

**Vaportzis, E., Georgiou-Karistianis, N., Churchyard, A., & Stout, J. C. (2014). The type of concurrent task affects dual-task performance in Huntington's disease. *Journal of Neurology, Neurosurgery and Psychiatry*, 85.**

### Abstract

#### Background

Huntington's disease (HD) is associated with difficulty in dual-tasking, which is performing two tasks at the same time.

#### Aims

We investigated whether different dual-tasks and levels of difficulty are affected in people with early HD.

#### Methods/Techniques

Twelve HD participants and 12 controls performed four pairs of dual-tasks. Each task within each dual-task had easy and hard levels. Pair 1 was circle tracing with counting backward: participants traced a circle while viewing (easy) or not viewing their arm (hard), and counted backward in twos (easy) or threes (hard). Pair 2 was simple choice reaction time (CRT) with digit forward: participants viewed single letters and responded to two (easy) or four target letters (hard) while repeating 4 (easy) or 5 (hard) digits forward. Pair 3 was complex CRT with digit backward: participants viewed 3X3 matrices of Xs and Os. They responded whether 3 Xs (easy) or 3 Xs or 3 Os (hard) appeared in a row, while repeating 3 (easy) or 4 (hard) digits backward. Pair 4 was cancellation with auditory tasks. Participants circled the target letter O on a sheet with distractor letters: other letters (easy) or the letter Q (hard). Concurrently, they reported the number of high-pitched sounds from a series of high-pitched sounds (easy) or a combination of high- and low-pitched sounds (hard). We measured speed and accuracy.

#### Results/Outcome

Participants with HD were slower and less accurate across all task conditions, compared to controls. Dual-tasks were performed slower and less accurately than single tasks; and harder levels slower and less accurately than easier levels. Differences reached statistical significance either in terms of speed or in terms of accuracy within each task pair.

#### Conclusion

Our findings suggest differential effects of dual-task performance on HD versus controls, and highlight the importance of considering different performance measures, as the relationship between HD and these measures may be different.