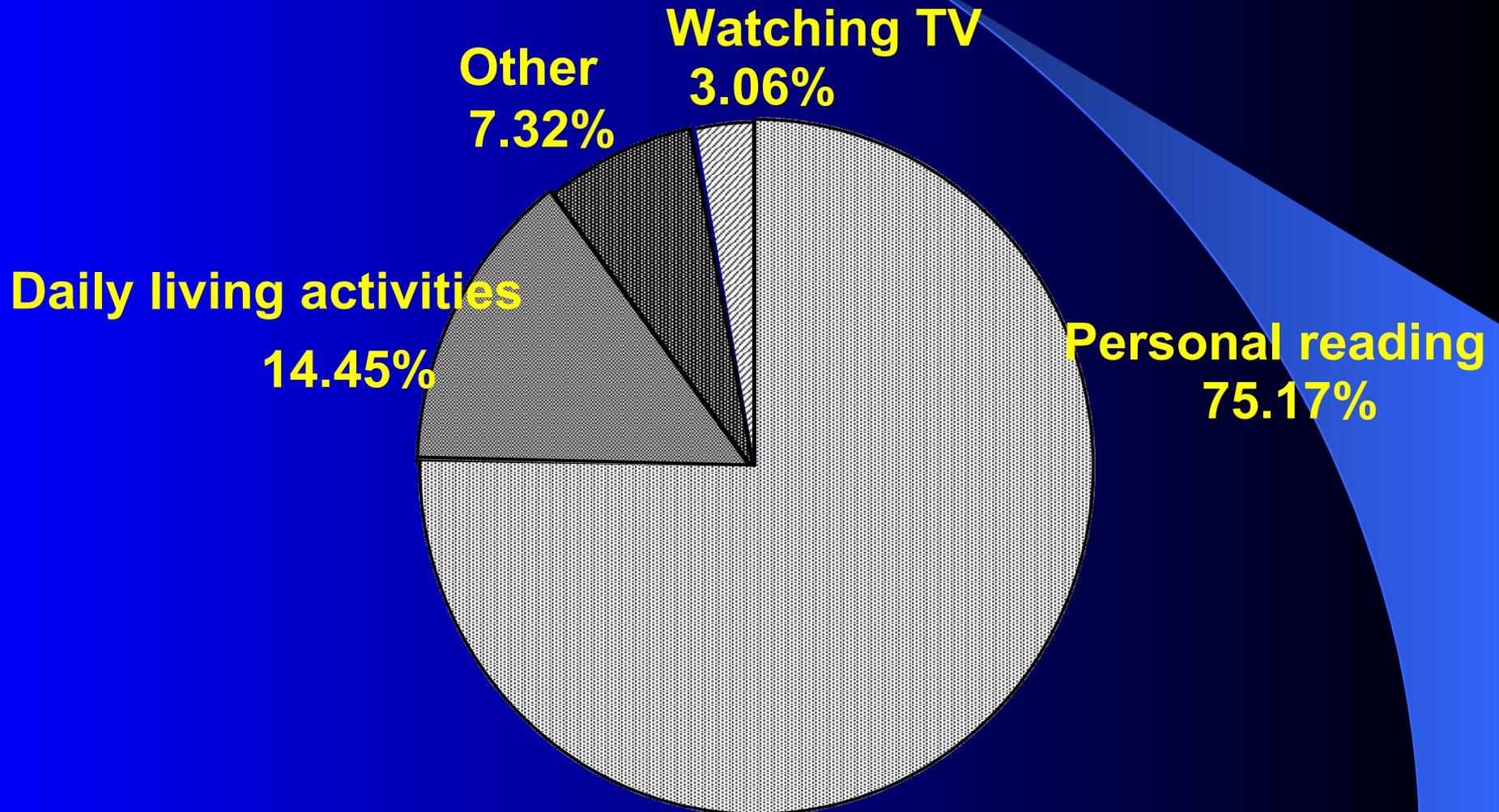
**May affect the Px's ability to perform everyday tasks or use the LVA properly**

## **9. Social Assessment**

- i) Does the Px live alone or with spouse or family?**
- iii) How is daily life affected by the vision problem?**
- v) Does the Px have a support network? (family, friends, agency)**
- vii) Is the Px's independence threatened?**

## 10. Reason for consultation

What would the Px like to get out of the consultation?



# Loss Model of Adjustment to Visual Impairment

**1. Shock**

**3. Depression**

**5. Anger**

**7. Anxiety**

**9. Denial**

**11. Disbelief**

**13. Realistic Acceptance**

# **Giving Information & Advice**

**Optometrist's Aim - what practical help the Px might require in the form of LVAs and training.**

## **Px's Requirements**

*'What did it all mean? I wanted someone to explain what was happening.'*

## **Psychological support**

**The low vision examination is an opportunity to provide the Px with further information about the eye condition and advice on how to cope with it.**

# Determining Refractive Correction

The subjective routine should begin with an approximately correct Rx in place

- **Retinoscopy**
- **Radical Retinoscopy**
- **Keratometry for high cyps**
- **Current Rx**

# Subjective Testing

**Use steps of +/- 2.00DS in order to produce a response (bracketing procedure)**

**Remember to compensate for reduced testing distance**

**+/- 1.00DC x cyl may be used to optimise clarity of a circular letter**

**Stenopaeic slit may also be used to optimise axis.**

**Is the Px binocular? Cover test/ocular motility**

# Assessment of Visual Acuity

Snellen charts are the most commonly used.

There are certain disadvantages associated with them:

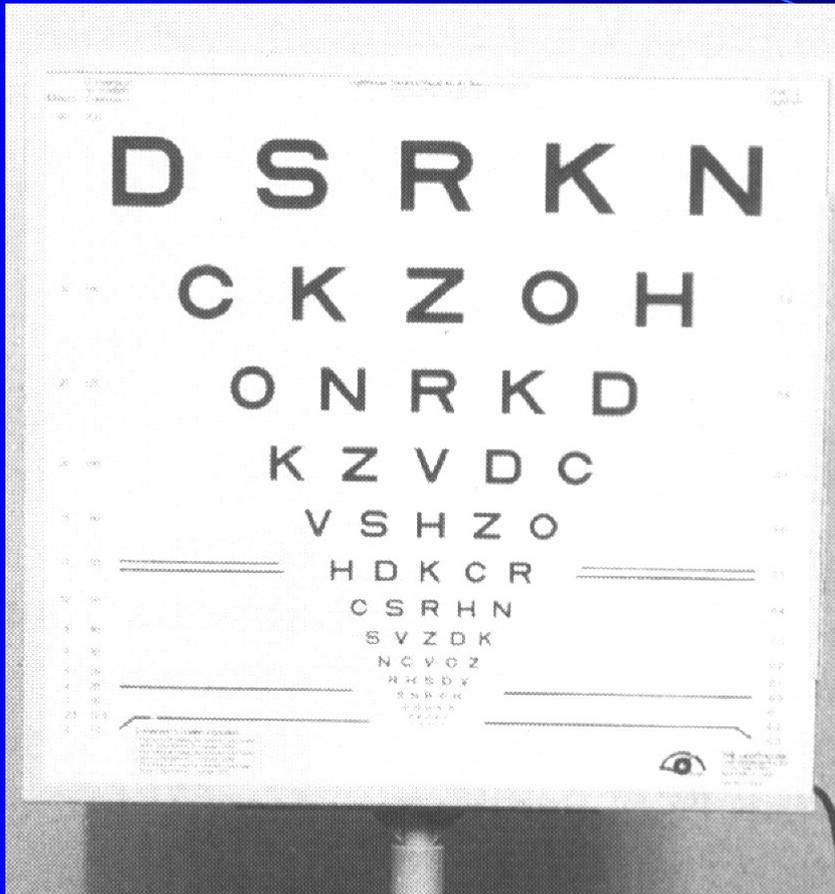
**non-uniform increase in size of letters**

$6/5 \rightarrow 6/6$  x1.2 increase

$6/36 \rightarrow 6/60$  x1.67 increase

**variation in the number of letters per line**

**(contour interaction effect)**



**Bailey-Lovie chart**

**Uniform increase in size of Letters for each line (1.25 x)**

**Same number of letters on each line.**

**Facilitates specification of VA in terms of logMAR**

**( $\text{Log}^{10}$  of minimum angle of resolution.)**

<b>MAR(min arc)</b>	<b>logMAR</b>	<b>Snellen</b>
<b>100</b>	<b>2.0</b>	<b>6/600</b>
<b>50</b>	<b>1.7</b>	<b>6/300</b>
<b>40</b>	<b>1.6</b>	<b>6/240</b>
<b>20</b>	<b>1.3</b>	<b>6/120</b>
<b>10</b>	<b>1.0</b>	<b>6/60</b>
<b>8</b>	<b>0.9</b>	<b>6/48</b>
<b>5</b>	<b>0.7</b>	<b>6/30</b>
<b>4</b>	<b>0.6</b>	<b>6/24</b>
<b>2</b>	<b>0.3</b>	<b>6/12</b>
<b>1</b>	<b>0.0</b>	<b>6/6</b>
<b>0.8</b>	<b>-0.1</b>	<b>6/4.8</b>
<b>0.5</b>	<b>-0.3</b>	<b>6/3</b>

# Measuring Visual Acuity

In low vision work the chart is presented at different distances:

3 → viewing distance  
60 → distance from which 'normal' subject can recognise the letter.

3m → 2m → 1m → 0.5m

Count fingers

Hand movements

Light projection

Light perception

No light perception

# Predicting the magnification required

$$\text{Magnification required} = \frac{\text{required VA}}{\text{present VA}}$$

In Snellen notation to improve from 6/60 to 6/6

$$\text{Magnification required} = \frac{6 \times 60}{6 \times 6} = 10 \times$$

**If VA is measured in a LogMAR notation:**

$$\text{Magnification} = (1.25)^n$$

**Where n = number of steps**

**If the present acuity = 0.5 and the required acuity = 0.1**

**Then Magnification =  $(1.25)^4 = 2.44x$**

# **Near Visual Acuity Testing**

**Near charts typically use sentences or paragraphs rather than isolated letters.**

**They should perhaps be referred to as reading tests.**

**Reading acuity does not correlate well with distance VA**

**Reading tests measure a more complex function than VA and some low vision Pxs have a reading acuity that is significantly worse than isolated near VA**

**Assess at the Px's preferred working distance with the appropriate near addition in place (+4.00DS in max. normal)**

**Encourage the Px to hold the print as close as possible.**

## **N - notation**

**N print uses New Times Roman font and is the standard UK test.**

**It has a linear scale:**

**N10 is 2x the size of N5**

**Magnification required =  $\frac{\text{present VA}}{\text{required VA}} = \frac{\text{N48}}{\text{N6}} \quad M = 8x$**

**A measurement of near VA should always be accompanied by the working distance at which it is taken.**

**Illumination**

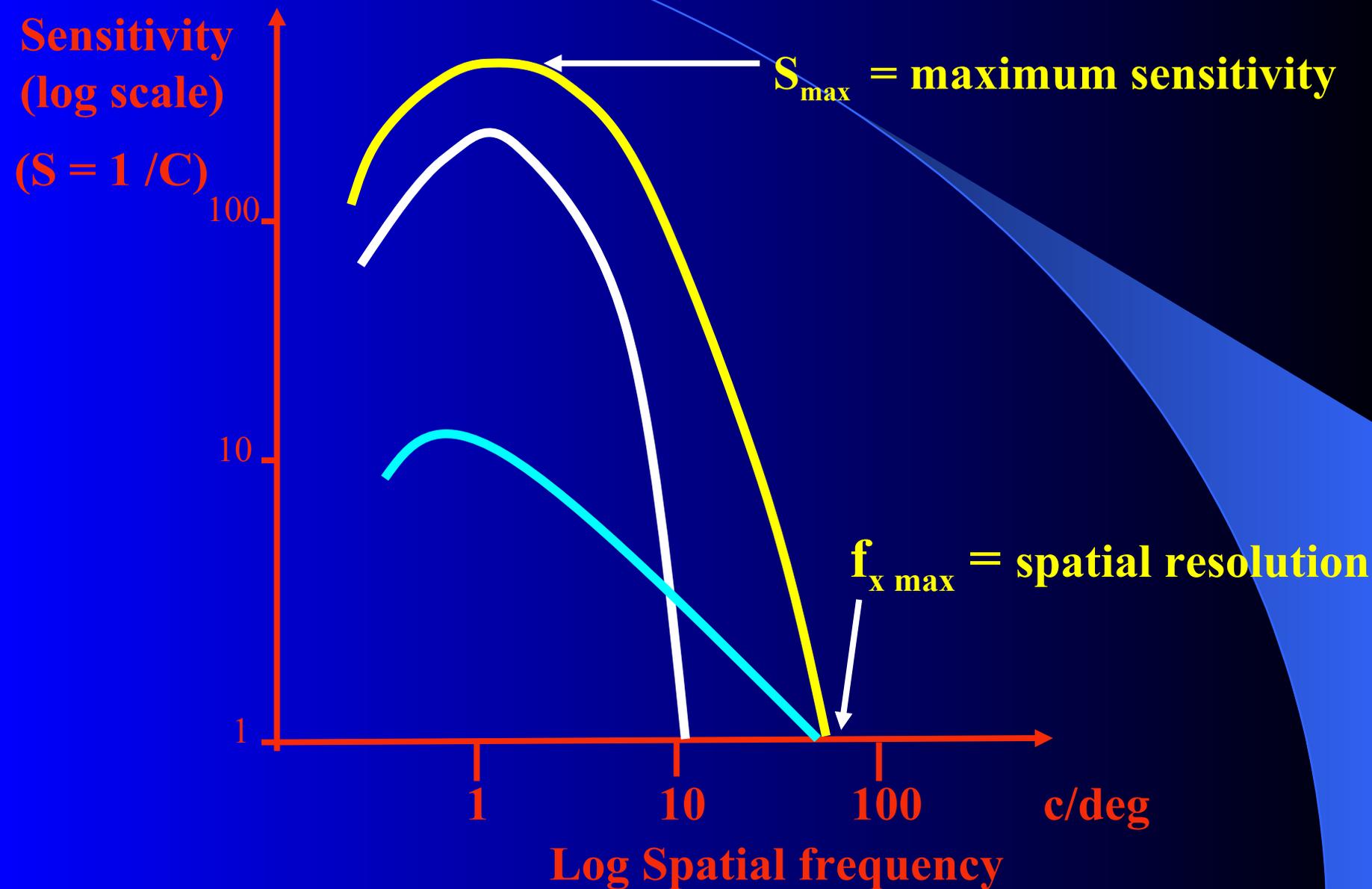
# **Contrast Sensitivity**

**Constitutes a more complete description of visual performance than acuity.**

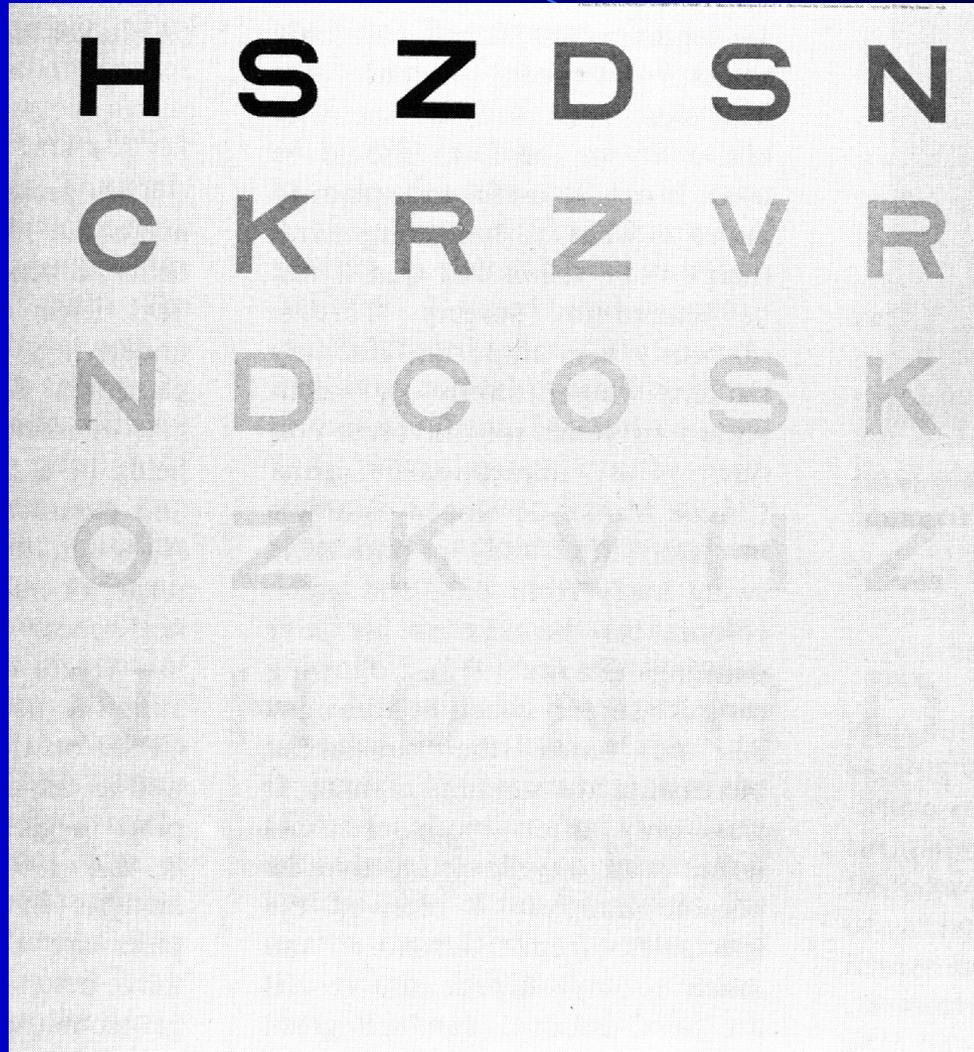
**Contrast sensitivity may help to explain a Px's functional difficulties.**

**Measurement in a clinical setting is fraught with problems**

# Human Contrast Sensitivity Function (CSF)



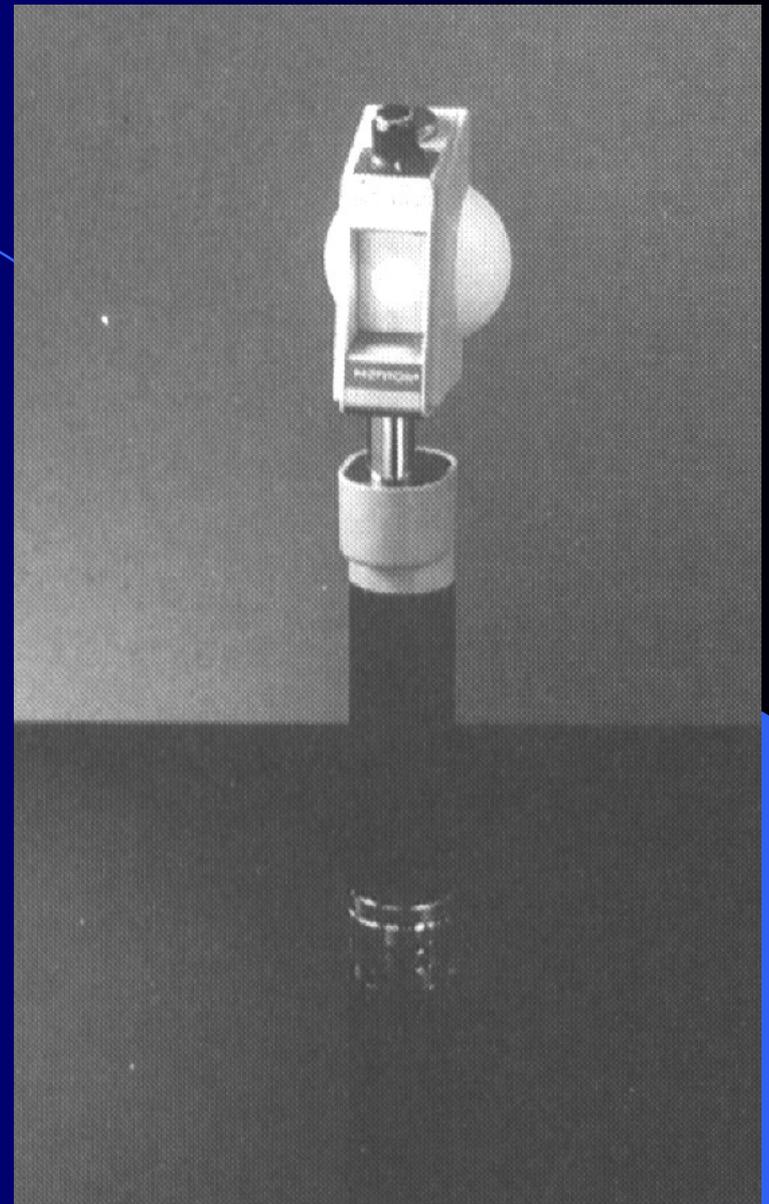
# Pelli-Robson CS chart



## Effect of a Glare Source

**Loss of sensitivity for low contrast targets may occur in the presence of high ambient illumination.**

**This is due to  $\uparrow$  light scatter producing - disability glare**



**Brightness Acuity Tester**

# **Other Tests of Visual Function**

## **Visual Field Assessment**

**Determination of the dimensions of the peripheral visual field**

**Determination of the distorted regions in the central field using the Amsler chart.**

# **Outcomes of Low Vision Examination**

- 1. No LVA is suitable for task**
- 1. The task may be tackled most effectively by sensory substitution.**
- 3. The task can be approach by using and LVA to overcome the visual impairment**

- 1. Determine whether binocular or monocular correction is preferable.**
- 1. Identify the specific task to be performed and predict the magnification required.**
- 3. Select the appropriate LVA.**
- 4. Trial of predicted magnification and LVA, modify if necessary.**
- 5. Determine the required spectacle correction to be used in conjunction with the LVA**
- 6. Loan aid for trial and instruction in its use.**
- 7. Plan follow up visits.**