What Is Cognitive Reserve?

Cognitive Reserve is the idea that someone's individual brain may be able to deal with brain changes better because of a better brain network, or cognitive reserve. We can affect our brain network because of neuroplasticity: brains are able to change and adapt as a result of the environment and circumstances they are exposed to.

The better your cognitive reserve, the better your brain network can compensate for brain changes. This means with better cognitive reserve, brain changes may affect someone less.

Analogy:

CITY A

More Networks - Changes Affect Less

CITY B

Less Networks - Changes Affect More

If there is a problem on a road **(The Red X's)** in each city, City B will be more affected because there are less "backup" routes. Even with the same road affected, City B will notice more of a change / challenge compared to City A. In the same way, those with a higher cognitive reserve (like City A) may be able to "re-route" or compensate when the brain has changes.

References

Stern, Y. (2013). Cognitive reserve in ageing and alzheimer's disease. *Lancet Neurol., 11*(11), 1006-1012.

What Can Help Cognitive Reserve?

What You've Done:

Research has shown several positive factors for a higher cognitive reserve based on life experiences:

- ✔ High Education Level
- ✔ High Job Attainment (Jobs with responsibility)
- ✔ Socioeconomic factors
- ✔ Lifelong engagement in cognitively stimulating activities
- ✔ Bilingualism
- ✔ Leisure activities that use intellect, attention, memory

What You're Doing:

At this time, the best predictor of cognitive reserve is what you have done in the past. Research is interested in what can be done to improve cognitive reserve when aging changes occur.

- ✔ Exact "recipe" to improve cognitive reserve is unknown
- ✔ Research has been unable to show computerized training programs transfer to improvement in everyday tasks
- ✔ Aerobic exercise is currently the most supported activity by research
- ✔ We do know that "more complex neural networks" in the brain help compensate.

What else would you like to know?

References

Mondini, S., et al. (2016). Cognitive reserve in dementia: implications for cognitive training. *Front. Ageing Neuroscience, 8 (84).*

Pietzuch M, King AE, Ward DD, & Vickers, JC (2019). The influence of genetic factors and cognitive reserve on structural and functional resting-state brain networks in aging and alzheimer's disease. *Front. Aging Neuroscience,* 11 (30).

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