A Virtual Reality-Based Stroop as a Predictor of Neurocognitive Disorder among Older Adults

Kailee P. Prentice, B.S., Jeanne M. Dube, B.A., Brandee A. McKinney, B.S., Yenifer L. Morales, B.S., Danielle R. Hardesty, M.S.,
Thomas D. Parsons, Ph.D., Michael D. Barnett, Ph.D.
Department of Psychology and Counseling
The University of Texas at Tyler

INTRODUCTION

- Virtual reality-based neuropsychological tests may increase ecological validity (Parsons & Barnett, 2019).
- In the Virtual Apartment, the participant is situated in the interior of a home apartment environment with Stroop stimuli being presented on the television screen (Henry et al, 2012)
- There is no extant research to investigate the use of the Virtual Apartment Stroop test among clinical populations.
- The preliminary study sought to investigate the Virtual Apartment Stroop test as a predictor of neurocognitive disorder among older adults.

Virtual Apartment Stroop Task

HYPOTHESIS

H_1 : The Virtual Apartment Stroop total score will serve as a predictor of neurocognitive diagnosis.

METHODS

Participants:

- Older adults (*N* = 34), ages 61-90 (*M* = 72.15, *SD* = 7.15)
- Gender 44.1% men, 55.9%
- Diagnosed with a neurocognitive disorder (*n* = 7) or without a diagnosis (*n* = 27) as determined by a comprehensive neuropsychological evaluation.

Measure:

- Virtual Apartment Stroop Test

Procedure:

- Participants were administered the test with and without distractors, with the order counterbalanced.
  - In the distractor condition, distracting stimuli appear in various locations in the participant's field of view.
- A total score was created by summing the total correct in the distractors and no distractors condition.

Supported by a Congressionally Directed Medical Research Program Grant W81XWH-19-0798
Correspondence:
Michael D. Barnett mbarnett@uttyler.edu
Kailee P. Prentice kprentice@patriots.uttyler.edu
Aging, Neuropsychology, and Technology (ANT) Lab – The University of Texas at Tyler

RESULTS

- A binary logistic regression was conducted to examine the Virtual Apartment Stroop test as a predictor of neurocognitive disorder.
- The total score explained 17.5%-27.5% of the variance in neurocognitive diagnosis (x^2 *= 6.65, df* = 1, *p* = .01), odds ratio: .97) and was able to correctly classify 85.3% of cases.

DISCUSSION

- This study provides preliminary evidence that the Virtual Apartment Stroop task is sensitive to neurocognitive diagnosis among older adults.

REFERENCES

Henry, M., Joyal, C. C., & Nolin P. (2012). Development and initial assessment of a new paradigm for assessing cognitive and motor inhibition: The bimodal virtual-reality Stroop. *Journal of Neuroscience Methods*, *210*, 125-131.

Parsons, T. D., & Barnett, M. (2019). Virtual Apartment-Based Stroop f or assessing distractor inhibition in healthy aging. *Applied Neuropsychology: Adult, 26*(2), 144-154. https://do-org.ezproxy.uttyler.edu/10.1080/23279095.201.1373281