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23 Cognitive Reserve Moderates Cognitive Functioning in Late-Life Depression

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Objective: The concept of cognitive reserve (CR) explains why individuals with higher education, intelligence, or occupational attainment exhibit less severe cognitive changes in the presence of age-related or neurodegenerative pathology. CR may be a useful construct in understanding the cognitive performance of patients with late life depression (LLD), a cohort who are twice as likely to later receive a clinical diagnosis of dementia. It follows that depressed older adults with low CR may be at greater risk of cognitive decline compared to non-depressed older adults matched for CR. However, the literature on CR and LLD is limited to cross-sectional studies with mixed findings as to whether proxies of CR moderate cognitive outcomes in LLD. For example, both higher and lower education levels in LLD are associated with greater cognitive impairment in LLD compared to similarly educated non-depressed older adults. Longitudinal studies may help disentangle the association between CR and cognitive outcomes in LLD. The current study investigated the interaction between proxies of CR (e.g., education) and depression status on cognitive functioning over three years. We hypothesized that depressed older adults with low CR would demonstrate greater cognitive impairment and decline compared to depressed elders with high CR and non-depressed older adults with comparable CR.
Participants and Methods: Older adults with LLD and non-depressed older adults age 59+ participated. All participants were free of dementia at baseline. We divided both patients and non-depressed participants into low (<16) and high (>=16) education groups based upon the median years of education (16) of the entire sample. All participants underwent detailed neuropsychological testing. Composite measures of episodic memory (CERAD Wordlist and recall, LM I and LM II, BVRT), processing speed-executive functioning (SDMT and Trail Making Part B), working memory (forward, reverse, ascending Digit Span), and verbal fluency (Animal Naming and COWA) were calculated based on the non-depressed older adults.
Results: The baseline sample included 210 non-depressed older adults and 465 older adults with major depression (LLD). 150 non-depressed older adults and 235 LLD patients provided three-year follow-up data. Separate ANOVAs revealed a statistically significant interaction between education and depression status at baseline on the composite score of executive functioning $F(1, 668) = 8.74$, $p < .003$. Consistent with our hypothesis, LLD with low education performed significantly worse compared to non-depressed with low education (z-score difference -1.35) and this effect was significantly greater than the difference between LLD patients and non-depressed with high education (z-score difference -0.36). No other interactions were found at baseline. Longitudinal analyses also revealed significant interactions between education and depression on memory over time, although sensitivity analyses did not suggest findings consistent with our hypothesis.
Conclusions: Cognitive reserve contribute to group differences between LLD and non-depressed older adults in cognitive performance but may not alter cognitive trajectories over time. Future studies should further explore structural and functional brain changes associated with CR in LLD.

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