PERCEPTIONS OF PRESENCE: DISCURSIVE AND EMBODIED EXPERIENCES IN GLOBAL COLLABORATION

Complete Research

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Abstract

When working in globally distributed settings, the perception of presence in collaboration and the use of technology directly impact how people are able to act in daily work practices. In this paper, we want to identify new ways to transform the way people think about presence in global collaboration, with the aim of improving the collaborative possibility for working closely with remote colleagues. In particular, we want to experiment with new techniques and approaches for facilitating reflections among the globally distributed participants, directly improving their conditions for work. Based upon previous research on global collaboration, we conducted, an action research study over a period of 20 months, where collaborative partners working within a global engineering company were invited to participate in workshops facilitating improved global collaboration. Through two action cycles we improved the approaches and techniques to make people reflect upon current practices with the aim of transforming their perceptions of presence when working remotely. In this paper, we present the results of this action research arguing that while discursive interventions challenging people’s perceptions are relevant and important, the embodied experience of the activities are essential to be able to transform people’s perceptions on presence and improve the global collaboration.

Keywords: Global collaboration, action research, interventions, embodied experience.

1 Introduction

Global collaboration certainly suggests a host of new opportunities for individuals and companies alike. With the arrival of various collaborative technologies new opportunities for global collaboration continue to emerge, but with new technologies, new questions and challenges also materialize (Maznevski and Chudoba, 2000; Gibson and Cohen, 2003; Olson and Olson, 2013). These challenges include technological discontinuities, time zone differences, and cross-culture communication (Bjørn and Christensen, 2011). One key challenge in global work is related to people’s perceptions of presence in global collaboration and the ways in which closely coupled interaction is possible across geographical distance. People’s perceptions of distributed collaboration directly impact the ways in which daily work practices emerges (Bradner and Mark, 2002; Orlikowski and Gash, 1994). The process of transforming perceptions and work practices in global collaboration is a topic, which deserves attention (Dubé and Robey, 2008).

In this paper, we want to identify new ways to transform people’s perceptions on presence in global collaboration, with the aim of improving the collaborative possibilities for working closely with remote colleagues. Thus, theoretically grounded within the literature on global collaboration, presence and transformation (e.g. Bjørn et al. 2014), we conducted an action research project (Rapoport, 1970), with the aim of transforming people’s perception of presence over two action cycles. The action research study was conducted within a research and development (R&D) department of a global engineering manufacturing company we refer to as "ScanEngineering".
The practical goal of the action research project was to concretely facilitate participants in the R&D department, who were globally dispersed to improve their collaboration. During the last decades the organizational structure of the R&D department has changed from a primarily Danish department to a global division located in China, Hungary, and the US. This organizational required a change in the ways management interact with each other and engage in technology-mediated activities. Particular ScanEngineering wanted to empower and increase the involvement of the subsidiaries in new products development in the R&D department. Thus, the action research interventions were designed with the dual goal of supporting the practical challenges of designing appropriate interventions while developing theoretical conceptualizations on the characteristics of such successful interventions. We found that while interventions based upon discursive characteristics can support reflective practices, embodied interventions turned out to be most effective. The embodied interventions were organized as activities where the participants were challenged in their perceptions of presence in global collaboration through collective embodied experiences with global colleagues.

The paper is structured as follows. First we review previous literature on distributed work with an emphasis on presence and transformation in global collaboration. This is followed by an introduction to the action research project, including detailed account of the data sources. The result section is divided into two main sub-sections, each presenting the interventions as they were planned, executed, and reflected upon in the two action research cycles of the project. We then discuss the results of the empirical investigations with the aim of figuring out, why the interventions in the second cycle were much more effective than in the first action cycle. Finally, we present our conclusions.

2 Working globally

2.1. Global collaboration

Working globally is the new normal for many multinational companies within global software development, manufacturing, engineering (Majchrzak et al., 2000) and research in distributed collaboration has become core for IS research (Vlaar et al., 2008; Matthiesen et al., 2014) Predominately, collaboration across geographical distance has been investigated in terms of common ground, coupling of work, collaborative readiness, technological readiness, and management and decision making (Olson and Olson, 2014). Even with later revisions and newer results in distributed work research (Bjørn et al., 2014) it is confirmed that geographical distance still matters.

Traditionally the literature has conceptualized geographical distance and perceived distance as similar and overlapping notions. However, Bradner and Mark (2002) show how the potential impact that geographical distance has on distributed collaboration is not fixed, but rather dependent on factors such as the amount of interaction. Thus, although team members initially cooperate less with someone they perceive as far away, their willingness to interact increases quickly with interaction (Bradner and Mark, 2002). Bjørn et al. (2014) support this finding showing how geographical distance matters less among closely-coupled workers due to continuous interaction compared to their loosely-coupled counterparts.

O’Leary et al. (2014) show how objective proximity has generally weak or mixed relationships with perceived proximity, communication and shared identification, and no effect on relationship quality. In contrast, the communication and identification processes generated perceived proximity in significant ways (O’Leary et al., 2014). Thus, global collaboration are dependent not only on geographical distance but on the perceived proximity to distributed colleagues building on factors such as the amount of interaction, shared identity and organizing of work. Understanding the perceptions people have in regard to their work can be particularly useful in order to understand the challenges with glob-
al collaboration. Social cognitive research has long shown that individuals act on the basis of their perceptions of the world, and in doing so enact particular social realities and endow them with meaning (Berger and Luckmann, 1967; Weick, 1979).

Orlikowski and Gash (1994) define “technological frames” as a useful analytic perspective to understanding team members’ perception of technology and their interaction with it. While technological frames are individually held, it is nonetheless useful to distinguish those cognitive elements that – through socialization, interaction, or negotiation – individuals have in common. Orlikowski and Gash (1994) use the term technological frame to identify that subset of members’ organizational frames that regards the assumptions, expectations, and knowledge they use to understand technology in organizations. Studies show how recognizing the central influences of the technological frames, is critical to developers, researchers and practitioners of global collaboration (Orlikowski et al., 1992; Bjørn et al., 2006).

2.2 Presence in global work

Global collaboration challenges previous perceptions of presence, because it enables team members to participate in different interactions at one time, and to be present in interactions at distant places. Presence is a complex phenomenon and its conceptualization has evolved in part because technology has become more social and used for various applications (Kim and Biocca, 1997; Schultze, 2010). Presence has developed from a single concept of telepresence to a multi-faceted concept of psychological states including spatial, social and time-related aspects (Schultze, 2010). Thus, the original notion of telepresence referring to the overall sense of existing or “being there” in the virtual space (Ijsselsteijn et al., 2001), now further entails the sense of “being with” (e.g. social presence, Bente et al., 2008) and being connected all the time (e.g. eternal presence, Loy, 2007).

Given the interactional and social nature of global collaboration, the form of presence that is of primarily relevance here, is that which is termed “social presence” (Kim and Biocca, 1997; Schultze, 2010). Social presence was originally defined as the medium’s ability to increase others’ salience in an interaction (Short et al., 1976). However, in later research social presence became a term, which reflects the subjective experience of closeness to and connectedness with others in mediated communication (Schultze, 2010, p. 438).

There are different theories on how to influence the sense of presence in computer-mediated worlds. Waterworth and Waterworth (2001) posit how the technology user is simultaneously present in both the “real” and the “computer mediated” world. When the user’s sense of presence shifts from the computer mediated to the real world, this leads to a “break in presence” (Garau et al., 2008). However, the break in presence need not necessarily be caused by a shift to the real world but can also be a shift to a private, internal world of thoughts and dreams, and the user become absent (Waterworth and Waterworth, 2001). Presence is a question of where attention is allocated. The number of distractions from both the actual and the computer-mediated environment that influences the user determine his ability to attend to the virtual world.

Presence is further dependent on the extent to which the user makes the event in the computer mediated communication meaningful by attaching significance to them, which in turn enhances presence (Byström, Barfield and Hendrix, 1999; Salinäs, 2002). Existing research shows how presence has a strong positive effect on both memory and persuasion, which again enhance the transfer from the computer mediated world to the “real” world (Kim and Biocca, 1997). Kim and Biocca (1997) further show how the absence from the physical environment’s distractions is critical to enhance the participants’ memory and persuasion.
2.3 Transformation of global work

Understanding the perceptions team members have in regard to their work can be particularly useful in order to understand the challenges of global collaboration. Further, understanding the perceptions team members have in regard to their work also provides a means for influencing and transforming individual’s perceptions of computer-mediated collaboration. Thus, tracking team members’ perceptions provide both researchers and practitioners to design a number of interventions to clarify or transforming people’s understanding and work practices. Existing research shows how transforming team members’ perception and the use of collaborative technology to more successful practices is influenced by both technological, social and psychological factors (Bjørn et al., 2006; Majchrzak et al., 2000). Bjørn et al. (2006) found that the alignment of individual technological frames required the articulation and re-evaluation of experience with collaborative practice and with the use of technology. Thus, the key finding was that the alignment that led to the successful use of groupware by a virtual team built on practical experience, and therefore could not take place at the outset of groupware adoption (Bjørn et al., 2006).

Majchrzak et al., (2000) argue that global teams may experience misalignment between the pre-existing work practices and new technology. In their study, they initially tried to solve this misalignment by changing the team members’ work practices. However, as the team proceeded, a series of discrepant events unfolded and caused the team to re-evaluate and modify both the group practices and the technology structure (Majchrzak et al., 2000). Thus, based on existing research, the technology adaptation process is understood to be one that evolves over time, sometimes gradually, sometimes discontinuously as a response to interruptions (Tyre and Orlikowsky, 1994). As Majchrzak et al. (2000) conclude, new technology represents “occasions for restructuring” of both organizational, group and technology structures.

Global collaboration are dependent not only on geographical distance but on the perceived proximity to distributed colleagues. Understanding the people’s perceptions of their work can be particularly useful in order to understand the challenges in global collaboration. Previous perceptions of presence, for instance, can be challenged by global collaboration, because technology enables team members to participate in different interactions at one time, and to be present in interactions at distant places. Existing research shows how transforming team members’ perception and the use of collaborative technology to more successful practices are influenced by technological, social and psychological factors.

3 Methodology

3.1 Empirical case

The research question for this paper is:

*How can we transform people’s perceptions on presence in global collaboration, with the aim of improving the collaborative possibility for working closely with remote colleagues?*

The aim of the research project is both to explore and improve the collaboration in the global setting of ScanEngineering, and further to contribute to the body of knowledge on how to design and conduct training sessions for global teams. Our research project is a 20-months (January 2012 to October 2013) collaborative study between a global engineering company, here named “ScanEngineering”, and researchers at Aarhus University, Department of Business Administration and The IT University of Copenhagen. ScanEngineering was established in 1945 and is today a leading engineering company that employs 18,000 individuals globally. ScanEngineering is headquartered in Denmark and has 80 subsidiaries in more than 55 countries. During the last decade ScanEngineering has undergone continuous globalization and the aim is to empower and involve the subsidiaries more and more particularly in the development of new products in the R & D department. The R & D department has to an increasing extent utilized global virtual teams to manage their decentralized and global activities.
Developing new products in ScanEngineering is knowledge-driven work, and executed by knowledge workers across various locations including America, China, Hungary and Denmark. In general the tasks are complex and planning and collaboration among virtual team members are critical. As distributed team members in the R & D department, mainly engineers, may spend time on developing, for instance the hydraulic components for a product, they often need to operate in real time to facilitate the exchange of rich and technical detailed information. The global team members collaborate through several forms of mediated communication including email, instant messaging, telephone, shared documents and video conferencing. Despite of the potential benefits of the globally distributed teams, rendering effective results is a challenge compared to the co-located teams in the R & D department.

3.2 The Action Research Approach

This research has two main interests, namely first to improve practice of global collaboration in ScanEngineering, and second to develop new theoretical understandings of how to create enabling conditions for globally distributed work. This dedicated dual goal made action research a useful approach as action research “aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science” (Rapoport, 1970, p. 499). Action research has received increased interest within IS research for the last decades and has been described as a post-positivist social scientific research method, ideally for studying technology in a human context (Baskerville and Wood-Harper, 1996; Bjorn and Boulu, 2011).

Action research is characterized by linking practice and research through different forms of cyclical and iterative processes (Baskerville and Wood-Harper, 1998; Avison et al., 1999; Coghian, 2001). There is a variation of action research approaches which generally all are organized by first a diagnostic of the practical circumstances and then the executions of interventions based upon theoretical considerations, collecting empirical data about the intervention, and finally reflecting upon the results (e.g. Baburoglu and Rav, 1992; Baskerville and Wood-Harper, 1998). In this research we conducted an action research study, which consisted of two cycles with the following phases: diagnosing, action planning, action taking, evaluating and specifying learning (Susman and Evered, 1978). Given our objective of transforming people’s perceptions on presence in global work, we studied the R&D department in ScanEngineering, a company dedicated to the development of their global collaboration.

3.3 Data Sources

The empirical data from our action research project came from various sources over the 20 months in which the first author worked closely with ScanEngineering (see table 1). During this period the first author spent half of the daily working hours at ScanEngineering doing research while engaging with the organization and supporting them in identifying new strategies to improve their global collaboration. In this period the first author conducted 50 interviews and 3 workshops were conducted, each planned as intervention activities, and data was collected about these interventions. It is especially two of these workshops, which are the core focus in this paper.

While the majority of the interviews provided us with valuable background knowledge on the case, 10 out of the 50 interviews were directly regarded the action research interventions. The interviews regarding the interventions were done immediately after the change sessions to get the first hand experience of the participants. Examples on questions asked in the interviews were: “What is your overall impression from the session?” This was supplemented by more specific questions regarding the actual exercises such as: “How did you experience the first exercise? (where you had to do the interviews while you were lying down with closed eyes)” The interviews were recorded and transcribed and supplemented with discussions and emails if necessary. A few weeks later, we revisited the participants on email to gain their feedback on the usefulness of the sessions. A few months after the first feedback sessions, we interviewed the managers in order to trace the effects of the session in daily life. We compared the methods and the results of the two action research cycles to evaluate both the success of
the interventions as problem solving methods as well as the applicability of the methods in other contexts.

<table>
<thead>
<tr>
<th>Activities</th>
<th>No./hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participatory observations: First author had an office in the department and participated in daily routines, meetings, activities, travelling, informal breaks.</td>
<td>20 months, Jan 2012 – Oct 2013:</td>
</tr>
<tr>
<td>Workshops interventions, conducting intervention</td>
<td>3 x 2 days workshops with 8-29 global participants</td>
</tr>
<tr>
<td>Interviews, Semi-structured managers and employees</td>
<td>29 (managers) and 21 (employees) = 50 total</td>
</tr>
<tr>
<td>Site-visits &amp; observations: Hungary, The US and China</td>
<td>5 working days at each location</td>
</tr>
<tr>
<td>Observations of meetings held in two global management teams in R&amp;D</td>
<td>9 virtual meetings = total 18 hours</td>
</tr>
<tr>
<td></td>
<td>4 face to face meetings = total 13 days</td>
</tr>
<tr>
<td>Participant on Yammer: An internal confidential online platform on global management for R&amp;D’s managers</td>
<td>6 months – where 33 managers were sharing their knowledge and concerns on global management</td>
</tr>
<tr>
<td>Development of an online training platform on global collaboration for distributed teams</td>
<td>1 online platform was developed in cooperation with 2 R&amp;D managers</td>
</tr>
<tr>
<td>Surveys</td>
<td>2 surveys. One for 28 managers &amp; one for 255 employees in 33 global teams</td>
</tr>
<tr>
<td>Documents analysis of, internal and external information</td>
<td>14 documents &amp; 3 books</td>
</tr>
</tbody>
</table>

Table 1: Data sources

3.4 Data Analysis

While data analysis was done during the whole period of interaction with the company, one specific aspect was particularly pertinent - namely the results of continuously re-designing and aligning the workshop activities. The data collection as well as the analysis is guided and informed by theories on global collaboration, presence and transformation in global work. In our continuous data analysis we compared the methods and the results of our planned workshop which in turn directly informed the following workshop. In our data analysis, we evaluated both the immediate success of the methods as problem solving methods and the practical improvement of the global collaboration. In this study, more than one year after the last workshop was held, we investigate this in more detail, and we re-examine the empirical data from the two workshops in order to understand if, why and how the intervention activities supported the transformation of the practice. The two action cycles are presented below in four main sections describing the problem diagnosing, the planning and activities of the two interventions as well as comparing and evaluating the outcomes from intervention 1 and 2.

4 Transforming the perception of distance

When we first set out to conduct workshops, with the aim of improving the global collaboration in ScanEngineering, it was important for us to design interventions, which helped the participant to reflect upon their own beliefs about working globally and to use this to further re-consider the collaboration. In addition, we wanted to make sure that the interventions were particularly designed for the audience in mind, taking into consideration the organizational culture of ScanEngineering as well as the particular global teams in the R&D department.
4.1 Problem diagnosis: Why is it difficult to work globally?

To ensure that interventions and activities were directed at the specific conditions in ScanEngineering, we began the study by exploring the challenges as experienced by the participants when engaging in global work. Three main data sources provided insights into the collaborative challenges, namely the surveys, the interviews, and the participatory observations conducted during the time of study. During this period, several different ideas to why and how working globally was difficult emerged from practice. In this period the first author engaged in reflective interactions with participants repeatedly presented in-progress findings from the data ensuring feedback loops and confirming interpretations.

The findings of this diagnostic process were in-depth characterization of challenges experienced by the organizational members. Participants expressed that working globally was difficult, because the lack of proximity and use of technology impacted the conditions for work in negative ways. The participants insisted on the need for meeting face-to-face and they experienced that working at a distance kept them from fulfilling the work expectations. Many of our informants had different perceptions of what it meant to work in remote settings, however some perceptions were shared between participants and fundamentally impacted their experiences of global work. One key perception, which emerged during the diagnostic process, concerned the importance of being able to see each other in for instance videoconferences in order to build relationships. The perception was: In order to develop a relationship with remote colleagues, it is critical to see each other. This key perception became the centre for the way we organized the interventions, since this was one of the perceptions that kept the participants constrained within traditional work habits making it difficult for them to expand their horizon and fully engage in global collaboration. In addition, it also became clear for us, that the strategy for transforming their work practices, through interventions forcing participants to reflection upon their core assumptions about global work, was aligned with the ideas and interests of the participants. As a manager stated:

"I would like to challenge the assumption that you only can develop a trustful relationship face to face (...) I believe it is all about presence – also in the virtual media world. Do your thoughts ever drift away from the topic or the person at the other end? The question is, how can you create more presence in your online interactions?"

(Manager, March, 2013)

Interestingly, the manager in this quote expresses, how he experiences that team members’ perceptions about global collaboration hinder the relationship building among them. Also he points to how the core question is about how to create the experience of ‘presence’ in global work. Based upon these insights we planned interventions dedicated to investigate: How can we transform peoples’ perceptions on presence in global collaboration through action interventions, with the aim of improving their conditions for work. Investigating this question, various activities were developed and executed with the global team members – however in this paper we will focus on the interventions related to the experiences of presence in global work.

4.2 Intervention 1: The Discursive Intervention

So, how do we transform peoples’ perceptions on presence in global work? We wanted to design an intervention encouraging reflections as the main method for learning. The discursive intervention here is a conversation, where the collocated participants, on the basis of a video, reflect and tell about their own opinions and experiences and listen to the opinions and experiences of others. The aim of the discursive intervention, was to lead to new reflections and insights. Immediate and general positive feedback gave us confidence that participants valued the intervention and the workshop as a whole. One of the responses after the workshop was:

"I would also like to thank all for a couple of very inspiring days! (...) I have been thinking that the task ahead is not just to become better virtual leaders, but for our
teams in general to be better virtual teams. We must raise the awareness of our new “virtual reality” in the minds of all members of our departments (and in the organization as a whole)!”

(Manager, April, 2013)

The above quote demonstrates that the results of the discursive intervention were positive and that the participants felt inspired with an increased awareness on the remote work and global collaboration. However, investigating the remote work, which followed the reflective intervention, it became clear that it was difficult for the participants to bring the insights they developed during the workshop into their practices. These results made us wonder whether and how we could improve our intervention not only as a discursive and reflective experiment, but also anchoring the results into the practices afterwards. These insights became the basis for the design of our second intervention activity.

4.3 Intervention 2: The Embodied Intervention

Moving from reflection to anchoring the experience to practice we needed a new approach for the intervention. While reflection in the first intervention was designed as a discursive engagement, we wanted the participants to experience a more embodied reflection. The embodied reflection is here understood as the process of reflecting on direct experience, when the body engages in concrete activities, instead of only discussing the issues of concern.

Intervention 2 also took place during a collocated workshop and started with a new group of participants watching a video similar to a video in intervention 1. The video was created by the first author and based upon the results from the problem diagnosis. The video was a short-form video (approx. 5 minutes) with an overall radical questioning of basic assumptions in global work. The video-presentation included four assumptions to challenge as well as four new assumptions to experiment with. An example of one of these four assumptions presented in the video is: 1) “One actually needs to see the person in order to develop a personal relationship with him or her”. This assumption was challenged with a research-based description of an alternative assumption, which stated: “By listening differently one can connect with somebody at a deep and very personal level” (see figure 1).

The instruction after the video was in summary as follows: “In pairs of two, spend 15 minutes on a phone conversation. The topic should be of importance to you and could well be a challenge you would like to have solved. Share your topic with your partner. Lie down and close your eyes during the conversation”. Thus, instead of simply having the participants discuss the content of the video afterwards (as in intervention 1), the participants were placed in experimental collaborative set up situations which clashed with some of their perceptions on global work. Concretely, participants were placed within different rooms and asked to lie down on the floor with their eyes closed, and asked to engage in a phone conversation through their cell phone with a person they barely knew. Throughout the phone call the two people on shift were sharing a topic of importance for them for instance a work challenge they would like to have resolved.

The intervention was designed as an embodied experience confronting participants’ perceptions of conditions for meetings. Where expectations to ordinary meetings were that participants sit on chairs with tables, they were in the intervention placed on the floor. Where expectations to ordinary meetings were that participants is that all can see each other directly in the eye; they were asked to close their eyes in the intervention. Where expectations to ordinary meetings were that participants needs high resolution media, they were asked to only use audio on their traditional cell phone. So what happened during this intervention was, that participants were invited to reflect upon their own perceptions about the constraints in global work, by participating in the embodied intervention activity, which potentially could transform their perceptions on global work. The aim of the exercise was to demonstrate that the simple act of lying down with the eyes closed, with no outer distractions, while listening to the voice of another person, enhance presence and can be a crucial way to connect with this person.
The immediate feedback on the intervention was that as soon as the participants got used to the new position, (lying down with their eyes closed), they experienced how their own perceptions could play a crucial role to the quality of collaboration. One of the participants explained:

“The session was a good way of actively work with your perception of virtual collaboration and the constraints that we often believe in (...) it really opened your eyes (ha ha) towards having a deeper discussion than you would normally do with your eyes open. For me it was clear that I do definitely not need a video meeting to get very close to my colleagues.”

(Manager, September, 2013)

As indicated by this manager, results from the embodied intervention caused participants to carefully reflect on their own perceptions on global work, and as it turned out it also affected their future collaboration. Further some of the participants experienced how their teams had a double-looped learning related to global collaboration and the potential for building relations online. One manager stated:

“When my team did this exercise, not only did they discover (or were reminded) that it is important to remove distractions during virtual meetings/telephone meetings to allow for the closeness to develop. Some of them also discovered that they could use their virtual colleagues for sparring much more than they do today. It was as if they discovered that their new global department had more resources than they first thought. So you could say that there was a double learning in this exercise for my team.

(Manager, September, 2013)

### 4.4 Comparing intervention 1 and intervention 2

While both interventions were designed with the same aim, the results of the two interventions were different. Comparing the two interventions it was clear that while discussing the video started out with fairly high engagement and awareness during the discursive intervention, the anchoring of the reflections to practice afterwards were minor. According to one of the participants the discursive intervention presented an opportunity to discuss interesting insights, but the insights were difficult to absorb and put into practice. By investigating their collaboration, the participants were offered an opportunity to become aware of their perceptions and work practices, but the implications of these weren’t as evident as in the embodied intervention. In the embodied intervention, it took time initially for the participants to engage, due to the unfamiliar conditions for the participants. This cautious from the participants however quickly changed during the exercise, and their engagement steadily increased during the workshop and represented for the majority an experience of practical inspiration. Thus, posited by one of the participants:
The session was very useful and pinpoints that some of the perceptions that you have in regards to being a virtual team can actually be proven not to be true. I am convinced that in the future I will conduct several of my one-on-one meetings by phone instead of video.

(Team member, September, 2013)

This quote demonstrates the general change in the perception on global collaboration of the participants during the embodied intervention. Besides becoming a reflective tool, the embodied experience transformed participants’ perceptions on global collaboration in general, and further made them develop ideas on how to improve their practical considerations about collaboration across distance in the future. Half a year after the intervention a manager explains how the intervention inspired him to change his management team meetings:

*It gave us the concrete outcome to change our weekly meetings to now be conducted by each of us instead just me and also to vary the way the meetings is held. (not just Scopia meetings).*

(Manager, September, 2013)

It was evident that both interventions impacted participations perceptions on global collaboration. Remember, that the majority of the participants in both interventions had significant objections in regard to the constraints of global collaboration, and basically had their doubt about whether it was possible to have successful global teams. Therefore, the execution of both interventions showed important results in terms of transforming people’s perceptions on presence in global work. Furthermore our results also showed that the embodied intervention transformed the participants’ perceptions on global work in much more engaged ways, compared to the discursive intervention, making it possible for the participants to anchor their reflections to their practices. Below is a table summarizing and comparing the results from both interventions.

<table>
<thead>
<tr>
<th></th>
<th>1: Discursive Intervention</th>
<th>2: Embodied Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aim/purpose</td>
<td>Challenging perceptions and changing work practices</td>
<td>Challenging perceptions and changing work practices</td>
</tr>
<tr>
<td>Main approach</td>
<td>Discursive &amp; reflective approach</td>
<td>Embodied &amp; reflective approach</td>
</tr>
<tr>
<td>Activities</td>
<td>Video-Information, reflection and discussion, agreements</td>
<td>Video-Information, embodied experience, discussion, agreements</td>
</tr>
<tr>
<td>Participants</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>Participant outcome</td>
<td>Some transformed perceptions in global collaboration</td>
<td>Transformed perceptions, agreements and implementation of new work practices</td>
</tr>
</tbody>
</table>

*Table 2 Comparing 1st intervention and 2nd Intervention*

5 Discussion

Our study seeks to answer the research question: How can we transform people’s perceptions on presence in global collaboration, with the aim of improving the collaborative possibility for working close-
ly with remote colleagues? Building on various data sources such as interviews, surveys and participatory observations over 20 months in the R&D department in ScanEngineering, two workshops were conducted and planned as intervention activities, and data was collected about these interventions. In this action research project we experimented with two different types of interventions and found that while interventions based upon discursive characteristics can support reflective practices, embodied interventions turned out to be most effective. The embodied interventions were organized as activities where the participants from a global R&D department were challenged in their perceptions of presence through collective embodied experiences with global colleagues. Let’s unpack this in more details.

Previous research investigating global collaboration and particular how such work organizations are transformed and changed over time have point to the role of discrepant events as the driving factor (Majchrzak et al., 2000). In this work, the discrepant event served as driving force for reflecting upon the practices, and thus using this opportunity to transform the work. Understanding our findings in this perspective, we can talk about the interventions as discrepant events, providing the opportunity for the management teams to reflect upon their practices and thus change these. However, it does not explain the differences in the effect of the two types of interventions.

Clearly, changing the way people think about global work impact the way they interact in global work (Orlikowski and Gash, 1994). However, while the participants were reflecting and thus changing their perspective on global work in both interventions it clearly provided different results. We might speculate that the effect of the change was due to whether the management team had a ‘window of opportunity’ (Tyre and Orlikowski, 1994) and thus was able to take benefit of the intervention in different ways comparing the two sets of interventions. It is difficult to change patterns of technology use and that participants often get stuck in unproductive work practices (Bjørn et al., 2006; Orlikowski, 2002), and it might be that the discrepant events provide global management team members with the ability to revise, modify and adjust work practices, including their technology use (Orlikowski et al., 1992).

However, more importantly, we found that it was the embodied intervention, which provided a particular new window of opportunity for the global collaboration. This new window was created not only as a reflective event, but as an embodied experience and was exploited immediately by the new perceptions and work agreements among participants. In line with the results of Tyre and Orlikowski (1994) the new perceptions among the participants emerged discontinuously (rather than continuously) as a result of the specific workshop intervention.

Our findings suggest the importance of embodied experiences in global work and confirm existing cognitive science indicating the crucial role of the body and embodied experiences for learning and knowing to take place (Biocca, 1997). The use of the body in the second intervention served as locally negotiated yet distributed organized context with border bracketing out the local practices not relevant to the current interaction (the participants were lying down with their eyes closed). This structure of the intervention had a fundamental role in making the collaborative actors currently present enhancing a sense of presence (Kim and Biocca, 1997). By reducing local stimuli from physical local environment, it made the collaborative partners able to bring his or her full attention to the remote partner. The presence experienced by our participants in the embodied exercise further served as an effective way to develop closeness and connectedness to the other person (Schultze, 2010).

Finally, our results highlighted how the activity of telling a personal but still work-related story allowed for bringing the participants closer together and experience a relation. By shutting down the physical local presences (closing eyes), distractions from the interaction was deleted and the participants were able to focus elsewhere – namely on the remote collaborator.
Our study has two main practical implications. First, organizations should not underestimate the challenges of people’s perceptions on global collaboration and should intentionally challenge team members’ and managers’ perceptions and existing work practices (Dubé and Robey, 2008). When an organization engages in global collaboration with the intent to make substantial changes in their business processes, people’s perceptions on collaboration will likely also require a transformation. In reality, one, often-used strategy, is to implement the new organizational structure of virtual teams widely in the belief that through experiences and with time, successful global collaboration will flourish (Orlikowski, 2002). However, our results show how an intervention can help people transform these perceptions, and we offer a short introduction to both problem diagnosing and workshop interventions, thereby guiding for similar interventions. By acknowledging the perceptions on global collaboration and through the challenge of these, global workers will be better prepared, and thus be able to develop routine (Esbensen and Bjorn, 2014), engaging communication patterns (Jensen and Bjorn, 2012), and solve task dependencies (Matthiesen, Bjorn and Petersen, 2014).

Second, in addition to the continuous development of more sophisticated technology, this study shows how creative uses of existing communicative technology should be considered. In our study, as well as existing research (Dubé and Robey, 2008), many global team members seemed anchored in a perception, which limits creative generation of more efficient alternatives. Workers might for instance engage in rapid and simple online exchanges or in formal writing in emails, where they end up perceiving the quality of collaboration as inferior compared to face-to-face interaction. Therefore, workers in global teams need to be informed and modelled to engage in more embodied ways of communicating, this could be to engage in communication which ensure presence and awareness among participants of the global technology-mediated communication. Consequently, to gain value from global collaboration organizations should prioritize careful migration of people’s perception, technological frames and work practices with the concrete communication technology (Orlikowski and Gash, 1994; Bjorn et al., 2006).

Like all research, our contributions are limited by choices made in the design of our study. Thus, Matthiassen (1998) posits how it is difficult - if not impossible - to generalize findings from action research. With respect to the improvement of global collaboration among the participants, our reliance upon individual reports limits our ability to confirm the outcomes associated with the interventions. Quite possibly, individual statements on outcomes could have been clouded by both enthusiasm and retrospective rationality among participants. Future research could address this limitation by obtaining measures of presence in global collaboration.

Future research could also investigate the conditions under which successful transformation of perceptions occurs. The transformation process, in our study, may be dependent on the influence of the first author and her long relationship into the organization. Quite possibly, the transferability of the intervention process revealed in our study may be limited due to reduced representativeness of both participants and researchers in the study. New research is required to complete the conceptualization of embodied transformation in global collaboration. Additionally research is required to refine and test the conceptualization. Regarding the transferability of the key perception on presence in global work that emerged from our empirical case, this perception is similar to the results of previous research (Caulat, 2010). This point to that our results are of a more general nature, and thus the interventions might be useful in supporting the transformation of peoples perceptions in working globally in other organizations.

6 Conclusion

We set out to study interventions, which will enable team members’ and managers’ participation in global work, and through our research we found, that the role of the embodied activities was essential. Our action research study suggests that in the transformation of perceptions on presence in global
work, the embodiment played an important role in facilitating the process by which participants’ reflections are brought into practice. While reflective interventions are critical for transforming global work, we found that the embodied experience was central and served to transforming the perceptions of participants. For participants with a background in technical environments and engineering applications (like in our case), the discursive reflections turned out to be difficult to grasp and put into practice.

However, we believe our finding is of a more general matter. Often when participating in global work, participants tend to direct their attention towards their immediate local colleagues, rather than their remote colleagues. This is often also related to the amount of distractions, which often exist within a local workspace. Meetings, disruptions, local politics all serve as disruptive element during the day, making it difficult to focus and pay attention elsewhere. In global work, attention and concentration is even more important, since it does not automatically exist within the work environment. This means that global teams have to spend extra effort in zooming in and paying attention required to engage in relevant and important global work. We argue, that our findings, on the importance of embodiment, are not only about embodied experience making it easier for participants to transform reflections into changed actions. Instead, it is the presence and concentration we created through the activity, which was essential. We created a space by which the participants could concentrate and participate in engaged and relevant interaction without interruptions, and this is the key to the success.

Our research, presented in this paper, thus make an important point for managing global work – namely that rather than spending resources of high fidelity surroundings for video conference meeting, improvement of the global work might rather be accomplished by creating situations where presence, concentration and focus are directed at remote colleagues. By creating collaborative patterns and enabling rhythms for global work, we might be able to improve global work in a much more fruitful manner. The process of learning new work practices in global teams, is one of potentially many issues that deserve attention in future research as well as in distributed organizational settings.

What existing perceptions might arise in the future to challenge global collaboration? Some challenges may become obsolete because they rest on contemporary perceptions about global work. We cannot assume to transfer experiences between work settings of fundamentally new structures. The next generation digital natives might have different perceptions and conventions for collaborating. Long-term research on the perceptions and transformations of global work is needed to further investigate changing perceptions of technology, work, and distance.
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