Sensitivity and Specificity of the Portland Digit Recognition Test: Online vs In-Person

Chloe A. Huston[1,3] & Amir M. Poreh[1,2]

[1] Department of Psychology, Cleveland State University; [2] Department of Psychiatry, Case Western Reserve University School of Medicine; [3] University of Pittsburgh Medical Center

Introduction

- With the proliferation of telehealth and online neuropsychological assessment, a question is raised to whether the results of such measures are comparable to those used in person.

- Therefore, this study aimed to compare the performance of an online adaptation of the Portland Digit Recognition Test (PDRT) at detecting simulators of traumatic brain injury (TBI) to that of the in-person PDRT when TBI patients are utilized.

Methods

- Four-hundred (400) volunteers were recruited from ResearchMatch.

- Participants were randomly assigned to the simulated malingerers' or the control group .

- Simulated malingerers were told to feign TBI.

- The control group was told to give their best effort.

- All participants completed an online adaptation of the PDRT.

- The suggested cutoff score for the online PDRT was developed using Youden's Index (Youden, 1950).

- Sensitivity and specificity using the suggest cutoff score for the online PDRT were compared to in-person PDRT scores from published studies using the original suggested cutoffs.
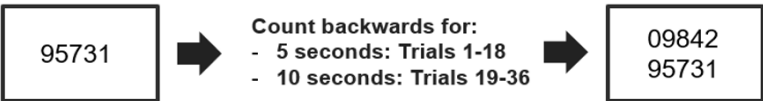
Participants

Table 1. Participant Characteristics

Participant Characteristics	Simulated Malingerers	Controls
n (# female)	254 (201)	146 (123)
% English as first language	94.9%	94.5%
% White	79.5%	78.1%
% non-Hispanic/Latino	90.9%	93.2%
Average age (years)	42.63	42.53
Average Years of Education	17.66	17.69

PDRT Adaptation

- During the first 18 trials, participants listened to an audio file of the strings of 5-digits being read at a pace of 1 digit per second.

- Next, they viewed a screen that showed a countdown clock and were instructed to count backwards out loud starting at 20 for 5 seconds.

    - Subjects remained on this screen until the 5 seconds were up.

- Lastly, participants were presented with two strings of 5-digits, arranged one on top of the other, and had to select the one they previously heard (recognition).

- The second 18 trials required examinees to count backwards for 10 seconds.

PDRT Online Adaptation

- 36 total trials split into two blocks of 18 trials

| 95731 | → | Count backwards for:
- 5 seconds: Trials 1-18
- 10 seconds: Trials 19-36 | → | 09842
95731 |

Results

Table 2. Sensitivity and Specificity of the online PDRT adaptation compared to in-person administration of the original PDRT

Study	Sample	Sensitivity	Specificity
Current study	Simulated TBI malingerers	94%	95%
Greve and Bianchini (2006)	TBI referrals: Probable and definite malingered neurocognitive dysfunction	45%	100%
Greve et al. (2008)	TBI referrals	44%	98%
Bianchini et al. (2001)	TBI referrals	77%	100%

Discussion

- This study has helped demonstrate the validity of an online adaptation of the PDRT for detection of malingering of TBI symptoms.

- When compared to in-person studies that used samples of TBI referrals, the online PDRT adaptation consistently had higher sensitivity but not higher specificity.

- Additional research and comparisons are needed to further validate the online version of the PDRT for malingering detection.

References

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