Trust Needs Touch: Understanding the Building of Trust through Social Presence

Completed Research Paper

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ABSTRACT

Trust is gaining in importance in today's digital world where interactions become more and more impersonal. In this context, many studies show that social presence, i.e. the feeling of human contact, has a positive effect on the formation of trust. However, the theoretical explanation of the relationship is still somewhat unexplored in the IS domain. In this study, we draw on psychology literature and derive a comprehensive framework to conceptualize and explain the relationship in detail. Particularly, we identify four mechanisms that were not yet explicated by IS research. Using the developed framework as a structuring device, we then carry out a structured literature review in the IS domain to identify existing studies and their theoretical focus as well as to point out research gaps. We are able to show that there is much more to the relationship between social presence and trust than the IS domain has yet recognized.

Keywords

Social Presence, Social Cues, Online Trust, Literature Review.

INTRODUCTION

Trust is an important though yet under-explored phenomenon in IS research. On the one hand, trust can be a success factor for selling in an online environment. On the other hand, trust is also important for internal operations of a company. In this context, several studies in information systems (IS) research have addressed the impact of trust in the area of e-commerce (Karimov, Brengman, and Van Hove, 2011) or technology-supported group work (Lowry, Zhang, Zhou, and Fu, 2010a). Here, trust has been proven to significantly impact the way we act and perform (Jarvenpaa, Shaw, and Staples, 2004). However, trust research in IS is still at a preliminary stage which may be due to the fact that "adapting trust concepts from the interpersonal domain to the domain of human-technology interaction has encountered skepticism by some MIS researchers" (Gefen, Benbasat, and Pavlou, 2008). In particular, the antecedents of trust in terms of IS design choices have not yet been conceptualized clearly in research.

With respect to trust, social presence, i.e. the feeling of human warmth and sociability (Short, Williams, and Christie, 1976), has been suggested as a key influencing factor. Here, it was found that "in a technology-mediated environment, it is challenging to establish trust due to the lack of social cues and warmth conveyed, but increasing the social presence of the technology may help to build trust" (Hess, Fuller, and Campbell, 2009). "Trust needs touch." (Handy, 1995, p.46). Several studies have proven this positive effect of social presence on trust (e. g. Choi, Lee, and Kim, 2011; Cyr, Head, Larios, and Pan, 2009; Pavlou, Liang, and Xue, 2007). However, while the general influence is widely acknowledged in literature, research yet lacks a clear conceptualization of the relationship. While psychology literature provides a plethora of studies explaining the effects of social presence on trust, IS theory building has not yet differentiated between these different mechanisms. The question why social presence effects trust and, more particularly, how different design choices may influence the different effect level is under researched as of today. To understand the interdependencies and to develop more suitable IS design theories, a differentiated analysis of the constructs is necessary. The research objectives for this study are:

1. *Develop a comprehensive framework regarding the relationship between social presence and trust.*

2. *Analyze which effects of social presence on trust have been evaluated by IS research and identify research gaps.*

This paper is structured as follows. First, we present related work on both social presence and trust and integrate key aspects into a conceptual framework (Section 2). Then, we present our research methodology, a structured literature review (Section 3), followed by the presentation of the results (Section 4). Finally, we discuss our findings with regards to implications for research and practice and conclude our paper with an outlook on future research (Section 5).

TOWARDS A FRAMEWORK OF TRUST THROUGH SOCIAL PRESENCE

We develop our framework (Figure 1) on basis of three major research streams, namely (1) trust, (2) social presence and (3) human information processing which connects social presence and trust.

Trust

In online environments trust plays a crucial role. Research in e-commerce shows that the absence of trust is a main reason for the reluctance to engage in online shopping (Hoffman, Novak, and Peralta, 1999). However, IS research yet lacks a clear conceptualization of antecedents (Gefen et al., 2008). In order to structure our discussion, we will distinguish between the party that trusts (trustor) and the party that is trusted (trustee) as referred to in our framework (Figure 1).

Trustor level. One distinction refers to trust as exposure of vulnerability versus trust as a way of meeting the expectations of another party (McEvily and Tortoriello, 2011). Referring to vulnerability, Mayer, Davis, and Schoorman (1995) define trust as the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. More recently, Corritore, Kracher, and Wiedenbeck (2003) referred to trust in an online setting as "an attitude of confident expectation in an online situation or risk that one's vulnerabilities will not be exploited" (p.740). It is important to distinguish between *perceived* trustworthiness and *actual* trustworthiness of the trustee (Riegelsberger, Sasse, and McCarthy, 2005).

Trustee level. The party or object that is trusted (trustee) can be differentiated. There is trust in IT artifacts (e.g. Li, Hess, and Valacich, 2008), computers as social agents (CASA) (e.g. Recommendation agents, Hess et al., 2009), interpersonal trust (e.g. Lowry, Zhang, Zhou, and Fu, 2010), trust in organizations (e.g. Lim, Sia, Lee, and Benbasat, 2006) and trust in systems (e.g. political systems (Luhmann, 1979)). As the first category, trust in IT artifacts, is only distinct from CASA when no considerable number of social cues is present, the category becomes out-of-scope for the purpose of this paper. The same is true for the last category, trust in systems, as systems are an abstract entity to which no social cues can be attributed.

Social Presence

One of the first definitions of social presence dates back to 1976 when Short, Williams, and Christie referred to it as the degree to which a medium allows an individual to establish a personal connection with others that is close to face-to-face interaction. In their work they refer to classical communication media such as telephone, fax and experimental phones with transmission of audio-visual signals. Historically, social presence stems from the field of social psychology. More recent definitions emphasize the psychological character of social presence as an individual experience of closeness to and connectedness with others (Biocca, 1997).

Social Cues. There are numerous cues that are conveyed in a social situation such as message, contact and intimacy cues (Fichten, Tagalakis, Judd, Wright, and Amsel, 1992). For example, physical cues can describe the appearance of a person; behavioral cues may describe gestures, smiling or eye movements of the trustee.

Medium (cue filter). The medium is an important factor that influences social presence. This especially concerns the richness of a medium, as a leaner medium carries fewer cues (Daft, Lengel, and Trevino, 1987). For example, a video chat allows for more social presence than a text chat. In this respect, the medium is a technical filter of social cues. There is also theory that suggests that users can compensate the filtering (Walther and Burgoon, 1992). The perceived level of social presence is, however, subjective (Short et al., 1976). That is why social presence is related but not to be mixed with media richness. For example, a text can lead to high or low social presence dependent on how personal and emotional the written information are in general and whether or not the receiver has a personal connection to the sender of the message. This is also true for the other channels like audio where the voice can convey information such as extraversion (Hess et al., 2009).

Human Information Processing

Regarding this part of our framework, we build on an existing model of Human Information Processing by Tam and Ho, (2006). We specify this model for our social presence and trust condition.

Attention (Cue Filter), Cognitive Processing and Trusting Beliefs. The information processing is conducted in several distinct stages. At a first stage, the incoming stimulus is subjected to the attention of the trustor. While the medium can be considered as a cue filter by technical means, attention can be seen as a cue filter by human perception. After filtering, only the remaining cues will be cognitively processed. The result of this process is an assessment of the trustee's trustworthiness which are the trusting beliefs held by the trustor.

Working memory. The working memory, "contains information about oneself [trustor], including perceptions, attributes, and experiences related to the self [trustor]" (Tam and Ho, 2006, p.868). To our understanding this also includes aspects that are evaluated against and matched with the incoming, perceived social cues. Concerning the explanation of the effect of social presence on trust these aspects play a central role. While our first approach to explain trust through social presence is based on the fact that richer media allow for more social cues being conveyed, a second stream of explanations refers to psychological explanations (see numbers in Figure 1).

1) Rich media explanation

High media richness conveys more social cues and will therefore lead to more social presence with a subsequent effect on trust building. Gefen and Straub (2003) mention two arguments for this effect. Both arguments are related to the concept of social presence as influenced by media richness. First, when fewer social cues are present, it is more difficult to spot untrustworthy activities. Therefore, a situation of high social presence may be perceived as more transparent and consequently as more trustworthy. Second, the assessment of the other person becomes easier if there are a high number of social cues containing the information of others. In such a high media richness setting trusting beliefs such as ability and benevolence are more likely to be formed.

This explanation of the effect of social presence on trust can be seen as a basis for further psychological explanations (see 2a-d). While this rich media explanation seems to hold true in many situations, psychological aspects as well as differences within a media condition are not accounted for. For example, an audio richness level can be either a soft human voice or an emotionless computer's text-to-speech output.

2a) Meeting expectations explanation

Matching actual social cues to prior expectations is a major mechanism for building trust through social presence. People have implicit and explicit expectations on what is normal in certain situations. This situational normality is seen as a part of institution-based trust (McKnight, Cummings, and Chervany, 1998). In general, trust develops when the trustee behaves as the trustor expects and is decreased when the trustee behaves otherwise without explanation (Blau, 1964; Giffin, 1967; Luhmann, 1979). For example, the first generation of recommendation agents were considered as incompetent as they were exposed to high expectations which they could not live up to (Riegelsberger and Sasse, 2001). However, expectations are subjective and may change over time. While Gefen and Straub (2003) mentions the example of derived expectations of offline vendors towards online vendors, we argue that nowadays online vendors are subject to distinct sets of expectations that are quite different from offline shops.

2b) Being identifiable explanation

Literature has also suggested that the possibility of identification is a strong driver for the building of trust through social presence. Making yourself identifiable increases vulnerability and, therefore is likely to generate trusting beliefs. In this context, Rockmann and Northcraft (2008) mention an explanation why anonymity due to low media richness may affect defection. They state that leaner media offer fewer social context cues which make individuals feel more anonymous and therefore more likely to behave anti-socially (Zimbardo, 1969).
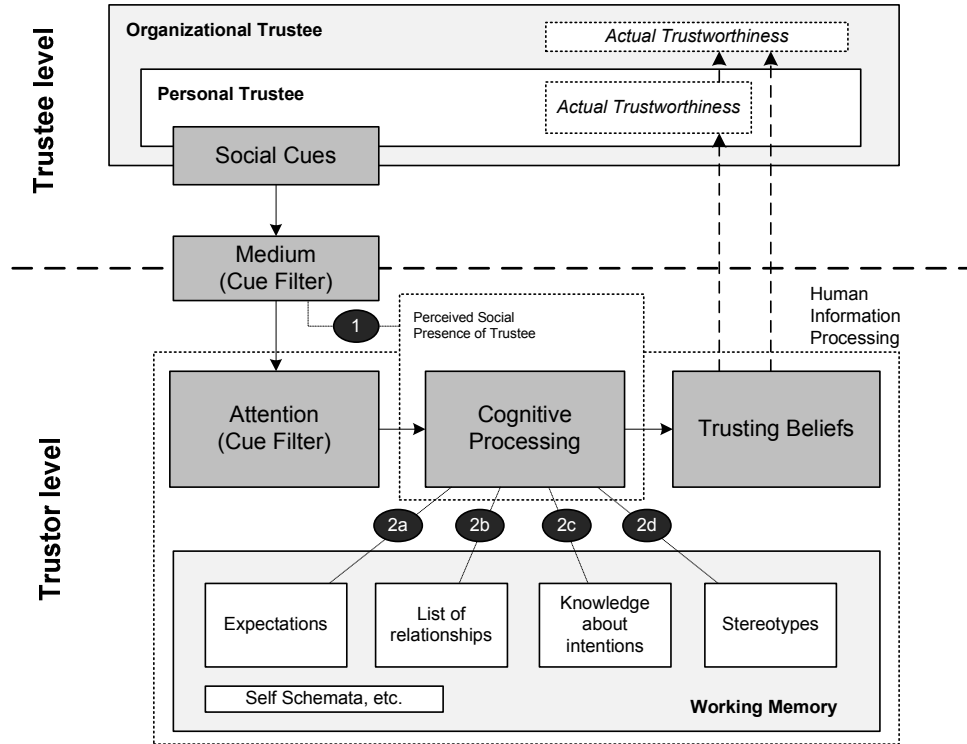
Figure 1. Framework of the Effect of Social Presence on the Building of Trust

2c) Evaluating intentions explanation

Another mechanism of building trust through social presence is related to the evaluation of intentions. For example, a smile is not a smile. Only if a certain action is considered as authentic and benevolent it may lead to a positive assessment of the other's trustworthiness. The intention matters and social cues are only perceived as trustworthy when they are seen as being given unintentionally (Riegelsberger and Sasse, 2001) and not with manipulation intent. Non-verbal cues such as body language or tone of voice are typically considered to be less controllable and, thus, more authentic (IJsselsteijn, Baren, and Lanen, 2003). They may therefore be considered as an important key in evaluating a person's trustworthiness.

2d) Matching similarities and stereotypes explanation

Social presence leads to trust because people are identified as members of a trusted group. McKnight et al. (1998) mention unit grouping and stereotyping as categorization processes to develop trusting beliefs. On the one hand, this refers to sharing common goals and values with the trustee (Kramer, Brewer, and Hanna, 1996). This may lead to the perception that the trustee is an in-group member and, thus, perceived as more trustworthy than out-group members (Brewer and Silver, 1978). On the other hand, stereotyping, e.g. based on voice (female/male), can quickly form positive trusting beliefs about the trustee by generalizing from the favorable category into which the person was placed (McKnight et al., 1998). Furthermore, a relationship aspect comes into play, when information from friends is compared to information from strangers. Studies show that recommender systems based on friends' recommendations are considered more trustworthy than from anonymous strangers (Choi et al., 2011).

RESEARCH METHODOLOGY

To address our research question, we conducted a structured literature review in IS research. Following Webster & Watson (2002), the search process incorporated a keyword search in a scholarly database (Web of Knowledge). Here, our search string was "presence AND trust". We searched in topic which included title, abstract and keywords of the articles in order to derive a broad initial set of papers on the subject. Furthermore, we used the term "presence" instead of "social presence" to account for both different forms of presence that resemble social presence in IS (e.g. co-presence) and the possibility of different wordings used for equivalent concepts.

We included a total of 30 journals in our search. These journals were selected using two mechanisms. On the one hand, we included all AIS top-basket journals. On the other hand, we additionally integrated all IS journals which received an average point rating below 20 in the AIS journal ranking meta review. Through the latter mechanism, the search space was widened to include journals which were not core IS research outlets but focus on management aspects related to IS implementations. This was considered important in order to incorporate "all sources that contain IS research publications" (Levy & Ellis, 2006, p.183) and, thus, to gain a comprehensive overview on the literature regarding the effects of social presence on trust.

Our search returned 34 papers which were then analyzed by the researchers using a two-step approach. First, the papers were screened by all researchers who then decided individually on their relevance for the research. These decisions were discussed in a workshop to come up with a set of papers for further analysis. As a result, we identified 7 papers that particularly addressed the relationship between social presence and trust. The remaining 27 papers either did not include the terms as concepts in their research, or they did not address their relationship. In a second step, the identified papers were analyzed in detail with respect to the different interdependencies between the two constructs social presence and trust as identified from related work. Again, papers were assessed individually first and the results were then discussed and aggregated in a collaborative workshop. These consolidation workshops were used to specifically discuss which cues were assessed by the different studies and how the measured effects could be mapped to our understanding of the relationships between the two key constructs.

RESULTS

The majority of studies have manipulations on the media richness level e.g. a text-only versus an audio-only condition (Aljukhadar, Senecal, and Ouellette, 2010; Hess et al., 2009; Lowry et al., 2010a; Qiu and Benbasat, 2009). In these studies the *rich media explanation* applies as a richer media condition contains more social cues from which either untrustworthy behavior can be spotted or an assessment of trusting beliefs (e.g. competence cues) becomes easier (Gefen and Straub, 2003). The importance of situational normality (*meeting expectations explanation*) is well illustrated in the study from Cyr, Head, Larios, and Pan (2009) where human images are embedded into a website. In another study by Hess et al. (2009) the manipulation of a recommendation agent's personality towards more extraverted behavior can also be seen in the light of a better match with an expected outgoing and open behavior of a recommender. For the *being identifiable explanation* no study has been identified. The *evaluation of intentions* plays a central role in the study by Benlian, Titah, and Hess, (2012). The results suggest that trust in reviews from consumers is higher than in recommendations by providers as the latter are considered to have money-making interests which the former group does not have. Finally, two studies show that in-group members (*matching similarities and stereotypes explanation*) are assessed as more trustworthy (Choi et al., 2011; Lowry et al., 2010a). In the first study by Choi et al. (2011) the in-group distinction of online recommendations is conceptualized between friends and strangers while in the second study virtual group work among culturally homogenous vs. heterogeneous groups is studied (Lowry et al., 2010a). More detailed results are summarized in Table 1.

Author (Year)	Trustee	Social Cues	Medium (Cue Filter)	Attention (Cue Filter)	Cog. Processing (SP on Trust)					Positive effect on Trusting Beliefs
					1) Rich media	2a) Meeting expectations	2b) Being identifiable	2c) Evaluating intentions	2d) Matching similarities	
Aljukhadar et al. (2010)	1) Agent 2) Online vendor	Increasing cues along the media richness dimension (see medium)	a) text (online vendor) b) audio (agent & online vendor) c) video (agent & online vendor)	n.a.	X					X
Benlian et al. (2012)	Online product recommendations	Primarily relationship to trustor cue: provider recommendations vs. consumer reviews	a) Text b) Text & picture	n.a.				X		X
Choi et al. (2011)	Recommender system	Relationship to trustor cue: names indicate either similar users vs. friends with similar tastes	Text	n.a.					X	X
Cyr et al. (2009)	Website	Medium-Human condition with no facial characterisitcs versus High-Human condition with facial features	Pictures	Measured by eye-tracking		X				X
Hess, Fuller, Campbell (2009)	Recommendation Agent	a) Increasing cues along the media richness dimension (see medium) b) Personality cue: Extraversion vs. Introversion	a) Text b) Voice c) Animation	n.a.	X	X				X
Lowry et al. (2010)	Group members	a) Increasing cues along the media richness dimension (face-to-face vs. virtual group) b) Relationship to trustor cue: culturally homogenous groups vs. culturally heterogenous groups	a) Face-to-Face unsupported b) Face-to-Face with collaborative software support c) virtual groups with collaborative software support	n.a.	X				X	X
Qiu & Benbasat (2009)	Recommendation Agent	Increasing cues along the media richness dimension (see medium)	a) Text b) Text-to-speech voice vs. Human voice c) presence vs. Absence of an animated face	n.a.	X					X

Table 1. Overview of the Results

DISCUSSION AND CONCLUSION

There is much more to the relationship between social presence and trust than the IS domain has yet recognized. Our study helps to better understand the relationship and put forward research implications to strengthen trust and social presence research. Our perspective on the relationship between social presence and trust shows that there is broad empirical evidence for the positive effect (see Table 1). We were able to show that all of the available studies could find a valid effect of social presence on trust. Therefore, research that includes both concepts should be strongly considered for future research. In addition, no study is older than three years, which confirms this trend.

Because this general relationship is so stable across studies, an explanation of the effect is even more important. Our paper gives new explanations based on psychological insight for this relationship and proves their practicability by means of the existing empirical examples. We point out that the focus on the explanation has been neglected in current IS literature and provide a first step in closing this research gap by a) providing a framework of the relationship between the concepts and b) analyzing existing empirical research in the IS domain with respect to the framework. Our study shows that the outlined framework is suitable to explain the effects social presence has on trust and suggest future research to take into account the different mechanisms in theory building. By doing so, we extend the commonly referred to rich media explanation by Gefen and Straub (2003) with insight of the psychological processes present in a trustor building his/her trusting beliefs about a trustee. However, as our study is small in size, future research may show which theoretical explanations of the relationship between social presence and trust are valid for specific design choices of created social presence (e.g. pictures vs. recommendation agents). This may help to optimize the effect of specific social presence design choices on trust.

Furthermore, our study shows the diverse nature of both concepts, social presence and trust. In the analyzed studies, social presence is conceptualized and designed in many different ways (human images, recommendation agents, human group members). As these design choices are different in nature, we suggest future research to build a taxonomy of social presence and derive clear classification dimensions. Not only the creation of social presence is quite diverse, there are also different levels regarding the party that is trusted. This distinction can be described as trust in the own entity versus trust in others. This confirms the view of Weiquan and Benbasat (2005) study, which elaborates on whether trust in recommendation agents refers to the agents itself or another trusted party (e.g. e-vendor that embeds the agent in a website). In addition, the use of trust measurement across different trustees makes it difficult to compare studies. We therefore advocate for the approach Aljukhadar et al. (2010) have taken, i.e. measuring both, the trust in an agent as well as the entity "behind" the agent (e.g. e-vendor).

By analyzing the different social cues and filter mechanisms (medium as well as attention), we have learned that only one study described the level of attention of the experiment participants during the experiment. The positive example is Cyr et al. (2009) who used eye-tracking (i.e. attention is operationalized as time focusing at an website element) and interviews to gain additional insight in the occurred effects. Attention is important because a creation of social presence might be technically speaking perfect but still have no effect on the user as it does not pass the attention filter. In this case, even perfectly designed social cues (e.g. from an avatar) may be not effective. Therefore, future research may show how attention is related to different design choices of social presence.

With respect to relevance for practice, we show that there are many applications to increase trust in companies and institutions. Our literature review presents several ways how online shops can increase trust by means of social cues. Thus, the discussed design choices can be considered a general starting point for the development of creating trust-building e-business websites. Moreover, these insights may be transferred to other fields that suffer from lack of acceptance such as e-government services. However, further experiments and especially field studies (due to high external validity) may help to show the real value and risk when it comes to the adaption of social cues into websites.

Our study is not free of limitations. First, regarding our framework, we account only for the perspective of the trustor towards the trustee (one-way relationship). In two-way communication settings there may also be interaction effects among the different actors. Second, we only focus on general trust aspects and do not account for specific trust aspects such as a distinction between affective and cognitive trust. Third, social presence is generally measured as an emotional construct. However, social presence also has evaluative aspects (Feinberg and Aiello, 2006), which are for reasons of simplification not considered in the model so far. Fourth, we only included journal papers in our review and did not consider conference proceedings. Finally, some matchings in our review were subject to interpretation. Not all empirical studies provide detailed explanations of the experiment manipulations.

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