



Development and Evaluation of a Novel Computerized Assessment of Visual-Cognitive Functions

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BACKGROUND

- Visual attention, visual discrimination, and visual memory are visual-cognitive functions necessary to engage successfully in many occupations
- Individuals with brain injury experience problems with visual perception
- Assessment tools often fail to isolate the reason why performance is impaired due to many cognitive operations involved in test tasks
- Previous work with the Componential Assessment of Visual Perception^a showed that a computerized test designed to control stimulus features and memory load showed promise
- This new test utilizes real test images rather than abstract stimuli making the test more ecologically valid

OBJECTIVES

Short-term objectives:

- To conduct initial normative studies with individuals who are non-disabled and individuals with TBI and other neurological conditions
- To conduct a preliminary validation study.

Long-term objectives:

- normative studies, validity studies and intervention studies

METHODS

Preliminary Normative and Validation study:

Participants: 20-30 non-disabled individuals (18-30 years) and 10-15 individuals with TBI (18-30 years) with known visual attention, visual memory and visual discrimination problems

Outcome Measures: Accuracy scores and errors of omission and commission, time to complete test, and search patterns will be the outcome measures.

The Mesulam^b and the line bisection test of the BIT^c will be used. These are measures of visual search.

METHODS

- Procedures:** Each participant will be tested on the Computer-Based Visual Perception Test^d (CBVPT) and the paper-pencil tests in random order.
- Both tests will be administered to non-disabled participants in the neuro-rehabilitation lab in the Department of Occupational Science and Occupational Therapy (U of T)
- The participants with TBI will be administered both tests at the TRI; the CBVPT test via the internet; the researchers will assist saving internet data and administer the paper-pencil tests
- The CBVPT consists of 6 test levels that vary the memory load and the number of targets
- The format of the CBVPT is a matrix of 6 X 6 images of Campbell soup cans (See Figure 1)

Computer-Based Test of Visual Perception



FIGURE 1

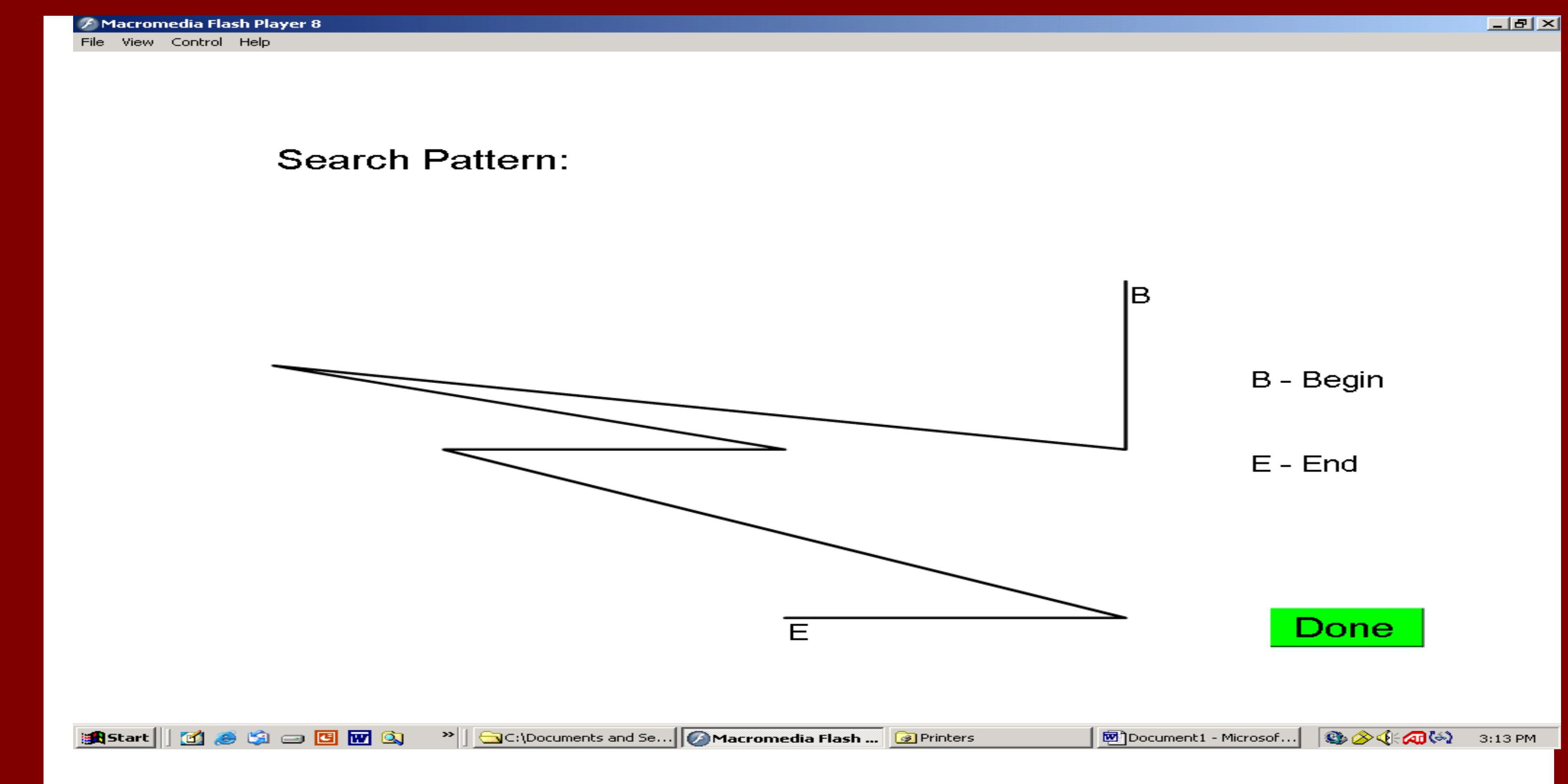
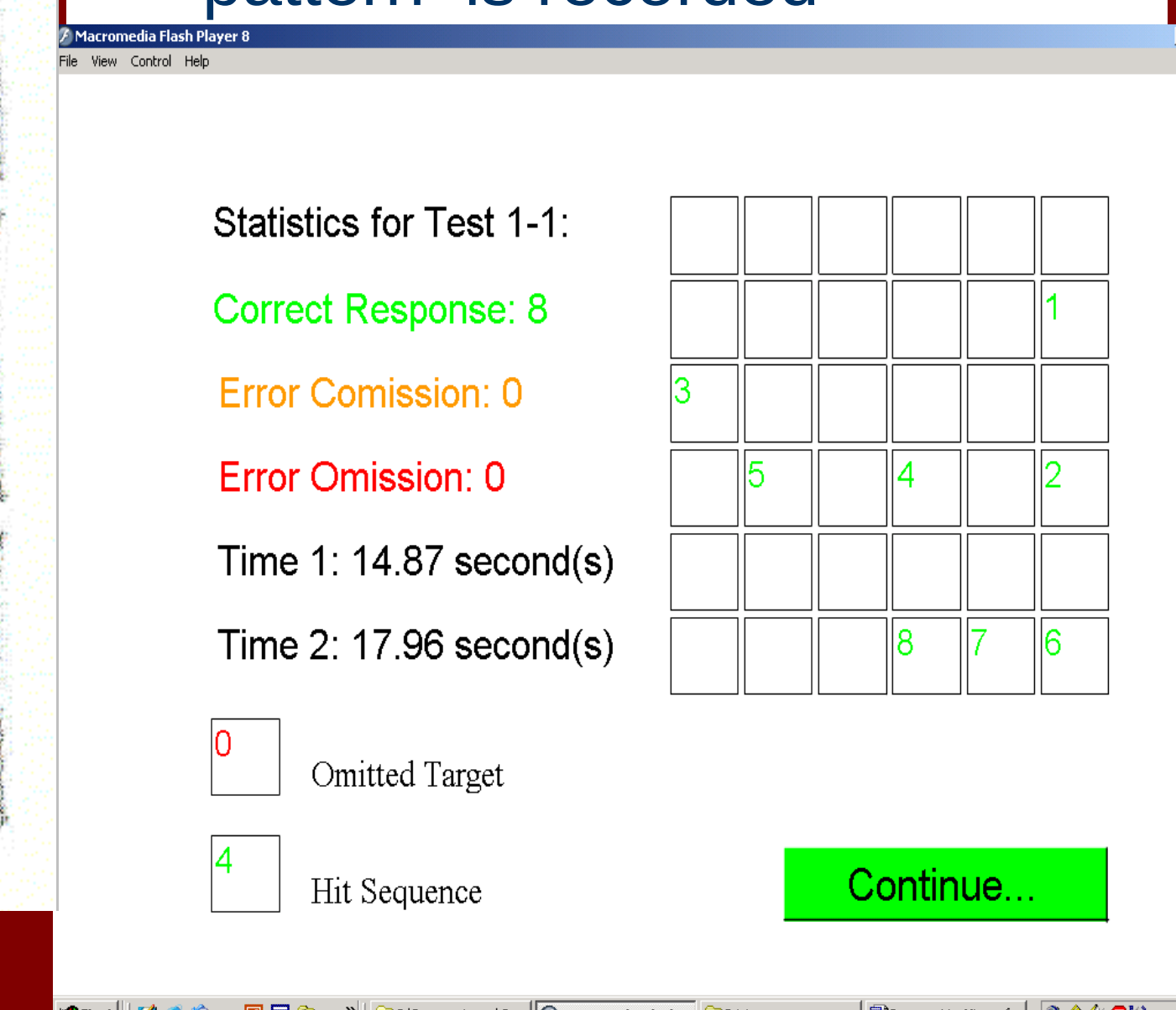
Level 1 test – 1 target

Condition: low

background distraction (8 white soup cans – Randomly displayed targets)

Preliminary Data:

The following accuracy, error data, and search pattern is recorded



CONCLUSION

Pilot data with 11 individuals between the ages of 20 and 30 (mean 24.1 years):

Low Distraction (LD) Items			High Distraction (HD) Items		
Targets	Mean	Error of Omission	Targets	Mean	Error of Omission
1	21.47455	1	1	23.25182	2
2	16.18	4	2	30.82455	17

Participants are faster on items in the LD environment. When memory load increases participants in the HD environment were slower and the number of errors of omission was increased. Participants were faster when performing the two target task in the LD, however made more errors. Search patterns revealed most participants used a systematic R-L or L-R or up-down, down - up strategy. Further research is needed to verify these results.

REFERENCES/NOTES

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