# Longitudinal multilevel models for predicting cognitive change in Alzheimer's and related dementia patients

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**Abstract**

Social isolation (SI) is a modifiable factor, thought to impact cognitive resilience, with the potential to impact cognition up to ADRD diagnosis and throughout disease duration. MMSE and/or MoCA cognitive function measurements, demographic (including marital and accommodation status SI proxies) and diagnosis data were extracted, using natural language processing, from electronic health records from Oxford NHS patients aged 50+ years. Longitudinal multilevel models were used to predict cognition as a function of the interaction between diagnosis duration, SI proxies and Covid-19, controlling for age, sex and diagnosis. Using MoCA, 'lifelong single' marital status (⊠ = -1.65, SE = 0.68, t-value = -2.42, p = .016) and 'supported accommodation' accommodation status (⊠ = -1.82, SE = 0.29, t = -6.19, p < .001) significantly predicted reduced cognition intercept (at diagnosis) scores; slopes remained similar across SI proxy levels. SI proxies should be considered with regard to ADRD patient cognitive change and care.



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