https://doi.org/10.36315/2026inpact041
Psychological Applications and Trends 2026

CONVERSATIONAL AGENTS AS TOOLS AND BEINGS: HOW PEOPLE ANTHROPOMORPHIZE CHATBOTS

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Abstract

A key challenge in research on text-based chatbots concerns the tendency to anthropomorphize them: chatbots can mimic certain human qualities, and users in turn often ascribe human traits to them. The perception of humanness plays a crucial role in human-chatbot interactions because it strongly shapes how users experience the conversation. At the same time, users may make potentially harmful decisions and experience negative psychological impacts when they "collaborate" with a chatbot they believe possesses human-like abilities: projecting human qualities onto an artificial agent can foster the misleading perception that the agent truly "understands" them and "feels for" them, which may lead to overreliance and overtrust. In this article, I examine how people ascribe humanness to both Large Language Model (LLM)-based chatbots and pre-LLM chatbots. Building on a literature review on human-chatbot interaction and empirical findings, I explain how people tend to anthropomorphize conversational agents, conceptualizing conversations with them as interactions with entities whose humanness is continuously ascribed and denied by human users, who may attribute or withdraw specific human-like traits, like emotions, intelligence, and agency.

Keywords: *Anthropomorphization, HCI, humanness, human-computer interaction, conversational agents.*

1. Introduction

A central challenge in research on text-based chatbots lies in users' tendency to anthropomorphize them. Although chatbots merely simulate selected human-like characteristics, users frequently attribute human qualities to them (Rapp et al., 2024). Perceived humanness is a pivotal factor in human–chatbot interaction, as it profoundly shapes users' conversational experiences (Rapp et al., 2021). At the same time, believing that a chatbot possesses human-like capacities can expose users to potential risks: when people "collaborate" with an artificial agent they perceive as human-like, they may make harmful decisions or experience negative psychological consequences (Rapp et al., 2023, 2025a). Attributing human traits to a chatbot can create the illusion that the system genuinely understands or empathizes with the user, which in turn may foster excessive trust and reliance.

This article builds on years of empirical research on interactions with conversational agents, adopting a Human-Computer Interaction (HCI) lens (Rapp, 2024). During these years, I investigated how users attribute humanness to both pre-LLM chatbots (Rapp et al., 2023, 2024) and LLM-based chatbots (Di Lodovico et al., 2025; Rapp et al., 2025a). Drawing on a review of the literature on human–chatbot interaction and this empirical research, I frame interactions with artificial agents as engagements with entities whose perceived nature dynamically shifts between that of a "tool" and that of a "being."

2. Background

2.1. Conversational agents and human-like features

Empirical studies on humanness have advanced our understanding of the design elements that can influence or enhance users' perceptions of conversational agents as human-like, as well as how individuals respond to and engage with systems deliberately equipped with human-like characteristics. Conversational agents are, in fact, created to involve users in interactions resembling those with humans (Nißen et al., 2022), frequently displaying social cues (Feine et al., 2019) and reproducing human modes of communication (Mazzei et al., 2022). From this perspective, humanness plays a central role in making sense of interactions with conversational agents.

Prior research emphasizes how design choices can evoke perceptions of humanness and produce both beneficial and detrimental outcomes for the conversational experience. Perceived humanness, for example, may facilitate the emergence of intersubjectivity, intimacy, and perceived closeness (Følstad et al., 2018; Skjuve et al., 2022), foster trust in the chatbot (Shin, 2022), and encourage altruistic actions (Shi et al., 2020). However, it can also elicit unsettling or eerie reactions (Ciechanowski et al., 2017; Liu & Sundar, 2018; Skjuve et al., 2019; Ta et al., 2020). Relatively simple features, such as assigning a name to the agent (Araujo, 2018), enhancing its conversational competence (Schuetzler et al., 2020) and response coherence (Go & Sundar, 2019), or enabling it to take initiative (Morrissey & Kirakowski, 2013), are often sufficient to heighten perceptions of humanness.

The diffusion of Large Language Models (LLMs), which are deep learning systems designed to comprehend and produce natural language, has further expanded the conversational agents' capacity to display human-like traits, given their ability to mimic human dialogues. LLMs have demonstrated remarkable abilities in generating fluent, high-quality text that closely resembles human-written content (Fang et al., 2023). Chatbots built on LLMs, such as ChatGPT and Copilot, offer intuitive interfaces that enable users to interact easily with these models and are increasingly being adopted by millions of people (Reuters, 2024). In this context, it has been observed that people may anthropomorphize an agent to varying degrees of humanness (Rapp et al., 2025a, 2025b).

2.2. Anthropomorphization and conversational agents

At its essence, humanness concerns the question "What does it mean to be human?", that is, the set of attributes that characterize human beings (Haslam & Loughnan, 2014), and it represents a key topic in human-agent interaction research. Notably, humanness can also be ascribed to non-human entities through a process commonly referred to as anthropomorphism (Festerling & Siraj, 2022). Research in HCI has largely relied either on broad theories of humanness originating in disciplines such as psychology, or on technology-oriented theoretical frameworks, to investigate humanness in conversational agents.

With respect to general theories, Haslam (2006, 2015) introduced a model of dehumanization distinguishing two senses of humanness. One is "human uniqueness," which encompasses traits considered uniquely human, such as moral sensibility and rationality. The other is "human nature," which refers to characteristics such as emotional responsiveness, agency, and interpersonal warmth that are viewed as central or typical of humans in a non-comparative sense and highlight continuity with other living beings. From this standpoint, entities may even be considered infrahuman or superhuman, lacking some human attributes (e.g., competence or warmth) while possessing others (e.g., friendliness or rationality) (Li et al., 2014). This framework has informed research in human–agent interaction (Ghafurian et al., 2019; Lee et al., 2019), showing that agents can be anthropomorphized either along the human uniqueness dimension, by being perceived as intelligent or intentional, or along the human nature dimension, by being seen as warm and emotional (Zlotowski et al., 2014).

Turning to technology-centered approaches, the uncanny valley theory posits that cues in non-human agents that promote the attribution of human-like mental capacities can elicit feelings of eeriness, due to conflicts in mental categorization and perceived threats to human distinctiveness (Stein & Ohler, 2017). When humanness becomes overly pronounced, it may generate aversion rather than attraction (Mori et al., 2012). This theory has been extensively applied in chatbot research (Ciechanowski et al., 2017; Liu & Sundar, 2018; Skjuve et al., 2019; Ta et al., 2020).

However, the most common theories employed to investigate the users' ascriptions of humanness to conversational agents might not fully capture the peculiarities that this kind of interaction entails. The uncanny valley framework, for example, accounts only for specific aspects of humanness, particularly the negative reactions that may arise when people interact with highly human-like conversational agents. Likewise, research has pointed out that the theory of dehumanization may not be fully adequate to explain humanness in conversational agents (Zlotowski et al., 2014).

3. How humanness is ascribed to conversational agents

My empirical research on user interaction with both pre-LLM and LLM-based conversational agents highlights that people tend to ascribe or withdraw specific human-like aspects to or from conversational agents, depending on users' specific goals and needs, the context in which they expect to interact, and the cues that the agent exhibits (Rapp et al., 2024).

Users do not perceive chatbot humanness as a binary, all-or-nothing property. Instead, perceived humanness varies along a continuum, ranging from low to high degrees. Moreover, different forms of humanness may be attributed depending on the context, or "script", within which users believe the interaction is taking place (e.g., submitting a complaint to a company). In addition, users' expectations

regarding the chatbot's humanness do not encompass the full spectrum of human characteristics, but rather focus on specific, modular human abilities (Rapp et al., 2024).

Perceived humanness is also dynamic, as it may shift over the course of an interaction as the conversation unfolds. For example, if the chatbot starts manifesting human-like qualities in the ongoing conversation and the user shifts their goal from executing a merely instrumental task to seeking emotional support, and the agent is able to fulfil this need, the degree of humanness ascribed to the agent may increase (Rapp et al., 2024).

In the research I conducted on LLMs, I found that these ascriptions and subtractions of humanness may also occur in response to an emotional need. For example, in a study conducted with qualitative researchers within the MidLLMan project, such as anthropologists, psychologists and sociologists, I have found that these researchers tend to withdraw human-like features from an LLM, when it is perceived as a threat to their identity as scientists. LLMs could potentially perform the qualitative analysis of data as or better than they do, and this possibility endangers their work as researchers. To cope with this anxiety, the researchers may devalue the models, considering them less-than-human entities, denying several fundamental human qualities, like creativity and emotions.

Likewise, when users do not understand the output that a model provides (e.g., an LLM's hallucination), they may tend to increase or decrease its perceived level of humanness to manage unfamiliarity and uncertainty (Rapp, 2025a, 2025b): (super and infra)humanization may thus become a strategy for dealing with the sense of uncanniness evoked by technologies that are perceived as completely diverse from humans, enabling individuals to trace the unknown back to the known (Di Lodovico et al., 2025). However, relying on anthropomorphism to make sense of what is difficult to explain can also bring latent fears about Artificial Intelligence (AI) to the surface, particularly concerns related to a potential loss of control over the technology (Rapp, 2025a). This aligns with prior research on people's apprehensions toward AI, which has highlighted that people may experience anxiety about AI's agency (Rapp, 2019, 2020), fearing that AI systems could assume excessive or even absolute control over the functions they are designed to carry out.

In sum, humanness in human-agent interaction is not an on/off state. Rather, it is modulated by people who interact with them depending on multiple factors, like their needs and objectives, the context of the interaction, and the conversational cues that the agent displays. In this sense, conversational agents may be interpreted as either "tools" or "beings". These interpretations are not fixed, but fluid and situational: the same system may be treated as a mere instrumental artifact in one moment and as a quasi-social entity in another. This oscillation underscores the need to conceptualize conversational agents not as inherently humanlike or non-human, but as entities whose perceived status emerges through interaction.

Acknowledgments

This study has been partially funded under the project "Integrating Large Language Models in Qualitative Research Analysis: Supporting Researchers in Effectively Collaborating with Generative AI – MidLLMan" – Funded by the European Union - Next Generation EU, Mission 4, Component 2, Investment 1.3 - Avviso "Partenariati estesi alle università, ai centri di ricerca, alle aziende per il finanziamento di progetti di ricerca di base - Bando a Cascata FAIR" - CUP: J33C22002830006.

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