

Would Intra-Individual Variability in Attention to Be the Indicator of Impending the Senior Adults at Risk of Cognitive Decline: Evidence from Attention Network Test(ANT)

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Abstract : Objectives: Intra-individual variability (IIV) has been considered as a biomarker of healthy ageing. However, the composite role of IIV in attention, as an impending indicator for neurocognitive disorders warrants further exploration. This study aims to investigate the IIV, as well as their relationships with attention network functions in adults with neurocognitive disorders (NCD). Methods: 36 adults with NCD due to Alzheimer's disease (NCD-AD), 31 adults with NCD due to vascular disease (NCD-vascular), and 137 healthy controls were recruited. Intraindividual standard deviations (iSD) and intraindividual coefficient of variation of reaction time (ICV-RT) were used to evaluate the IIV. Results: NCD groups showed greater IIV (iSD: $F= 11.803$, $p < 0.001$; ICV-RT: $F= 9.07$, $p < 0.001$). In ROC analyses, the indices of IIV could differentiate NCD-AD (iSD: AUC value = 0.687, $p= 0.001$; ICV-RT: AUC value = 0.677, $p= 0.001$) and NCD-vascular (iSD: AUC value = 0.631, $p= 0.023$; ICV-RT: AUC value = 0.615, $p= 0.045$) from healthy controls. Moreover, the processing speed could distinguish NCD-AD from NCD-vascular (AUC value = 0.647, $p= 0.040$). Discussion: Intra-individual variability in attention provides a stable measure of cognitive performance, and seems to help distinguish the senior adults with different cognitive status.

Keywords : intra-individual variability, attention network, neurocognitive disorders, ageing

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