## **Cognitive reserve**

Cognitive reserve is the mind's resistance to damage of the brain. The mind's resilience is evaluated behaviorally, whereas the neuropathological damage is evaluated histologically, although damage may be estimated using blood-based markers and imaging methods. There are two models that can be used when exploring the concept of "reserve": brain reserve and cognitive reserve. These terms, albeit often used interchangeably in the literature, provide a useful way of discussing the models. Using a computer analogy brain reserve can be seen as hardware and cognitive reserve as software. All these factors are currently believed to contribute to global reserve. Cognitive reserve is commonly used to refer to both brain and cognitive reserves in the literature.

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Both cognitive reserve and modifiable-risk-factor profiles play a role in dementia incidence. Jia et al. investigated whether cognitive reserve moderates the risk of dementia attributable to the modifiable-risk-factor profile.

They followed 2102 older individuals aged 65+ years recruited from the population-based longitudinal cohort CFAS Wales study, begun in 2011, and the follow-up wave completed in early 2016. Cognitive reserve was measured by combining educational level, occupation complexity, and engagement in social and cognitive activities in later life. Modifiable-risk-factor profile scores were based on depression, diabetes, smoking, physical activity, a healthy diet, and drinking. The interactions between cognitive reserve indicators and modifiable-risk-factor profiles were assessed on multiplicative and additive scales.

There is an additive interaction between the composite effect of cognitive reserve indicator and modifiable-risk-factor profile on dementia. In those with low cognitive reserve, the risk of dementia in participants with a favorable profile was significantly lower than in those with an unfavorable one (OR = 0.08, 95% CI = 0.02-0.27).

Cognitive reserve significantly moderates the association between modifiable-risk factor profiles and dementia <sup>1)</sup>.

Kaur N, Dendukuri N, Fellows LK, Brouillette MJ, Mayo N. Association between cognitive reserve and cognitive performance in people with HIV: a systematic review and meta-analysis. AIDS Care. 2020 Jan;32(1):1-11. doi: 10.1080/09540121.2019.1612017. Epub 2019 May 13. PubMed PMID: 31084206.

Jia F, Liu F, Li X, Shi X, Liu Y, Cao F. Cognitive reserve, modifiable-risk factor profile and incidence of dementia: results from a longitudinal study of CFAS Wales. Aging Ment Health. 2020 Oct 6:1-7. doi: 10.1080/13607863.2020.1828270. Epub ahead of print. PMID: 33021096.

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