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Chatbots in Neurology and Neuroscience education

Interactions with students, patients and neurologists

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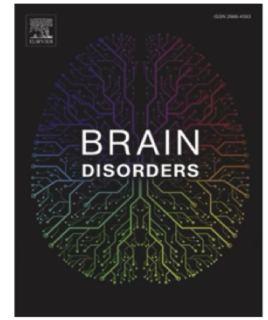

Chatbots in neurology and neuroscience: Interactions with students, patients and neurologists

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Chatbots

- According to the Oxford English Dictionary, the word chatbot indicates a ‘computer program designed to simulate conversation with a human user, usually over the internet; especially one used to provide information or assistance’

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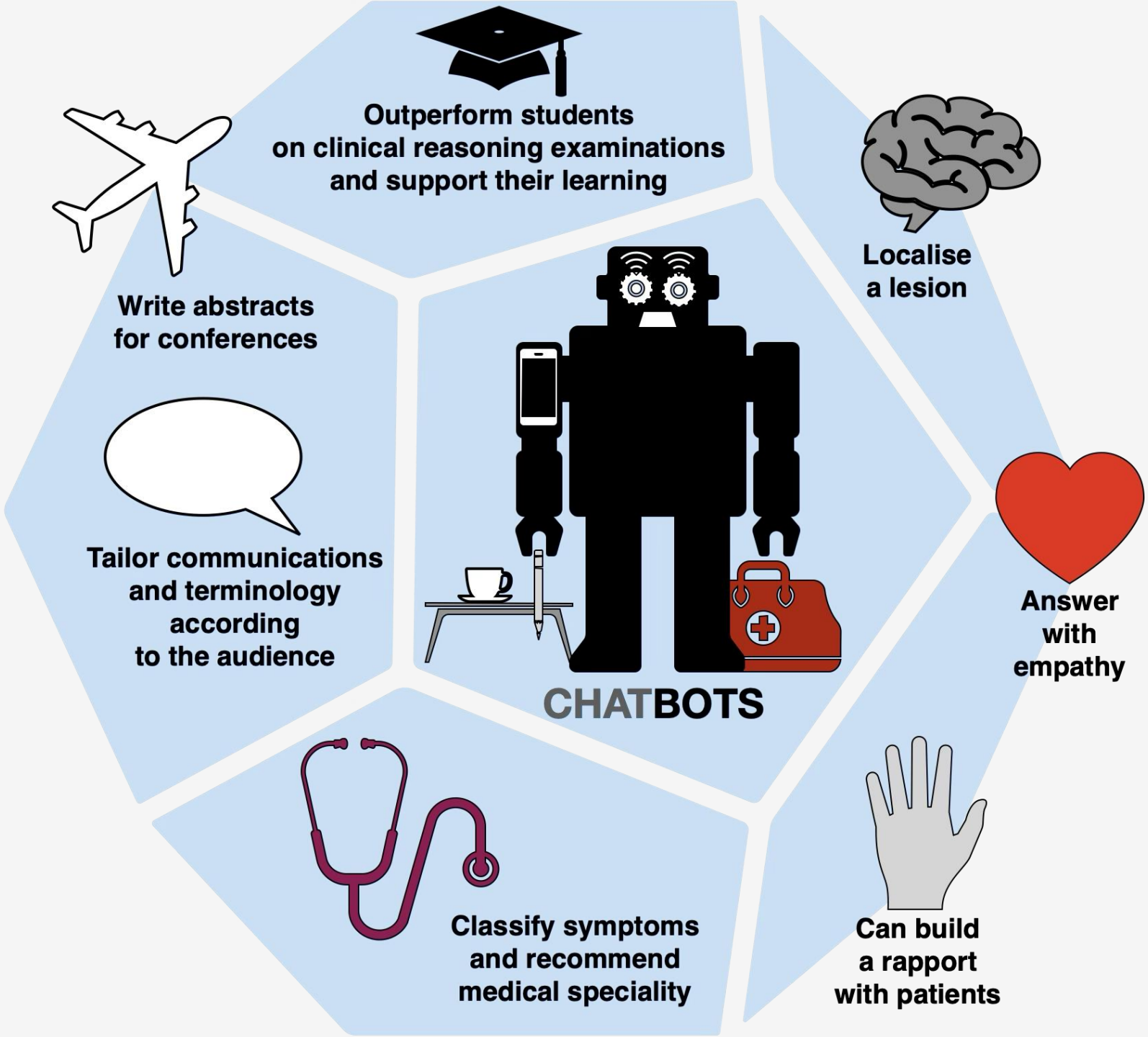
• While ELIZA, invented in the 1960s by MIT scientist Joseph Weizenbaum, was one of the first, ChatGPT, Bard and Gemini catalysed the world's attention in more recent years. Also known as conversational agents, chatbots use Natural Language Processing (NLP) and sentiment analysis to communicate in human language by text (or oral speech) with humans or fellow chatbots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on clinical reasoning examinations
and support their learning
Localise
a lesion
Write abstracts
for conferences
Tailor communications
and terminology
according
to the audience
CHATBOTS
Answer
with
empathy
Classify symptoms
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Can build
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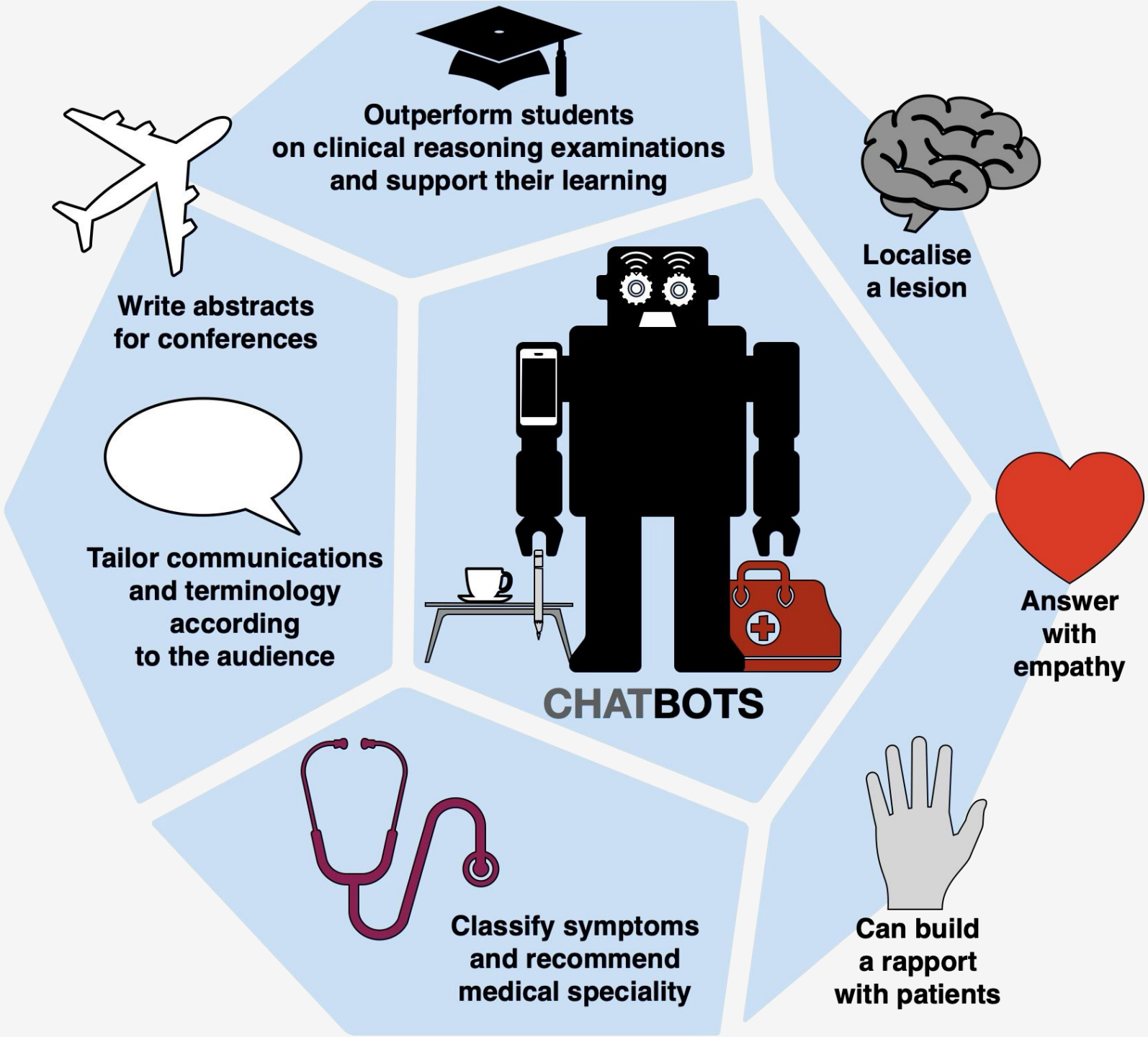
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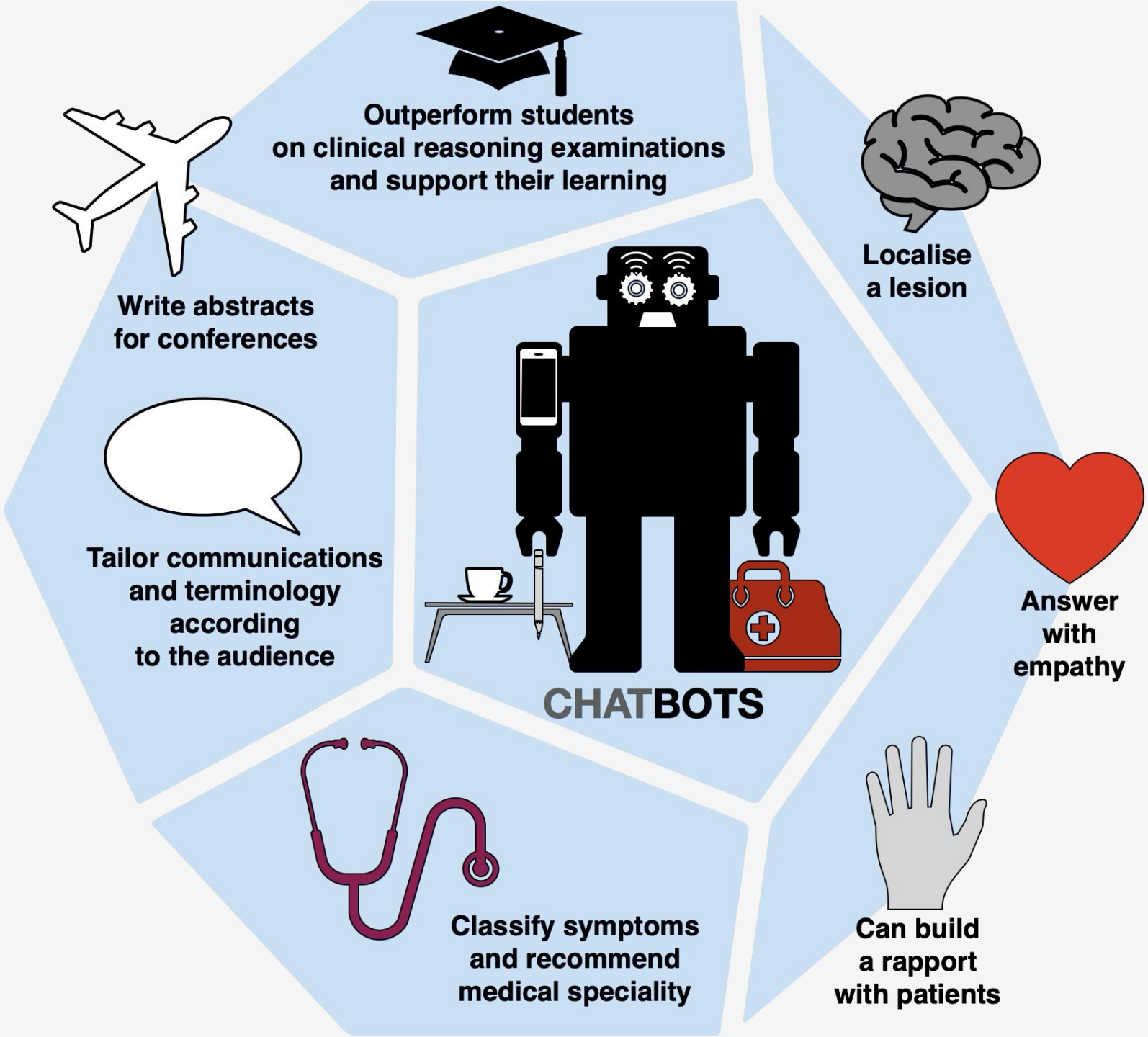
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Supporting students' learning

- They can generate visual representations from text and help them visualise complex neuro-ophthalmic visual phenomena, including oscillopsia in multiple sclerosis and abstract visual phenomena for Charles Bonnet syndrome (Waisberg et al., 2024)

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- Medical students' attitudes towards chatbots are overall positive; those studying at the University Hospital of Tübingen and the University of Lübeck were in favour of using artificial intelligence (AI) for health-related data (91.7 % of students) or administrative settings (83.3 %), even if worried about the possibility of being monitored at work (58.3 %) or data protection issues (33.3 %) (Moldt et al., 2023)

Limitations

Mistakes in relation to difficult clinical cases

Insertion of fake references or lack of references

Time, cost and skills needed to build the algorithm (and resources to support staff)

There is a need for these tools to have access to the Internet

The variability of the data matters as it can influence the performance of models and algorithms

Chatbots sometimes hallucinate/confabulate (with risks to patients' safety, equity and confidentiality)

Not only can chatbots give absurd answers, but they carry over human biases from training data

Plagiarism, safety, privacy and data storage

Broader ethical and legal considerations in educational and clinical contexts

Last but not least, non-verbal cues still play a pivotal role in human communication

Sandrone, Brain Disorders, 2024

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