Chapter 1
Trust in Computers:
The Computers-Are-Social-Actors (CASA) Paradigm and Trustworthiness Perception in Human-Computer Communication

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ABSTRACT

Research based on the Computers-Are-Social-Actors (CASA) paradigm has documented that people's responses to computers are fundamentally "social"—that is, people apply social rules, norms, and expectations core to interpersonal relationships when they interact with computers. In light of the CASA paradigm, identifying the conditions that foster or undermine trust in the context of interpersonal communication and relationships may help us better understand the trust dynamics in human-computer communication. This chapter discusses experimental studies grounded in the CASA paradigm that demonstrate how (1) perceived people-computer similarity in personality, (2) manifestation of caring behaviors in computers, and (3) consistency in human/non-human representations of computers affect the extent to which people perceive computers as trustworthy.

INTRODUCTION

Although computers, when first invented, emerged in the image of a massive, beast-like machine (Laurel, 1993) or a "giant calculator" (Turkle, 1995), they have evolved to reside in almost every corner of our daily lives. We no longer use computers only as a computing tool, but use them for a variety of purposes including, but not limited to, learning, shopping, entertainment, and social interaction. In these various venues of computer use, people not just rely on computers for connecting and communicating with others (i.e., computer-mediated communication: CMC), but, in many cases, communicate *with* computers (human-computer communication: HCC).

Thanks to the advances in digital technologies and to the availability of higher bandwidths, the ways in which people communicate with computers and computer agents—pre-programmed digital

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representations that are controlled by computer algorithms (Bailenson & Blascovich, 2004; Isbister & Layton, 1995)—are becoming increasingly multimodal (Nass & Brave, 2005), enhancing the affordances for "richer" interaction. In addition, the roles played by computers in HCC are becoming remarkably diversified, ranging from trainers/tutors (W. L. Johnson, Rickel, & Lester, 2000) to personal assistants (Cassell & Bickmore, 2000; Maes, 1994) and social companions (Cassell, Sullivan, Prevost, & Churchill, 2000). As these changes take place in the landscape of HCC, with more and more computers and computer agents interacting and "working" with people, issues of people's trust in computers are particularly intriguing to study.

This chapter presents a number of research studies that investigated conditions under which computers and computer agents are perceived as trustworthy. This line of research is grounded in the assumption that computers and computer agents, which are lifeless digital artifacts, can and should be considered an object of trust. While it is true that people who use computers are well aware that a computer "does not warrant human treatment or attribution" (Nass & Moon, 2000, p. 82), our research program based on the Computers-Are-Social-Actors (CASA) paradigm has documented that people, despite their awareness that computers are not humans, do apply social rules, norms, and expectations to their interactions with computers, and treat computers as if they were "social actors" (Nass & Brave, 2005; Nass & Moon, 2000; Reeves & Nass, 1996).

In the context of interpersonal communication, trust is defined as "reliance upon," or confidence in, "the communication behavior of another person in order to achieve a desired but uncertain objective in a risky situation" (Giffin, 1967, p. 105). If we translate this definition of trust in interpersonal communication into HCC contexts, people's trust in computers may be understood as the extent to which people rely on or have confidence in a computer (computer agent), particularly when they are seeking to achieve a goal (be it learning, receiving recommendations on commercial products, purchasing goods, or entertainment) in an uncertain or risky situation. The empirical evidence discussed in this chapter demonstrates that the conditions under which people perceive computers/computer agents as trustworthy closely reflect the conditions under which trust becomes fostered in the context of interpersonal communication. Before presenting these studies on trustworthiness perception of computers, we will first begin by discussing the CASA paradigm.

THE COMPUTERS-ARE-SOCIAL-ACTORS (CASA) PARADIGM

Research based on the CASA paradigm has demonstrated that people respond to computers in the same manner as they would toward other people, and such responses can be triggered once certain social cues are manifested by the computers (Nass & Brave, 2005; Nass & Moon, 2000; Reeves & Nass, 1996). That is, once a computer (or computer agent) looks, "talks" (via either text or speech), or behaves like a person —however minimal these cues might be—people would respond to it as if it were a real person (Nass, Takayama, & Brave, 2006). In this section, we describe some of the key CASA studies which have established the "social-ness" of people's responses to computers: studies on similarity attraction, reciprocity, and social stereotyping and categorization.

Similarity Attraction Operates in HCC

Can computers manifest personality characteristics? And when a computer exhibits personality-relevant cues, what responses would people show to the computer? And do social principles in human-human relationships such as similarity attraction (Byrne, Griffitt, & Stefanik, 1967) play out in human-computer relationships? These