

Brain scans, surveys help scientists paint neural portrait of loneliness

Iran Daily · 17 Dec 2020 · 7 · Campaigntoendloneliness.org

Using brain scans, genetic analysis and psychological self-assessments, scientists have managed to render a kind of neural portrait of loneliness.

Researchers hope their efforts, detailed in the journal *Nature Communications*, will help illuminate the impacts of isolation on human health, UPI reported.

For the study, scientists relied on an openaccess database called UK Biobank.

The researchers sourced magnetic resonance imaging and genetics data, as well as psychological self-assessments, from some 40,000 middle-aged and older adults.

By comparing the brain scans of people who reported feelings of loneliness with those who hadn't, researchers were able to identify the ways isolation shapes the brain.

Researchers found those who reported feelings of loneliness were more likely to feature a more connected and robust "default network," a collection of brain regions responsible for reminiscing, future planning, imagining and thinking about others.

Lonelier people also featured more wellstructured fornices. The fornix links the hippocampus to the default network.

It makes sense that lonelier people would strengthen the brain muscles that power the default network, which powers the human ability to contemplate the past and daydream about the future — perhaps, a future with more social interaction.

"In the absence of desired social experiences, lonely individuals may be biased towards internally-directed thoughts such as reminiscing or imagining social experiences. We know these cognitive abilities are mediated by the default network brain regions," lead study author Nathan Spreng said in a news release.

"So this heightened focus on self-reflection, and possibly imagined social experiences, would naturally engage the memorybased functions of the default network," said Spreng, an associate professor at the Montreal Neurological Institute at McGill University in Montreal, Canada.

Humans all over the world have found themselves increasingly isolated during the COVID-19 pandemic, with restrictions on public gatherings and movement — measures intended to slow the spread of the coronavirus — stranding millions at home.

Studies suggest the pandemic has caused increased rates of loneliness, depression and anxiety among both younger and older adults.

In recent years, several studies have highlighted the links between loneliness and human health problems.

Among older adults, research suggests loneliness is a risk factor cognitive decline and dementia.

Understanding the ways loneliness influences brain structure and neural patterns could help researchers develop remedies for these problems.

"We are just beginning to understand the impact of loneliness on the brain," said senior study author Danilo Bzdok.

“Expanding our knowledge in this area will help us to better appreciate the urgency of reducing loneliness in today’s society,” said Bzdok, a researcher at the Montreal Neurological Institute and the Quebec Artificial Intelligence Institute.