A couple defies the years at the Luckenbach, Texas, dance hall.
Should we consider aging a natural part of life or an illness? When it comes to the brain, research has tended to focus on the negative side of aging—Alzheimer’s disease, for example. Yet all of us know individuals who continue to be mentally sharp their whole lives. And history repeatedly offers proof—Titian, Socrates, da Vinci, and so on—that great creativity and insight can come with maturity.

This special issue of Science therefore looks at the mechanisms and contexts of successful brain aging. The developmental trajectory of the brain through the entire life span is affected by genetic, physical, and psychological factors. One thing we know already is that our mental lives benefit when we lead lives that are not only physically healthy but also intellectually challenging and socially engaged (Lindenberger, p. 572).

As we age, our brains constantly reorganize in response to new experiences. Even after adverse physical or psychosocial events, such as a stroke or a loved one’s sudden death, there is an astonishing level of flexibility in the brain that enables an individual to compensate and adjust (Gutchess, p. 579). Indeed, the language systems of the brain, responsible for some of the richest human interactions, have an inbuilt resilience that ensures that they remain largely robust across the life span (Shafto and Tyler, p. 583).

Although many researchers are closely watching how individuals age cognitively (Underwood, p. 568), aging populations have global implications for economies and societies (Harper, p. 587). These demographic transformations have to be much more widely discussed if societies are to become well prepared, both mentally and on an institutional level, for the challenges they present.