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COMMENTARY – PAPER OF THE MONTH

Expanding the mind – growing the brain . . .

What does learning to juggle, to golf, to drive, and to be a doctor all have in common? Valkanova and colleagues, in our editors' choice for "paper of the month," note the impact they have on gray matter growth.

In their comprehensive review of the literature they highlight the impact that certain activities can have on both gray and white matter changes inferring that the brain retains much greater plasticity in both young and older (though <75 years old) adults than is conventionally thought.

Whilst correctly identifying the limitations of the contributory research to their review, they do note sufficiently consistent evidence that the brain is capable of growth after and during both complex task training, e.g. juggling as well as cognitive training – though there is a sense the more "multimodal" the training the greater the likelihood of an impact on brain volumes. Whilst recognizing the need to correlate training on a task with cortical changes and thereafter broader functional improvements, they do offer encouragement from their review that there is a "notion that plasticity is an inherent property of the human brain."

All the studies they review though are (it appears) similar in one way irrespective of the experimental task (its complexity, duration, and frequency of training), the imaging modality (functional or structural) or the age of the experimental population and that is that they were in cognitively healthy individuals. It is tantalizing to imagine what such interventions would achieve in patients with or people at risk of dementia as indexed by abnormal cerebral atrophy; moreover, what is the impact of such training in building up resilience or functional reserve against the ravages of neurodegenerative diseases in at risk but healthy individuals? That is for later . . .

Perhaps, though their review highlights the need for there to be a multi-faceted approach to primary and possibly secondary prevention of dementia. The disease modifying agents in development may be given one day to minimize the neurotoxic and synaptotoxic effects of, e.g. Aβ oligomers with appropriate "brain training" being given to optimize recovery.

Now here is an interesting vision, after much more research, maybe the clinics of the future, as well as creating infusion suites for monoclonal antibody delivery, will need to also build golf driving ranges and have on tap a steady supply of juggling balls . . .

Conflict of interest

None.

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