

Visual Fixation Patterns of Adults with Aphasia

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BACKGROUND

Many people with severe aphasia benefit from using visual scenes to improve functional communication (Dietz, Hux, & Beukelman, 2009; Fried-Oken, Rowand, Gibbons, 2010; Hux, Buechter, Wallace, & Weissling, 2010). Little is known about how people with aphasia interact with visual scenes. Eye tracking is a noninvasive technique used to measure an individual's attention patterns based on the movement of their eyes on a target (Duchowski, 2007; Wilkinson & Light, 2011). No studies to date have examined the visual attention patterns of adults with aphasia when viewing visual scenes. This research is necessary to build more effective AAC systems for these individuals.

PURPOSE

The purpose of this project is to explore and compare the visual attention patterns of people with aphasia and age and gender matched controls when viewing visual scenes to determine which elements within these images capture attention most readily.

METHODS

Participants

3 adults with aphasia
3 age (+/-5 years) and gender matched neurotypicals

Equipment (On loan from Tobii Technology)

Tobii T60 is a research eye tracker used to measure eye movements and fixations with infrared technology. The T60's camera monitors and records eye movements

Images

- 38 paired, colored photographs (i.e., 19 disengaged, 19 engaged)
- Disengaged and engaged images had matching content (e.g., person, background)

Disengaged



Engaged

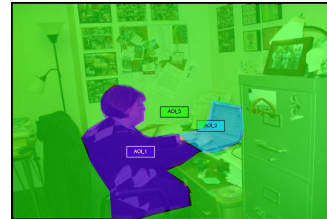


Measurement

Three areas of interest were outlined for each image:

- Person
- Background
- Object

Number of fixations and percent of time fixated in each area of interest was calculated.



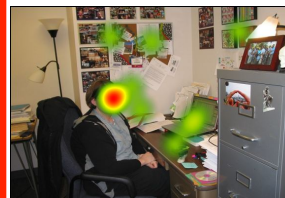
- Person
- Background
- Object

Procedures

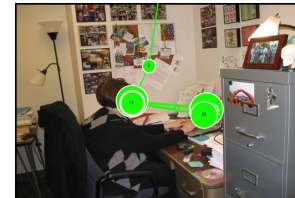
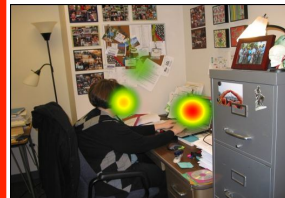
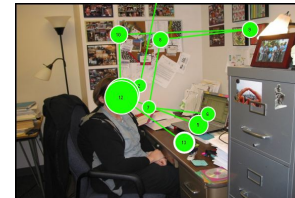
- Vision screening to rule out vision deficits
- Participants calibrated to T60
- Participants view all visual scene images in one session
- All visual scene images were preceded by a 2 second fixation dot used to align all participants' vision to the same place before viewing each visual scene
- Visual scene images were presented for 7 seconds
- Free viewing condition, no search task

RESULTS

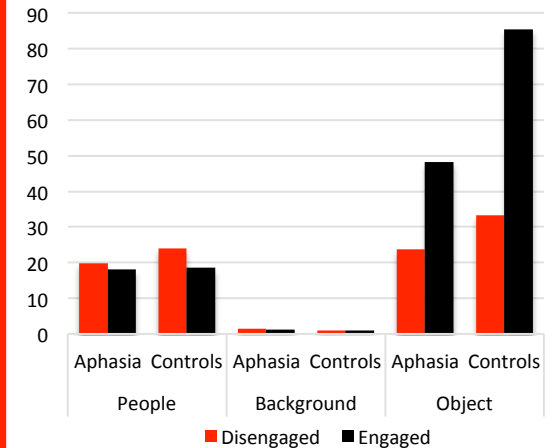
Hot Spots



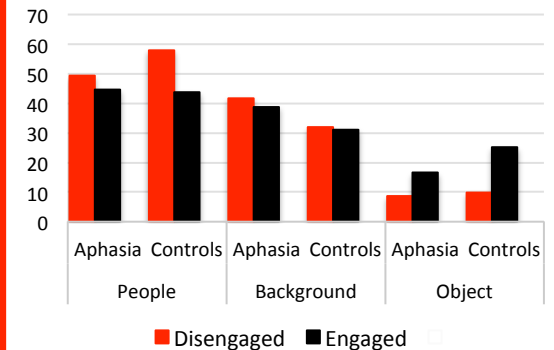
Fixation Map



Relative Time Fixated



Percent of Time Fixated



CONCLUSIONS

- Preliminary results suggest that people with aphasia view images in a manner similar to control participants.
- Images with high levels of engagement result in increased fixation on the object of engagement
- When selecting visual scenes, high levels of engagement may assist with increasing focus on important elements within a scene.