
AVRY, Sunny, et al.

Abstract

There is a large consensus on a significant role of emotions in individual and collaborative settings. In this context, emotion awareness tools (EAT) have been developed to promote the sharing of emotions during computer-mediated collaboration. In this study, we explore whether and how an EAT impacts collaborative processes, and whether there is a gender effect. Results showed that the EAT was beneficial to mutual modeling processes but we found also that men exchanged more verbal acts aiming at improving the relational climate but expressed less divergent opinions with the EAT, which is not the case in women.

Reference


Available at:
http://archive-ouverte.unige.ch/unige:111854

Disclaimer: layout of this document may differ from the published version.

Poster · June 2017
DOI: 10.13140/RG.2.2.11796.60808

5 authors, including:

Some of the authors of this publication are also working on these related projects:

Role of emotions in collaborative problem-solving processes View project
Dual-T View project

Sunny Avry, Distance Learning University Switzerland, TECFA/University of Geneva
Gaëlle Molinari, Distance Learning University Switzerland, TECFA/University of Geneva
Guillaume Chanel, Computer Science Department/University of Geneva
Thierry Pun, Computer Science Department/University of Geneva
Mireille Bétrancourt, TECFA/University of Geneva

Abstract: There is a large consensus on a significant role of emotions in individual and collaborative settings. In this context, emotion awareness tools (EAT) have been developed to promote the sharing of emotions during computer-mediated collaboration. In this study, we explore whether and how an EAT impacts collaborative processes, and whether there is a gender effect. Results showed that the EAT was beneficial to mutual modeling processes but we found also that men exchanged more verbal acts aiming at improving the relational climate but expressed less divergent opinions with the EAT, which is not the case in women.

Introduction
There is a strong empirical evidence that emotions have an influence on problem solving and learning as they affect attention, motivation, use of strategies and self-regulation processes (Pekrun, 2014). In collaborative working/learning environments, emotions are recognized as playing a role in mutual modeling (Molinari, Sangin, Dillenbour, & Nüssli, 2009), relationship (Andriessen, Baker, & Van der Pui, 2010) and performance (Eligio, Ainsworth, & Crook, 2010). However, access to emotional information may be limited in remote computer-supported collaboration. One way to increase emotion awareness during remote collaboration is to provide collaborators with emotion awareness tools (EATs). In Molinari, Chanel, Bétrancourt, Pun, & Bozelle (2013), an EAT has been developed offering the possibility to share emotions during collaboration. In the EAT condition, a positive relation between emotion modeling and the time spent building on the partner’s contributions (transactivity) was found. However, we found also that the effect of the EAT on transactivity was confined to women, whereas the EAT tended to reduce transactivity in men. Woolley, Chabris, Pentland, Hashmi, & Malone (2010) also showed that the number of women in a group is a significant predictor of the group collective intelligence because women score higher than men in social sensitivity measures, i.e. the ability to understand social cues. The EAT could therefore have a beneficial effect in women, possibly by compensating the lack of emotional information. By contrast, men could be disturbed by this kind of emotional sharing. In the present study, verbal interaction data from Molinari et al. (2013) were analyzed to evaluate further whether and how the EAT impacts actual collaborative processes, and whether this effect varies depending on gender.

Method
The sample consisted of 38 participants working in 19 same-gender dyads (6 women dyads, 5 men dyads in the EAT condition; 6 women dyads, 2 men dyads in the control condition). All dyads performed a remote collaborative design task. Dyad members were asked to create together a slogan against violence in school using an argument graph tool. A coding scheme was designed to analyze both socio-cognitive and socio-relational processes. It was composed of 26 sub-categories of collaborative processes group in 7 categories: (1) Outside Activity, (2) Social Relation, (3) Interaction Management, (4) Information Sharing, (5) Task Management, (6) Transactivity and (7) Tool Discourse. A full description is available at the following address: https://goo.gl/Jf93Kl. For each dyad, the whole verbal interaction content was first transcribed with the ELAN software. Two independent coders applied the coding scheme. The inter-coder reliability of Cohen's kappa was equal to 0.47 (moderate agreement).

Results
The results showed a positive effect of the EAT on the Use social convention, Give self-information, and Elicit-partner information variables. More precisely, the rate of use was higher in the EAT condition than in the control condition for Use social convention (EAT: $M = 0.96$, $SD = 0.56$; Control: $M = 0.52$, $SD = 0.60$; $F(1, 34) = 4.75$, $p = .003$, $\eta^2 = 0.12$), Give self-information (EAT: $M = 4.71$, $SD = 2.54$; Control: $M = 2.89$, $SD = 2.24$; $F(1, 34) = 6.92$, $p = .012$, $\eta^2 = 0.16$), and Elicit-partner information (EAT: $M = 0.81$, $SD = 0.12$; control: $M = 0.36$, $SD =
0.57; $F(1, 34) = 5.43, p = .002, \eta^2 = 0.13$). The EAT had a negative effect for Coordinate teamwork, with a higher rate in the control condition ($M = 2.89, SD = 1.28$) than in the EAT condition ($M = 2.04, SD = 1.59$), $F(1, 34) = 3.85, p = .057, \eta^2 = 0.10$. There was a significant EAT by Gender interaction for the Relax atmosphere variable ($F(1, 34) = 6.59, p = .014, \eta^2 = 0.16$) and for the Give opinion against variable ($F(1, 34) = 7.65, p = 0.009, \eta^2 = 0.18$) (Figure 1). Men produced more Relax atmosphere acts in the EAT condition ($M = 6.35$) than in the control condition ($M = 0.92$), whereas there was no significant difference between the EAT condition ($M = 4.75$) and the control condition ($M = 4.20$) for women. Men produced more Give opinion against acts in the control condition ($M = 3.43$) than in the EAT condition ($M = 0.92$), whereas there was no significant difference between the EAT condition ($M =1.52$) and the control condition ($M =1.55$) for women.

**Figure 1.** Interaction between EAT and Gender for Relax Atmosphere and Give Opinion Against.

**Discussion and conclusion**

First, we found that the EAT encouraged to be more engaged in the mutual modeling process, i.e. the process of building and updating a mental model of the other. That could be explained by an increase of the receptivity to each other driven by emotion communication during interaction. Second, there was an EAT by gender interaction for two process variables, i.e. Relax atmosphere and Give opinion against; the effect of the EAT on these collaborative acts was observed only for men. The EAT encouraged men to reduce the emotional tension during interaction by producing verbal acts designed to relax atmosphere and by avoiding socio-cognitive conflicts. By focusing on emotions, men would be more inclined to build and maintain a positive climate that could be in opposition with a greater propensity to initiate and conduct negotiations (Small, Gelfand, Babcock, & Gettman, 2007). There is a need to be cautious with these results because the total number of women dyads ($N = 12$) was higher than the total number of men dyads ($N = 7$) and the number of men dyads in the control condition was really low ($N = 2$) compared to the number of men dyads in the EAT condition ($N = 5$). Despite this limitation, the results described in this paper contribute to a better understanding of how the sharing of emotions during computer-mediated collaboration shapes the way people interact with each other.

**References**


