**Title**: Comparing Random versus Alternating-Runs Switch Costs in Younger, Healthy Older Adults, and Mildly Impaired Older Adults using the CV/OE Switch Task

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**Abstract**:

The Consonant-Vowel/Odd-Even task (CV/OE, Minear & Shah, 2008) is a task-switching paradigm that allows measurement of both local and global task-switching costs. Participants are shown a bivalent stimulus (e.g., D 42) and are asked to classify the letter (consonant/vowel) or the number (odd/even). Previous work by Huff, Balota, Minear, Aschenbrenner, and Duchek (2015) has shown that global switch costs (i.e., error rates and latencies for switch versus pure trials) increased as a function of both age and cognitive impairment. However, older adults show reduced local switch costs (i.e., performance on switch vs non-switch trials within switch blocks) for RTs relative to younger adults, suggesting that they are less tuned to the task. Prior research has primarily investigated switch costs using an alternating-runs sequence in which participants respond to a set of CV/OE trials that switch in a predictive sequence (i.e., CV, CV, OE, OE, CV, CV). The present study compares an alternating-runs sequence to a separate switch block in which CV/OE trials are presented randomly and are therefore unpredictable (i.e., CV, OE, OE, OE, CV, OE). Consistent with previous findings, we show that older adults have greater RTs relative to younger adults across all trial types. Furthermore, this effect was magnified for mild cognitively impaired (MCI) older adults relative to healthy older adults. Additionally, older (vs. younger) adults showed increased global switch costs for both sequences, but local switch costs were only greater for the unpredictive random sequence. For younger and healthy older adults, there were no differences in error rates across trial types. However, MCI adults had significantly higher error rates. These results suggest that task-set reconfiguration processes associated with local switch costs are particularly taxed for older adults when switching is not predictive, especially for those with cognitive impairment.