LOW VISION

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Low Vision

How do we know when vision is working well?
Definitions

- Blindness
- Functional Blindness
- Legal Blindness
- Low Vision
- Partially Sighted
- Visual Impairment
Definitions

Other terms
  - Residual Vision
  - Visual Loss
  - Remaining Vision
What is blindness?
What do blind people see?
Is there a continuum of visual abilities?
Is blindness an impairment, a disability, or a handicap?
Types of Low Vision

- Low visual acuity
  - With clear ocular media
  - With cloudy ocular media or cornia
  - With central scotoma
  - Without scotoma
Measuring Visual Acuity

- Snellen Chart
- Low Vision Charts
- Objects at various distances
- Rolling balls
- Preferential Looking Test
Measuring Visual Acuity

Use of Measures
  – Meaning of measures
  – Interpretation of measures
  – Measures for eligibility for services
Types of Low Vision

- Visual field restrictions
  - Central
  - Peripheral
  - Multiple scotomas
  - Hemianopsia
  - Retinal tears
  - Lack of regard
Types of Low Vision

- Low Contrast Sensitivity
- Illumination
  - Photophobia
  - Need for more light
  - Glare
- Eye Movement Disorders, e.g., Nystagmus
- Cortical Visual Impairments
Types of Low Vision

- Combined Types

- Other (alone do not cause low vision)
  - Monocular vision
  - Color deficiencies
  - Strabismus
  - Visual perceptual disorders
Clinical Measures

- Low Vision Acuity Charts
- Low Vision Color Tests
- Low Vision Contrast Sensitivity Charts
Functional Measures

- Functional Vision Assessment
- Learning Media Assessment
- Orientation and Mobility Assessment
Expectations for Visual Functioning

Meet John:
- O.U. 20/200
- Age 21
- Oculocutaneous albinism
- Average IQ
- Efficient user of optical devices
Expectations for Visual Functioning

How many of you believe John is able to:

- Read a paperback novel (Star Trek)?
- Read a street sign from across the street?
- Read for an hour at a time?
- Read a menu at a fast food restaurant?
- Drive a car?
Myths of Low Vision

- People with low vision only see a few feet in front of them.
- People with low vision will harm their eyes if they are used.
- People with low vision see blurry images.
- All people with low vision need large print.
Myths of Low Vision

- People with low vision are old people.
- People with low vision should learn how to function as blind people.
- People with low vision are “faking it”
- People with low vision should only learn to use their vision.
Models of Visual Functioning

- Corn (1983)
  - Model of Visual Functioning
    - Congenital
    - Advenitious
Models of Visual Functioning

- Visual Abilities Domain

**Figure 1.1B. Components of the Visual Abilities Dimension**

Models of Visual Functioning

- Environmental Cues Domain

Figure 1.1C. Components of the Environmental Cues Dimension

Models of Visual Functioning

- Stored and Available Individuality Domain

Figure 1.1D. Components of the Stored and Available Individuality Dimension

Models of Visual Functioning

- Hall and Bailey, 1989
  - Visual Behaviors: A Model for Training Visual Functioning
  - VISUAL CAPACITIES
  - VISUAL ATTENDING
  - VISUAL EXAMINING BEHAVIORS
  - VISUAL GUIDING BEHAVIORS

Figure 1.2A. Visual Behaviors of Visually Impaired Children From Birth to Age 2
Interventions

- Optical Devices
- Non Optical Devices
- Environmental Modifications
- Techniques
Interventions

- Low Visual Acuity – expand retinal image
  - Magnifiers
  - Monoculars
  - Closed Circuit TV
  - Reduce distance

- Visual Fields
  - Central – magnification, eccentric fixation
  - Peripheral – prisms, reversed telescopes, eye scanning
Interventions

- **Contrast Sensitivity**
  - Filters

- **Illumination**
  - More illumination
  - Reduced illumination – non optical devices, therapeutic contact lenses

- **Non Visual Approaches**
  - Combined with visual
  - Non visual learning – tactual, auditory
Major Research Questions

- What differences exist in the clinical measures and functional abilities of normal and low vision populations?
  - Are there differences in how children with and without low vision use their peripheral vision?
  - Are there differences in reading fluency of adults with congenital and adventitious low vision who have similar clinical measures?
Major Research Questions

What relationships exist between the pathology, clinical measures and functional abilities?
- At what stage of diabetic retinopathy do functional limitations begin to impact mobility?
- Are there differences in the patterns of visual attention for students with Stargardt’s Disease and those with Leber’s Disease?
Major Research Questions

- What interventions are effective in increasing functional visual abilities?
  - What impact does the use of individually prescribed optical devices have on the reading fluency of students with low vision?
  - Does training in the use of peripheral vision result in fewer impact incidents of adults with acquired low visual acuity?
  - Does teaching eccentric fixation improve reading rates of those with acquired central scotomas?
Major Research Questions

- In what ways does low vision impact children’s and adults’ lifestyles?
  - What is the impact of oculocutaneous albinism on African-American teenagers with albinism?
  - How do the employment rates and earnings of young adults with low vision 3-5 years out of school compare with those of students with other disabilities and with those without disabilities?
Multidisciplinary Approaches

- Ophthalmologist
- Optometrist
- Clinical low vision specialist
- Teacher of students with visual impairments
- Orientation and mobility instructor
- Rehabilitation teacher
Providing Access to the Visual Environment

- Project PAVE
  - Multidisciplinary
  - Direct Service
  - Consultation
  - Continuing Education
  - Research
Project PAVE

- Clinical low vision evaluations
Project PAVE

- Instruction in visual efficiency
Project PAVE

- Instruction in the use of optical devices
Project PAVE

- Research

Graph: Initial silent reading rate and norms by grade

- Low vision (fall)
- Sighted norm

Silent Reading Rate (WPM)

Grade

2 3 4 5 6 7 8 9 10 11 12
Project PAVE

- Research
Project PAVE

- Psychosocial
Resources

- Local Schools
- Special Schools for Students with Visual Impairments
- State Agencies for the Blind
- American Foundation for the Blind
- Distributors of adaptive devices
- Technology companies
Resources

- Professional Organizations
  - International Low Vision Research and Rehabilitation (ISLRR)
  - Association for Education and Rehabilitation of the Blind and Visually Impaired
  - Lighthouse International
  - American Foundation for the Blind
Resources

- Consumer Organizations – Impairment Specific
  - Macula Diseases International
  - National Organization for Albinism and Hypopigmentation
  - American Nystagmus Network
  - Achromatopsia Network
  - RP Fighting Blindness
Resources

- Consumer Organizations – Low Vision and Blindness – Different Philosophies
  - National Council of the Blind
  - National Federation of the Blind
Resources

- Special Interest Groups
  - American Academy of Ophthalmology
  - American Academy of Optometry

- Journals
  - Journal of Visual Impairment and Blindness
  - Visual Impairment Research
  - RE:view
“You may be as enthusiastic as you please on my behalf in endorsing the telescopic lenses. I never knew there was so much in the world to see.”

– Ann Sullivan Macy, 1924