

A prospective association between sensory impairment and cognitive performance among older community-dwelling adults: The role of depressive symptoms

Rabia Khalaila (1,2), 1) Senior Atlantic Fellow at Global Brain Health Institute, 2) Zefat Academic College, Israel

Introduction:

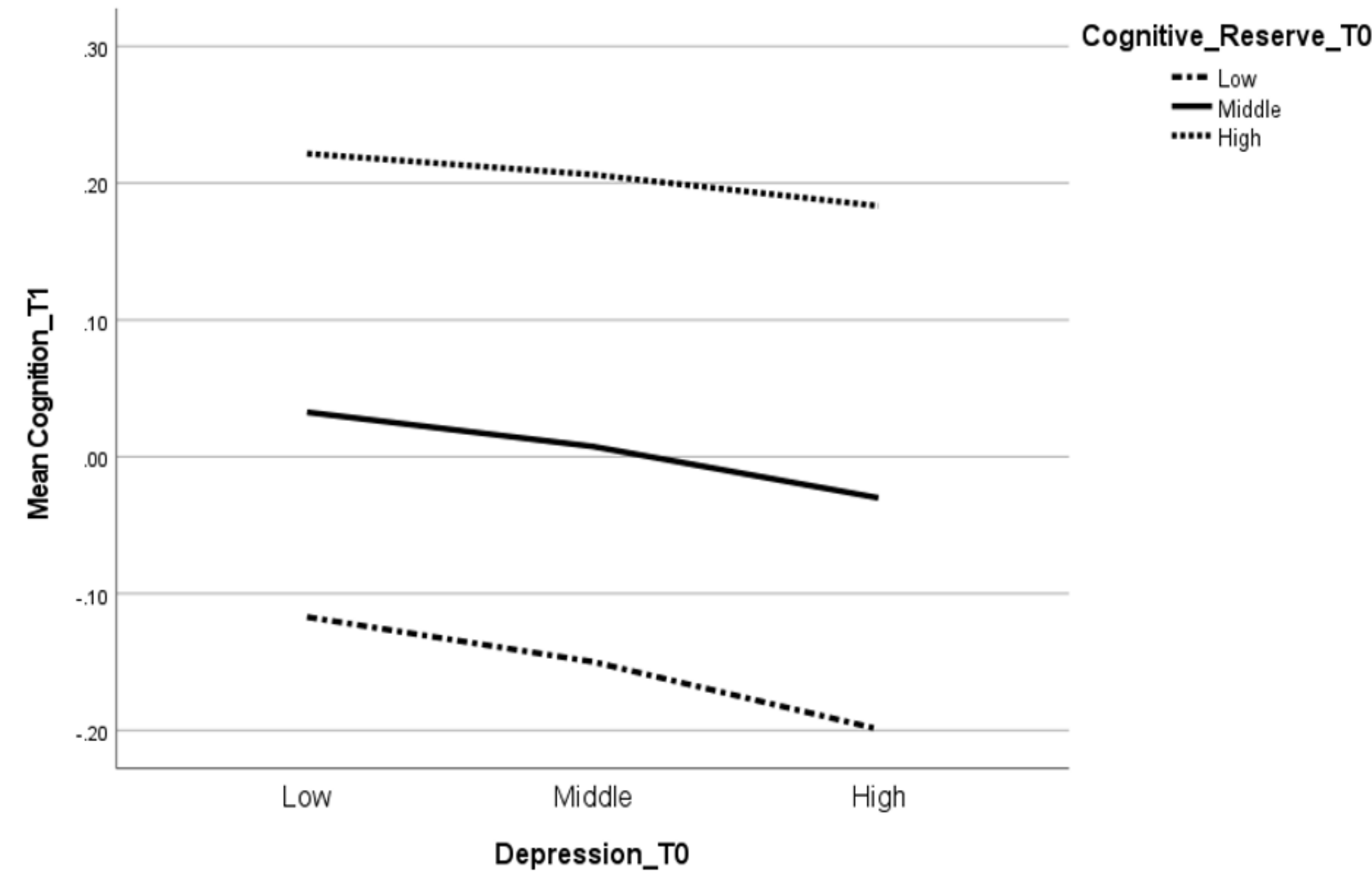
Cognitive decline and depressive symptoms are common in older adults and significantly impact the incidence of dementia and Alzheimer's disease. In aging, also sensory impairments such as visual and hearing loss, and cognitive decline are common (Fuller-Thomson et al., 2022; Hwang et al., 2022). Research has shown that sensory impairment, especially dual sensory impairment (DSI) involving both hearing and vision is associated with higher prevalence of cognitive decline and dementia. About 9% of dementia cases are attributed to hearing loss in individuals aged 45-65 years (Livingston et al., 2017). The presence of sensory impairment has also been linked to depression. Studies have shown that VI, HI, and DSI are strongly associated with developing depressive symptoms (Capella-McDonnall, 2009; Chou, 2008; Heine & Browning, 2014; Liu et al., 2022; Lupsakko et al., 2002; Rong et al., 2020).

Aims: This study examines how sensory impairment (vision and hearing) affects cognitive performance and how depression mediates that effect.

Methods: The study used data from the Survey of Health, Ageing and Retirement in Europe, which assessed 55,139 participants in 2011 (baseline, Time 1) and 2015 (follow up, Time 2). Our analyses include sociodemographic and health factors, self-reported vision and hearing impairments at baseline, depression, and cognitive performance at 4-year follow-up. In our study, participants were classified as having good vision and hearing, impaired vision, impaired hearing, or dual impairments (vision and hearing). A multiple mediator model was tested by bootstrapping with resampling strategies.

Results: The majority of participants (56.5%) had good vision and hearing, and 22.9% had impaired vision only (10.2%), 10.2% had impaired hearing only (10.2%), and 10.2% had both impairments. A significant relationship between vision impairment ($B=0.038$, $p=0.001$) and dual sensory impairment ($B=0.041$, $p=0.001$) was found, and depression symptoms mediated this relationship. There was no direct or indirect relationship between hearing impairment and cognitive performance, however.

Figure 1: Relationship between depression and cognitive performance at different values of the moderator (cognitive reserve)



Conclusion: Visual impairment or dual sensory impairments among older adults are associated with decreasing cognitive function directly and indirectly by leading to depression symptoms, which are linked to poor cognition. It is important for psychologists and clinicians to be aware of the detrimental impact sensory impairment has on mental health and cognitive function in later life.

What this paper adds

- A four-year assessment of those with only vision impairment and dual sensory impairment (but not those with sole hearing impairment) revealed poor cognitive performance.
- Depression partially mediates the association between vision impairment and dual sensory impairment and cognitive performance.
- The presence of a dual sensory impairment may increase the risk of cognitive impairment more than the presence of either sensory impairment alone (vision or hearing only).

Applications of study findings

- Sensory impairments and depression symptoms should be considered when assessing cognitive function, and appropriate interventions and support should be provided.
- To prevent cognitive decline, policymakers should promote regular sensory screenings, use assistive technologies.
- The clinical implications of sensory impairments on cognitive function and depression should be examined in future clinical studies.