

# Affect and Information Sharing: Considerations in the Design of Critical Collaborative Information Systems

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## ABSTRACT

Attention to the role of affect in HCI has gained much interest, but less so in the realm of CSCW. Except for the limited attention on conveying affect in text chat, there have been no attempts to directly study affect in CSCW system use or design. The following research addresses the gap between CSCW research and affect. I propose an ethnographic study of affect and information sharing in an emergency room. Outcomes of this study could provide considerations for affect in the design of collaborative systems as well as identify further areas of study within affect in CSCW.

## Author Keywords

Emotion, information sharing, collaboration, design

## ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## INTRODUCTION

We know a great deal about the role of affect in work. Affect plays a critical role in determining people's motivations and goals. For instance, mood influences motivation by informing people when they have achieved their goals [6]; and emotions are also thought to reorient a person's goals and motivations in a different direction [3]. We also know some about the role of affect in group work. Emotional contagion, the process of "catching" others' emotions, occurs in groups [5] and leads to group affective tone [4]. And positive homogenous group affective tone can improve group processes by increasing cooperativeness which can result in increased group performance [2].

While studies like these provide a convincing argument that emotions are an important construct to attend to in designing collaborative information systems, less is known regarding affect at the group collaboration level – particularly from the viewpoint of design practitioners. For instance, what affective information needs to be captured

and transmitted in a group affect awareness tool?

## Critical Environments

To address the gaps identified and the need for contextual knowledge, I will investigate affect and information sharing in a critical collaborative environment. Critical environments have a number of special characteristics including time pressure, complex and ambiguous problems, stress, and interruptions [7]. The consequences of these characteristics are that cognitive and physical skills can be deleteriously affected and emotions are brought to the surface.

One example of a critical and information-rich collaborative environment is a hospital's emergency department. This 24-hour a day operation engages multiple shifts of autonomous healthcare workers who must navigate this complex and high pressure situation in a coordinated fashion with limited resources. Communication failures and specifically information sharing failures are the primary reason for a large number of fumbled handoffs and medical errors [8].

Due to the high rate of medical errors in the ED, hospitals are beginning to push for the integration of electronic patient records and other information systems in order to increase efficiency (i.e. lower costs) and increase safety (i.e. lower deaths). However, there have been a number of problems noted with this move to the paperless hospital [1] – primarily due to the lack of understanding how personnel realistically coordinate and communicate in the ED. A more complete understanding of the role of affect in information sharing in this particular critical environment can improve the design of these essential electronic patient records.

## Research Questions

To investigate collaborative information sharing and affect in critical environments, I will conduct a study of workers and their information sharing practices in an emergency department. As part of this study and specifically in service of my first research objective, I will answer the following research questions:

*How does affect play a part in information sharing in an emergency department?*

Because I will be investigating a real world collaborative context, I expect to go beyond the individual and lab studies and uncover critical contextual factors associated with affect and information sharing. Knowing how affect changes information sharing practices informs our understanding of the differing and evolving ways people share information. Likewise, knowledge of these flexible methods informs our understanding of how people understand the information shared. Together, this knowledge informs the design of collaborative information systems to ensure the complete and effective transfer of information between collaborative team members.

*What affective information is conveyed during information sharing in an emergency department?*

A few studies have discussed the nature of specific affective information cues (e.g. facial, vocal, gestures). In the proposed research, however, I need to understand more precisely which are used to convey affect in emergency departments, and how these cues contribute to information sharing. In addition, I want to discover if there are other cues not previously considered but are important in an asynchronous or distributed environment; for instance there may be affective cues produced in the course of writing down information that also influence information sharing. This analysis can be used to determine what is significant for the design of systems for affect awareness as well as be cognizant of what information is being lost in the transition to a paperless and increasingly distributed collaborative environment.

### **Approach**

Because I want to understand the deeper structure of the phenomena within its contextual situation, I will utilize an ethnographic study. An ethnographic study allows for an emic perspective which can provide insights on the work practices of which the subjects are not aware. The practice of ethnography is primarily concerned with the prolonged study of a group of people. This generally involves immersion and participation in their day to day lives. Ethnographers establish broadly based patterns of human behavior and thought, and provide interpretations of unfamiliar contexts. The specific techniques I will entail are that of observations, interviews, and artifact analysis.

### **WORK IN PROGRESS**

This study will be conducted at Hahnemann University Hospital in the center of the Philadelphia metropolitan area. Hahnemann is a 618-bed academic medical center which is one of the major receiving sites for police and fire rescue patients, and services a large number of walk-in patients from the general population. My expected start date will be August, 2008, and my observations will continue until January, 2009.

Prior to my dissertation proposal, for a year and a half I observed operations in the Mt. Nittany Medical Center in State College, Pennsylvania. My primary goal was to

conduct a 'pilot' study at the Mt. Nittany Hospital in order to determine if my research questions are able to be addressed through observation and interviewing as well as to determine the best method for observation. In addition, from this pilot I have begun to collect examples of the type of trends I expect to uncover in my formal study.

### **EXPECTED CONTRIBUTIONS**

The study proposed here has the goal to provide guidance on how designers can understand and meet the requirements of affect in the design of software systems that support information sharing. In so doing, contextualized scenarios will provide examples of trends found within a specific context. These scenarios will provide grounding and implicit information for design practitioners to integrate into their own requirements. In addition, scenarios will lend support to existing knowledge of affect in work as well as support design researchers in uncovering new areas of research within affect and collaborative systems.

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### **REFERENCES**

1. Ash, J. S., Berg, M., & Coiera, E. (2004). Some unintended consequences of information technology in health care: the nature of patient care information system-related errors. *Journal of the American Medical Informatics Association*, 11(1), 104-112.
2. Barsade, S. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly*, 47(4), 644-675.
3. Frijda, N. H. (1993). The place of appraisal in emotion. *Cognition & Emotion*, 7(3-4), 357-387.
4. George, J. M. (1990). Personality, affect, and behavior in groups. *Journal of Applied Psychology*, 75(2), 107-116.
5. Hatfield, E., Hsee, C. K., Costello, J., Weisman, M. S., & Denney, C. (1995). The impact of vocal feedback on emotional experience and expression. *Journal of Social Behavior and Personality*, 10(2), 293-312.
6. Martin, L. L., Ward, D. W., Achee, J. W., & Wyer, R. S. (1993). Mood as input: People have to interpret the motivational implications of their moods. *Journal of Personality and Social Psychology*, 64, 317-326.
7. Salas, E., Driskell, J. E., & Hughes, S. (1996). The study of stress and human performance. In J. E. Driskell & E. Salas (Eds.), *Stress and human performance* (pp. 1-45). Mahwah, NJ: Lawrence Erlbaum Associates.
8. Sucov, A., Shapiro, M. J., Jay, G., Suner, s., & Simon, R. (2001). Anonymous error reporting as an adjunct to traditional incident reporting improves error detection. *Academic Emergency Medicine*.