Not Too Much, Nor Too Less: Investigating Which Information Should Be Shared for Awareness Between Remote Workers

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ABSTRACT

Many companies are focusing on remote working since the Covid-19 pandemic. One difference between remote working environment and face-to-face setting is the absence of natural awareness, which promotes social interaction and helps coordination of work flow. To maintain the benefits of awareness in a remote working environment, it is important to first understand which information remote workers disclose and need for awareness. In this paper, we aim to investigate which information is disclosed and needed, and provide insights to mitigate the difference between the two. We conducted a case study with an actual workgroup of a university laboratory for a week. They disclosed and accessed each other's status information while working remotely. Then, a semi

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KEYWORDS

Awareness; information sharing; remote working; CSCW

Table 1: Information collected or considered necessary in previous studies on awareness

Information Type	*Questions answered*
Personal Information	What is your phone number?
	What is your email?
Presence	Are you in a specific area right now?
	Are you using a specific object right now?
	Is there a speech/motion being made?
	Is your computer on?
	How long did you not touch your computer?
	How many windows are open on your desktop?
	Are you logged in?
	When did you last log in?
Specific Activity	What work are you doing right now?
	If you are chatting/in a meeting, who are you chatting with?
	If you are chatting/in a meeting, what are you talking about?

-structured interview asked why certain information was disclosed or accessed. Our results provide understanding over information sharing between remote workers for awareness in a post-pandemic world.

INTRODUCTION

Many companies adopted remote working due to the Covid-19 pandemic. While remote working increases flexibility and productivity of workers, there are also negative attributes such as lack of awareness [1, 10]. In a face-to-face setting, awareness helps to assess availability for social interaction and encourage spontaneous coordination [4, 6].

To maintain the benefits of awareness in a remote working environment, it is necessary to first understand which information remote workers disclose and need for awareness. We aim to investigate 1) which information is disclosed and 2) which information is accessed between remote workers for awareness, and 3) provide insights to mitigate the difference between the two.

We conducted a case study with an actual workgroup of a university laboratory for a week. The participants used a pseudo-service to disclose and access each other's status information. Then, a semi-structured interview asked why certain information was disclosed or accessed. The status information types examined in this study were set based on previous studies on awareness.

This paper organized information types that were collected and investigated in previous studies on awareness. We also captured the gap between disclosed and accessed information through case study. Furthermore, we provide understanding of awareness in a post-pandemic remote working environment, where various collaboration tools are already available.

DECIDING WHAT QUESTIONS TO ASK

To set questions for the case study, we looked at previous studies on awareness and organized information types that were collected or considered necessary. The information could be collected through video technique [6, 9, 12], sensor technique [3, 4, 11], application or device data [2, 3, 5-8] and self-report [2, 6, 7, 9]. Information types and questions answered by the provided information are organized in Table 1.

This study decided to ask 8 types of information: specific activity, location, device availability, time availability, social availability, emotional availability, schedule and contact method. The final 11 questions asked in the study are as follows:

1. Where are you right now?
2. What work are you doing right now?
3. Can you use your computer right now?
4. Can I interrupt you right now?
5. When can you be interrupted?
6. How can I reach you?
7. Are you active in chat/in a meeting?

Table 1 continued

Location	What is your past and current location?
	What is the physical difference between you and I?
Device Availability	Can you use your computer right now?
Time Availability	Can I interrupt you right now?
	When can you be interrupted?
Social Availability	Are you active in chat/in a meeting?
Emotional Availability	What is your mood?
Schedule	What is on your calendar?
	What is your next plan?
Contact Method	How can I reach you?

Table 2: Demographic information and daily location of the study participants

ID	Gender /Age	R(remote), O1(office1), O2(office2)									
		Day1		Day2		Day3		Day4		Day5	
P1	M/32	R	O2	O1	O1	R	O1	O1	O2	O1	O1
P2	F/26	O2	O2	R	R	R	R	R	R	R	R
P3	F/29	O2	O2	O2	O1	R	R	O2	O2	O1	O1
P4	F/27	O1	O1	O1	O1	R	R	O1	O1	O1	O1
P5	F/25	O1	O1	O1	O1	R	R	O1	O1	O1	O1
P6	F/23	O1	O1	O1	O1	O1	O1	O1	O1	O1	O1
P7	F/33	O2	O2	R	O2	R	R	O2	O2	O1	O1
P8	F/25	O2	O2	O2	O2	R	R	O2	O2	O1	O1

8. If you are chatting/in a meeting, who are you chatting with?
9. If you are chatting/in a meeting, what are you talking about?
10. What is your mood?
11. What is your left plan for today?

METHODS

A one-week case study was conducted with an actual workgroup composed of 8 students working at a university laboratory. The workgroup worked at an office inside the campus (office1), an office outside the campus (office2) or some other remote location of their choice. They were in a mixed remote working environment, where more than one person could be in office1 or office2. Demographic information and daily location of the participants is shown in Table 2.

The workgroup used a pseudo-service to disclose and access status information for a week, and then participated in a semi-structured interview. They were asked the 11 questions as finalized above at least 6 times a day during working hour. They could either answer or skip each question. Their answers were instantly uploaded to a website where they could access others' answers for each question (Figure 1). Post interview asked why certain information was or was not disclosed and accessed.

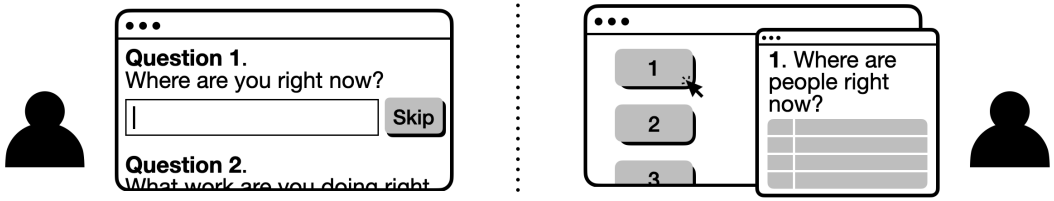

Figure 1: Screen of the pseudo-service when disclosing (left) and accessing (right) information

To see which information was disclosed and accessed, response rate of the 11 questions and page view of each question tab on the website was measured.

RESULTS AND DISCUSSION

A total of 1,511 status information was collected from the 11 questions, and a total of 312 access occurred from the 11 question tabs on the website. Disclosure rate of each 11 question is shown in Figure 2, and access rate of each 11 question tab is shown in Figure 3. In both figures, questions are in order of highest to lowest disclosure rate. The difference between the two figures indicates difference between which information people disclosed and accessed.

We present five insights to mitigate the difference between disclosed and accessed information drawn from the actual data and interview results.

Location and Current Task (High Disclosure, High Access). Questions 'where are you right now?' and 'what work are you doing right now?' recorded both high disclosure rate and high access rate. This

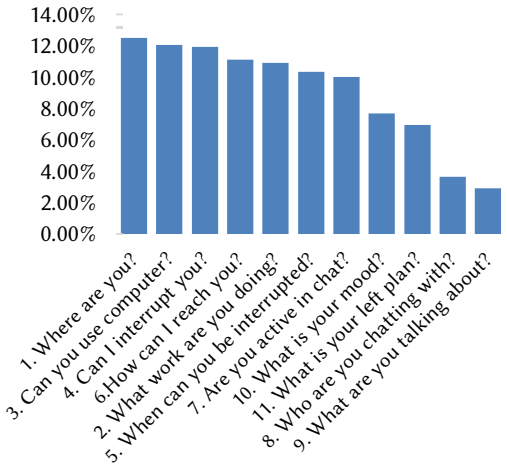

Figure 2: Disclosure rate of the 11 questions in order of highest to lowest disclosure rate

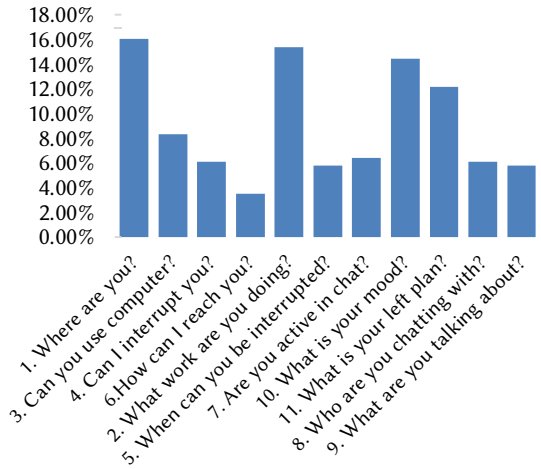

Figure 3: Access rate of the 11 question tabs on the website, in order of highest to lowest disclosure rate

may be because location and current task is the most important information workers need to share in a remote working environment. Hence, people are open to sharing and accessing the according information. About location data, P2 added, "Location is just the most basic information when you're working apart." Information about current task was considered something they should "report to co-workers" by many participants.

Emotional Availability and Schedule (Low Disclosure, High Access). Questions 'what is your mood?' and 'what is your left plan for today?' showed low disclosure rate but high access rate. Participants said that they did not disclose this information as it is "too private" or "not important when you're working". Yet, they were still "curious" about what others would say. P5 said that it is "like social media, you don't disclose yourself but lurk on others."

Device Availability, Time Availability, Social Availability and Contact Method (High Disclosure, Low Access). Device availability (can you use your computer right now?), time availability (can I interrupt you right now? when can you be interrupted?), social availability (are you active in chat/in a meeting?) and contact method (how can I reach you?) showed high disclosure rate but low access rate. Most of the participants explained that this information is important but already available through other platforms. Hence, they were not reluctant to disclose the information, but at the same time considered it unnecessary to access. Participants usually used Slack, an online collaboration tool or KakaoTalk, an instant messaging application. P8 said, "We have KakaoTalk and Slack. We can just send a message and they'll respond when they are available."

What People Are Talking About with Whom (Low Disclosure, Low Access). Questions 'if you are chatting/in a meeting, who are you chatting with?' and 'if you are chatting/in a meeting, what are you talking about?' recorded both low disclosure rate and low access rate. Participants agreed that this information is "too private" and "not important". Hence, they did not disclose the information and also were "not curious what others would answer."

Status Information Is Still Useful in a Mixed Remote Working Environment. Most participants agreed that status information was "useful in catching up with all workers," whether they were in the same office or not. Still, when all workers except one gathered in a single office, they did not disclose nor access as all workers "were right in front of me." Their answers imply that sharing status information is not useful in a completely face-to-face setting, but in a mixed remote working environment, all members' information becomes useful.

CONCLUSION AND FUTURE WORK

Our work provides understanding of which information should be shared for awareness between remote workers in a post-pandemic world. We organized status information types based on previous studies on awareness and investigated the gap between disclosed and needed information through case study. Our results also captured the new remote working environment that is assisted by already existing collaboration tools. Further research is required to confirm the applicability of the insights among common workgroup.

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