Electronic Patient Briefing and Informed Consent: Creating Patient Trust and Information Satisfaction through Social Presence and Personalization

Emergent Research Forum papers

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Abstract

Patient consultation and briefing are essential for patients to make informed, self-determined decisions in their medical treatment. However, cost and time pressures lead to medical specialists spending less time with patient consultation, which may result in decreasing consultation quality. Electronic consultations are a potential solution to this problem. We propose patients' trust and information satisfaction as key indicators of high consultation quality. We argue that the degree of social presence and personalization of information systems for informed consent and consultation positively influence these measures. Electronic consultation systems may therefore need to be designed to promote social presence and personalization. We develop five hypotheses on this relationship based on social presence theory. These hypotheses will be tested in a university hospital's radiology department in the scope of an interdisciplinary research project on cancer therapy.

Keywords


Introduction

Commonly invasive medical procedures or treatments are mandatorily preceded by informed consent consultations and discussions between patients and medical specialists. While these physician-patient engagements are subject to strong regulatory guidelines and critical for patients' well-being and decision making, there are pressing issues that have led to repeated calls for modifications of this practice (Ogden et al., 2004). Cost and time pressures lead to medical specialists spending less time with patient consultation and risk disclosure. However, most patients are not well-educated in the specifics of their medical condition and related invasive procedures and thus require detailed informative conversations and time in order to properly understand their medical situation, possibilities and risks. As a result of this conflict, particularly patients with life-limiting diseases such as cancer are often dissatisfied with the information they receive (Faller et al., 2016). A potential solution for this conflict may lie in the electronic and repeatable provision of comprehensive treatment and risk information, followed by an actual shorter but - due to a higher information standard of the patient - more detailed informative conversation between patient and physician. However, patient briefings and consultation meetings not only serve the purpose of information gathering but also allow the patient to build trust in the physician as a proxy of trust in the treatment to be received (Gefen & Straub, 2003). Although technology may allow more effective as well as efficient provision of risk and treatment information to patients, they may lose an important chance for building trust due to the absence of the actual physician during the consumption of information. In fact, technology mediation and standardized information provision may even cause patients to feel dehumanized (Haque & Waytz, 2012) and thereby subject to the decisions of a morally disengaged, untrustworthy
other (Bandura et al., 1996). It is currently unclear how the benefits of improved information accessibility and reduced chances for building interpersonal trust may arise and affect patients. In order to be able to design appropriate technology that supports electronic briefing and informed consent, there is consequently a big need to more clearly understand the development of patient trust on the one and the satisfaction of patient information needs on the other hand. In particular, it is not only necessary to understand which information should be provided to patients but also how the presentation of information influences these important elements of patient well-being. In this research-in-progress we focus on the latter aspect and seek to answer the question:

_How does the presentation of information affect patient trust and satisfaction of information needs in electronic risk disclosure and consultation for patients in high-risk situations?_

We address this question from the perspective of social presence theory and deduce a theoretical model relating properties of the presentation of information to the development of trust and information satisfaction. We have operationalized this model and are currently preparing a field experiment with cancer patients who receive patient briefings and consultations before a biopsy in a European university hospital.

**Theoretical Foundation**

In addressing our research question, we rely on literature on patient trust and information needs to understand their role and interactions in patients’ cognitive and emotional state. We harness theory on social presence and personalization to explain the effects of information presentation via different media.

**Information Satisfaction and Trust**

Information Satisfaction is the patient’s perceived level of satisfaction with the information provided based on the patient’s individual information needs. The latter have been found to be related to personal characteristics such as age (Watson et al., 2015), gender (Faller et al., 2016), mental states based on diagnosis and treatment as well as individual coping styles (Mills & Sullivan, 1999, Miller et al., 1995). Past studies revealed that patients are often dissatisfied with the information they receive, particularly in high-risk situations where information needs are extraordinarily high, for example when suffering from cancer (Faller et al., 2016, Nicolaie et al., 2012). This is dramatic, as low information satisfaction levels lower quality of life and increase patients’ anxiety (Husson et al., 2011). From physicians, patients expect more than just being informed about treatment options and risks: they want to trust in them, i.e. they want to be sure that decisions are made in their best interest (Bending, 2015, Hawley, 2015). Patient-physician trust has consequently been found to increase patient satisfaction, treatment adherence, and improved health (Pearson & Raeeke, 2000). During personal interactions, physicians have the chance to demonstrate competence, transparency, openness, and reliability, which stimulates trust (Van Velsen et al., 2016). Exactly such demonstrations of trust-increasing characteristics may however be absent in purely electronic patient briefings and informed consent without the presence of an actual physician.

**Social Presence and Personalization**

Short et al. (1976) define social presence as "the degree of salience of the other person in a mediated communication and the consequent salience of their interpersonal interactions". The higher the degree of social presence, the more users experience others to be socially present (Lankton et al., 2014). The degree of social presence is dependent on the used medium where face-to-face meetings have the highest degree of social presence, videos a lower one, and audio and text the lowest (Fulk & Collins-Jarvis, 2001, 629). We argue that, for patients in high-risk situations who may be scared or stressed, information provided with higher social presence helps to build trust because physical cues like body language, gesture and facial expressions are transported more easily (Gefen & Straub, 2003). Personalization refers to whether a service provider (i.e., a physician) understands the needs of each individual customer (i.e., the patient) and then knowledgeably addresses each individual’s need in a given context (Liang et al., 2006, Riecken, 2000). Especially in hospitals, patients are often in difficult and life changing situations. They should feel comfortable both physically and mentally. Getting personalized information promotes closeness. Prior work on personalization showed that customers have an affective desire for personalized services (Xu et al., 2014). Regarding product design, personalization positively influences trust (Komiak & Benbasat, 2006), perceived service quality (Mittal & Lassar, 1996), and satisfaction (Liang et al., 2006).
Social Presence and Personalization in Electronic Patient Briefing

Research Model

Based on theoretical anchors of literature on social presence and personalization, we develop five hypotheses explaining why information satisfaction and patients’ trust towards their physicians are affected by the technological characteristics of the way information is presented via an electronic medium during patient briefing and consultation. Figure 1. Patients have a cognitive need for information that has to be satisfied. In addition to this information satisfaction, the trust towards their physician is essential for their well-being and overall satisfaction with the consultation and treatment. We argue that both are positively affected by the degree of social presence. With a higher degree of social presence, patients can extract more provided information due to cognitive stimuli triggered by additional social clues that are not perceptible in media channels with lower social presence. This can be the room and devices shown in the video or nonverbal signals like facial expression, direction of gaze, posture (Fulk & Collins-Jarvis, 2001, p.627). Therefore, we propose our first hypothesis: H1: The higher the degree of social presence of the medium for information transmission, the higher will be the degree of information satisfaction of the patient.

The nonverbal signals that can be seen at higher degrees of social presence can also build more trust towards physicians. For example, instead of just reading the textual information provided by their physician, patients can actually see his posture, dress, physical appearance and feel proximity to him. This can lead to more familiarity as the physician is not someone unknown and hence promote the trust towards him. So our second hypothesis is: H2: The higher the degree of social presence of the medium for information transmission, the better will be the trust that the patient has towards the physician.

The degree of personalization has a similar influence on information satisfaction and trust towards the physician as social presence. However, the reasons are different. The degree of personalization is affected by different dimensions. The degree on which the information provided is individualized to the patient’s diagnosis or treatment, the way how the patient is addressed (e.g. Dear Patient or Dear Mr./Ms. Doe) and finally the way how the physician is introduced to the patient (Gefen & Straub, 2003). If the degree of personalization is high, the authenticity of the provided information is higher. The patient gets the impression that the information he receives is not information provided to everybody but is customized to his needs. This makes the information more valuable for him and thus increases the information satisfaction. In addition, the personalization can favor the closeness between patients and their physicians. Calling each other on a first-name basis is something which usually is not the initial case in the real world. This connectivity also promotes the trust towards the physician. This leads to our hypotheses: H3: The higher the degree of personalization in the provided information, the higher will be the degree of information satisfaction of the patient. H4: The higher the degree of personalization in the provided information, the better will be the trust that the patient has towards the physician.

When patients have a high degree of information satisfaction they pay tribute to the information provider. In this case this is the physician. The tribute they pay to the physicians is an indicator that they believe in the competence of the physician, which in return leads to a better trusting relationship. So we hypothesize: H5: The higher the degree of information satisfaction perceived by the patient, the better will be the trust that the patient has towards the physician.

Design of the Field Experiment and Stimuli

Our study is positioned within a larger research project that aims to develop and implement new effective but minimally invasive methods for cancer therapy based on an interdisciplinary team of researchers from

Figure 1. Preliminary Research Model
IS, engineering, physics, biology and medicine who work together on a single European university hospital site. This study is conducted in the department for interventional radiology of said hospital. We are able to observe roughly ten patients per week. These patients receive electronic briefing and consultation sessions in preparation for a biopsy, which is needed to further classify their disease and facilitates proper treatment. We use anonymized patient data from the hospital’s electronic health records to control for procedure, age and gender of the patient, location of primary and secondary tumor (classification of the disease) and predicted risks. The electronic consultation consists of three stages. At the first and the third stage, the patient answers questions which are necessary to conduct our research. The second stage consists of a standardized form to gather information about the recent medical history and provide information about the treatment, its related risks, and follow-up actions. We have access to the results of all three stages. In order to validate our hypotheses, we vary social presence of the presentation of information with two settings: we present the information either in a textual form or as a video. In both presentation forms, it is possible to personalize the information through approaching the patient in a personal or impersonal way (i.e. with or without his name). We always show the physician’s name below the text or video along with the information provided to show the patients that the information they are receiving in the textual presentation comes from their treating physician. The patients neither have any time restrictions nor any location restrictions. We have already created the information system that fulfills these requirements. It is running on a tablet computer, preloaded with a configuration for each patient individually. Hence, the patient receives the necessary information that is specifically relevant for his treatment, which also allows us to further personalize this information. This pre-configuration also ensures that patients have the freedom to use the application at any place they want. We measure information satisfaction with the items of the Information Satisfaction Questionnaire (Thomas et al., 2004). Patients’ trust towards the physician is measured with the Trust in Physician Scale (Anderson & Dedrick, 1990).

Expected Contributions and Current State

This research is expected to contribute to literature on the individual level effects of IT on patients and their relations to medical experts. In particular, we expect to show that patients’ trust in their physicians can not only be stimulated directly through affective arousal caused by personalization and nonverbal social clues transported via media with high social presence, but that it is also impacted by patients’ cognitive satisfaction with information. In contrast to previous work that has emphasized on the negative affective consequences of technology-mediated and standardized interactions with patients (Haque & Waytz, 2012), our work is expected to show how appropriate technology can aid in simultaneously satisfying patients’ information needs and their need for building trust in a person or institution they depend on in high-risk situations. We expect our study to deliver design implications for electronic patient briefing and informed consent: technology should at the same time ensure social presence of a representative actor of the medical institution that patients need to trust in while providing information in a personalized way. We have completed the operationalization of all variables and secured access to patient data and physicians. A prototypical system has been implemented that directly communicates with the site’s medical information system and allows for using the data from each patient’s electronic health record. Moreover, a series of videos has been recorded in which an experienced interventional radiologist presents standardized information of risk disclosure and consultation for minimal invasive biopsies. These are conducted in order to obtain tissue samples of suspicious tumors for histological analysis, which is essential for reaching a diagnosis for the patient and thus allowing proper treatment. Although the differences between procedures specific to single organs had to be captured in separate videos, it was made sure that information beyond these specifics remained stable in all videos. We are going to conduct a pretest of our research and present the results at the AMCIS 2016 in order to gather feedback for the finalization of our model and setup for the main field experiment in autumn 2016.

REFERENCES


