Trust and Distrust in Conversational AI Agents: The Effects of Agent Interaction Style and User Information Need

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*Background and Purpose*. Conversational agents (CAs) with artificial intelligence (AI) are computer programs with the ability to interpret and respond to users' natural language and communicate with the users as humans would do with another human (Vishnoi, 2020). CAs have been increasingly adopted to serve different roles, such as customer service agents, sales and marketing agents, enterprise assistants, and a data collection engine (Bukovinsky, 2020). The global CA market was worth $3.89 billion in 2019 and is projected to be $18 billion by 2027 (Verified Market Research, 2021). With the growth of the CA market and the expanded roles that CAs play in consumption decisions comes the need to understand what impacts consumer trust or distrust in a CA. Addressing this need, the aim of this paper is to propose two factors, *CA interaction style* and *user information need*, that potentially impact consumer trust and distrust in a CA and the mechanism by which this impact occurs, based on existing theories and literature.

*Theoretical Framework and Propositions*. Trust in a CA has been a construct often studied in the CA literature; however, little research exists on distrust in a CA due to the assumption that trust and distrust are on the opposite sides of a continuum (i.e., the same construct). However, according to Lewicki et al.'s (1998) trust/distrust theory, a social relationship can develop through shifts across all four combinations of trust and distrust from (a) low trust – low distrust to (b) high trust – low distrust, and then (c) low trust – high distrust, and finally (d) high trust – high distrust. It is imperative, hence, to understand how users build trust and distrust in a CA and what conditions give rise to the relative appearance of trust and distrust.

Extant literature has found compelling evidence of the effect of CAs' interaction style on consumers' trust (e.g., Chattaraman et al., 2019). CA interaction style is defined as the way in which CAs communicate with a user, manifested as *social-oriented* or *task-oriented* (Chattaraman et al., 2019). The social response theory (Moon, 2000) asserts that people treat their interactions with computers as if they were interacting with other humans. This theory gave birth to the computers-are-social-actors (CASA) paradigm which identified three attributes of computers that make them similar to humans (use of words, interactivity, and ability to perform human tasks), and these attributes trigger scripts for human-human interaction (Nass & Moon, 2000). Hence, people would treat their interaction with CAs as if they were interacting with another human being. Therefore, CA interaction style is likely to influence consumer trust just as we form different levels of trust in another person depending on how that person interacts with us. For example, Bickmore and Cassell (2001) found that embodied CAs' small talk increased trust for users, particularly among extroverted users. Chen et al. (2010) also found users had higher trust in the social-oriented CA than in the task-oriented CA. Given this, we propose:

*Proposition 1*: A social-oriented (vs. task-oriented) CA interaction style elicits a higher trust in a
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*Social support* has been studied in human-to-human relationship literature to refer to assistance an individual accesses from others to whom they are closely related either as friends, family, or network (Lin et al., 1979). The concept of perceived social support has been applied in CA contexts based on the social response theory. For example, Shim et al. (2012) found that mature consumers perceived higher social support from apparel retail websites that used CAs, which also influenced their attitude toward the retail website. Therefore, we propose:

*Proposition 2:* Perceived social support would mediate the effect of CA interaction style on consumer trust in a CA.

According to the construal level theory (Trope & Liberman, 2010), construal level refers to the level of abstractness or concreteness a person ascribes to an event or an object. The theory postulates that as the psychological distance from an object increases, people tend to use higher-level (i.e., more abstract) construal to represent the object and that four types of psychological distance can be conceptualized, including temporal distance (time), spatial distance (physical space), social distance (interpersonal distance), and hypothetical distance (imagination of the likelihood of occurrence). Differentiated information needs (needs for general vs. specific information) due to a temporal, spatial, social, or hypothetical distance characterizing the situation giving rise to the user's information need, thus, are expected to elicit varying levels of construal (abstract-concrete), which then drive different levels of *cognitive vigilance,* or "psychological readiness to perceive and respond" (Mackworth, 1948, p. 6) during information processing. That is, a user with a need for specific information (e.g., information about specific details of a product they are considering purchasing *now)* from a CA would have a greater tendency to process concrete details and be more careful to scrutinize the information than a user with a need for general information (e.g., information about general attributes of a product category they may purchase in a *remote future*). Therefore, we propose:

*Proposition 3*: Users with a specific information need would have higher cognitive vigilance than users with general information need.

Moody et al. (2014) found that suspicion is an important antecedent to distrust in e-commerce sites. Users with high cognitive vigilance are more prone to fault finding and thus more susceptible to distrusting the information as compared to users looking for general information. Hence, we propose:

*Proposition 4*: Cognitive vigilance would mediate the effect of user information need on distrust.

Cognitive load theory (Sweller, 1988) explains that when a problem solver is focused on the attainment of a given goal, they devote all their cognitive processing capacity to the goal and exclude other features of the problem. The cognitive load theory identifies three forms of cognitive load: intrinsic (inherent complexity of a task), germane (schema automation to tackle tasks), and extraneous (distractions introduced by how information is presented) cognitive loads (Sweller, 1998). Users of a CA with specific information need are likely to deal with a higher intrinsic cognitive load, leaving little cognitive resource to handle the extraneous cognitive load from the CA's social dialog which adds extra information for the user to process, and thus may not recognize or appreciate the social support from the social-oriented CA and even find the task-irrelevant (social) information given by a social-oriented CA to be suspicious due to their heightened cognitive vigilance. This discussion leads us to propose:

*Proposition 5*: The effect of CA interaction style on users' perceived CA social support is stronger among users with general (vs. specific) information need.

*Proposition 6*: The effect of user information need on users' cognitive vigilance is stronger when the CA uses a social-oriented (vs. task-oriented) interaction style.

*Implications.* This conceptual paper offers valuable insights into the application of trust/distrust theory, social response theory, construal level theory, and cognitive load theory in CA conversation design. By proposing the mechanisms by which users build trust and distrust in a CA through perceived social support and cognitive vigilance, respectively, this paper offers recommendations for CA design in retail customer service contexts to enhance consumer trust and minimize consumer distrust in the CA.

Acknowledgements

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