Reduction of grammatical complexity in schizophrenia in Chinese: relations to theory of mind

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Abstract

Disorganized and impoverished language is a key feature of schizophrenia (Sz) but the generalizability of linguistic changes modelled on Indo-European languages so far is unknown. A specific dimension of reduced complexity of interest concerns embedded clauses (such as *she is upset* in *He thinks she is upset*), which may relate to well-known theory of mind (ToM) impairments in this population, creating a link between verbal and nonverbal cognitive abilities.

We aimed to profile grammatical complexity in Mandarin Chinese Sz, using speech generated as part of a standardized ToM task.

Spontaneous speech was collected from a group of 51individuals with Sz and 39 healthy controls through the animated triangles task, where triangles move either randomly or else in an apparently intentional way. Our annotation scheme targeted linguistic variables targeted embedded clauses (both argument and adjunct clauses), aspect (progressiveness and completeness), and non-clausal adjuncts (action modifiers, Vp-attached adjuncts, e.g. spatiotemporal ones, and epistemic adverbials).

Participants produced significantly more embedded argument clauses in the ToM condition than in the random condition, in both groups, with the control group performing significantly better in the ToM condition than the Sz group did. Production of both aspect markers was also significantly higher in the ToM condition than in the random condition for both groups. There was an overall reduction in adjuncts at both clausal and non-clausal levels in Sz. Correlational analyses suggested that production of embedded clauses was significantly correlated with ratings of intentionality on the same task.

These results document, for the first time, grammatical impoverishment in Sz in Chinese, consistent with data in Indo-European languages, while also suggesting that this impoverishment is not premised on ToM capacities.

Keywords: schizophrenia; Theory of Mind; spontaneous speech; language complexity; Mandarin Chinese