318 - Does one size fit all? Evaluating individual temporal associations between affect and cognitive function in older adults using a single-subject design

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Introduction

Depression and cognitive impairments often co-occur in older adults and account for a high disease burden. Insight into how affect and cognitive function influence one another on a daily basis could be helpful in the diagnostic process and treatment decisions for individual patients. However, little is known about the daily associations between affect and cognitive function in older adults and it is unknown whether these associations differ per person. Therefore, the objective of this study was to get insight into the temporal associations between affect and cognitive function within individual older adults.

Materials & Methods

For this single-subject study eight older adults with depression and cognitive impairments filled in electronic diaries for 63 consecutive days in their home environment. The diaries included a questionnaire evaluating positive affect (PA), negative affect (NA) and a computerized cognitive test battery assessing working memory reaction time (WMRT) and visual learning accuracy (VLA). Time-series analyses using Vector Autoregressive (VAR) modelling were conducted for each individual separately. Granger causality tests were used to determine the temporal direction of the individual associations. Cumulative Orthogonalized Impulse Response Function (COIRF) analyses were performed in order to determine the cumulative effect size over a 10-day period. The contemporaneous associations were derived from the correlation between the residuals in the VAR model.

Results

For one out of eight participants higher NA was associated with better WMRT the next day (cumulative effect size=0.345; p=0.005). For another participant higher NA and lower PA were associated with worse WMRT at the same time (r=-0.369; p=0.003 and r=0.352; p=0.005, respectively). For a third participant better VLA was associated with lower NA (cumulative effect size=-0.569; p<0.001) and higher PA the next day (cumulative effect size=0.223; p=0.001). The other five participants showed no contemporaneous or lagged association between affect and cognitive function.

Conclusion

For the majority of individuals we found no contemporaneous or temporal association between affect and cognitive functioning. For the others, the associations differed in direction, sign and size. This highlights heterogeneity even in a small and relatively homogeneous sample. Future studies should evaluate how individual data can be used in personalizing diagnoses and treatments.