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An interactional perspective on group awareness: Alleviating the information-exchange dilemma (for everybody?)

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Abstract

In situations of computer-mediated communication and computer-supported cooperation, a central challenge lies in increasing the willingness of those involved to share their information with the other group members. In the experimental work presented here, a shared-database setting is selected as a prototypical situation of net-based information exchange and examined from a social-dilemma perspective: the individual who contributes information to a shared database must reckon with costs and no benefits. The most efficient strategy from the perspective of the individual is thus to withhold information. Previous research has shown that a group-awareness tool which provides information about the contribution behavior of group members influences people's information-exchange behavior. In order to examine the psychological processes underlying these effects of group awareness in more detail, the present study adopts an interactional approach, according to which person-situation interaction is investigated. Certain personality traits (interpersonal trust, sensation seeking, and self-monitoring) were measured and several hypotheses tested regarding the reactions of individuals with high and low trait values to different types of awareness information. Results demonstrate that awareness tools providing information about highly cooperative group members encourage participants to trust one another and minimize the risk of being exploited. When an awareness tool additionally provides feedback about the contribution behavior of single individuals, it becomes an opportunity for self-presentation. In conclusion, an interactional approach which considers personality traits and situational factors in a net-based information-exchange situation provides new insights into both the influence processes of group awareness and the connection of these processes to specific personality traits with respect to contribution behavior.

Keywords: Information exchange; Group awareness; Personality traits; Interpersonal trust; Risk taking; Self-presentation

1. Introduction

It is the reciprocal provision of useful information by team members that makes cooperative team work efficient (Hinds and Kiesler, 2002). For individuals interacting with one another via computers, the support of such information exchange is of particular interest (Olson and Olson, 2003). A relatively simple technical possibility when it comes to facilitating general access to the information of individual team members for all team participants is the establishment of a shared database. Shared databases enable each and every team member to enter information into and retrieve information from the database (Jian and Jeffres, 2006; Kimmerle and Cress, in press). Databases are widely used for knowledge management purposes by organizations throughout the world as a means of providing company members with such knowledge repositories (Ackerman, 1996, 1998; Beckman, 1999). In practice, however, such databases are associated with numerous problems: many studies report poor motivation of team members in entering information into databases and thus

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making it available to others (Huber, 2001; Ardichvili et al., 2003; Yuan et al., 2005), for example due to the assumption of a lack of reciprocity from fellow team members.[1]

From a psychological point of view, this lack of willingness to share information with others is hardly surprising, given that the transmission of information is often regarded as a loss of power. In addition, entering information is associated with extra time and additional effort. Thus, the decision as to whether to pass on information represents a social dilemma (Dawes, 1980; Komorita and Parks, 1994, 1995; Kollock, 1998). For the individual group member, not sharing one's own information can be viewed as advantageous (Cabrera and Cabrera, 2002; Cress and Kimmerle, in press a; Kalman et al., 2002). By withholding information, an individual can potentially save time and maintain a leading position in terms of the amount of knowledge possessed. Withholding information thus constitutes the most promising strategy for the individual: he or she can retrieve information from the database without contributing information in turn (these costs-benefits considerations correspond to the utilitarian perspective in the three-dimensional framework of Jian and Jeffres, 2006). However, if all team members decided to behave in this manner, nobody could use the shared database and everyone would have to work out the needed information on one's own. Consequently, the group as a whole is worse off due to individually efficient behavior (Cress and Martin, 2006). This information-exchange dilemma is a real challenge for human–computer interaction: in order to make computer-mediated knowledge communication via shared databases effective, people must be motivated to behave contrary to their individual interests. So, analyzing people's contribution behavior represents a particularly stringent test for tools fostering computer-supported cooperation. Bonacich and Schneider (1992) distinguish structural from psychological solutions in social dilemmas. Structural solutions, on the one hand, aim at influencing the behavior of the people involved by changing the dilemma's pay-off function, thereby stimulating cooperation. In the information-exchange dilemma it was shown that bonus systems and costs have an impact (Cress et al., 2006, in press). On the other hand, psychological solutions try to increase persons' cooperative decisions without changing the pay-off situation. This is the point where interface design comes into play. The interface offers various psychological solutions. It is, for example, possible to manipulate the anonymity of the group members (Kerr, 1999; Lee and Nass, 2002; Lee, 2004; Cress, 2005) or the identifiability of the contributors' behavior (Komorita and Parks, 1994). The respective results of such manipulations are, however, conflicting. For instance, Cress (2005) found that the effect of anonymity depends on participants' social identity (Tajfel and Turner, 1986). The interface can also implicitly deliver anchors containing information about how people should behave (Cress and Kimmerle, 2007). All these studies focus on *situational* aspects of information exchange, which incorporate the effect of feedback information provided by various tools. The aim of the present article is to broaden this spectrum by adopting an interactional approach. People's behavior and their experiences are determined by characteristics of the current situation, by characteristics of the person her- or himself, and by the interplay of personal and situational aspects. An interactional approach focuses neither exclusively on situational factors nor exclusively on personality factors but considers both and—above all—the interactions of the two (for a detailed explanation of an interactional perspective in psychology cf. Cronbach, 1957, 1975; Endler and Magnusson, 1976). Thus, this approach takes into account that people differ in their personalities, their perceptions, and their behavior. As a result, the same feedback information can have different effects on different subgroups of users.

Concretely, the remainder of this article deals with interactions of group awareness and certain personality traits. These interactions allow some insights into the psychological mechanisms caused by group awareness.

2. The concept of group awareness

This section introduces the concept of group awareness with its different forms and describes some possible interaction effects between personality traits and group awareness.

2.1. Forms of group awareness

Group awareness is a concept subject to increasing discussion in the literature concerning human–computer interaction (e.g. Endsley, 1995; Begole et al., 1999; Gutwin and Greenberg, 1999; Gross et al., 2005; Soller et al., 2005; Briggs, 2006; Tam and Greenberg, 2006). While some authors apply other terms, the group-awareness concept refers to the information obtained by group members about their fellow team mates, current group processes, and mutually employed objects (Gross et al., 2005) in order to efficiently perform a certain task. In face-to-face situations, such information is generally available directly. In situations of computer-mediated communication, however, the provision of group-awareness information depends on the necessary technical support. Gross et al. (2005) criticize the predominantly technical perspective from which the majority of group-awareness tools have been developed (cf. Briggs, 2006); developers of group-awareness tools should also pay attention to theoretical considerations along with the users and their needs. Hence,

[1] A related but effectually different situation emerges in the context of www-based social software such as wikis, weblogs (blogs), or file-sharing communities (Weiss, 2005; Kolbitsch and Maurer, 2006; Cress and Kimmerle, in press b). Here, contribution behavior is triggered by additional motivational factors, such as for example the need for impression management (Ellison et al., 2006), the expression of identity (Moinian, 2006), or establishment of reputation (Metzger, 2006).