Cognitive Reserve: From Theory to Intervention

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Abstract

The concept of reserve emerged from observations of a disjunction between the degree of brain damage or pathology and the clinical manifestation of that damage. For example, two individuals with the same amount of Alzheimer's disease pathology can have widely divergent severity of clinical dementia. In addition, many studies indicate that a set of life experiences such as educational and occupational exposure and leisure activities are associated with reduced risk of developing dementia and with a slower rate of memory decline in normal aging. Two types of reserve are possible. Brain reserve applies to anatomic differences in the brain, such as more synapses, that may allow some individuals to cope better with AD pathology. Cognitive reserve postulates that individual differences in the cognitive processes or neural networks underlying task performance allow some people to cope better than others with brain damage. This talk will provide a theoretical account of reserve. It will review epidemiologic research that has lent support to the concept of cognitive reserve. The logic behind the design of imaging studies intended to elucidate the neural underpinnings of cognitive reserve will be presented, and the implications of cognitive reserve for clinical practice will be explored. Finally, because epidemiologic evidence suggests that cognitive reserve can be enhanced through life experiences at any age, this concept supports the idea that nonpharmaceutical interventions might slow or prevent the cognitive effects of aging and dementia. Progress towards developing such interventions will be assessed.