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INCREASING TEAM COORDINATION AND SOCIAL MOTIVATION THROUGH AWARENESS PRACTICES: A CASE STUDY

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INCREASING TEAM COORDINATION AND SOCIAL MOTIVATION THROUGH AWARENESS PRACTICES INVOLVING SOCIAL COMPUTING TECHNOLOGY: A CASE STUDY

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Abstract

People working in teams are vulnerable to so-called "process losses," which occur when the team's output is less than what could be produced given the capabilities of the team members. Teams can develop practices that provide awareness of each other's activities, thereby enabling them to coordinate activities better and reducing one of these process losses – coordination loss. Such awareness is harder to maintain when team members are geographically dispersed, but can be promoted using social computing technologies. We present a framework derived from a case study that identifies drivers of awareness practices in geographically dispersed teams. Our investigation indicates that new awareness practices were developed at times when the teams faced changes in the team's goals, social computing context, physical context, and team structure. The teams developed awareness practices to improve coordination in the teams, but the practices had the added effect of decreasing social motivation losses. Based on these results, organizations that are considering implementing social computing technologies such as life streaming and microblogging are advised to take social motivation into account formulating their implementation strategies. Designers and users of social computing technology are similarly advised to consider latent social motivation effects that might occur in organizational teams when social computing technology and practices are introduced.

Keywords: Awareness, coordination, social loafing.

1 Introduction

Imagine a situation in which Ben, a member of a small team working in a financial service company, works alone in front of the computer in his small office. Feeling the urge to take a cigarette break, he rises from his desk. However, instead of immediately leaving his office, he composes and sends a short message to his colleagues via the company microblogging system to inform them. At the same time, Tina, a member of the same team, is about to leave the work area in her home office for a lunch break. However, as soon as she reads Ben's message, she decides to stay and work until Ben returns. Such an exchange might be considered unremarkable to a casual observer; however, by reporting on a case study in which such behaviors occurred we will show that social computing users, designers and researchers, should understand how and why such awareness practices are developed and changed because they can have an influence on team coordination and motivation.

To a great extent, the performance of a team depends on their ability to coordinate their individual efforts (Malone & Crowston, 1994). Under some conditions, however, there is the possibility that some of the members may question their own commitment and the commitment of others. For example, when a team member feels that their individual effort is not being measured and/or evaluated separately from the performance of their team, he/she may choose to exert less effort, feeling that others in the team will make up for their low performance (i.e., free riding). In this case, the social contract among the team members has broken down, resulting in "social motivation losses," and reduced performance for the team (Parks & Sanna, 1999).

Measuring and evaluating the efforts of team members is especially difficult when they are geographically dispersed, as the teams in our case study were. The lack of physical presence of team members denies them access to important social comparison information (Greenberg et al, 2007), and potentially increases social motivation losses. This is reflected in virtual teams research, which suggests that geographic dispersal affects the development of trust to the extent that some teams are unable to effectively perform their assigned task (Jarvenpaa & Leidner, 1999; Sarker & Sahay, 2003).

Fortunately, management research suggests that social motivation losses might be the exception rather than the rule under normal organizational conditions – where teams have a specific goal rather than just "do your best" and team members know each other and might work together in the future (Erez & Somech, 1996). Under such conditions, regularly monitoring others might better enable coordination (Malone & Crowston, 1994) and even inspire higher levels of performance from team members (cf., Kerr & Hertel, 2011).

The purpose of this paper is to examine why members of teams working under normal organizational conditions develop and refine their practices for maintaining awareness of the availability of other team members. We present a case study in which the methods for maintaining availability awareness emerged and evolved over time with changes in communication technology and other changes in the team context. Our paper begins with a theoretical foundation, which discusses the role of awareness practices in coordinating behavior in teams and includes brief review of the theories of social motivation losses. Next, we report the data from our case study in which employees of a financial services firm evolved their availability awareness practices. These results are then reported as empirical support for a framework, which identifies general factors that influence availability awareness practices, and how those in turn affect coordination and team performance. We conclude the paper with implications for researchers and tool designers.

2 Theoretical Foundation

When individuals are assigned to a team and given a task that must be accomplished by their collective efforts, the total amount of effort exerted is often less than what the individual members

would be capable of as individuals. The difference between a team's performance and the sum of their individual capabilities is called *process losses* (Steiner, 1972). Process losses can further be divided into coordination losses, which are the result of team members' efforts not being used fully or not contributed at the best time, and motivation losses, which are the result of individual team members choosing to not exert their full effort.

2.1 Coordination Losses

Coordination within a team can be defined as "managing dependencies between activities" (Malone & Crowston, 1994, p. 90). According to this notion, different kinds of dependencies between individual activities exist that must be managed by a team. As examples, a team might have a shared resource and have to schedule its use, or there might be a task-subtask relationship in which certain subtasks have to be performed before others. The management of task/subtask dependencies can be observed in a team context where various team members need to perform different activities that are all subtasks to achieve an overall team task or goal (Malone & Crowston, 1994). A concrete example for this might be a soccer team where the aim is to win the game. However, this can only be achieved if every player fulfills his or her specific subtask, which is defined by the role, such as keeper, forward, or defense, and the particular situation the team is facing. Thus, the performance of all subtasks must be managed such that the timing of the performance of each is done at the time a dependency is observed (e.g., defense is played until the team has an opportunity to go on the offensive). In summary, members of teams need to ensure that the efforts of all team members are coordinated – used in the most efficient and effective ways possible. A team and its members need to know for a given subtask: what to do, who should do it, and when it should be done. When a team and its members do not understand how their work will be coordinated, it results in tasks not being completed, duplicated efforts, or team members interfering with each other.

In order to coordinate his/her efforts with others, a team member needs to obtain information about the other members of the team. This "understanding of the activities of others, which provides a context for your own activity" (Dourish & Bellotti, 1992, p. 107) has been termed *awareness*. The notion that team members need to hold information about others is similar to the notion in transactive memory systems (TMS) that team members need to hold knowledge that links tasks, expertise, and people in order to most efficiently accomplish an interdependent task (Brandon & Hollingshead, 2004). However, awareness can be thought of more broadly, comprising all of the information that team members hold about each other that motivates one's present activities in the context of past team activities and leads to an intended future (Haines & Riemer, 2011). Maintaining awareness has been identified as a critical factor in ensuring that team members are able to coordinate their efforts in a variety of face-to-face contexts, including air traffic control (Harper et al, 1989) and subway control rooms (Heath & Luff, 1992).

2.2 Motivation Losses

Motivation losses typically occur when team members are in a situation where their individual efforts cannot be observed and evaluated separately from the effort of the team as a whole. When this occurs, team members may not exert their full effort (Parks & Sanna, 1999). For example, members of a tug-of-war team win based on the efforts of the entire team, but the effort of an individual member is difficult to determine. Thus, a given member might not necessarily pull as hard as he/she could. This effect is generally termed social loafing.

Social loafing has been shown to occur in a wide variety of social computing contexts, including group decision support systems (Shepherd et al, 1996) and online communities (McLure-Wasko & Faraj, 2005); however, there is little research into how being a member of a team using social computing technology affects motivation beyond contributing to the online community itself (Hertel et al, 2004). The primary individual drivers of social loafing are dispensability and low involvement

(Parks & Sanna, 1999). A perception of dispensability occurs when a team member feels that his/her efforts are not necessary for achieving the team's goal. Low involvement is evidenced when a team member contributes little to the team's effort because he/she has little interest in accomplishing the task and/or does not feel motivated to achieve the team reward.

Social loafing is shown most often experimentally using disjunctive tasks, where the team's performance is determined by the performance of the best member of the team (Steiner, 1972). For example, an organizational team may be assigned to identify a solution to a problem. If the team's performance is determined by the quality of the solution, one or more team members may stop contributing once they feel that an acceptable solution has been suggested by another team member. In such cases, it might be better to have team members generate solutions alone and pool the suggested solutions later (Pinsonneault et al, 1999). The causes of social loafing share one necessary component – team members' contributions to the team's work cannot be individually observed or measured. Thus, increasing awareness should be associated with decreased social motivation losses because it makes individual efforts more visible.

2.3 Mitigation of Losses via Social Computing Technology

In contexts where team members are geographically separated and social computing technology is used, creating and maintaining team awareness is as important as in face-to-face contexts – members need to coordinate interdependent tasks (cf., Gutwin & Greenberg, 1996; Espinosa et al, 2007). However, awareness may be more difficult to acquire and maintain because the lack of physical presence of others makes it harder to collect information about what they are doing. Some awareness information can easily be obtained when another is physically within view and earshot, but such information may be difficult or impossible to obtain when only the traces of the other's activity are observed (Schütz, 1945).

To deal with this lack of easily obtainable awareness information, team members can employ awareness practices using their communication technology. For example, features of an instant messaging (IM) program can be employed to create and maintain awareness of their team members' presence or activities (Riemer et al, 2007). If individual team members display their presence via CMC (e.g. by changing the IM presence status from online to away), other team members can monitor such changes and thus feel more aware of their team members' comings and goings. Based on this information, the team may be able to better coordinate their individual activities in order to ensure the achievement of an overall team goal (e.g., making sure that someone from the team is always available via IM).

Awareness practices can also affect the motivation of team members. If a team member feels that the comings and goings they observe via IM represent efforts exerted by others, he/she is likely to feel reciprocally that other team members observe his/her changes in IM status as effort observed. Thus, in a team that is rewarded for an overall goal of having one member always available via IM, an individual team member might feel that they should make more effort to be available via IM.

3 Research Design

The research presented in this paper is the result of a case study of back office teams in a medium-sized financial services company, identified by the pseudonym MUFIN. We conducted interviews at different organizational levels of the company (e.g., managers and employees), and with 13 members of ten different teams in one operating department.

3.1 Data collection and analysis

In February 2010, we conducted interviews with managers of the IT department to get a good overview of the company and team background as well as the existing set of available communication technology. In June and July 2010, we conducted semi-structured interviews with the employees. One key question of these interviews was: Why and how are different technologies used to create awareness of other team members' presence and availability? In August 2010, we discussed our preliminary results with IT managers and the head of the operating department. We tape-recorded the interviews with the team members and the head of department and transcribed them. The interviews with the managers were not tape-recorded in order to facilitate a candid discussion.

The interviews were analyzed by looking for points in time when the interviewees said team awareness practices had changed. Next, we identified the factors that led to the changes in the practices. Finally, we re-read the interviews to identify outcomes of the new practices. In the text below, the quotes presented are highlights from the interviews.

3.2 Case Setting

The headquarters of MUFIN comprises several departments – the IT department and several operating departments. The latter are subdivided into several divisions, each of which consists of approximately 15 small teams with about 8 to 12 team members. These teams provide day-to-day support for the decentralized sales organization, whose members are spread over the entire country. Besides processing standard files for the sales agents, the daily work of the employees of the teams also consists of communicating with sales agents, customers and colleagues inside or outside their teams. Normally, a single team member is responsible for processing their own set of standard files in a timely fashion, meaning efforts within a team only need to be coordinated to the extent that someone must be present when a sales agent or customer calls.

Over the time period covered by this case study, employees could draw on a variety of communication technology: telephone, E-Mail, and instant messaging (IM). Employees had two technologies for sending E-Mail: 1) The E-Mail function of Lotus Notes and 2) the E-Mail function of the MUFIN Application System (MAS). For IM, team members could use the messenger feature of the Information Management System (IMS), which was introduced in the late 1980s, or the chat feature of IBM Sametime, which was rolled-out in March 2010.

The physical structure of the workplace consists of small offices, each with two work places. Since 1995, most of the investigated teams include team members that practiced alternating telework, meaning they alternate between one workday at home (home office) and a workday in the head office. Two team members with complementary rhythms normally share a desk and thus only meet face-to-face at common team meetings.

4 Case Study: Evolution of Awareness Practices

Besides E-Mail, telephone is a dominant communication medium for team members, especially when communicating with people outside their team. Every team member has his/her own telephone number, and in addition, every team has a team telephone number. If someone calls this team number, the call also rings the phone of all team members who have connected to the team number at that moment. Team members normally have to answer both types of calls – their own phone number and any team calls. Furthermore, if a team member will not be able to answer the telephone (e.g. in case they will be in a meeting), he/she can forward her incoming calls to the team number. Only in cases of extreme pressure can team members log off from the team number.

4.1 Basis for Awareness Practices: Team Goal

Because the employees in the headquarters function as a back office for the sales organizations, it has always been important that incoming calls from the sales organization are answered immediately. In the late nineties, MUFIN's management decided to improve telephone response rates at the team level by including it in the calculation of the annual team bonus. The head of department explains:

> "In the late 1990s we did some intensive optimizing of the telephone response rate. It is like a kind of registration authority. When you leave, when you arrive, when you shift your phone, all these things had been a little loose. We had always monitored these things, but in 1999 we added them to the variable salary. […] We monitored it for every team, the telephone response rate, and then we compared all teams."

After this point, one of the teams' goals became achieving a good telephone response rate to assure a bonus. Thus, teams had to coordinate telephone availability at the team level. This meant that team members needed to be aware of the comings and goings of their other colleagues to decide on their own availability, because it was crucial that there were enough team members to answer the phone.

According to Steiner's (1972) classification system for team tasks, the task of ensuring that there is always someone available to answer the phone would be considered a discretionary task: the teams can determine the best way to allocate their efforts in order to achieve the goal. However, there is an element of a conjunctive task as well: if one team member does not make the other team members aware that they are unable to answer the phone, the performance of the entire team suffers. From a dependency perspective (Malone & Crowston, 1994), the main goal is to answer the phone, and this goal can only be reached if the team members' individual availabilities are coordinated such that at enough members of the team are available (i.e., the overall team availability is 100%).

4.2 Awareness Practice based on IMS Messenger

Coordinating telephone availability on the team level was difficult during the time period immediately following the new availability requirement, as the head of the department remembered:

> "… they really obsessed about this and started to scream at each other: 'Why haven't you shifted your telephone? Man! You have to shift it to the team number when you leave your office.'"

The physical context of the workplace made it difficult for team members to be aware of their colleagues' presence or absence from the workplace. As knowing this was essential when deciding on one's own presence or absence, teams started to use the IMS messenger system to inform each other about their absence by sending group messages to all group members. The head of the department continued:

> "This is why there is an incredible huge sensitization about telephone: 'I will be gone for a few minutes or I won't be available'. And we don't have open-plan offices. Thus people might have said: 'I don't know about the other. It seems that I am the last one doing business and answering the telephone.' … and to avoid this: 'Before others might think that I am intentionally not answering the phone, I prefer to give notice of my departure'. This is why this practice evolved."

With IMS messenger, employees sent short messages to individuals by addressing the ID number of this person. In most cases, this ID number contained the number of the corresponding team (e.g. 45), meaning it was possible to send a message to an entire team by addressing it to the team ID followed by a wildcard (e.g. 45*). Thus, team members developed a practice of using IMS messenger to send text messages to their team whenever they needed to leave their work place and informed their team members about their absence and its duration. This not only coordinated their availability, but also reduced suspicion about whether other team members weren't making themselves available to answer the phone.

4.3 Awareness Creation Practice based on E-Mail

Over time, due to some organizational changes in the team structures, employees experienced some problems when using the IMS messenger to inform their team members about their absence. Because some employees changed their team membership but maintained their ID number, it was no longer possible to send team messages by simply addressing the team number plus wildcard. Instead, employees had to address every member to reach the whole team. One employee stated:

> "The ID numbers, they were not adjusted to the actual tasks. Thus, when someone moves within MUFIN [into another team], he keeps his ID number … Well, there has been a lot of movement, and now it does not fit with the teams, I mean the ID numbers … and now I would have to address every single person individually …"

As this became very inconvenient, team members changed the practice to a new communication medium, E-Mail, because of the possibility to define groups of recipients. However, using E-Mail had some downsides. For example,

> "If someone is not there at a specific day, he does not need to receive an E-Mail saying 'I am back in half an hour'. Actually, such messages can go straight in the trash."

> "Sometimes, when our server is overstretched, E-Mails arrive with a delay of two hours."

In spite of this, team members still used E-Mail because they were able to maintain enough awareness, and using E-Mail instead of the IMS messenger was perceived to be more suitable. Furthermore, at that time, there was no comparable communication medium that could be used instead.

4.4 Awareness Practice based on Sametime

In March 2010, Sametime was rolled-out for voluntary use. This extended employees' set of available technology and led to some changes in the existing practice of using E-Mail for creating awareness. In addition, although the employees had been familiar with how to communicate activity information via text, the presence information feature of Sametime was new to them and led to the creation of new practices.

Awareness Practices using Chat Feature: As the employees had perceived some downsides of using E-Mail for signaling availability, most of them welcomed Sametime as an alternative that was similar to IMS messenger. Thus, there were some teams where members simply changed from using E-Mail to using Sametime for signaling availability via text messages. This only happened in teams where all members were using Sametime – due to its use being voluntary, there were teams where Sametime was not used by all team members. Within these teams, the shift from E-Mail to Sametime to signal availability did not take place.

Interestingly, there was one team with full group adoption, where the team members developed a practice of using both Sametime and E-Mail for signaling awareness about their team availability. Team members in this team perceived Sametime to be appropriate when informing others about aspects of availability that were only relevant within a day (e.g., "I am off for half of an hour"), but perceived E-Mail to be more valuable when they wanted to inform their team about a longer absence from the workplace (e.g., when they went on holiday), because E-Mails were documented and archived.

Awareness Practices using Presence Feature: Sametime's presence feature enabled new methods of signaling. Prior to the introduction of Sametime, availability was only signaled by writing text messages. After its introduction, employees started to also signal their availability using the presence feature of Sametime: for example, by actively changing their presence status from "available" to "away" or "in a meeting" when they left their workplace. Furthermore, members of some teams added additional text to their status information. One employee reported:

> "Right now, the additional label for my status information says: 'I am available @MUFIN", I have written this … and when I am working from home, it would say: 'I am available @home'."

Besides the active forms of signaling (changing the status and/or entering an additional label), automatic forms of signaling were also reported, like when the computer was inactive for a certain time or when someone has logged off by pulling out his/her identification card from his/her computer. One employee explained:

> ".. when I pull out my card, the status automatically changes to 'not available' and that's it."

Although they began to use the status information to signal their own availability actively or passively (e.g. by pulling out their identification card), the practice of coordinating team availability by using the chat feature of Sametime and by writing text messages also continued.

Monitoring was also changed as a result of Sametime's presence feature. Prior to the introduction of Sametime, awareness about someone's availability always depended on the active signaling of that person via text messages. After the introduction of the presence information feature of Sametime, employees could monitor the availability of their colleagues at any time under the assumption that they would be connected to Sametime for their entire workday, whether they were at home or in the office. Although the presence information feature was perceived by some employees as a possible instrument for surveillance, many of the interviewees emphasized the advantage of using Sametime for monitoring availability of other team members – in essence, they were able to better create an awareness of other's availability. This allowed them to better coordinate team availability and to manage telephone response rate. Some of them stated:

> "I always have a look at my buddy list to see who is online, when I arrive in the morning. Starting at 8 a.m., we have to answer the telephone. If I arrive at 8.15 a.m. and no one is online, I know that I am the only one and that I have to connect to our team number."

> "We use the presence information of our team members to coordinate availability. It is not ok to leave the work place for lunch or a cigarette break, if already half of the team is absent."

Because the Sametime status changed automatically when a team member's identification card was inserted or removed from their computer, it began to be viewed as a proxy for availability. This led to a new level of visibility and connectedness, and enabled team availability to be even more closely coordinated than by sending a chat message. As one employee put it:

> "You always notice. When I have pulled my card out of my computer, rarely someone calls, in other words if it says "I am not available" or if I am in a meeting … no one calls. When I put in my card and one can see that I am suddenly there, my telephone suddenly rings and then 'I have seen that you have just logged in to Sametime' …"

The ability to monitor comings and goings via the presence feature also had the effect that individual team member effort was seen to be more visible to other team members, leading members to be motivated to make themselves more available. One employee reported:

> "…I don't know, after 5 p.m. when it is normal that one called it a day and then sees ...'Man! You are still working. Thus, I have thought that I might just call you to clarify some things'. Thus, one knows who is there and one can get through to someone quickly …"

> "… it is really interesting in the evening at about half past 5, who is still there. I think I have never seen all 27 people - belonging to my buddy list - being online at the same time. Right now, 18 out of 27 are online and at about half past five it will be about four, then three, then two. One day I just said; 'Today, I work till such time as I am the last one being online.' I really did this and then ... I found it really funny and I really managed it."

Thus, the employees assume that just being connected and available on the Sametime system indicated that the others were working. The team members reported that this is because team members were under individual pressure to process case files over the course of the day, and could assume that others

were under similar pressure. Having to answer the team phone was seen as an important duty, and, as noted earlier, one that could only be neglected when the number of case files to be processed by an employee was too high.

5 Discussion and Conclusions

Based on our analysis, we developed a framework that describes the factors that led to changes in awareness practices and the resulting effects of those awareness practices on team coordination and performance (Figure 1). The earliest driver of change was the implementation of the team bonus for telephone availability, which not only gave the team members a reason to be coordinated, but also made them aware that the efforts of the team members were not visible.

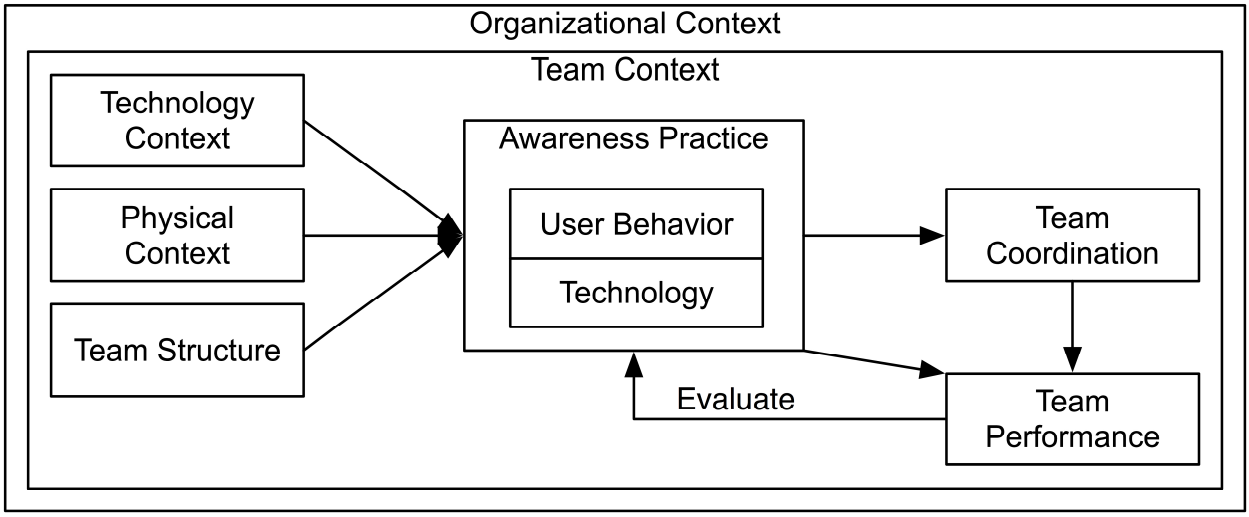

Figure 1. Framework of Why Awareness Practices Change.

As illustrated in our case, teams developed awareness practices by selecting a technology tool from the portfolio of tools that was available in the organization (e.g., IMS, E-mail, Sametime), and incorporating a specific user behavior that together held significance for the team. An example of an awareness practice might dictate that a team member should notify all of the other team members before he/she left her workplace for a meeting. Specifically, the team member should compose a note using E-Mail that contained the text "I will be in a meeting for the next 2 hours in room 214," address it to all of the other team members, and send it. Over the time period covered by this case study, changes in awareness practices occurred: 1) when the teams received the new goal and were having difficulty achieving it, 2) when changes in the teams' structure meant that the practice of using IMS was no longer effective, and 3) when the use of a new, but voluntary technology was seen as a more useful way to signal and monitor availability.

The left side of our framework illustrates the motivations that team members gave in our case study for developing new awareness practices: their technology context (i.e., what communication technologies are available), physical context (i.e., the geographic dispersal of team members), team structure (i.e., which organization members are on the team), and an evaluation of their team's performance (i.e., is the team achieving its goals in a satisfactory manner?).

The right side of the framework links awareness practices with team coordination, which in turn influences team performance. As noted earlier in the Theoretical Foundation section, teams need to effectively coordinate their activities. In order to reduce *coordination losses*, the members of the team need information about the activities of the team members (i.e., awareness). We also found that the practices for communicating availability of team members had the additional effect of decreasing *social motivation losses*. Team members were observed to show frustration with other team members

when they were unable to know when others were available to work. These frustrations declined when awareness practices were introduced. With the introduction of Sametime, team members developed additional awareness practices that relied on automatic status changes resulting from removing the identification card from one's computer. Although these practices were less explicit and often weren't directed at increasing coordination, they had a direct impact on team performance because team members used this information to gauge the extent to which they and others were working. Thus, team members are also able to reduce social motivation losses by developing awareness practices, reflected in our framework as a direct link from awareness practices to team performance.

There are limitations to this study that present opportunities for future research. Although our case involved members of ten different teams within MUFIN, teams in other organizations with different cultures might react differently. In addition, we relied primarily on interview data, which might be affected by recall bias. Experimental and/or survey research could be used to confirm the relationships and causal effects that are proposed in our framework. Finally, team members in MUFIN had the motivation to maintain awareness about the availability of others because availability formed the team goal. However, in a context where the team goal was the completion of a collaborative document or project, availability awareness practices might be considered an unwelcome distraction and not fit with the task. We emphasize that this could be as much or more a task-practice fit than task-technology fit because team members might be able to choose whether or not to be prompted by such messages and/or use that information for purposes not intended by the designers of the technology. For example, being aware of the comings and goings of other team members might be viewed as a proxy for how much effort was being made and increase social motivation – members of a software development team might view the checking in and checking out of code from a repository as a means for gauging the effort of other team members and adjust their social motivation accordingly.

5.1 Implications for Practitioners

Designers of social computing technology that provide the ability for awareness creation and managers of teams that use such technology should be aware of the social psychology implications of developing awareness practices. The ostensible reason for such practices is to enable better coordination of team work, but being able to monitor others' availability has social motivation implications. Normally, the presence feature of IM applications is considered by technologists to indicate simply whether or not the person is able to communicate. This study shows that such a tool can mean more than that to team members. In this case, we found that team members observed when others' status changed and used this information not only to determine when others were available for work, but also as a means for determining how much they were working. In addition, we found some evidence that team members are motivated to be sure that their efforts measure up when compared with others. Thus, we suggest that the adoption of social software such as life streaming, microblogging, wikis and online communities will likely have implications for social motivation among the participants.

A shared/team goal is likely a critical antecedent to whether a team member will wish to be aware of the activities of others. In our study, practices for monitoring availability did not emerge until after such a goal was given. Before this time, the team members in our case study did not seem to think such practices were necessary. Once the goal was introduced, team members showed frustration with the lack of availability information, which motivated the development of awareness practices. Without a team goal, such practices would probably not have emerged.

Finally, we note that these practices for providing awareness of availability emerged from team interactions. In this case, management clearly had the option to simply dictate a practice for ensuring that enough team members would be available to answer the phone. For example, by developing a schedule that ensured hour-by-hour coverage and dictated when each employee could take breaks for lunch, etc. We speculate that such a practice would not have the motivating effects that the team

developed availability awareness practices had. Thus, if management dictates practices rather than simply goals, employees will simply follow the practice and fewer beneficial side effects may occur.

5.2 Implications for Future Research

Researchers in the area of social computing have embraced the notion of process losses. In awareness research, much attention has been given to the need for awareness to reduce coordination losses (Gutwin & Greenberg, 1996). However, there has been little attention paid to the mitigation of social motivation losses that might occur when team members have increased awareness of other team members. We propose that social motivation losses will decrease when awareness practices are introduced, and might decrease spontaneously when IT artifacts are adopted that automatically track comings and goings (e.g., the Sametime presence feature).

In online communities research, the notion of social motivation losses has been used to explain the extent to which individual users contribute material and/or knowledge to a community (McLure-Wasko & Faraj, 2005; Butler, 2001; Ling et al, 2005; Ludford et al, 2004; Michinov & Primois, 2005; Yuqing Ren et al, 2007). This study is unique in that it finds that social motivation can both drive contributions to a community (i.e., sharing one's status) and have social motivation effects on work that is not directly related to the community. For example, one might be following a company microblog on human resource practices, and find the tweets very useful and be impressed by the number and quality of contributions. However, one might not be an expert on human resources and thus feel like one has nothing to contribute. Instead, one might be motivated to contribute to the company wiki on a topic where one is able to provide some expertise.

Finally, we note a "between the lines" interpretation of the attitudes of the team members in this case: as time passed and awareness practices became more sophisticated, team members seemed to use positive rather than negative language about efforts. Moreover, the point of evaluation seemed to shift from judging the efforts of others, to judging the efforts of oneself. In essence, we found that the descriptions of the later awareness practices were accompanied by statements about feeling more motivated to work harder, while the earlier practices were associated with statements about ensuring that others were working hard enough. Thus, we suggest that awareness might be associated with social motivation gains (cf., Kerr & Hertel, 2011) under some organizational conditions.

In summary, we have outlined a framework that explains why awareness practices emerge. Using our case study as a reference, we have identified the technology context, physical context, team structure, and an evaluation of how well the team is meeting its goals as reasons why a team alters its availability creation practices. Furthermore, we have identified team coordination and team performance as results of using availability awareness practices in teams. These can be considered as ways that teams can overcome process losses under normal organizational conditions, improving coordination and increasing social motivation within teams.

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