Three reasons why AI doesn't model human language

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Artificial intelligence (AI) is being used to develop large language models (LLMs) with considerable success. But they should not be seen as being models of how human language works and is acquired.

First, LLMs are probabilistic models of externalized language data, whereas human language is truly generative: it yields an unbounded number of hierarchically structured expressions (M. B. A. Everaert *et al. Trends Cogn. Sci.* **19**, 729–743; 2015). Second, language acquisition in infants does not depend on massive amounts of input data, but includes knowledge of language's generative nature. Therefore, children can acquire any language rapidly with minimal linguistic input (C. Yang *et al. Neurosci. Biobehav. Rev.* **81**, 103–119; 2017). Third, LLMs can produce 'impossible' languages, not generated by the principles governing all known human languages, just as well as (if not better than) natural language output, and cannot distinguish between them (A. Moro *et al. Cortex* **167**, 82–85; 2023).

LLMs are a useful technology, good at reproducing strands of information derived from training data, but they do not model the structure of human language, let alone encompass its creative nature.