Project: DELTA-LANG: The Delta of Language

Can we use the neuroscience of language to predict relapse in psychosis?

While mental states are constantly fluctuating, these fluctuations are usually mild. For approximately 22 million people in Europe, however, they can tip into unpredictable turbulence, resulting in psychotic episodes that often recur. A team of international researchers, based in the Netherlands, Norway, Spain and Switzerland, hypothesizes that this mental turbulence is reflected by what they call "the delta of language" – measurable changes in language and the brain. With the help of large language models, which give computers the ability to comprehend and interpret human language, and with high-frequency brain imaging, they want to repeatedly measure the linguistic and neurobiological changes during different states of psychosis – from the acute phase to remission.

The aim of their project DELTA-LANG is to build a personal and neurobiologically plausible index of phase-change: when people with psychotic episodes go from a remission to a psychotic relapse. The capacity to understand and detect such phase-changes early enough, similar to our capacity to forecast a thunderstorm, would be a

major advance in public health – since unlike thunderstorms, psychosis can be prevented. Moreover, a breakthrough in this field could potentially have wide-ranging implications not only for managing recurring psychotic episodes but also for other mental diseases.

This idea comes from an interdisciplinary team: Prof. Iris Sommer is an experienced clinician and expert in neuropsychiatry. She works at the University Medical Center in Groningen. Prof. Wolfram Hinzen has a strong background in linguistic theory as well as experimental linguistics. He conducts his research at the Institute of Advanced Studies of Catalonia (ICREA) and the University Pompeu Fabra in Barcelona. Prof. Philipp Homan is a clinician scientist with a focus on computational psychiatry and works at the University Hospital of Psychiatry and the Neuroscience Center Zurich. Prof. Brita Elvevåg has expertise in cognitive neuroscience and works at the UiT (The Arctic University of Norway in Tromsø) in Norway.

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