OCULOMOTOR DYSFUNCTION- A CASE STUDY

CHRIS MCGUFF

CREIGHTON UNIVERSITY

BACKGROUND

- The brain promotes 30-40% of capacity to the need for visual stimulation (Butler, 2016).
- Impairment to functional vision can grossly affect activities of daily living and the ability to perform meaningful tasks (Turton, Angilley, Chapman, Daniel, Longley, Clatworthy, Gilchrist, 2015).
- Visual impairments are one of the most common disabling impairments experienced by older adults (Cimarolli, Morse, Horowitz, Reinhardt, 2012).

BACKGROUND CONTINUED…

- Often these are caused by cerebral vasucular accident (CVA), traumatic brain injury (TBI), or non-traumatic brain injury (N-TBI) (Turton et al., 2015).
- The model of visual functioning is used by occupational therapist because it looks at visual impairments in an occupational manner (Butler, 2016). This model allows for understanding and assessing the difference between visual system integrity versus how the individual functions as an occupational being (Butler, 2016).
- Assessments of visual function include, ocularmotor functions, contrast sensitivity, visual fields, visual acuity, and binocular vision (Butler, 2016).

MODEL OF VISUAL FUNCTIONING

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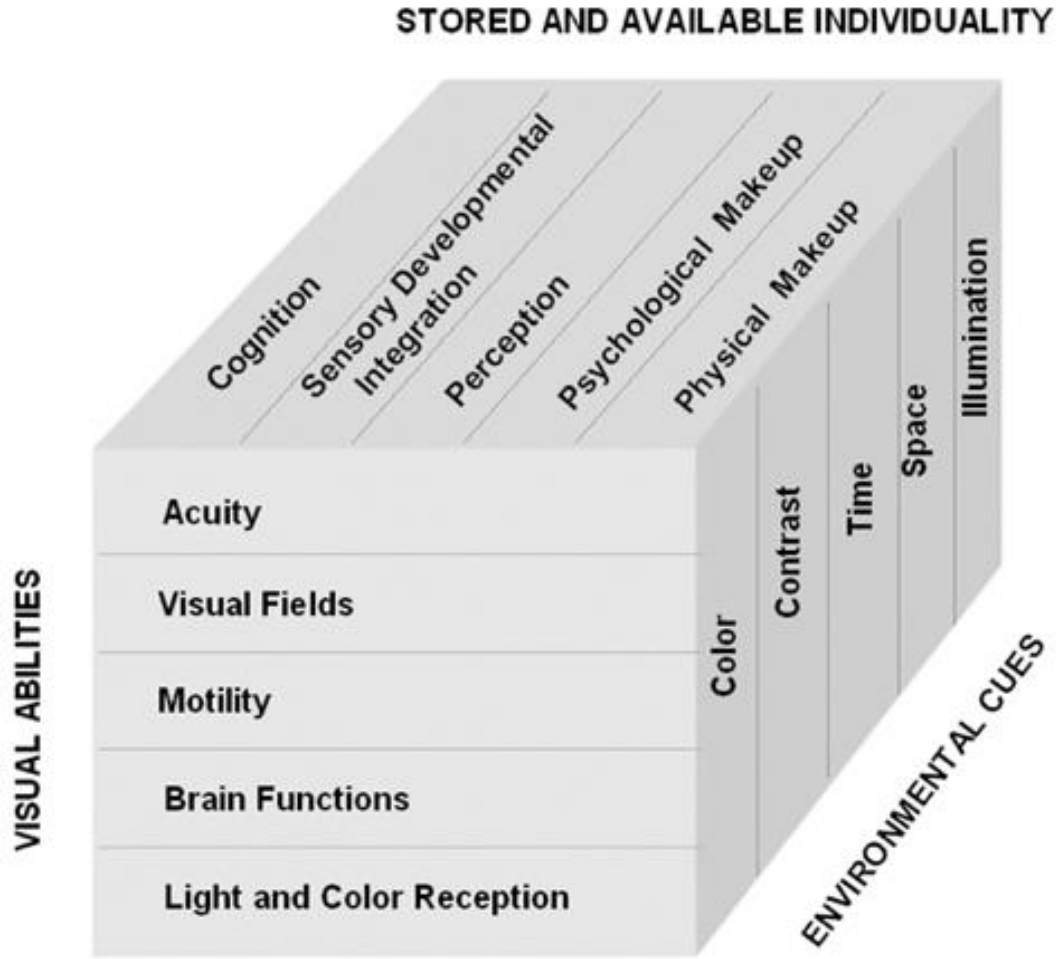
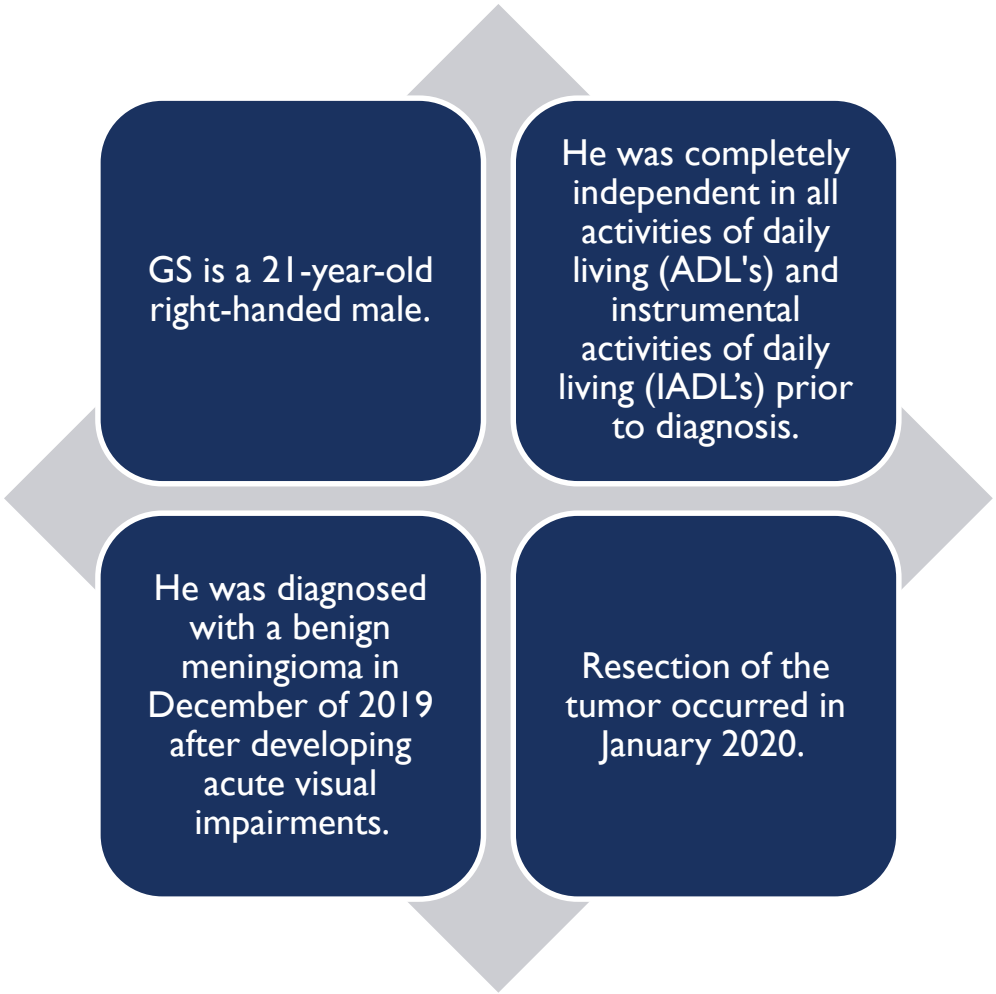


https://www.tsbvi.edu/534-hatton-functional-vision/4818-session-2-handout-f-model-of-visual-functioning

PATIENT HISTORY



PATIENT HISTORY CONTINUED…

- After removal, the patient experienced hemiparesis of the right upper extremity and visual perceptual deficits, oculomotor impairments, and blurriness.
- He had begun using his left hand for all activities and he had difficulty isolating his eye and head movements during scanning activities.

RESEARCH QUESTION

- Will there be visual improvements with specialized visual based occupational therapy?

METHOD: ASSESSMENTS FOR VISUAL PERFORMANCE

Brain Injury Visual Assessment Battery for Adults (biVABA)

- Visual acuity (distance and reading)
- Contrast sensitivity function
- Ocularmotor function
- Visual attention and scanning

Developmental Test of Visual Perception (DTVP-A)

- Eye hand coordination
- Copyinge
- Figure-ground
- Visual closure
- Form constancy

Dynavision Light Board

- Visual perceptual
- Visual scanning
- Reaction time
- Depth perception

METHOD: INTERVENTIONS

- Frequently, but not exclusively, used as objective measurements to document progress.
  - Trifold board- using letter and/or numbers
  - Sequence scanning board
  - Bioness Integrated Therapy System (BITS)
  - Ipad applications
    - I.e. Mahjon, Montezuma, Little Finders

RESULTS

- Due to national pandemic, the therapist felt that results could have been potentially more improved, but they are still considered significant.
- Patient received 10 weeks of rehabilitation at Ability KC that included:
  - Occupational therapy
  - Physical therapy
  - Speech therapy
  - Along with various other groups and activities
    - Meal prep group, exercise group, vision group

RESULTS CONTINUED…

- The patient increased his Dynavision score from 30 lights in 60 seconds while using his left hand to 58 lights in 60 seconds while using his affected right hand.
  - Bilaterally he was able to successfully hit 65 lights in 60 seconds.
- He successfully met his goal of completing moderately complex tabletop activities with minimal cues for head stabilization with visual scanning.
- The patient was able to read for approximately 20 minutes without blurriness or headaches. Beginning of therapy he could read 3-4 sentences and feel various negative symptoms.

RESULTS CONTINUED…

- Patient reduced compensatory head movements when scanning within his immediate visual field
- Patient was able to return to playing catch with his siblings and was successful when tracking moving objects during various sporting activities (baseball, basketball, ping pong)
- Patient no longer used his left hand for activities previously done with right hand. He was successful at returning to using his right hand unconsciously.

BOTTOM LINE FOR OT

A wide variety of visual activities are needed to allow patients the novelty that will be the norm in everyday life activities

It's necessary to correct compensatory techniques for visual scanning if they are not essential for the patient to function.

Visual scanning is a crucial function of performing ADL's and IADL's because it is used during:

- Grooming/self care
- Looking for objects within the home

Integrating vision and upper extremity function is important in returning to prior level of function to allow for hand-eye coordination during daily tasks

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