Promoting Occupational Performance for Older Adults with Visual Limitations

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Our Background on the Topic

- OTs who have worked in different practice settings (Hospital, SNF, Community)
- We work with older adults
- Saw need to address vision but often it was not the primary reason for OT referral
- Concerns involving occupational performance and participation were either not addressed or were not adequately addressed

Learning Objectives

1. Identify common age related vision changes and common diagnoses responsible for age related visual impairment
2. Identify the components of an occupational therapy low vision evaluation, interventions, and team collaboration
3. Apply low vision assessment, intervention, and collaboration to current practice settings through case study discussions

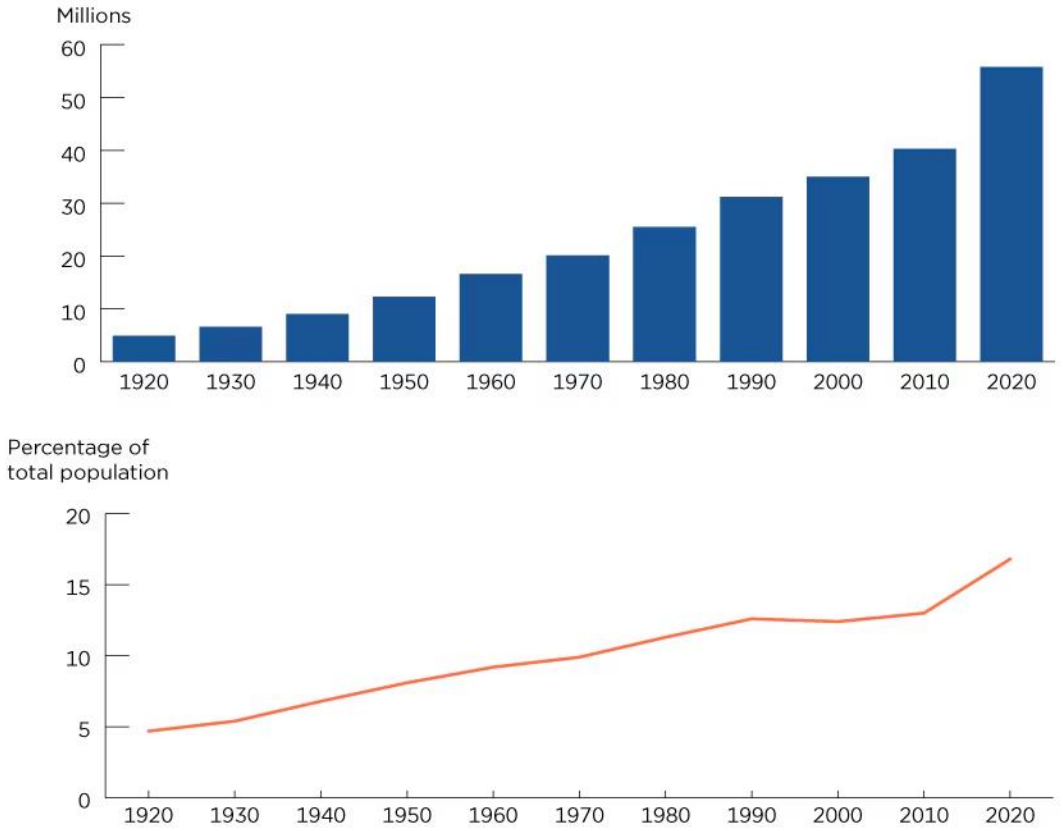
Aging of the Population

Cautionary Note

"When Elvis Presley died in 1977, there were an estimated 37 Elvis impersonators in the world. By 1993, there were 48,000 Elvis impersonators, an exponential increase. Extrapolating from this, by 2010 there will be 2.5 billion Elvis impersonators. The population of the world will be 7.5 billion by 2010. Every 3rd person will be an Elvis impersonator by 2010."***San Francisco Chronicle***, October 27th, 1993

Figure 1.

Population 65 Years and Over by Size and Percentage of Total Population: 1920 to 2020



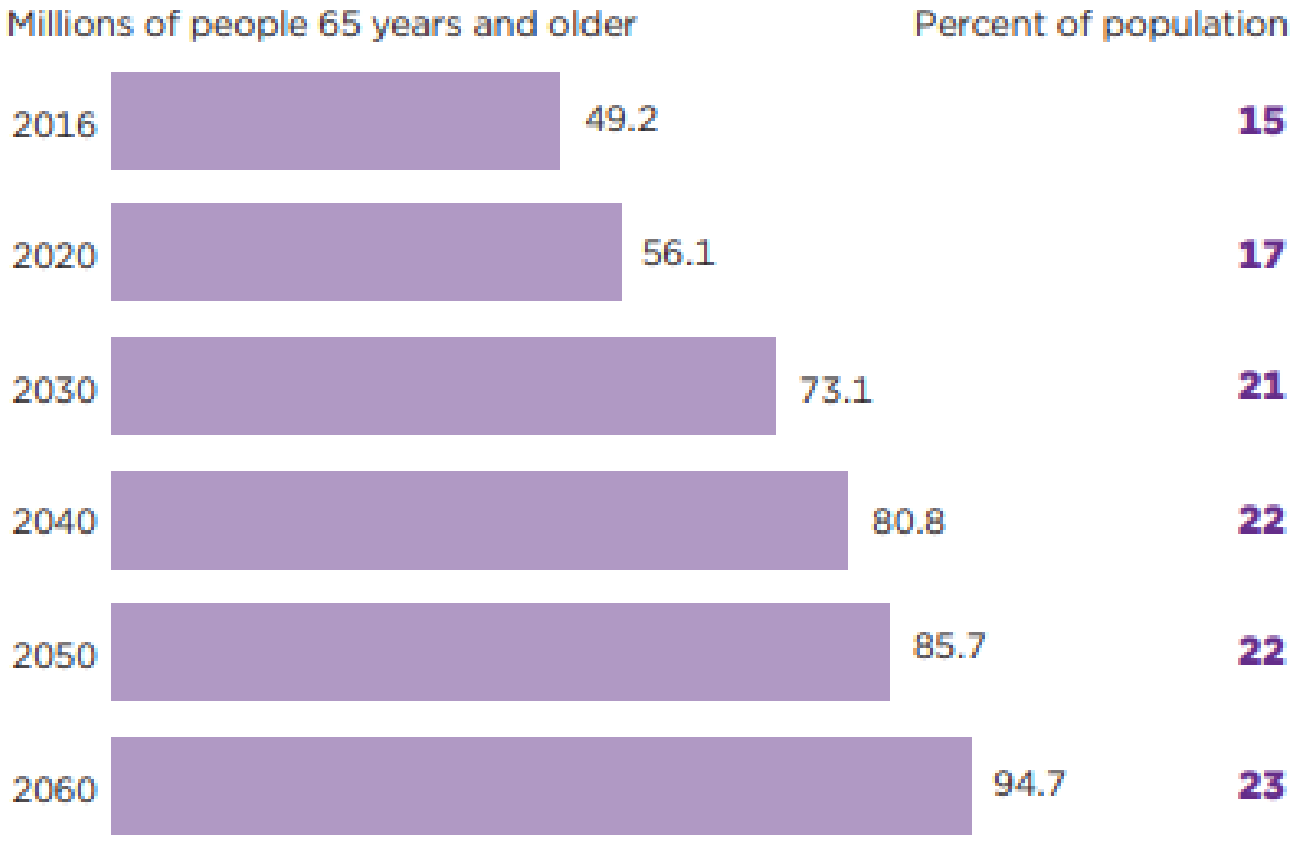
Note: For information on data collection, confidentiality protection, nonsampling error, and definitions, refer to <https://www2.census.gov/programs-surveys/decennial/2020/technical-documentation/complete-tech-docs/demographic-and-housing-characteristics-file-and-demographic-profile/2020census-demographic-and-housing-characteristics-file-and-demographic-profile-techdoc.pdf>.

Source: U.S. Census Bureau, Decennial Census of Population, 1900 to 2000; 2010 Census Summary File 1, and 2020 Census Demographic and Housing Characteristics File (DHC).

Figure 1.

Projections of the Older Adult Population: 2020 to 2060

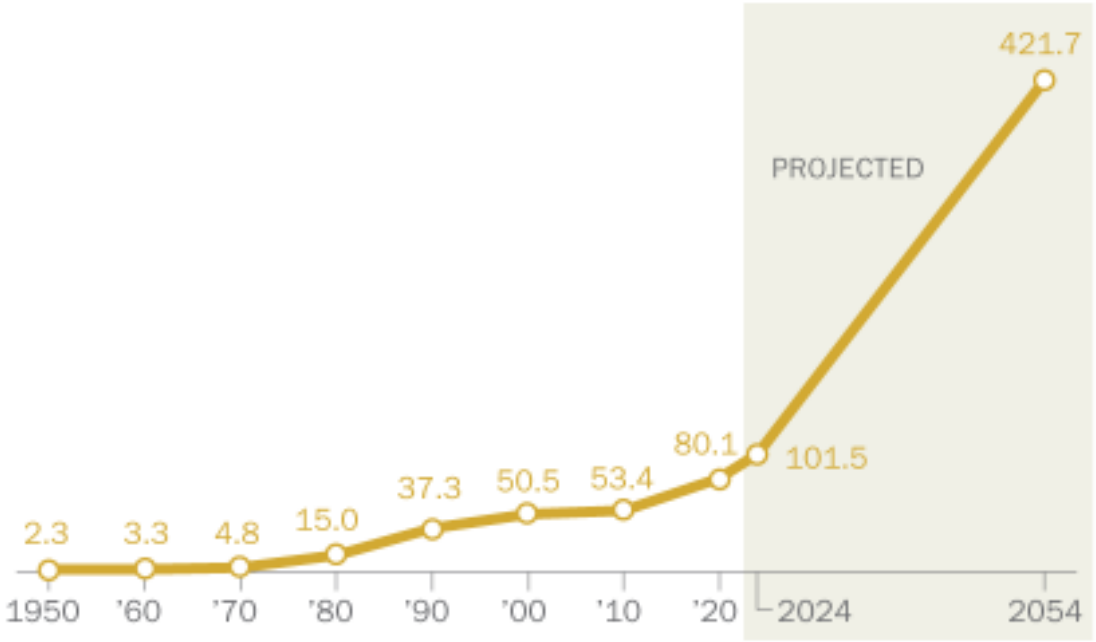
By 2060, nearly one in four Americans is projected to be an older adult.



Source: U.S. Census Bureau, 2017 National Population Projections.

U.S. centenarians projected to quadruple in number by 2054

Total estimated number of Americans ages 100 and older, in thousands



Note: The Census Bureau uses calculated estimates for years prior to the 1990 census because it has identified large errors in the census counts of centenarians for those years. Counts for 2024 and 2054 are projections.
Source: U.S. Census Bureau.

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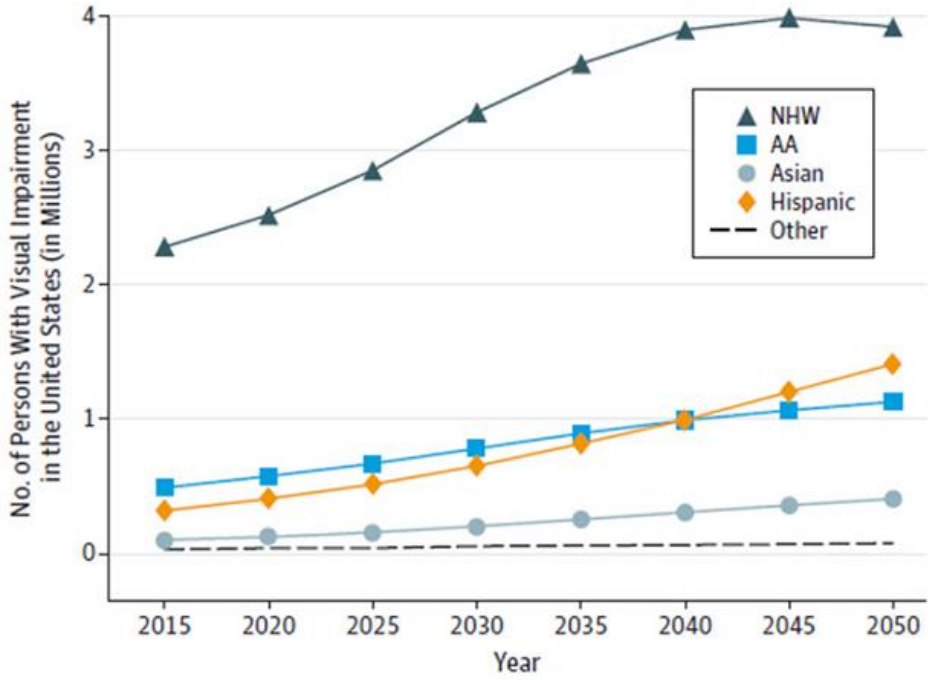
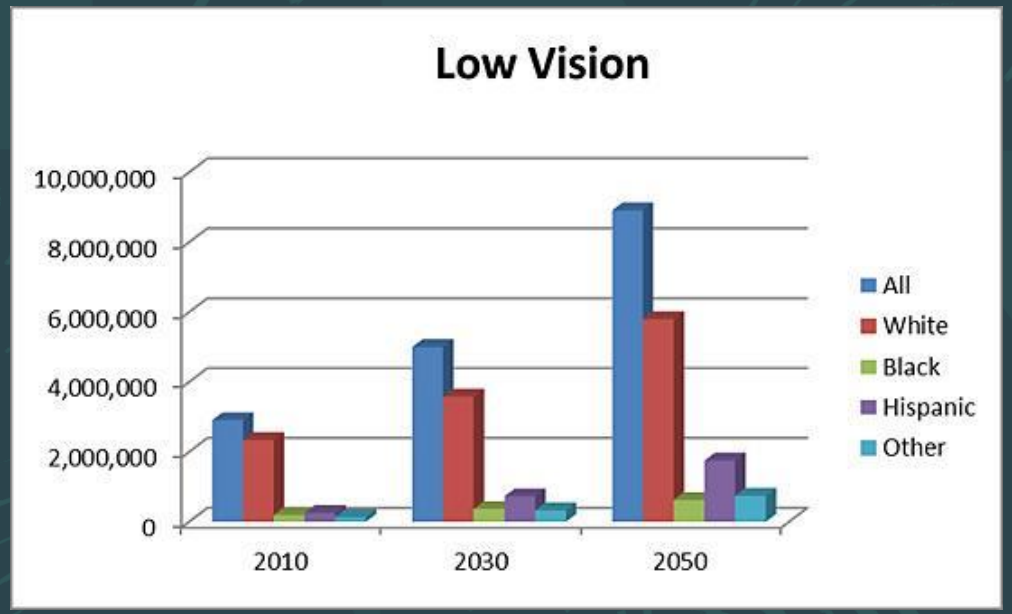
Figure 1. Estimated Numbers of Persons With Visual Impairment in the United States by Race/Ethnicity (All Persons) and Year



AA indicates African American; NHW, non-Hispanic white.
Source: Varma, et. al (2015)

- From CDC: https://www.cdc.gov/vision-health-data/prevalence-estimates/vision-loss-prevalence.html#:~:text=Approximately%206%20million%20Americans%20have%20vision%20loss%20and%201%20million%20have%20blindness.



- From National Eye Institute: https://www.nei.nih.gov/learn-about-eye-health/resources-for-health-educators/eye-health-data-and-statistics/low-vision-data-and-statistics

Why is Low Vision Competency Important

- Globally, at least 2.2 billion people have a near or distance vision impairment. In at least 1 billion of these, vision impairment could have been prevented or is yet to be addressed.
- Vision impairment poses an enormous global financial burden, with the annual global cost of productivity estimated to be US$ 411 billion.
- Vision loss can affect people of all ages; however, most people with vision impairment and blindness are over the age of 50 years.
- Among this 1 billion people, the main conditions causing distance vision impairment or blindness are cataract (94 million), refractive error (88.4 million), age-related macular degeneration (8 million), glaucoma (7.7 million), diabetic retinopathy (3.9 million) (1). The main condition causing near vision impairment is presbyopia (826 million) (2).

- WHO (2024)

Aging and Vision

Significance of vision, typical changes associated with aging, and age related eye diseases

AGING IS THE SINGLE BEST PREDICTOR OF LOW VISION

Vision loss doesn’t occur alone

Addressing vision is important to meet the needs of older adults

Impact of Vision

Could you complete this occupation with no vision?

Could you complete this occupation with limited vision?

Vision is the primary sensory modality for persons with typical vision

- Gives us unequalled vast amounts of formation about the environment
- Allows us to make quick assessments and decisions
- It is far reaching
- Has advantages over other sensory modalities

Visual Advantages

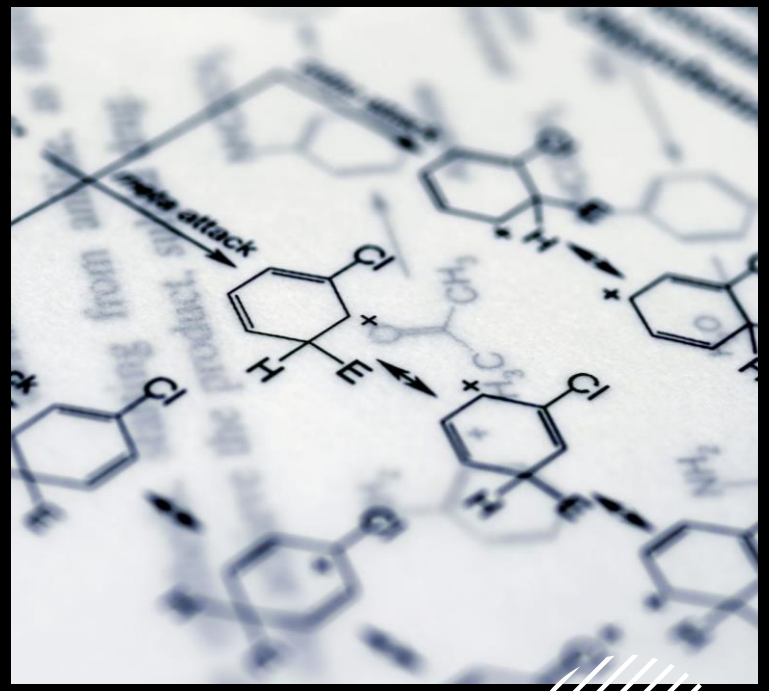
Context and environment

Warren’s Visual Hierarchy

- Visual cognition
- Visual memory
- Pattern recognition
- Scanning
- Attention
- Oculomotor control
- Visual fields
- Visual acuity

Survey of Age Related Visual Changes

How Does Typical Aging Impact Vision?



Longitudinal studies

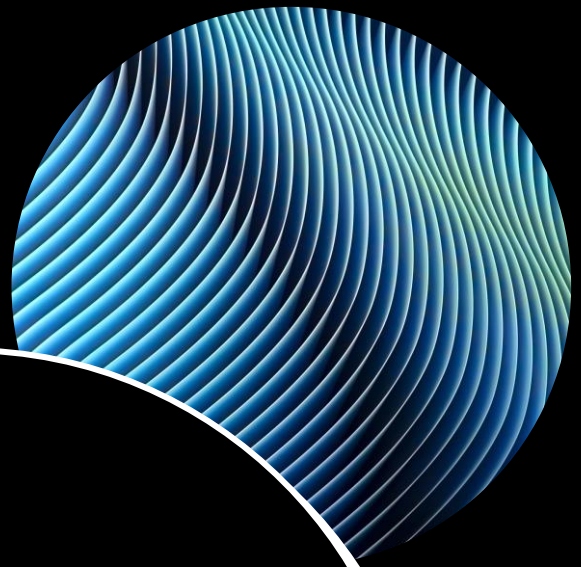
- Brabyn, J., Schneck, M., Haegerstrom-Portnoy, G., & Lott, L. (2001). The Smith-Kettlewell Institute (SKI) longitudinal study of vision function and its impact among the elderly: an overview. *Optometry and Vision Science: Official Publication of the American Academy of Optometry*, *78*(5), 264–269.

Eye Changes Associated with Typical Aging

- Presbyopia (aka farsightedness)
- Lens yellowing, clouding, and fluorescence
- Pupil size
- Decreased retinal illumination and increased scattering
- Cell loss
- Increased prevalence of retinal disease

Typical Aging and Vision

- Decreased visual acuity
- Decreased visual accommodation
- Floaters
- Dry eye
- Need more light
- Glare sensitivity
- Reduced light/dark adaptation
- Reduced contrast sensitivity
- Reduced color perception
- Reduced visual attention



What Does Typical Vision Look Like?

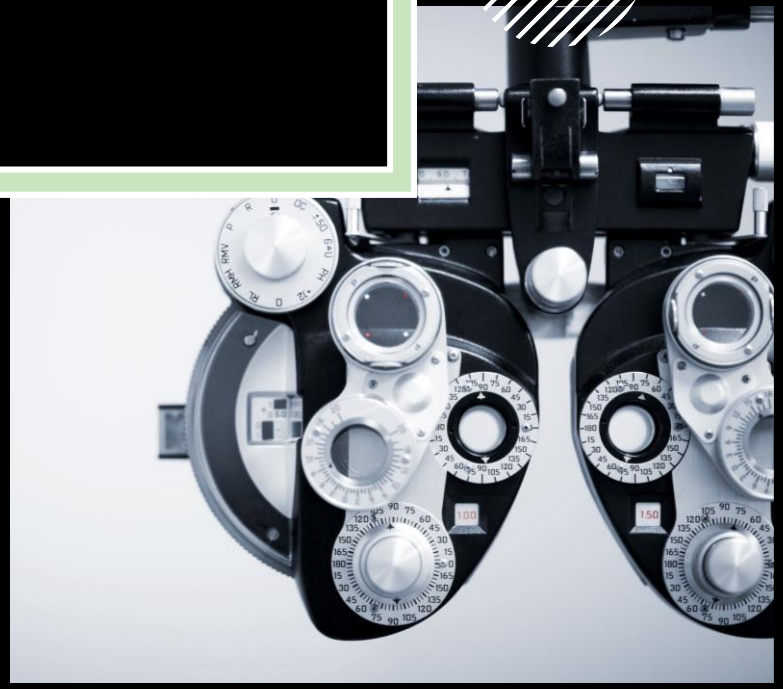
Not all or nothing- Range of usable vision

Legally blind = nothing more can be done

Age related medical conditions responsible for low vision

- Glaucoma
- Diabetic retinopathy
- Macular degeneration
  - Dry AMD
  - Wet AMD

What is low vision?



- National Eye Institute (NEI) definition:
- “Low vision is a vision problem that makes it hard to do everyday activities. It can’t be fixed with glasses, contact lenses, or other standard treatments like medicine or surgery. “

UNPACKING THE DEFINITION

- Low vision involves the use of remaining vision
- Visual impairment that is not able to be corrected and interferes with occupational performance
- What it is not: blindness (or no light perception)
- Legal blindness is not a clinical term (originally related to voc rehab eligibility)

WHO

- “Disability refers to the impairments, limitations and restrictions that a person with an eye condition faces in the course of interacting with her or his environment – physical, social, or attitudinal.”
- “A person with an eye condition experiencing vision impairment or blindness and facing environmental barriers, such as not having access to eye care services and assistive products, will likely experience far greater limitations in everyday functioning, and thus higher degrees of disability.

Multimorbidity

"Multimorbidity has emerged as a significant public health issue in the world. It is typically defined as the presence of two or more chronic conditions at the same time in one individual…The high prevalence of multimorbidity has several negative consequences, including a high mortality rate, increased healthcare utilization, and increased healthcare expenses, influencing overall functioning and quality of life."

Chowdhury, S. R., Das, D. C., Sunna, T. C., Beyene, J., & Hossain, A. (2023). Global and regional prevalence of multimorbidity in the adult population in community settings: a systematic review and meta-analysis. *EClinicalMedicine*, *57*.

Medical comorbidities

- Dual sensory loss
- Depression
- Anxiety
- Dementia

Vision Loss for the Older Adult

- Contributes significantly to ADL/IADL decline
- Interacts in combination with other conditions
- Contributes to psychosocial issues

Most Older Adults Have Lived Their Lives as Sighted Persons

Will continue to rely on vision (despite obvious deficits)

Not immediately obvious to others that they have deficits

Other senses will not compensate

Vision loss occurs in the context of aging

Impacts cognition and processing of information

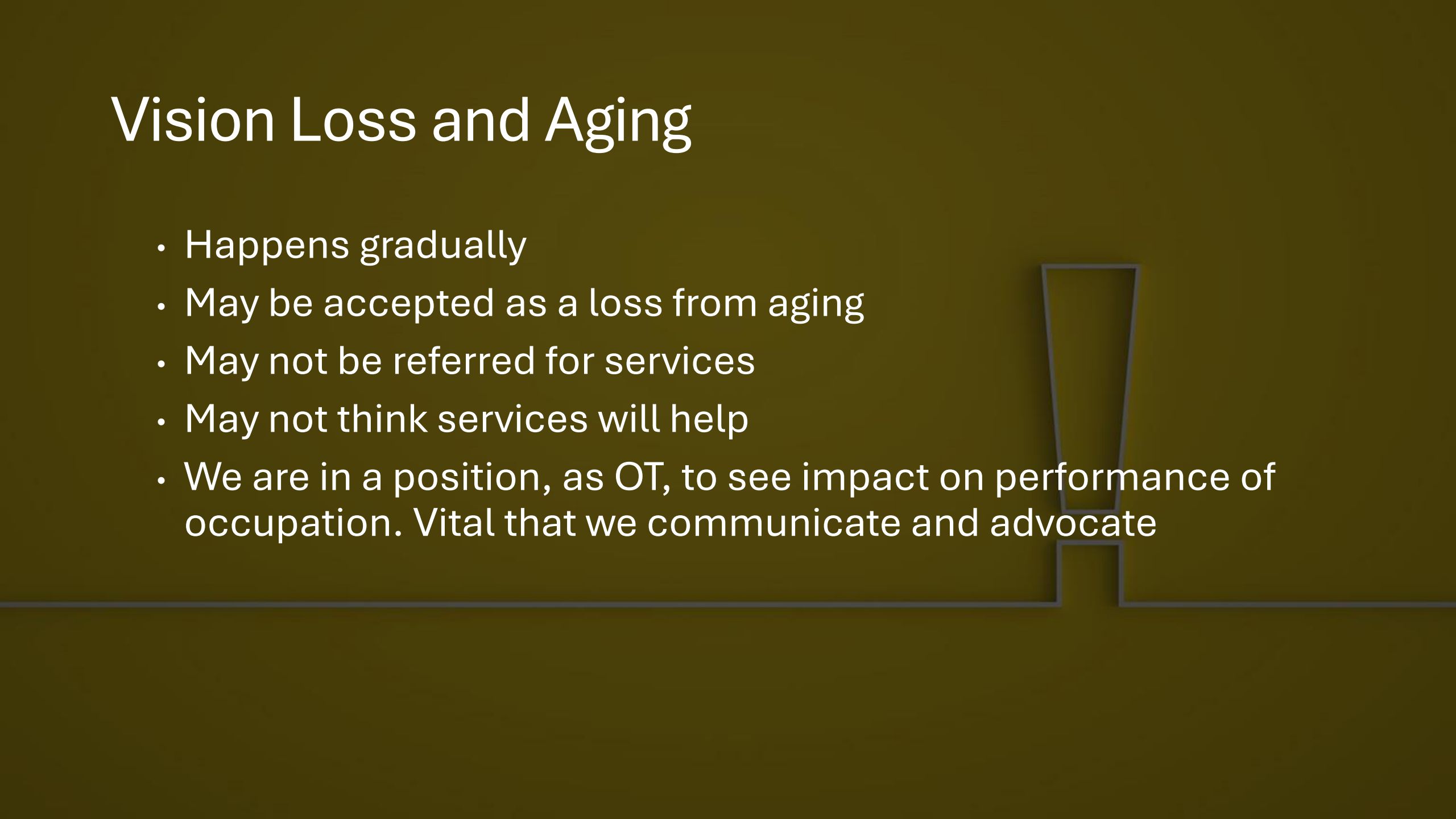
- Adequacy of information
- Missing details

Impacts motor response

- Feedforward and hesitancy

Vision Loss and Aging

- Happens gradually
- May be accepted as a loss from aging
- May not be referred for services
- May not think services will help
- We are in a position, as OT, to see impact on performance of occupation. Vital that we communicate and advocate



Health disparities among older adults with visual impairment

Disproportionate impact

OT Evaluation and Intervention for Clients with Visual Impairment

A Word About Theoretical Models

OT theory is essential to articulating our distinct value in low vision (Weisser-Pike et al., 2024)

We have not always been explicit in identifying the theoretical models used in low vision practice in published literature (Weisser-Pike et al., 2024)

What does Recent Evidence say about the role of OT?

Nastasi, J. A. (2020). Occupational therapy interventions supporting leisure and social participation for older adults with low vision: a systematic review. *American Journal of Occupational Therapy*, 74(1), 7401185020p1-7401185020p9.

Liu, C. J., & Chang, M. C. (2020). Interventions within the scope of occupational therapy practice to improve performance of daily activities for older adults with low vision: A systematic review. *American Journal of Occupational Therapy*, 74(1), 7401185010p1-7401185010p18.

Smallfield, S., & Kaldenberg, J. (2020). Occupational therapy interventions to improve reading performance of older adults with low vision: A systematic review. *American Journal of Occupational Therapy*, 74(1), 7401185030p1-7401185030p18.

Kaldenberg, J., & Smallfield, S. (2020). Occupational therapy practice guidelines for older adults with low vision. The American Journal of Occupational Therapy, 74(2), 7402397010p1-7402397010p23.

Summary from Nastasi (2020)

Insufficient published evidence addressing the topic of social participation (only 3 studies in a systematic review)

Evidence supports the provision of low vision devices to address social participation

Future studies needed on occupation-based interventions and outcome measures

OT education content on intervention and outcome measures addressing leisure and social participation for older adults with low vision.

Summary of Liu & Chang (2020)

Basic low vision rehab services are effective to improve ADL function. OTs who are not LV specialists can provide general services (e.g., home assessments, problem solving training, HEP)

Comprehensive low vision rehab provided by a multidisciplinary team

Performance-based vison related occupational performance assessments like the Revised Self-Report Assessment of Functional Visual Performance (R-SRAFVP) https://www.uab.edu/shp/ot/post-professional/low-vision-gc/student-resources

Future research needed on self-management programs for older adults with low vision

Smallfield & Kaldenberg (2020): implications for practice

- For adults with low vision addressing reading performance should routinely use the following interventions:
  - Comprehensive low vision rehab
  - Eccentric viewing training
- Practitioners should use the following interventions on a case-by-case basis:
  - Vision specific AT
  - Mainstream technology to improve reading
  - Visual search training for hemianopsia

Kaldenberg & Smallfield (2020): implications for practice

- Multicomponent low vison rehabilitation to facilitate ADL/IADL performance, reading for occupational performance, and leisure/social participation
- Eccentric viewing for central VFD

- Case-by-case
  - Problem-solving training
  - Mainstream and vision-specific technology for reading
  - Visual skills training for hemianopsia to improve reading

The Occupational Therapy Low Vision Evaluation Process

Clinical Concerns

Meyers, J. R., & Wilcox, D. T. (2011). Low vision evaluation. Occupational Therapy Interventions for Adults with Low Vision, 47–73.

OT Role in Low Vision is Different From Other Providers

- Goal of OT is to assist the client to promote participation and well being in life through occupational engagement
- Evaluation is not to label, diagnose, or determine norms for vision
- Identify limitations in occupational performance
- How or if vision contributes to limitations in occupational performance
- Select and guide intervention approaches and priorities
- Identify referral within or outside team

Occupational profile and visual history assessments

Occupational Profile

Who is the client?

Why are they seeking services? What are their concerns related to occupations, ADL, IADL?

What areas of occupation are successful? What areas cause problems or increase risk?

What environments or contexts support occupational performance?

What is the occupational history? What are the meanings of occupations? Has this changed?

What are client priorities? And desired outcomes?

History

- Visual dx
- Chief vision-related concerns
- Documented best corrected acuity
- Current eyeglass prescriptions
- Visual field restrictions (description good, graphic test report is better)
- Eye surgeries and medications
- Low vision devices (where obtained and current use)
- Previous LV doctors or therapists seen
- Client's understanding of their eye condition

Revised Self-Report Assessment of Functional Visual Performance (R-SRAFVP)

Has 2 components: 1) self report 2) optional subjective observational assessment

Takes about 20 minutes to complete

https://www.uab.edu/shp/ot/post-professional/low-vision-gc/student-resources

Other History Assessments

- Low Vision Visual Functioning Questionnaire (LV VFQ)
- Smith's Low Vision Independence Measure (LVIM)
- National Eye Institute Visual Functioning Questionnaire – 25 (VFQ-25)

OT Clinical Evaluation

- From a clinical reasoning standpoint, we use the same process as any other OT concern
- Involves specialized body of knowledge but the process is still occupation driven
- Occupational profile: what are the clients preferred occupations, goals, concerns
- Occupational performance: this could include occupations and performance skills
- Synthesis
- After completing the occupational profile and occupational performance assessments, we assess functional vision

Low Vision Evaluation

- High contrast acuity
- Low contrast acuity and contrast sensitivity function
- Visual field integrity assessment
- Color vision assessment
- Other changes in visual function: dark light adaptation, sensitivity to glare and light

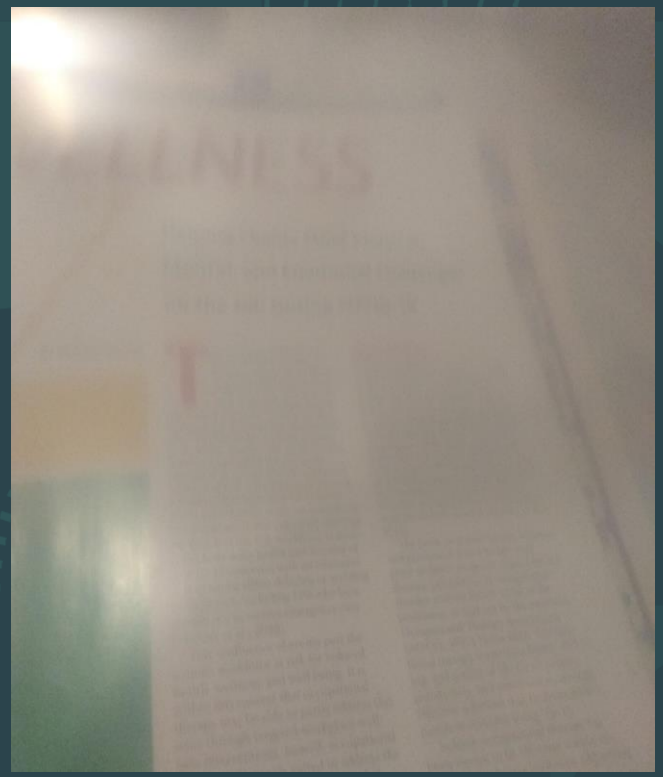
(Meyers & Wilcox, 2011;Whittaker et al., 2016)

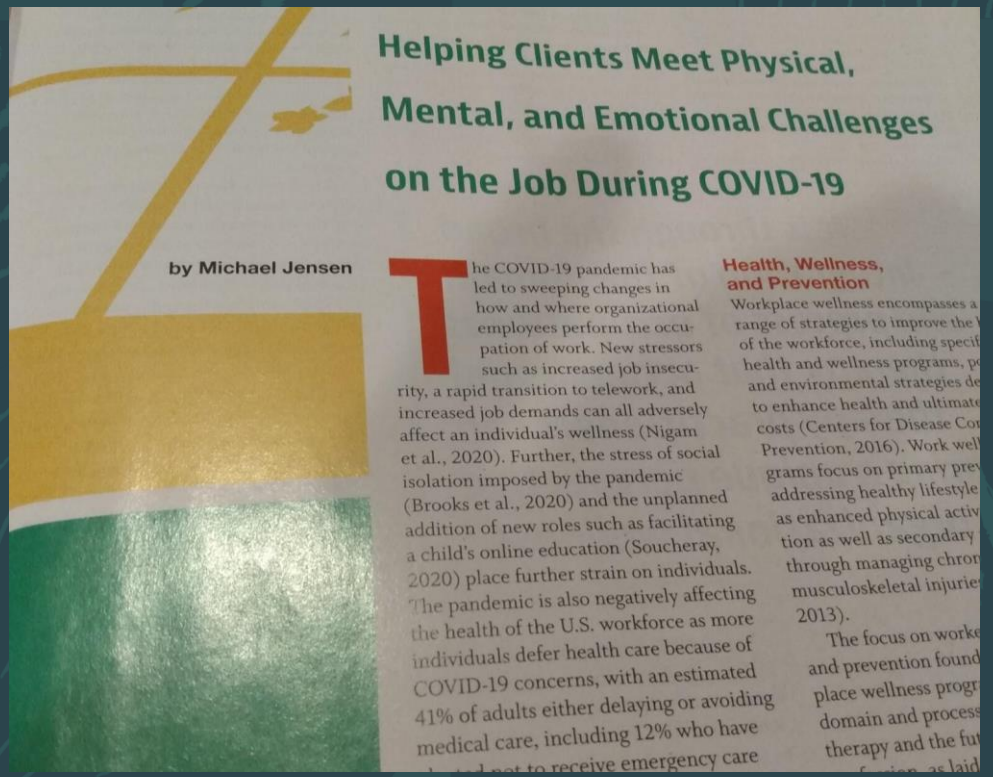
Common Issues

- Decreased visual acuity
- Decreased contrast sensitivity
- Decreased color discrimination
- Sensitivity to light/glare
- Reduced dark/light adaptation

(Blaylock et al., 2015)

Acuity





Helping Clients Meet Physical, Mental, and Emotional Challenges on the Job During COVID-19

by Michael Jensen

The COVID-19 pandemic has led to sweeping changes in how and where organizational employees perform the occupation of work. New stressors such as increased job insecurity, a rapid transition to telework, and increased job demands can all adversely affect an individual's wellness (Nigam et al., 2020). Further, the stress of social isolation imposed by the pandemic (Brooks et al., 2020) and the unplanned addition of new roles such as facilitating a child's online education (Soucheray, 2020) place further strain on individuals. The pandemic is also negatively affecting the health of the U.S. workforce as more individuals defer health care because of COVID-19 concerns, with an estimated 41% of adults either delaying or avoiding medical care, including 12% who have

Health, Wellness, and Prevention

Workplace wellness encompasses a range of strategies to improve the of the workforce, including specif health and wellness programs, p and environmental strategies de to enhance health and ultimate costs (Centers for Disease Co Prevention, 2016). Work well grams focus on primary prev addressing healthy lifestyle as enhanced physical activ tion as well as secondary through managing chron musculoskeletal injuries 2013).

The focus on worke and prevention found place wellness progr domain and process therapy and the fu

Another Acuity Example

Assess Acuity First

- Common issue
- If they are unable to see key features, it can impact performance on assessments
- Even minor reductions can impact performance on assessment items
- Deficits in acuity could be attributed to other causes (i.e., cognition)

Assessment Process

- Establish eye dominance
- Have adequate lighting without glare
- Maintain correct distance
- Distance acuity
  - Wear glasses or other near correction prescription eyewear
  - Test each eye individually
  - Always start at the top or largest print
- Near Acuity or reading
  - Wear glasses or other near correction prescription eyewear
  - Test both eyes together, not separately

Visual Acuity Assessments (High Contrast)

- LeaNumbers Intermediate Acuity
- Early Treatment of Diabetic Retinopathy Study (ETDRS) Chart
- Snellen Chart
- Tumbling E Chart
- Near (reading): Warren Text Card, MN Read, SK Read

- Additional resources: https://precision-vision.com/introduction-to-visual-acuity-measurement/

Clinical Observations: Visual Acuity (from Warren-BIVABA)

Difficulty recognizing faces

Easier to see out of the corner of their eyes (peripheral vision)

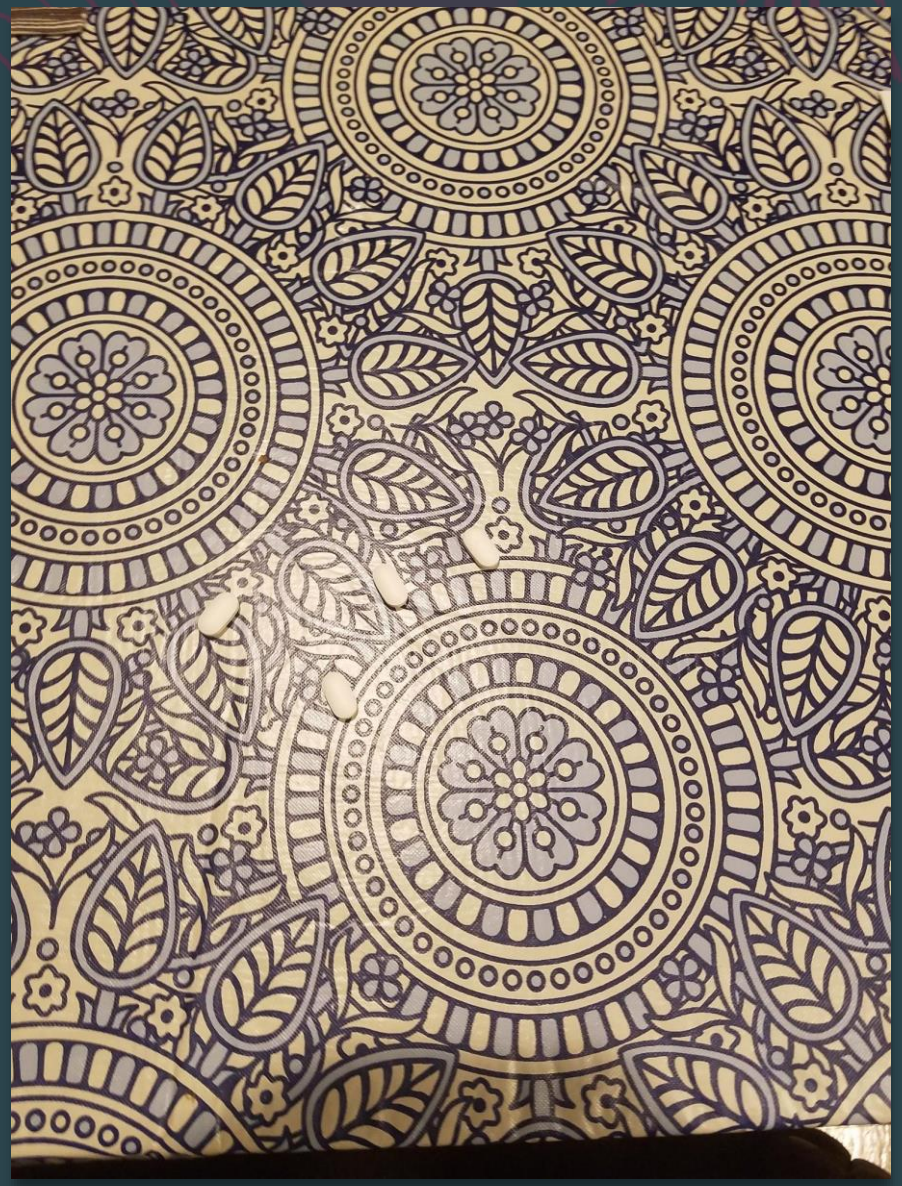
Vision fluctuates throughout the day

Colors are difficult to distinguish (especially dark colors)

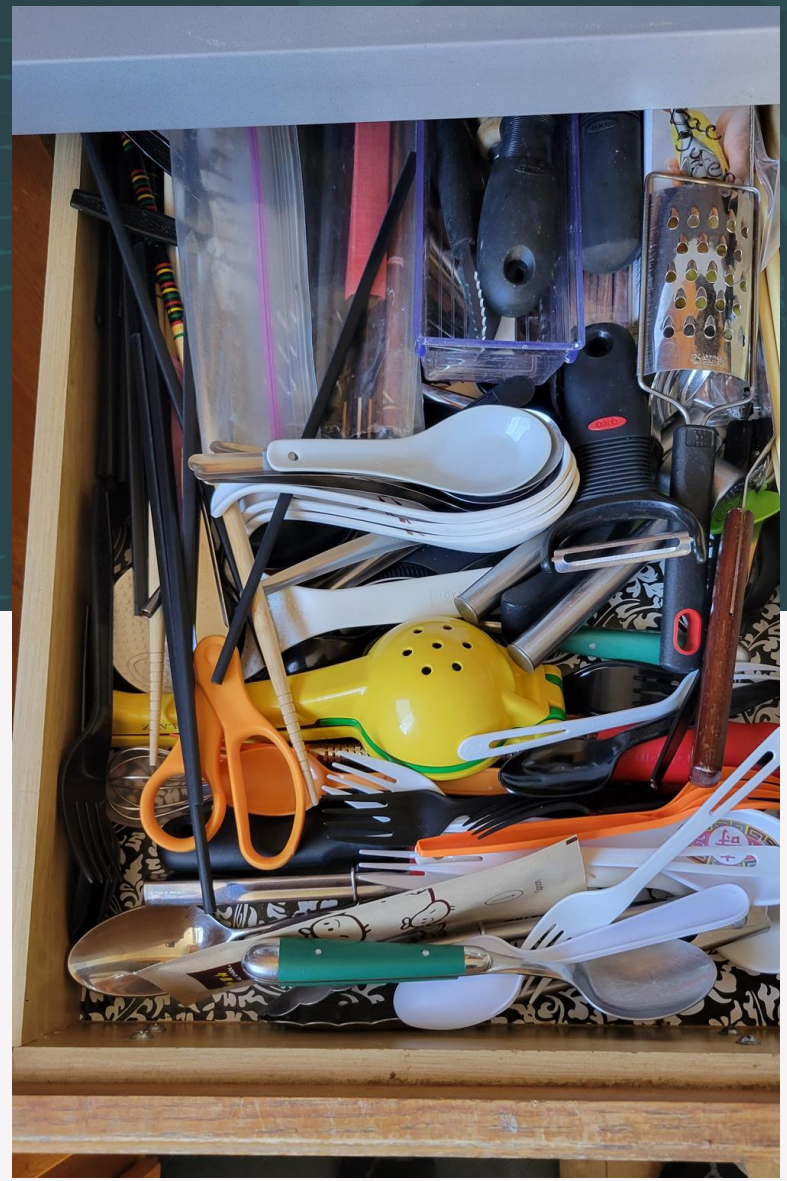
Uses a flashlight or additional light to view objects

Quick screen(reading card in standard print)

Pattern



Now, where is that bottle opener?

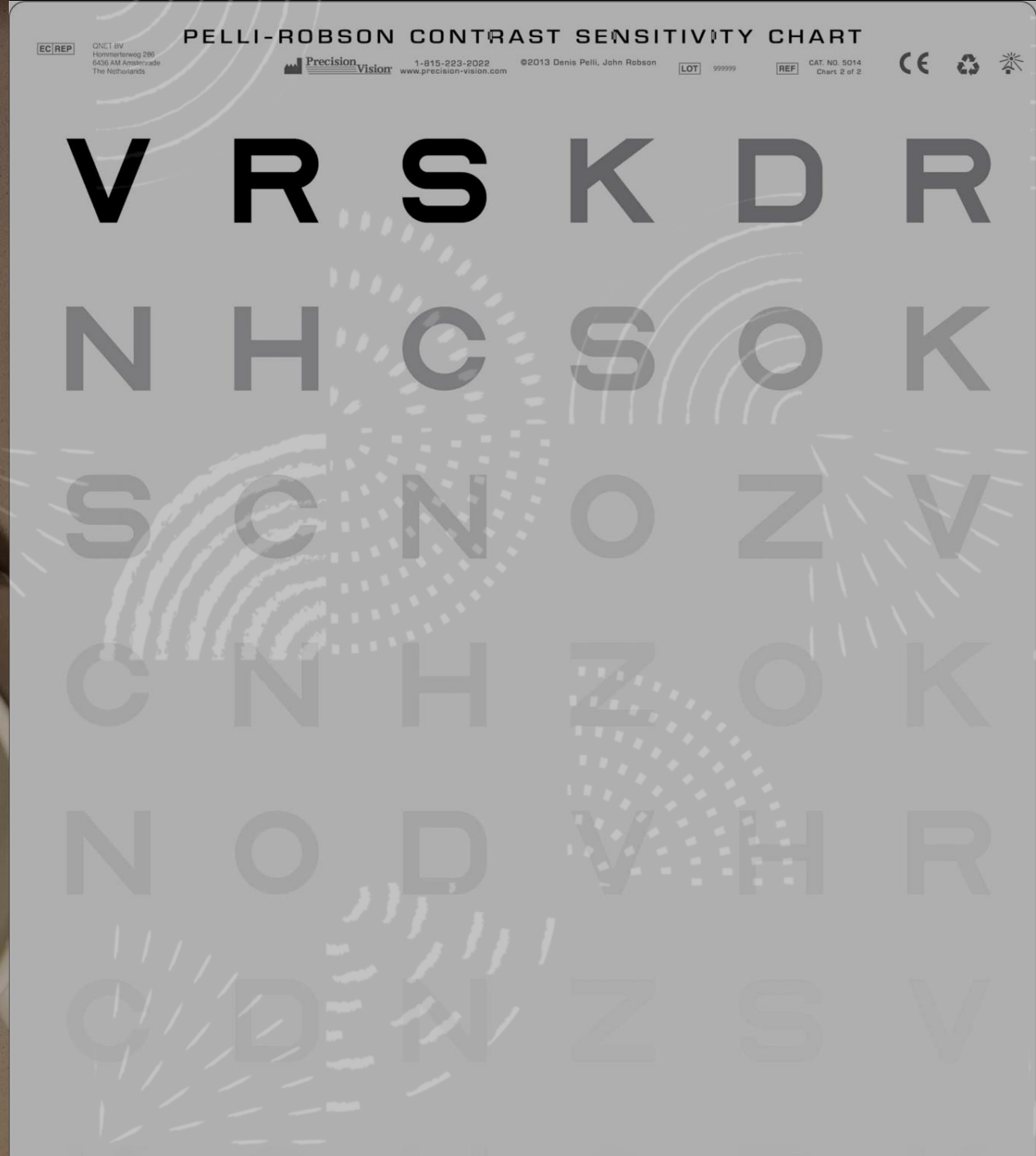


Contrast

Clinical Observations: Contrast sensitivity (from Warren-BIVABA)

- Inability to recognize faces
- Difficulty performing tasks or functional mobility in low lighting conditions
- Difficulty distinguishing colors
- Requests additional lighting when completing tasks
- Quick screen (ask client to fill a clear glass with water to within ½" of the top)

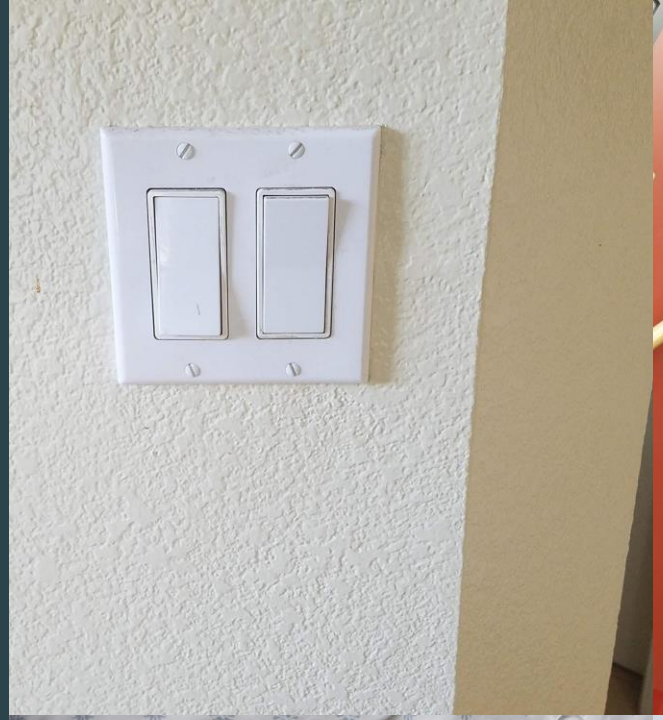
Low Contrast Sensitivity



More Contrast

Outdoor Contrast

Contrast in the Environment



Clinical Assessment of Contrast Sensitivity

- Good lighting conditions without glare
- Correct distance
- Test eyes separately then together (Mars)
- Lowest contrast before 2 consecutive errors
- LeaNumbers (2 formats: symbols or numbers)
- If reads the first number without effort then they are given credit for the whole line

Contrast Sensitivity (Low Contrast Acuity)

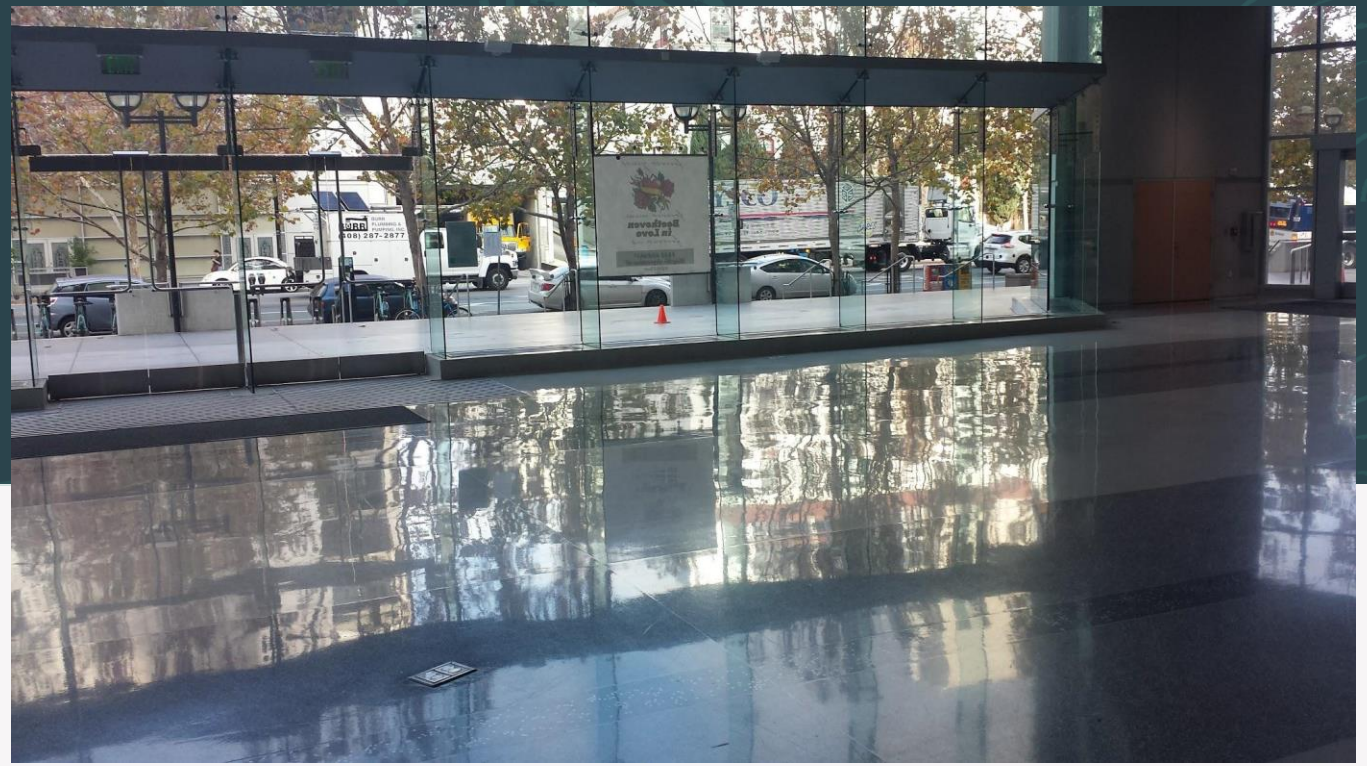
- Eschenbach Continuous Text Low Contrast Chart
- Lea Numbers Low Contrast Chart
- Mars Letter Contrast Test

Decreased Color Discrimination

Color Vision Assessment

Formal Assessment by matching tests

Informal assessment by interview, matching paint chips, clinical observation



Sensitivity to Light/Glare

Assessment of Glare (Formally)

- Aslam, T.M., Haider, D. and Murray, I.J. (2007), Principles of disability glare measurement: an ophthalmological perspective. Acta Ophthalmologica Scandinavica, 85: 354-360. https://doi.org/10.1111/j.1600-0420.2006.00860.x


Reduced Dark/Light
Adaptation

Visual Field Assessment

- Perimetry Testing
- Amsler Grid
- Confrontation
- Damato Campimeter

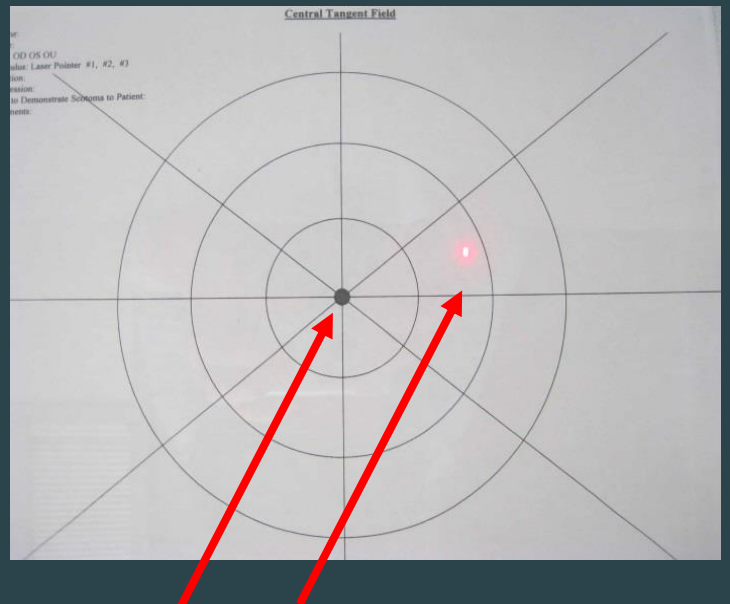
Visual Field: Central & Peripheral

Geographic Depiction of the Fields

Central Field Test

-Macular Scotoma and PRL assessments:
FACE FIELDS & PAPER TARGET Methods.

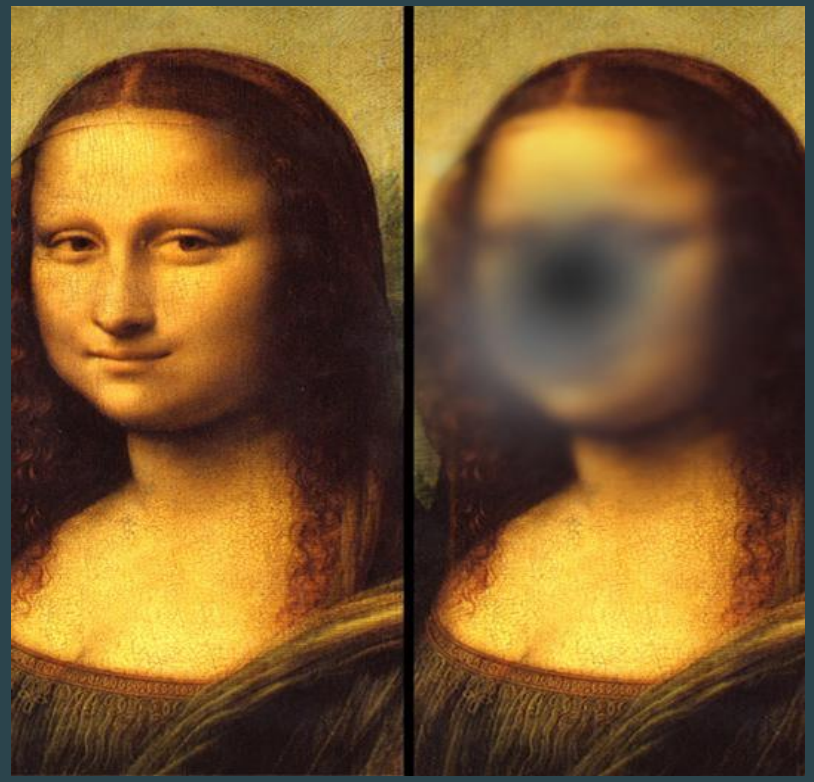
-California Central Field Test (CCFT) :



Visual Field

- Client holds the target at a distance where it can be seen
- Three step assessment
  - Step 1-Determine location and awareness of scotoma
  - Step 2-Determine location of the PRL
  - Step 3-Determine ability to use PRL to locate information

Face Field Method



Paper Target as the Central Target

Visual Field

Confrontation Test

Tangent Screen Test

Visual Search

Central Field

Cancellation Tests

Telephone Number Copy Test (biVABA)

Light boards- good intervention tool

Peripheral Field

Scan Course (biVABA)

Observational dual-task assessment- ability to integrate visual search with ambulation (wheeled or walking)

Create a target (post it with letters/ number)

Place 10 targets in various locations along each side of hallway (20 total)

Instruct client to identify each target as client walks down hallway

Color Vision Assessment

Formal Assessment by matching tests

Informal assessment by interview, matching paint chips, clinical observation

OTPF 4

Occupations

Context (Environmental and Personal Factors)

Performance Patterns (Habits, Routines, Roles and Rituals) -Thank you for reminding us about ROUTINE (MOHO). Often due to vision loss, clients stop doing their routine and this leads to other negative effects. Having a routine gives them a sense of purpose, reducing a sense of helplessness. Observed at a clinic: the common theme from clients is the inability to do their habits/ routines.

Performance skills (Motor, Process and Social Interaction Skills)

Client Factors: (Values, beliefs and spirituality, Body functions, and Body Structures)

PSYCHOSOCIAL FACTORS

They can be skeptical, resistive, withdrawn & angry. Success in LV rehab hinges on addressing these client factors.

Emotional Coping

Depression

Stress and Anxiety

Social Support- at least one will help

AOTA recently shared Occupational Profile Examples. Attaching the Outpatient Adult example below.

The template can be located here: https://contentsharing.net/actions/email_web_version.cfm?ep=6xX3RWT_y-Zgujfys_wwVgfjlWlVSN3o-Nxlh8rr9lFfQ4fzbiifiZLIrAp00Gyg20AEQBcA7plCIIUlBwQtC6u898EsgihB6-0JIF-lRi-MvoBDCg9rjbvTO4Sl1Lcp

Outpatient Adult Occupational Profile Example.pdf

Low Vision Interventions

Intervention: Occupational Performance

Blaylock et al (2015) reported that common environmental factors that are facilitators or barriers: lighting , organization of household items, and contrast level. With increasing visual impairment, glare became a barrier. Familiarity of environment is important for successful ADL and IADL performance. Functional mobility: fluctuating levels of illumination, lack of floor contrast, clutter & lack of environmental familiarity reduce safety and independence.

Feeding, Dressing, Toileting,

Functional Mobility

Leisure / Social Participation

Intervention

Low Vision Intervention

Primary OT role is to enable client to participate in valued occupations

Cognitive behavioral and problem solving approaches help the client reframe challenges in a more positive light

Education, support groups, resources enable the client and family to continue to work through adjustment after therapy has ended

Tailor Interventions to coping styles and needs of the client and family

Counsel families & staff against over protecting the client

Encourage reciprocity-enables client to give back to family emotionally or physically-facilitates emotional adjustment

Environment Modification

Luminance: Brightness, Reflectance, Quality of light source, Glare and Evenness

Light meter: Comparison of pre and Post lighting modification

Contrast: visibility

Background Pattern :1) moving – created by people, and 2) static

Organization: Reduce CLUTTER

Assistive Tech/ AD

Accessibility features iPhone/ iPad & computers

Low Vision Intervention

Remember V-P Hierarchy: Client Factors, Visual Stress (How is this manifested?)

Visual Acuity (glasses current), magnification needs

Central VFD: scotomas greater than 5 degrees, brain will attempt to perceptually complete but may not be successful. PRL training, Threshold scotomas: respond to light/image if bright enough

Peripheral VFD- compensate and turn head wider, more often and more efficiently

Glare: How do you reduce glare

Recruitment of other sensory functions: Hearing, Touch, Olfactory, Taste

Wellness, Disease management

Older Adult Learner

Technophobe, resistant to change

Cognitive decline: Simple Instructions

Approaches:

1) Teach back method

2) Metacognitive Approach- Cognitive Orientation to Occ Performance (CO-OP) – OT guides ct through process of GOAL-PLAN-DO-CHECK

-initiated through verbal self-instruction & self-monitoring: BEFORE- State comp strategy, DURING-"talks self through steps of task", AFTER- Ct analyzes performance (goal met, what went wrong, how to correct errors), NEXT TIME- Review

Hand out - appropriate font size, high contrast, appropriate reading grade level, don't use ALL CAPS

Task Modification (Activity Analysis)

- Eliminate visual dependent steps

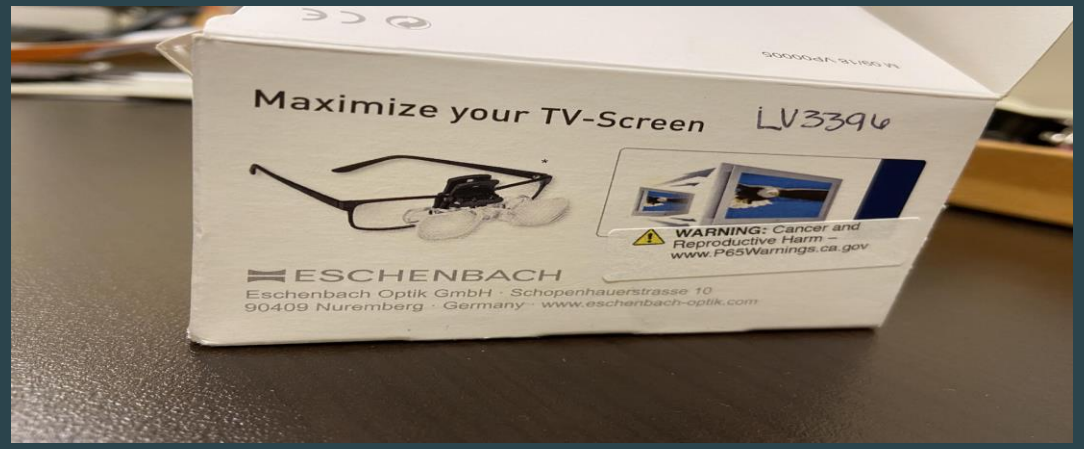
- Grading down

Vista Center

CCTV

Magnifiers: Stand vs handheld

Maxaides.com



TV Specs

ILLUMINATION

Task Lighting

- Properly positioned
- Appropriate to task

LED Lighting

- Qualities
  - Instant on
  - High intensity focused light
  - Expensive
  - Bulb life is years

Full Spectrum Lighting

-Light that covers electromagnetic spectrum

-Mimics natural light, even illumination

-White light-best for glare and contras

Intervention: use Occupation to increase motivation

IMPROVE VISIBILITY : print size, contrast, illumination, magnification

COMPENSATORY STRATEGIES

Visual Scanning Training-

compensate for spatial bias and execute a comprehensive search strategy:

a) Initiate from the LEFT,

b) Symmetrical Pattern,

c) Complete Search,

d) Observe Visual Detail,

e) Anticipate Visual Input occurring on left,

f) Shifting search b/w left and right fields

FACILITATE SUSTAINED ATTENTION

Select activities that are emotionally relevant and meaningful, provides rewarding experience, interactive that extend over time & require challenging memory

LIVING with Low Vision-

from AOTA tips for living life to its fullest.

OT can:

Prevent accidents and injury

Teach New Skill

Modify the Task or Environment

Promote a Healthy and Satisfying Lifestyle

Intervention

Home Low Tech Ideas

Black and white plates

Organization labels, tactile markers (Velcro, moleskin, bump dots)- pill bottles

Large numbered/ talking clocks

Large print calendar /checks, Bold line paper and 20/20 pens / Boldwriters

Hot liquid indicator

Threshold markers, colored tape

Low vision playing cards

Battery operated magnifiers

High Tech Ideas

Siri / Alexa

iPhone and iPad: Accessibility features, reading, menus

Kindle

CCTV (can be rented)

Electronic Magnifiers

Screen Reader Software: JAWS is a screen reader for Microsoft Windows offered by Freedom Scientific Inc

OrCam Read- Artificial intelligence (AI) reader

Intervention

Table 3 Techniques of low-vision rehabilitation for patients with severe central visual loss due to neovascular age-related macular degeneration

Low-vision rehabilitation programs	Assisted technologies and strategies	Optical devices
Eccentric viewing training	Electronic aids	Prescription eyewear
Eye movement control	Adaptive computer software	Selective transmission lenses
Perceptual learning	Glare control	Prisms
Environmental changes	Closed-circuit televisions	Telescopic devices
Counseling and education of patient's family	Head-mounted magnification systems	Magnifying glasses
In-home training	microperimetry	Stand or mounted devices

Note: Data from Hooper P, et al;[137] Amore FM, et al;[138] and Pijnacker J, et al.[139]

LTC- SNF Study

2007 NIH study- common Nursing Home intervention:-

Common areas: feeding, mobility.

Proper illumination was the greatest challenge: alteration to help achieve near-task goals, direct light source. Illuminated magnifiers were LV optical devices of choice for reading.

Recreational activity was reason subjects most often sought LV rehab. To enhance TV viewing: sport glasses with 2.8x magnification were the most useful / consider TV size and viewing distance.

Patients with LV devices had better self-reported vision-related quality of life

LV devices dispensed: Black felt tip 3. Squeeze Light 1, Bold-lined paper 5, Handheld magnifier 10, High-intensity lamp 15, Prismatic reading glasses 5, large-print remote 3, Large-print playing cards 3, New glasses with bifocals 7, Piano safety glasses 1, Signature guide 1, **Sport glasses 18**, Stand magnifier 5, Talking book 1

Participant Goals: improve the quality of solitary recreational activities , IADLS, improve independence in ADLs (eating) and mobility, navigation

Facility based approach, staff involvement in delivery of LV rehab is critical

Documentation

Evaluation: Expand beyond “Glasses: yes or no”.

Assess visual function as they impact all occupations while in SNF for long term residents and upon DC out of SNF

Addressing vision is within our OT scope of practice as they impact occupational performance

Goals (Examples):

-Pt will locate food using high contrast feeding devices 50%.

-Pt watch TV using tactile bump dots on remote control (I)

-Access modified call button and raise and lower bed using modified controls independently

<u>CPT Codes</u>

OT Evaluation: 97166 (Low). 97166 (Mod), 97167 (High)

97535 -Self Care

ADL & compensatory training; Safety

Meal Prep

Instructions in use of access, technology devices, adaptive devices

97537 -Community / Reintegration Training

Shopping, transportation, Avocational activities &/or work environment/ modification analyses. Work task analysis, use of assistive technology & adaptive devices

Occupational Therapy Practice Guidelines for Older Adults With Low Vision

- Interventions to enhance performance of ADLs and IADLs
- Multicomponent low vision intervention to improve ADL and IADL performance
- “[T]ailored multicomponent and multidisciplinary interventions to improve independence at home for older adults with low vision, and problem-solving training may be a useful component of such interventions.”
- (Kaldenberg & Smallfield, 2020)

Additional Considerations for Low Vision and the Home

- “Occupational therapy practitioners play a pivotal role in enabling people who have vision loss to age safely and independently in their homes. To fulfill this role, practitioners conduct home assessments and provide recommendations and intervention.” (Barstow et al., 2011).
- “[N]o standardized English-language home assessment has been developed for adults with low vision.” (Barstow et al., 2011).
- “To optimize occupational performance outcomes for clients with low vision and comorbidities, occupational therapy practitioners should do the following: …Provide at least some intervention in the clients’ home environment” (Barstow et al., 2015).

Justification for Home Assessments

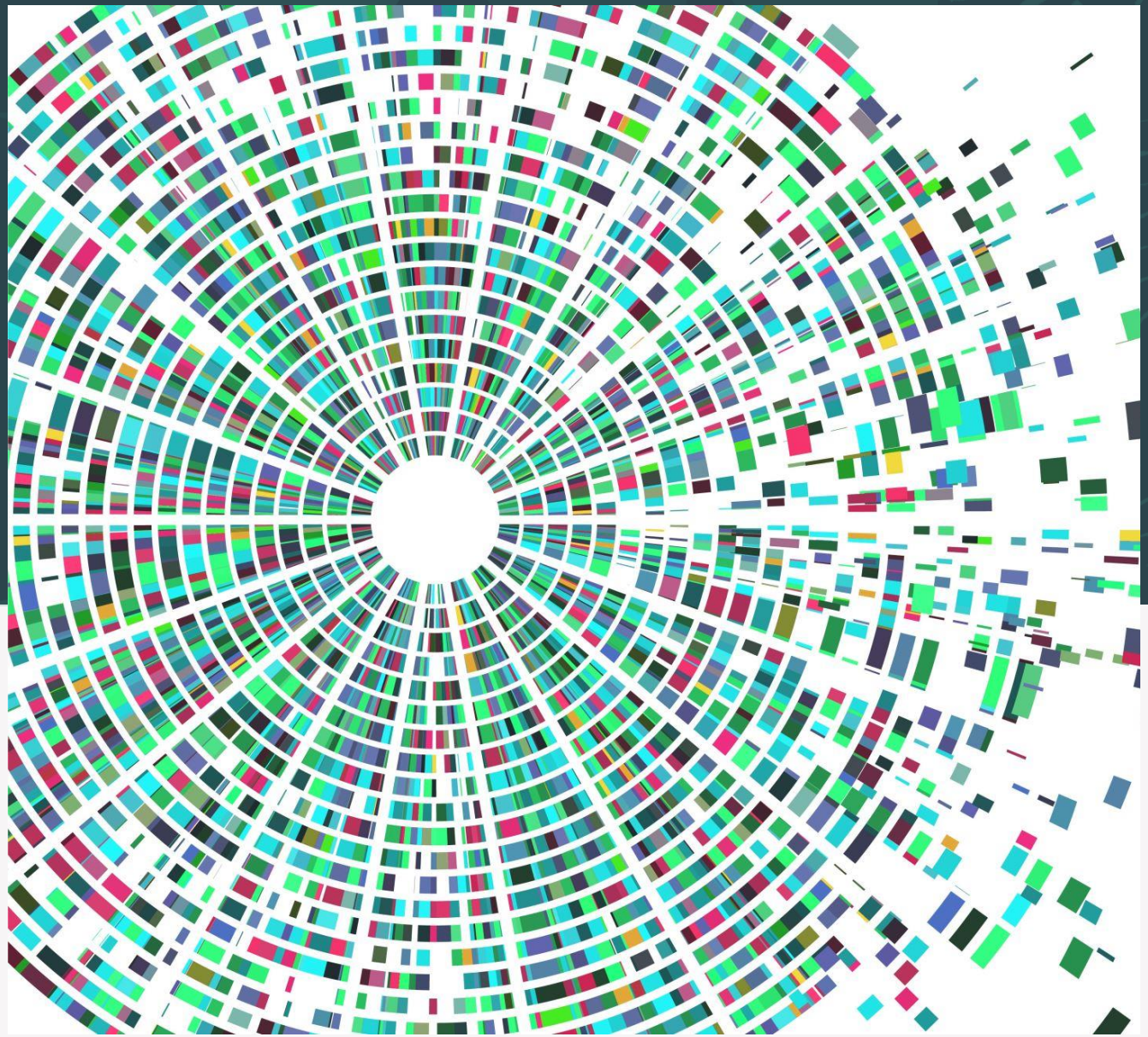
“[M]ulticomponent comprehensive low vision rehabilitation services that include education about low vision conditions, use of low vision devices, compensatory strategies (e.g., lighting,home modifications, sensory substitution, contrast enhancement), and low vision resources should be used routinely on the basis of strong evidence in the literature.”

(Kaldenberg & Smallfield, 2020)

Principles in home interventions

- Lighting
- Color and contrast
- Organizations
- Texture and touch
- Sound
- Labels, Lettering, and Marking
- Safety

OT Interventions in Context



ADL/IADL Which Types of Occupations Will be Most Impacted by Visual Deficits?

ADL Overview

- Blaylock, S. E., Barstow, B. A., Vogtle, L. K., & Bennett, D. K. (2015). Understanding the occupational performance experiences of individuals with low vision. *British Journal of Occupational Therapy*, 78(7), 412-421.
    - Near normal to moderate vision loss
    - Severe and profound

Near normal to moderate vision loss

- Difficulties with clothing selection
- Difficulties with grooming
- Difficulties with functional mobility
- Performance barrier:
  - Decreased contrast
  - Decreased illumination
  - Organization

Blaylock, S. E., Barstow, B. A., Vogtle, L. K., & Bennett, D. K. (2015).

Severe and profound vision loss

Difficulties with self-feeding

Difficulties with dressing

Difficulties with grooming

Difficulties with functional mobility

Performance barriers include:

- decreased contrast
- Illumination
- organization

Additional barrier of glare

Increased reports of simplification strategies

Increased reliance on others for performance

Blaylock, S. E., Barstow, B. A., Vogtle, L. K., & Bennett, D. K. (2015).

IADL Profound Vision Loss

Additional barrier of too much lighting and glare

Frequent use of AE (magnifiers and pillboxes) and AT (CCTV)

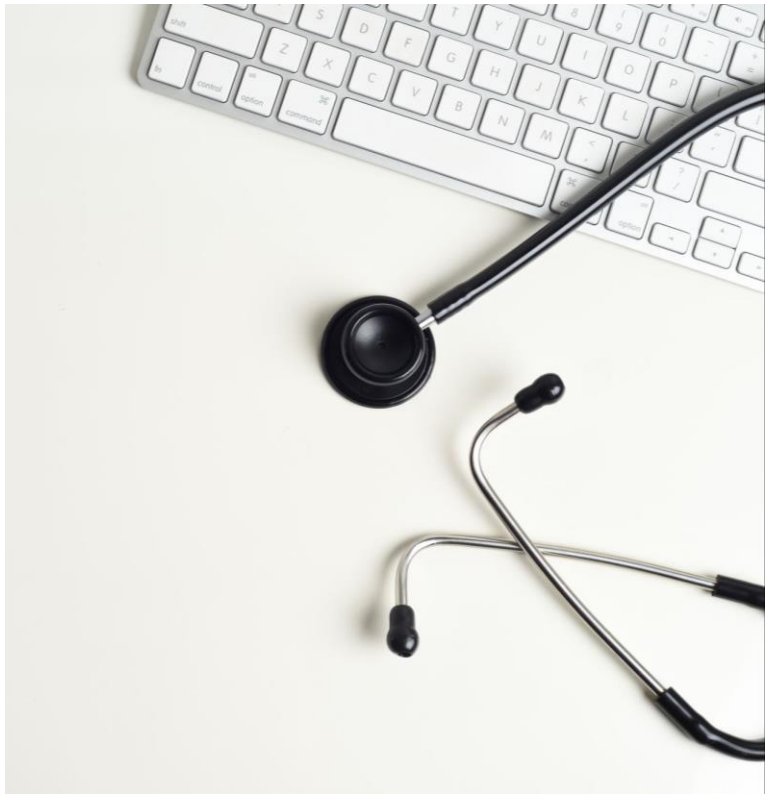
Increased reliance on others for performance

Difficulties with novel environments

Blaylock, S. E., Barstow, B. A., Vogtle, L. K., & Bennett, D. K. (2015).

Implications for Occupational Therapy Practice

- Provide at least some intervention in the clients' home environment
- Screen clients for depression and address psychosocial adjustment to vision loss
- Collaborate with and refer clients to other rehabilitation providers, particularly mental health professionals
- Solicit and enhance caregiver involvement

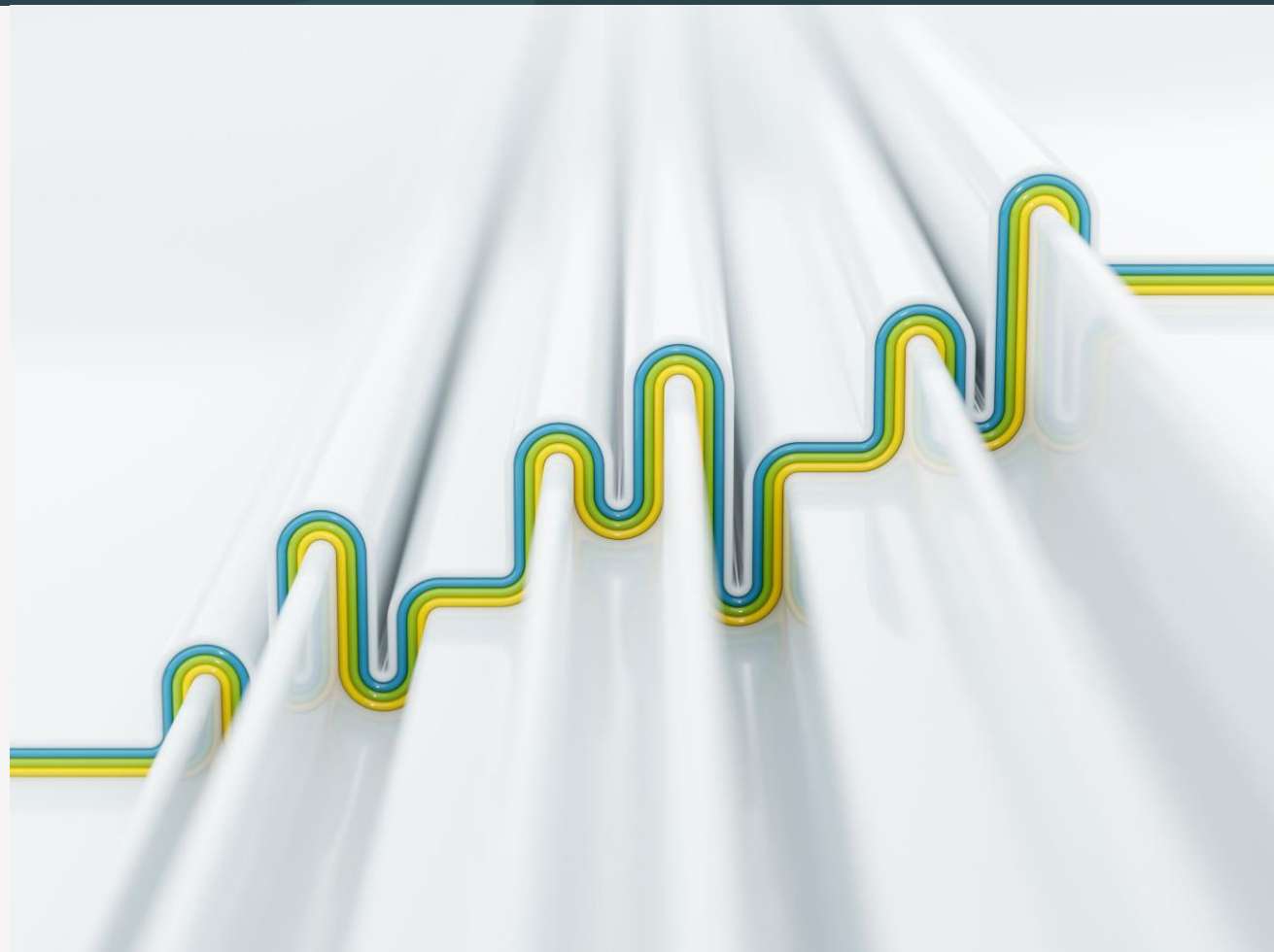


Blaylock, S. E., Barstow, B. A., Vogtle, L. K., & Bennett, D. K. (2015).

Continued

- Address both vision loss and comorbidities to enhance safety
- Expect deficits in ADLs, IADLs, social participation, leisure involvement, and work
- Apply compensatory strategies that include environmental modification, adaptive equipment, and modification of habits and routines.

Barstow, B. A., Warren, M., Thaker, S., Hallman, A., & Batts, P. (2015). Client and therapist perspectives on the influence of low vision and chronic conditions on performance and occupational therapy intervention. *American Journal of Occupational Therapy*, 69, 6903270010. http://dx.doi.org/10.5014/ajot.2015.014605



Promoting Participation

- Screen for visual deficits with occupational performance
- Collaborate with other professionals
- Assessing person-environment fit
- Improve visibility of task
- Improve visibility within the environment
- Address adjustment issues
- Provide resources
- Collaborate on goals- need to know issues and what to ask
- Some areas may require additional training- optical devices- some may not e.g., cell phones

What is Assistive Low Vision Technology?

“[A]ny item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve the functional visual capabilities with a disability.”

Copolillo, 2009

High Tech to Low Tech Continuum

From bump dots and puff paints to electronic magnification

Categories of Assistive Technology

- Magnifiers
- Lighting
- Adaptive Devices

Five Categories

1. Mobility aids (navigation and obstacle avoidance)
2. Vision aids (vision enhancement)
3. Object detection or recognition (general purpose or for specific objects)
4. Sighted guides (real human, virtual, or mixed) https://aira.io/ https://www.bemyeyes.com/
5. Digital accessibility tools

(Pundlik et al., 2023)

Gaps in Rehabilitation

- Barriers to vision rehabilitation
- Abandonment of AT
- Real world Impact of AT (changes too quickly for research to keep up)

(Pundlik et al., 2023)

HI Mark 3-D Marker

https://www.amazon.com/HI-MARK-TM-Tactile-Pen/dp/B00IIP4ZHI

Spot n Line Pen

https://www.maxiaids.com/product/spot-n-line-pen-black?gad_source=1&gclid=Cj0KCQjwo8S3BhDeARIsAFRmkON9DuaL9E5yeZ334RZDIGT_ZngUpy-BRgULPvNhcIfcH6UvZTjdbMcaAvYOEALw_wcB

Bump Dots

- https://www.amazon.com/LimitlessLab-Bump-Visually-Impaired-Combo/dp/B0CXM7QHD2/ref=sr_1_6?crid=2IX3REL03O4PC&dib=eyJ2IjoiMSJ9.2Z_hNqt-Xb38T8EjB_3zXSKlhVFGcvreXEKsqCX0vzO1rJ5olUBQdXBnHqV3HFOqorxsAVRikrSGJp-WLTOFl7QpCdYB6husw9LNhbftUnrYgxQzhR8FN7Td07y_i39Tbt8MHxCLO17TOjLJMF6kGM5WwETrb2tuqcgc05tcgupv1CfwmT04PINg6qO8SFMBhpV4fF9w-dbFN9I-Jyp5hMwQBIv_v0yaqLHaD18m2B4RW0sHqUY4-PCYu5kJaQJtTlXdD9OJ2fe6jYHKzml6R8sL2QvGuWzVEKH3zWnnV40.7xDkY31LX-gHBKXGto9x5-wJvp_6OTiOaYNTKE_WHEg&dib_tag=se&keywords=bump+dots&qid=1728269778&sprefix=bump+dots%2Caps%2C164&sr=8-6

Paint Markers and Ink Markers

- Bullet tip
- Chisel tip
- Cone tip

Talking Scales, Talking Clocks, Talking Watches

https://www.maxiaids.com/product/deluxe-talking-scale

https://www.maxiaids.com/product/talking-madi-talking-and-recordable-alarm-clock

https://www.maxiaids.com/product/reizen-digital-analog-water-resistant-talking-watch-black

https://www.maxiaids.com/product/talking-pulse-oximeter

https://www.maxiaids.com/product/reizen-talking-digital-thermometer

Reizen Talking Label Wand - Voice Labeling System

https://www.amazon.com/Reizen-Talking-Label-Wand-Labeling/dp/B085T731CV

PenFriend 3 Voice Labeling System

Demo:
https://www.youtube.com/watch?v=QU0-g9SoAf0

Indenti-Buttons for Clothing Identifications

https://www.amazon.com/MaxiAids-Identi-Buttons-Clothing-Identifiers/dp/B00I5PSRI4

Color Detectors

https://www.amazon.com/dp/B0001KHN2M/ref=sspa_dk_detail_0?psc=1&pd_rd_i=B0001KHN2M&pd_rd_w=4GenJ&content-id=amzn1.sym.8c2f9165-8e93-42a1-8313-73d3809141a2&pf_rd_p=8c2f9165-8e93-42a1-8313-73d3809141a2&pf_rd_r=M1SERDSDS5307MCT24G3&pd_rd_wg=wz6Jv&pd_rd_r=da235db6-7d95-4580-a090-dfe4b6d31cd3&s=beauty&sp_csd=d2lkZ2V0TmFtZT1zcF9kZXRhaWw

https://www.amazon.com/Colorino-Talking-Color-Identifier-Detector/dp/B001C4AYOK

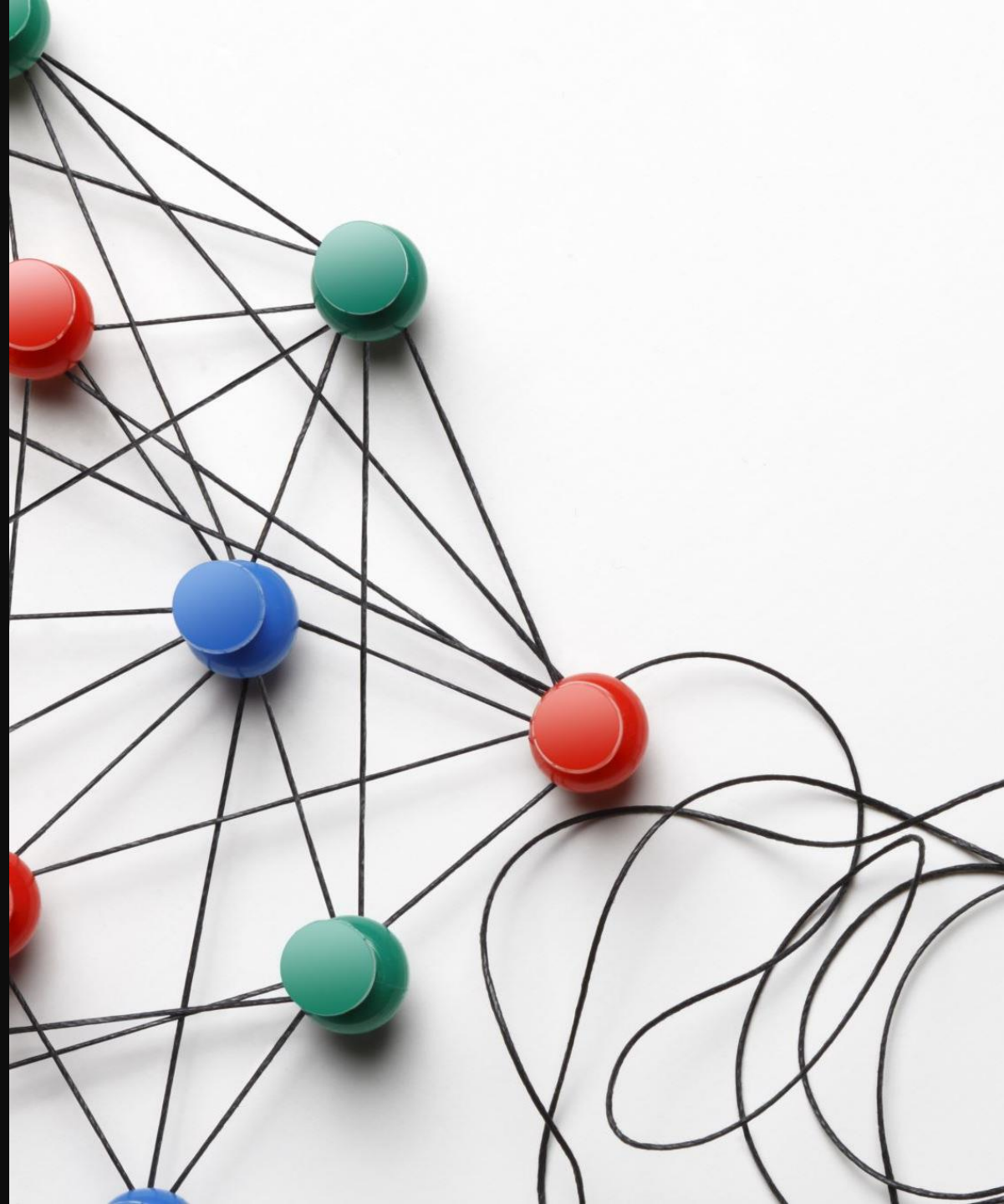
Color Identification App

- Droid an iPhone
- Can be found with a quick search

Coding System for Clothes (safety pins)

- Code by quantity of pins for a color group
- Place in an inconspicuous location

- Hang matching outfits together on hangers with clips



Color Mates Clothing Identifiers

https://www.maxiaids.com/product/color-mates

Head worn: OrCam MyEye

Close View

Envision Glasses

Magnification

Magnification Types

- Relative Distance
- Relative Size
- Angular
  - Handheld
  - Stand magnifier
- Electronic

(Nowakowski, 2011)

Angular Magnification

Portable Electronic Magnification

Stand Magnifiers (Electronic)

A wide range with a variety of features

Additional Optical Devices

- Microscopes
- Telescopes
- Telemicroscopes
- Visual Field enhancements (e.g., reversed telescopes, prisms, mirrors, concave lenses)

(Nowakowski, 2011

Accessible features for other technologies

- Settings on phones
- Settings on computers and tablets
- Wide variety of apps for Apple and Droid products

Digital Texts (Wu et al, 2020)

Continued importance of visual reading (Wu et al.,2020)

Use both hard copy and digital but more time spent on digital

Flexibility-flexibility, customized layout, customized text appearance

Electronic reading still faster for persons w/ AMD but hard copy is still considered easier (Gil et al., 2013)

No longer limited to optical magnifiers (e.g., large monitors, screen magnification, screen readers)

2 factors: reduced viewing distance and increased on-screen letter size

My Reading Display

Use the link to choose an appropriate display

https://myreadingdisplay.umn.edu/

https://mnread.umn.edu/

Simple over advanced LV devices (Macnamara et al., 2023)

Magnifiers over iPad or head mounted devices. Reasons?

Older population?

Misprescribed or poor fit?

Inadequate support or instruction?

Apps for Vision Assistance (Pundlik et al., 2023)

- Advantages over stand alone or dedicated devices: versatility, accessibility, affordability
- Home versus community (compared with computer)
- One device, many apps
- Socially blend in, not conspicuous

Apps by category

- Computer vision (n=68)
- Digital accessibility(n=84)
- Navigation (n=44)
- Magnifier (n=77)
- Entertainment (n=13)
- Sighted guide (n=4)

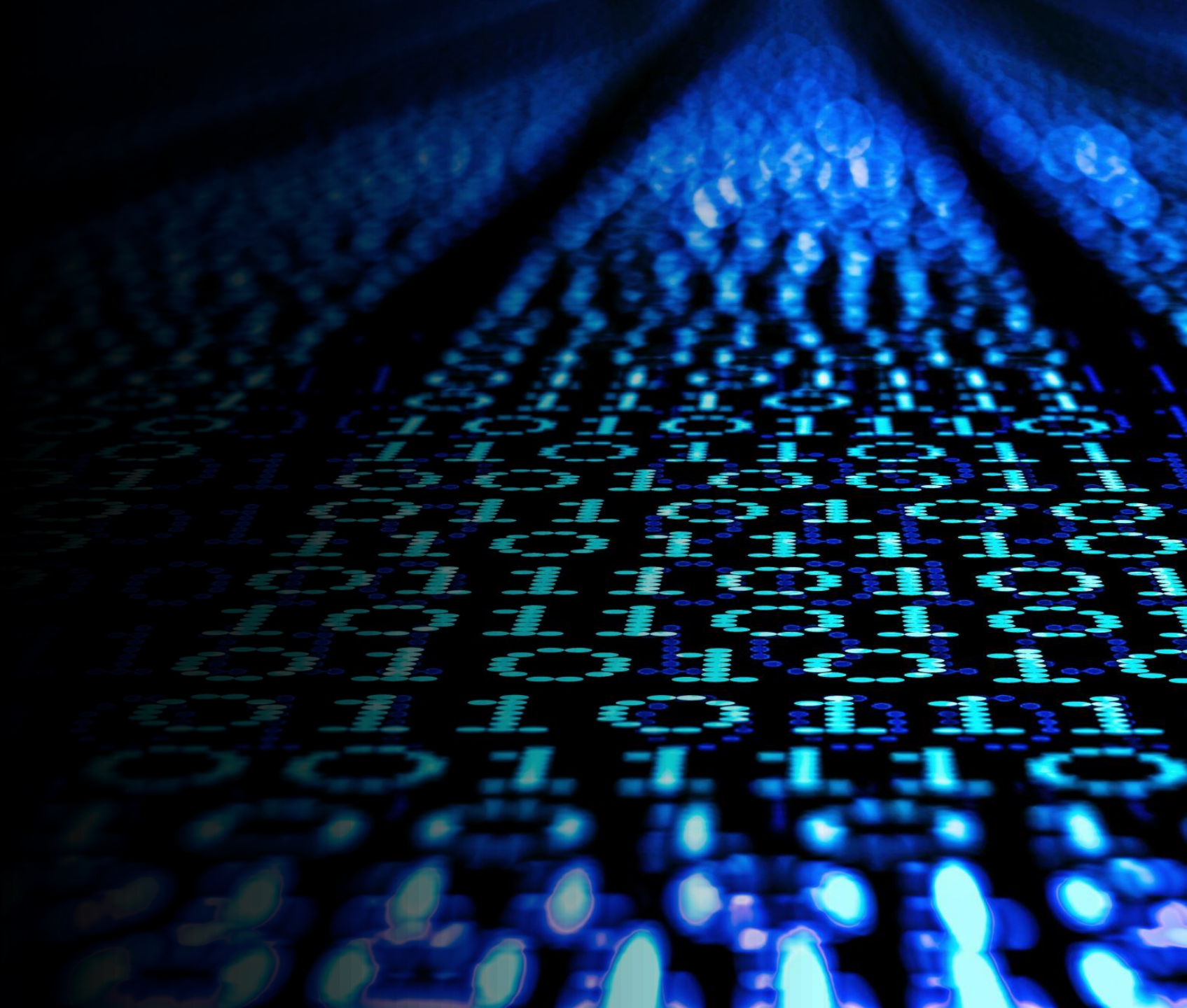
(Pundlik et al., 2023)

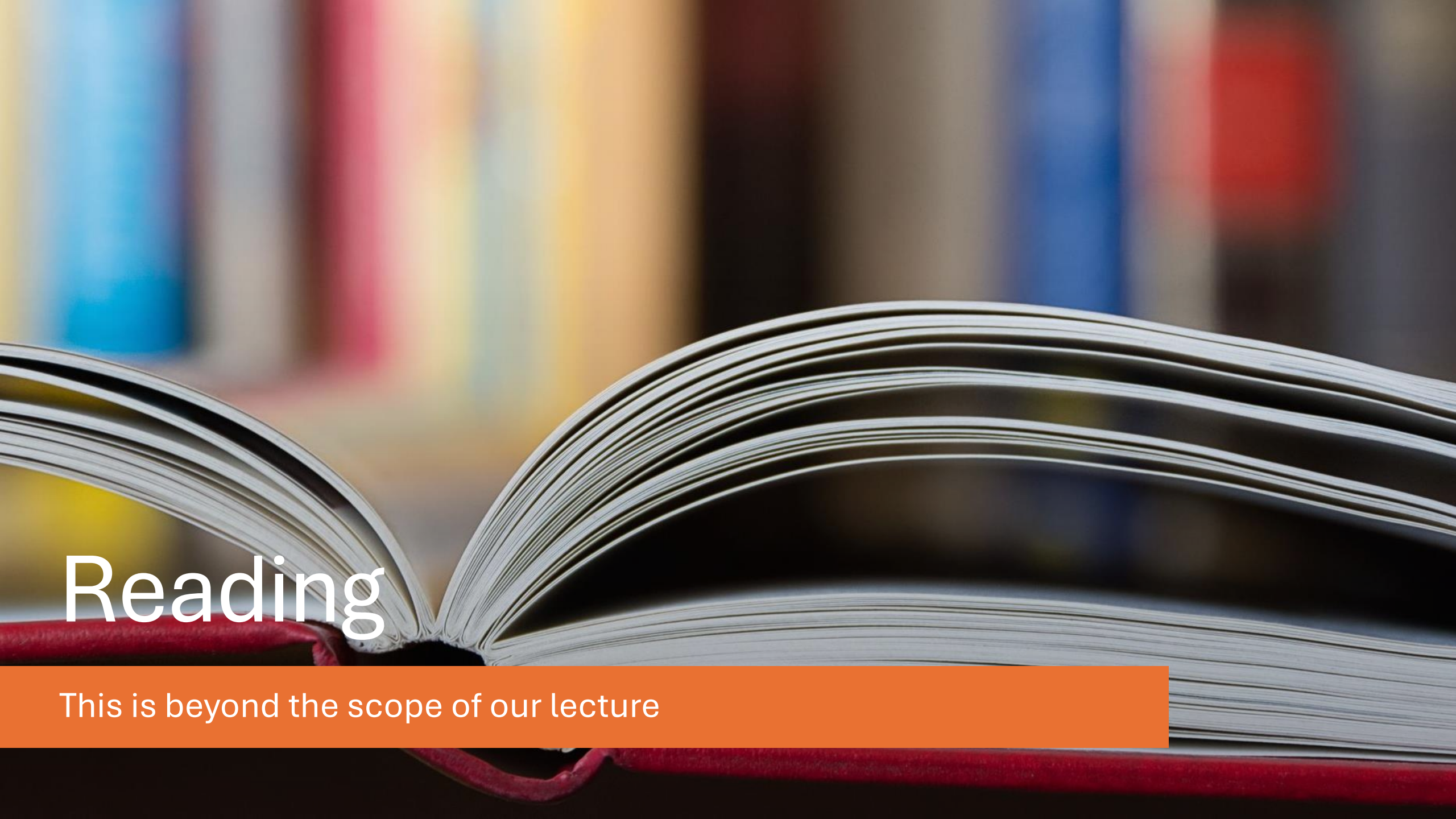
What types of Apps are most used? (Vrysis et al., 2023)

- Display enhancements and audio feedback options (i.e. *Select to Speak, TalkBack, Spoke Content, VoiceOver*)
- Apps or features that can be used as LV aids:
  - Magnifying with camera
  - Reciting printed material
  - Voice typing
  - Voice commands
- Liked common display enhancements (text size, bold text, increased contrast, inverted colors and dark mode)
- Preloaded apps (i.e., dialer, clock, calculator, and calendar)

App list

https://vrt.partners.org/visionapplist.html





Reading

This is beyond the scope of our lecture


MN Read and Gordon Legge
https://legge.psych.umn.edu/
An der roten Ampel steht ein gelber Bus und wartet auf Grün
La señora llevó a su perrito temprano de paseo
El automóvil de mi vecino tiene puertas de un color extraño
Correr por la noche es un buen ejercicio para todo el mundo
Ayer encontré unas cuantas monedas de plata sobre una silla
El viajero regresó a su casa tan cansado que no pudo dormir
father takes me school every day in his big green car
My father asked me to help the two men carry the box inside

Role of OT within the team and referral process

Team Members and Collaboration

Low Vision Providers

- Ophthalmologists
- Optometrists
- Certified Orientation and Mobility Specialists
- Certified Vision Rehabilitation Therapists (Rehab Teachers)
- Certified Low Vision Therapists
- Teachers of the Visually Impaired
- Psychologists
- Occupational Therapists

Resources and tools for communicating with other disciplines

Templates

Issues in different practice settings

ACUTE

POST-ACUTE

COMMUNITY PRACTICE

Case examples in discussion groups

Case Example # 1 Across Continuum of Care

- **Name:** J.C. (pronouns: he/him/his)
- **Age:** 72 years old
- **Gender:** Male
- **Diagnosis:** Recent R femoral neck fracture from fall (s/p R THR: posterior lateral approach). His glasses were damaged in the fall but a neighbor brought an older pair for him to use.
- **Living Situation:** Resides alone in a single-story home
- **Medical History:** CHF Type 2 diabetes mellitus for 25 years, diabetic retinopathy (Stage: Advanced), hypertension, mild arthritis in the hands
- **Occupational History:** Retired teacher
- **Occupational Profile findings:** Difficulty with daily activities such as reading, medication management, and mobility within the home due to progressive vision loss

Presenting Concerns

- States that he has increased difficulty reading medication labels, identifying objects in his kitchen, and safely navigating his home, particularly at night or in low-light conditions.
- He describes significant discomfort with glare, which worsens under certain lighting conditions, making it harder to complete routine tasks.

What would you address in assessment or intervention plan?

- In what practice setting would you typically address this case?
- Is there additional information you would want to know?
- Are there assessments that you would prioritize
- Would you be able to complete a home assessment?

Case # 2: Living in the Community

- Client is a 78 y.o. female with dx of macular degeneration. She lives alone in a senior apartment building. She has additional PMH of type II DM, OA, and chronic kidney disease (stage 4). She has indicated having decreased sensation in B hands and feet.
- She has had recent falls in the apartment mainly while going from her bed to the bathroom at night. She had one additional fall while “moving too quickly” to answer the door and did not see an obstacle in her path
- She has stopped continuous text reading. She is struggling to pay bills, use her telephone, complete home management tasks, and meal preparation

Case # 2 Continued

- Her current visual acuity is OD: 20/200 OS 20/60
- She has been referred to OT to assess ADL/IADL performance and home safety following her recent falls.
- What assessments or interventions could you consider?


Questions?

Thank You

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