

# The Future of Cognitive Strategy- enhanced Persuasive Dialogue Agents: New Perspectives and Trends

**Mengqi CHEN, Bin GUO, Hao WANG, Haoyu LI, Qian  
ZHAO, Jingqi LIU, Yasan DING, Yan PAN, Zhiwen YU**

Frontiers of Computer Science, DOI: [10.1007/s11704-024-40057-x](https://doi.org/10.1007/s11704-024-40057-x)

# Problems & Ideas

- Problems of Survey of Persuasive Dialogue:
  - Lack of summary of concepts, challenges, methodologies, and applications in the field of cognitive strategy-enhanced persuasive dialogue (i.e., CogAgent);
  - Lack of formal definition and elaboration of cognitive strategies for achieving efficient persuasion process.
- Ideas: Formalized definitions of three kinds of cognitive strategies, a conceptual model and a generic system architecture for CogAgent, and research challenges, representative works, datasets, and promising research trends.

Table 1 Part of definitions and examples of persuasion strategies.

Strategy	Definition	Example
Present of Facts [8]	Using factual evidence (e.g., official news reports, statistics) and a credible reasoning process to persuade others	In recent months, the demand for residential properties has become extremely high. The price of residential property has risen almost twenty percent.
Challenges and Inquiries [8]	Expressing disbelief or opposition to the other side's viewpoints and providing strong rebuttal evidence to enhance persuasiveness	Really? I don't agree. This Star Wars episode was incredible!
Emotional Resonance [8]	Eliciting specific emotions to influence others' attitudes	Advanced special effects are the main reason for the success of previous episodes, so audiences have high expectations for this one, and I don't think they will be disappointed.
Eliciting Anger [8]		If that's the case, there's not much point in further discussion. We might as well call the whole deal off.
Eliciting Guilt [8]		Come on, you can at least try a little, besides your cigarette.
Self-modeling [8]	Expressing one's intention to act and opting to serve as a role model for the persuadee to emulate	That still leaves a gap of 20 dollars to be covered. Let's meet each other halfway once more, then the gap will be closed and our business completed.
Building Trust [15]	Building rapport and psychological trust through a harmonious conversation	I'm glad we've agreed on price. We'll go on to the other terms and conditions at our next meeting.
Courtesy Tips [49]	Expressing gratitude, approval, praise, etc. to lower the other party's psychological defenses	I know exactly what you mean. Hearing that song gives me a nostalgic feeling.
Compromise [50]	Expressing concessions on time to avoid being too intense in the guidance process and causing the other party to end the conversation	I think it unwise for either of us to insist on his price. How about meeting each other halfway so that business can be concluded?
Attachment of Views [49]	Expressing kindness and concern through active listening and to some extent seconding the other person's point of view	Better late than never.

Table 2 Part of definitions and examples of persuasion strategies.

Strategy	Definition	Example
Problem Decomposition [52]	Decomposing the ultimate persuasion goal into sub-issues and stepping through the persuasion process	Let me get down some information about your apartment first. What is your property's address?
Social Identity [53]	Gaining psychological support from the other person by emphasizing group and identity belonging	I know. I have been a subscriber for the past two years.
Herd Mentality [54]	Presenting a viewpoint that is recognized or accepted by the majority of people and persuading the other side to accept it	There was always a good round of applause every time she sang.
Expression of Disgust [55]	Expressing a particular point of view or emotion to emphasize the persuasive content	Oh, my god! I look so old. I look as if I were 40. I think it's time for some plastic surgeries.
Expression of Empathy [38]		I know, dear. I am too. But we've just been too busy to look for a house.
Expression of Views [15]		That means the apartment has furniture in it.
Logical Appeal [8]	Enhancing the credibility of persuasive content through the logical and reasoning process	It certainly is. But to tell you the truth, the room is so large that I can share it with someone else, and that will decrease the total amount of the rent.
Task Inquiry [8]	Asking questions related to persuasive goals	That might be going overboard a bit. How about just that scarf with a bracelet?
Personal Story [8]	Using narrative examples to illustrate the positive outcomes of your actions to inspire others to follow suit	Yes, I'm sure I've done a lot of house painting in my life. If I got even a tiny drop of paint on her furniture, she would get furious. So I learned to be very picky.
Refutation of Objections [56]	Directly refuting the other side's point of view	Not necessary. If we use a realtor to find a house, it will be more expensive.
Greeting [8]	Greeting at the beginning of a dialogue	Hi there! How are you doing today?

# Main Contributions

- Contributions:
  - We formalize the definition of cognitive strategies, and present the concept model and generic system architecture of CogAgent, to provide an overall picture for the summary of research works;
  - We make a profound investigation of the development in CogAgent by presenting the core contributions of each work. Besides, we also comprehensively summarize available datasets and evaluation metrics;
  - We further discuss some open issues and promising research trends in CogAgent to promote the development of the research community.

