

Mild Behavioral Impairment as a Predictor of Cognitive Functioning in Older Adults

BACKGROUND

The older adult population is growing rapidly in the United States, and with this demographic shift comes a higher prevalence of age-related cognitive disorders like dementia. Recently, research has been increasingly focused on identifying people with dementia earlier in their disease process. One well-established earlier indicator, and risk factor, for dementia is cognitive deficits. However, there is growing evidence to suggest that the presence of neuropsychiatric symptoms (NPS) might also be an early indicator of, or risk factor for dementia. Additionally, these NPS could also potentially influence one's cognitive abilities. These findings have led to the development of diagnostic criteria for mild behavioral impairment (MBI). This is a late-life transitional state between normal aging and dementia, where individuals present with persistent behavioral changes and/or mild psychiatric symptoms that are abnormal of their past. The goal of this study was to evaluate the influence of an MBI diagnosis on the cognitive abilities of both cognitively healthy older adults and older adults with mild cognitive impairment (MCI).

STUDY METHOD

Measures. The data for this secondary data analysis was derived from the Florida Alzheimer's Disease Research Center. The study included 497 participants who were either cognitively healthy (n=285) or had MCI (n=212), and therefore not diagnosed with dementia. Further, 110 cognitively

healthy participants and 144 participants with MCI met diagnostic criteria for MBI. The variables examined in this study included the cognitive domains of executive function, attention, short-term memory, and episodic memory. Executive function was assessed through Trail Making B, category fluency, and verbal fluency; attention was assessed through Trail Making A, Digit Symbol Substitution, and three Stroop tasks; short-term memory was assessed through the forward and backward Digit Span task; and episodic memory was assessed through Logical Memory and the Hopkin's Verbal Learning Test. Within each of these domains, the participants' scores for each test were standardized into z-scores and averaged together to produce a composite score for each domain as a whole. The presence of MBI was assessed using the Neuropsychiatric Inventory Questionnaire, which assesses for the presence or absence of 12 NPS. The criteria for MBI, developed by the International Society to Advance Alzheimer's Research and Treatment- Alzheimer's Association, maps ten of these NPS onto the five domains of MBI. These domains are decreased motivation, affective dysregulation, impulse dyscontrol, social inappropriateness, and abnormal perception or thought content. If a participant showed one or more of these five domains, they were said to meet criteria for MBI.

Analytic method. A 2 (MCI: presence/absence) x 2 (MBI: presence/absence) multivariate analysis of co-variance was used to assess the interaction between cognitive status and MCI, as well as the differences in the composite scores for each domain of cognition. If there was a significant

interaction between the groups, a one-way analysis of variance was completed to further elucidate the differences within each of the group.

FINDINGS

Results indicated that participants with MBI performed worse on tasks of executive function, attention, and episodic memory, regardless of cognitive status. Furthermore, when compared to participants with only MCI, those with both MBI and MCI showed a significantly worse performance on tasks testing episodic memory. Short-term memory was the only domain to not be differentially influenced by the presence of MBI. These results suggest that MBI significantly influences performance on tasks of cognition, and what domains are affected is influenced by the person's cognitive status.

POLICY IMPLICATIONS

Overall, older adults who have MBI perform worse on tasks within multiple domains of cognition, regardless of their cognitive status. Additionally, those who have both MCI and MBI perform worse than those with only MCI on tasks of episodic memory. As the older adult population continues to grow, better ways of identifying the early stages of dementia will be essential. These results suggest that an easy and effective way to potentially do this is by assessing for the presence of MBI within

routine doctor's visits and by providing more awareness to families. By testing older adults and promoting knowledge on these symptoms, even when cognitive complaints are absent, an MBI diagnosis could potentially identify those in the prodromal dementia stages well before drastic changes present themselves. Further research is needed to understand how MBI affects cognition over time, as well as the longitudinal risk for dementia associated with MBI. Policymakers should consider incentivizing physicians to incorporate MBI assessments into their exams, and should also educate the public about the non-cognitive symptoms that are found to present early in the disease process.

Original Article

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