Does Wearing a Watch Influence Performance on the Clock Drawing Test?

Mairy Yousif, M.S.; Julianne Szemko, M.S.; Kaci Gorres, M.S.; Ruta Sohoni, M.S.; Anthony LoGalbo, Ph.D.

Florida Institute of Technology & Health First Memory Disorder Clinic

BACKGROUND INFORMATION

While digital clocks are becoming more commonplace, there is still a stable number of individuals who utilize a regular analog clock (Hoffman, 2009). Some individuals choose to wear a wristwatch most days while others do not. Individuals who wear a watch were observed to have higher levels of conscientiousness (Ellis & Jenkins, 2015). Literature in the area suggested that watch wearing was related to individuals arriving to appointments early or on time at higher rates. However, older adults with dementia tend to have a decreased awareness of time, time flexibility and also have more difficulty with scheduling and planning (Requena-Komuro et al., 2020). Meanwhile, they may show an increase in "clockwatching" behaviors, which is described as having a preoccupation with time and having a higher tendency to "watch the clock" (Requena-Komuro et al., 2020). Patients with dementia also have difficulty with planning and organizing, which is commonly measured with a Clock Drawing task (Eknoyan et al., 2012). The Clock Drawing Test (CDT) is a simple cognitive assessment tool which is often used to screen for dementia (Agrell et al., 1998). While the CDT was created as a measure of visuo-spatial ability, it is now well accepted that the CDT also incorporates other cognitive abilities, such as aspects of executive functioning (i.e., planning/organization) (Agrell et al., 1998). Relevant research has shown that the CDT accurately discriminates cognitively unimpaired patients from those showing early cognitive decline (Aprahamian et al., 2009). The present study examines whether individuals who regularly wear a watch will perform better than those who do not on the CDT within a memory disorder clinic population. The objective is to determine if wearing a watch regularly is of benefit during completion of the CDT in a subsample of a memory clinic population.

METHODS

Participants: Data from 69 memory disorder clinic patients was utilized, ages 59-94 (M = 80.45, SD = 7.231; 52% female). Participants were included in this study if they had a diagnosis of within normal limits, mild cognitive impairment, or unspecified neurocognitive disorder. Patients with a diagnosis of dementia were excluded to reduce the impact of substantial cognitive impairment on CDT performance. Additionally, patients with incomplete information regarding watch wearing were excluded.

Procedure: Patients were administered the CDT as part of a brief neuropsychological battery following a referral from a board-certified geriatric and internal medicine physician. Patients were also asked three questions regarding watch wearing including if they typically wear a watch, and type (i.e., digital or analog) and frequency of watch wearing. Regular watch wearing was defined as responding affirmatively to the question "do you regularly wear a watch?"; individuals reported wearing a watch at least 2 times per week, with the majority (N=30) reporting wearing a watch 5 or more times per week.

Measures: The CDT was administered in addition to a number of neuropsychological tests. The CDT was scored quantitively by assigning an error as either minor (minus 1 point) or major (minus 2 points) for a highest possible total of 10 points. Types of errors include omissions/additions, sequencing errors, straying from the perimeter, spacing errors, and hand/time errors (i.e., hand placement and pivot point).

METHODS

Figure 1. Mean CDT Scores Amongst Watch Wearing Groups

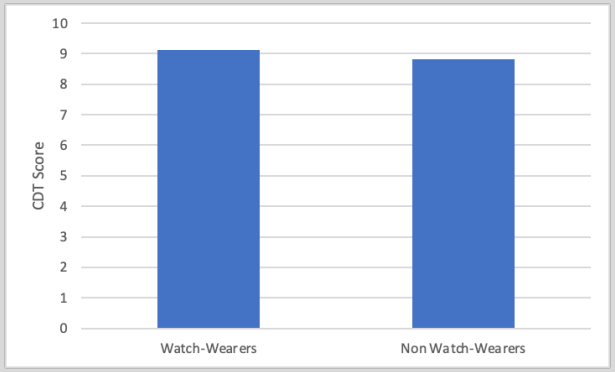
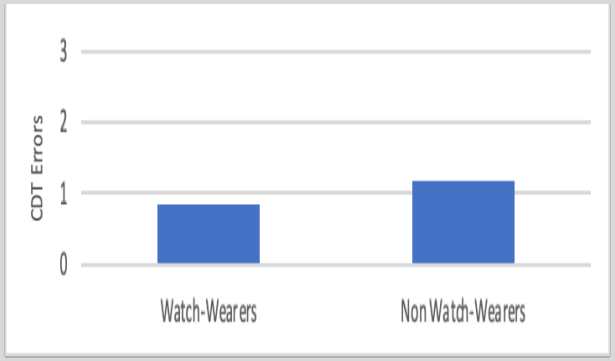


Figure 2:. Means CDT Errors Amongst Watch Wearing Groups



RESULTS

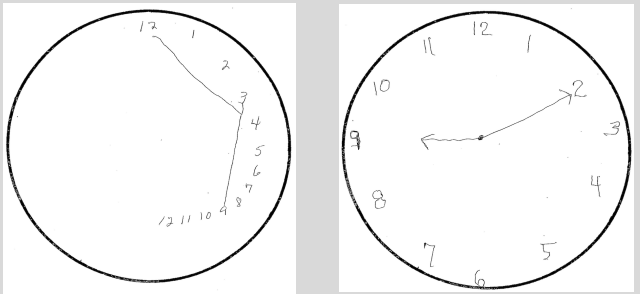
Key Findings

- **Those who wear a watch obtained a higher score on the CDT compared to those who do not wear a watch.**
- **Fewer errors were made by those who wear a watch regularly.**

Results: The 38 participants who wear a watch regularly (M=9.13, SD=.811) performed significantly better on the CDT compared to the 29 participants who do not (M=8.83, SD=1.1441), $t(65)$ = 4.210, p=.044. Similarly, those who wear a watch regularly (M=.85, SD=.812) made significantly fewer errors on the CDT compared to those who do not (M=1.17, SD=1.17), $t(65)$=4.101, p=.047.

RESULTS

Figure 3. Sample CDT Samples of Non-Watch Wearer (left) and Watch Wearer (right)



DISCUSSION

Results indicate that individuals who regularly wear a watch perform better on the CDT, making fewer errors than those who do not. On average, watch wearers score above 9 and make less than 1 error, while non-watch wearers on average score below 9 and make greater than 1 error. This finding might suggest increased planning and organization skills in those who wear watches regularly. Future research should attempt to replicate these findings with a larger sample size and in other settings. Additionally, it would be beneficial to establish if this effect is also seen at follow up evaluations and if it is more prominent in those who are more impaired (i.e., diagnosed with dementia) compared to those who are less impaired (i.e., diagnosed with mild cognitive impairment or normal cognition). The results from this study suggest that watch wearing among older adults may offer protective or compensatory benefit toward preserving aspects of visual planning and executive functioning.

Conclusion

Regularly wearing a watch may serve as a protective factor against cognitive decline as measured by the CDT.

REFERENCES

Agrell, B., & Dehlin, O. (1998). The clock-drawing test. *Age and ageing*, *27*(3), 399-404.

Aprahamian, I., Martinelli, J. E., Neri, A. L., & Yassuda, M. S. (2009). The Clock Drawing Test A review of its accuracy in screening for dementia. *Dementia & neuropsychologia*, *3*, 74-80.

Eknoyan, D., Hurley, R. A., & Taber, K. H. (2012). The Clock Drawing Task: Common Errors and Functional Neuroanatomy. *The Journal of Neuropsychiatry and Clinical Neurosciences*, *24*(3), 260–265. https://doi.org/10.1176/appi.neuropsych.12070180

Ellis, D. A., & Jenkins, R. (2015). Watch-wearing as a marker of conscientiousness. *PeerJ*, *3*, e1210. https://doi.org/10.7717/peerj.1210

Hoffman, E. (2009). *Time*. Profile Books.

Requena-Komuro, M.-C., Marshall, C. R., Bond, R. L., Russell, L. L., Greaves, C., Moore, K. M., Agustus, J. L., Benhamou, E., Sivasathiaseelan, H., Hardy, C. J. D., Rohrer, J. D., & Warren, J. D. (2020). Altered Time Awareness in Dementia. *Frontiers in Neurology*, *11*. https://doi.org/10.3389/fneur.2020.00291