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Bilingualism: A Journey of Brain Transformation/ (Bilingualism as a brain-changing experience)

The remarkable adaptability of the human brain in response to challenging experiences holds profound implications for effective learning and navigating the aging process within our diverse societies. Bilingualism, a phenomenon known to shape our brain's very structure, presents a captivating yet enigmatic subject of study. Despite decades of research, the precise mechanisms governing these neuroplastic adaptations remain elusive, often yielding inconsistent findings. This presentation will illuminate the intricate landscape of bilingualism-induced brain changes, casting them in the light of the broader principles of experience-dependent neuroplasticity.

Grounded in these fundamental principles, which recognize that demanding experiences exert nonlinear effects on brain architecture, our research explores the intricate interplay between the quantity and quality of experiences that precipitate such changes.

Furthermore, we venture into uncharted territory by investigating the potential nonlinear impact of quantified bilingual experiences on the grey matter volumes of brain regions susceptible to bilingual influences. Specifically, our studies delve into the cerebral transformations brought about by (1) general bilingual experiences, (2) interpreting and translation practices, and (3) habitual code-switching practices. The findings from our investigations reveal that various forms of bilingual experiences can dynamically and systematically shape the brain's structure.

In conclusion, I will make the case that a comprehensive understanding of bilingualism-induced brain changes necessitates the integration of neurobiological principles pertaining to experience-dependent neuroplasticity. Furthermore, it compels us to take a nuanced approach to the multifaceted world of bilingual experiences. In doing so, we can unveil the complex yet appropriate brain adaptations resulting from bilingualism, enriching our appreciation of the profound transformations occurring within the bilingual brain. Additionally, I will discuss my latest work on the delay of dementia symptoms in bilinguals, offering valuable insights into the impact of bilingualism on cognitive resilience and dementia risk.