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## **AGE-RELATED CHANGES IN THE INTERFERENCE BETWEEN COGNITIVE TASK COMPONENTS AND CONCURRENT SENSORIMOTOR COORDINATION**

Suvobrata Mitra, Charlotte Boatman & Joshua Baker

Nottingham Trent University, United Kingdom

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**Background:** Continuous sensorimotor coordinations (CSCs) such as driving, walking, using control interfaces or maintaining the body's balance are often performed alongside concurrent cognitive tasks involving attention and executive function. A range of these task combinations show interference, particularly in older adults, but the timing, direction and reciprocity of interference is not yet understood at the level of the tasks' information-processing operations.

**Aims:** This project compares the chronometry of dual task interference between a visual oddball task and a continuous visuomanual tracking task performed by young and older adults.

**Method:** The oddball task's constituent operations were identified using the electrophysiological correlates (ERP's P1, P2 and P3b, and time-frequency characteristics in the alpha-beta band range), and deviations in the tracking task reflected perturbations to state monitoring and adjustment characteristics of CSC tasks.

**Results:** Despite instructions to give equal priority to both tasks, older participants ( $N = 28$ ) maintained a high level of resourcing of the oddball task when dual tasking whereas young participants ( $N = 24$ ) reduced resourcing to accommodate the demands of the tracking task. Older participants had a longer period of tracking inaccuracy during the executive function component of the oddball task, and unlike in young participants, this decrement was also observed when the stimulus was not a target and the executive function of updating the target tally was not required.

**Conclusions:** These detailed chronometric results clarify that age-related amplification of CSC-cognitive interference is largely due to greater inflexibility in task prioritization. Prioritization of the cognitive task over the CSC in this type of dual tasking may have safety implications in everyday task settings.

**Keywords:** Dual tasking, Sensorimotor coordination, Event-related potential, Attention, Executive function, Electrophysiology

### **Publications:**

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**E-mail contact:** [suvo.mitra@ntu.ac.uk](mailto:suvo.mitra@ntu.ac.uk)