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Naturally occurring data in the study of virtual teams in working life – Challenges and opportunities

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Abstract

Previous research on virtual teamwork heavily relies on experiments conducted in laboratory settings, frequently utilizing zero-history university student groups, and drawing conclusions with regard to working life. While such studies can give some preliminary insights into the characteristics of distributed teamwork, they lack a methodological ingredient which is too often neglected in research on human interaction: authenticity. Such findings, consequently, are not easily applicable to what people do in real work life contexts. Earlier pleas to focus more on what is going on outside the laboratory, however, have been widely disregarded. This article takes a stand for including more naturally occurring data in the study of social interaction in virtual teams, and discusses the key challenges and opportunities related to gathering naturally occurring data in working life contexts.

Keywords: distributed teams, naturally occurring data, technology-mediated communication, virtual teams, virtual teamwork

Introduction

In their interdisciplinary literature review on virtual teams research covering nearly 200 journal-articles from areas such as communication, management, and psychology, Kirkman et al. (2012) observe that studies in this broad field of inquiry still to a great extent utilize data collected at the laboratory. Subjects are often university students with no background of working with one another, who are confronted with certain tasks to be completed for the purposes of the experiments, and who quite frequently receive course credits or even money for their participation. Studies of this kind on virtual teams and virtual teamwork explore, for example, the development of trust (e.g. Krebs, Hobman & Bordia 2006; Wilson, Straus & McEvily 2006; Zornoza, Orongo & Peñarroja 2009), issues related to leading and leadership (e.g. Hambley, O'Neill & Kline 2007; Purvanova & Bono 2009; Huang, Kahai & Jestice 2010), processes of decision-making (e.g., Bartelt et al. 2013; McLeod 2013), as well as the role of team members' (national) cultural background (e.g. Paul et al. 2004; Staples & Zhao 2006; Mockaitis, Rose & Zettinig 2012). Furthermore, these works frequently engage in comparing virtual teamwork to (similarly induced) face-to-face group interaction. Many of these studies outline their motivation as organizational in nature: Because of technological advancements companies draw more and more on virtual teamwork, which in turn necessitates more research on virtual teams in order to provide relevant insights and implications for team improvements. While this is a valid conclusion, we argue that the underlying assumption that controlled experiments with students reflect real-life situations in all their complexity and unpredictability should be challenged. Interestingly, this issue is, in fact, often acknowledged in these studies' concluding remarks

concerning their limitations. However, the connection to virtual teams in *actual* organizations remains, once posed, at the heart of these papers. Some authors even explicitly link their laboratory findings to real work life: “In addition to building upon virtual leadership theory, this study provides some practical implications for organizations currently using or considering implementing virtual teams” (Hambley, O’Neill & Kline 2007, 16).

While there have been scholars noting and criticizing the lack of studies utilizing authentic data in virtual teams research before (e.g., Martins, Gilson & Maynard 2004; Gibbs et al. 2008; Kirkman, Gibson & Kim 2012), the *challenges* researchers might be faced with when collecting data in the field have barely been addressed (see Martins, Gilson & Maynard 2004, 823; Mathieu et al. 2008, 463 on teams in general; see Espinosa et al. 2003 for methodological challenges in studying real virtual teams). Similarly, the advantages and potential of compiling and utilizing this kind of material have not been sufficiently acknowledged. In what follows, we will first look at the status quo of virtual teams research in terms of the underlying data and argue against limiting the view on virtual teaming to controlled laboratory settings and interviews or surveys. After that we discuss a number of difficulties and benefits related to gathering naturally occurring data in the study of communication in dispersed working life groups and teams.

We take the stance that social interaction is situated, highly emergent and hard to predict, and that experiments done in controlled settings can only ever provide a narrow and even unrealistic picture of the dynamics of interaction found in natural settings. While controlled experiments can and do have their place, it is advisable to be critical as to their utility for real-life purposes (see also Silverman 2006, 246). For example, in a recent literature review (Stanko & Gibson 2009, 286) it was noted that a number of studies on virtual team performance yielded contrary findings depending on whether the data used were experimental or collected in the field (see also Kirkman 2012, 811). Put simply, the reality of controlled experiments reflects poorly the many-faceted realities that people encounter in their everyday interactions. The research field leans towards being methodologically one-sided resulting in a relative lack of knowledge on virtual teaming in actual work life (for some exceptions, see e.g. Baba et al. 2004; Dixon & Panteli 2010; Klitmøller & Lauring 2012). This is by no means a novel conclusion. Indeed, the superiority of research looking at induced student interaction in laboratory settings was criticized already almost 10 years ago (Martins, Gilson & Maynard 2004, 822–823). Nevertheless, as Kirkman, Gibson and Kim’s review on virtual team literature revealed, Martins, Gilson and Maynard’s (2004, 823) plea for “empirical research [to] move out of laboratory settings and into the field in order to advance the literature through the asking and answering of questions that cannot be adequately tested in a laboratory setting,” has been widely disregarded (Kirkman, Gibson & Kim 2012, 41).

Scholarly interest in virtual teamwork in real-life, however, is beginning to grow as of late. A common way to approach aspects of communication in authentic virtual teams is through conducting interviews and surveys. For example, Dekker, Rutte and Van den Berg (2008) studied critical incidents and their perceived impact on the functioning of virtual teams, interviewing altogether 36 professionals from different countries. In another example, Reed and Knight (2010) implemented a survey among 150 real-life team members in order to obtain insight in the significance of communication-related risk factors for virtual teams (e.g. technical connectivity). Interviews and surveys at actual organizations have further been utilized, for instance, in studies on the work climate in virtual teams (Virolainen 2010), and on dispersed team-members’ identification with their teams (Hakonen 2010).

However, while interviews and questionnaires focused on real-life settings reflect actual virtual teamwork and internal communication in real virtual teams and thus make important contributions to the research field, they ultimately provide us with only second-hand information on how virtual teamwork is actually conducted. Despite them, being clearly closer to real-life than data obtained via controlled experiments, interviews and surveys involving professionals are “researcher provoked” (Silverman 2006, 201–203). This means that they are limited and

directed by the researcher's *a priori* decisions (e.g. should the interview be open-ended, semi-structured or structured, what kind of questions have to be posed, etc.). In addition, they rather attain participants' perceptions and moral notions than their actions within the situations in question: "[...] what people say in answer to interview questions does not have a stable relationship to how they behave in naturally occurring situations" (Silverman 2006, 39). If we want to see what is actually happening at the level of social interaction in working life groups and teams, therefore, conventional approaches do not suffice.

Naturally occurring data on teamwork

In order to address these weaknesses in common research designs when it comes to studying social interaction in the context of virtual teamwork, we propose investing more into research that uses (recordings of) naturally occurring data. Data can be considered as naturally occurring or authentic when it is not induced by the researcher. In other words, for social interaction to be natural, it would have to take place in that form at that time and location even without the researcher's interest (Silverman 2006, 201–240). However, unless the data already exists, for example in the form of written text (like email), researchers do need to intervene somewhat in order to be able to record a naturally occurring situation (via field notes, tape-recorder, camera, and so on). This intrusion or interference is explained by a classical paradox concerning the difficulty of collecting natural data for research purposes. In this what is called Labov's observer's paradox, it is noted how, in order to get natural data, we need to interfere, which in turn makes the data less natural (Deppermann 2008, 24–25). One could even say that naturally occurring data is usually not fully untouched (see also Silverman 2006, 380–381). Indeed, even the thought of participating in a study can spark a reaction in the participants, and thus be seen as a kind of intervention.

But what are the consequences of actually following the call for using genuine data in the study of virtual teaming? Over the next pages we present some key challenges related to setting up the scene for gathering material in working life settings and discuss the ways in which it is possible to overcome some of these difficulties. In addition, we address the advantages of utilizing a naturalistic approach to studying communication in virtual teams. We limit our methodological considerations mostly to the process of data collection and to the potential of this kind of material in research. While further looking into questions related to analyzing naturally occurring data is of course methodologically equally relevant, it reaches beyond the scope of this paper.

This paper draws on a research project looking into the dynamics of social interaction within distributed working life teams. Research in this project focuses to a great extent on recordings of genuine, technologically mediated work interaction. The data have been collected at several organizations whose employees work together across distances utilizing groupware systems, intranet, or web-conferencing services, as well as email and other communication tools.

Challenges in compiling naturally occurring work life data

It can be hard to obtain naturally occurring data within the framework of social interaction. Researchers are sometimes faced with unease with the idea of being recorded, lack in cooperativeness, and privacy issues on the part of possible research participants (see Deppermann 2008, 24). In the end, the research project greatly depends on the potential participants' good will. The process of gathering naturally occurring data from work life involves additional obstacles, starting from issues related to networking, drawing interest, building trust and obtaining organizational consent, dealing with demands of secrecy, up to the recording or saving of (technologically mediated) interaction. Indeed, several sources acknowledge and address the difficult nature of research on real (virtual) teams (Martins, Gilson & Maynard 2004,

823; Mathieu et al. 2008, 463), but they also underline the importance of overcoming these issues. In addition, the nature of virtual teams itself might cause problems that require careful methodological considerations. Espinosa et al. (2003) point out various team boundaries (namely geographical, functional, temporal, identity, and organizational) that have, according to them, an influence on how distributed work groups can be approached and studied. Mathieu et al. (2008, 463) see worthwhile advantages in challenging 'inbuilt' intricacies of teams in general. They urge researchers "to embrace the complexity of current team arrangements. Rather than viewing these complex features of organizational teams as confounds or design problems to overcome, we submit that they are important variances to assess, model, and understand." This, undoubtedly, applies to the study of virtual teams as well.

Finding partners – Building up rich research material greatly depends on the cooperation of participating employers, and individual employees subsequently. Reaching mutual understanding and rapport between various partners can be a time-consuming endeavor. Sometimes researchers can utilize existing networks in reaching out to organizations, while at other times it is necessary to establish totally new connections. Whatever the case, there is typically some 'sales work' included, where the researchers have to pitch the idea to the representatives of organizations – sometimes over and over again.

Negotiating contracts – After finding suitable partner organizations, the next step is getting them to agree on the terms of the study at hand. In our project, a significant amount of time was spent negotiating with potential partner organizations about entry to the organizations' every day interactions. This included negotiating the wordings of contracts, and sometimes even resulted in the collaboration coming to a halt. For example, the organizational partners often had doubts concerning the possibility of researchers revealing classified information, or had their hands tied because of non-disclosure agreements (NDAs) they themselves had made with outside parties. While frustrating, this stage is extremely important in building a common ground for the upcoming data collection. While many organizations would like researchers to sign far-reaching NDAs, it can cause problems at the stage of reporting findings, for example.

Benefits to the participants – With exploratory goals and qualitative methods an open-ended research project cannot easily predict its outcomes. One of our goals was to find out what virtual teamwork is like in today's organizations. Unfortunately, this does not sound like an extremely beneficial cause for a company to be involved in the project. This vagueness can cause suspicion and bewilderment; especially since an organization's natural approach to participating in a study is to ask: "What's in it for us?" This is something we solved with the promise to keep in contact with the participating organizations and come and present our findings and possible suggestions. While a project like ours falls very much under the umbrella of basic research, it is often possible to talk through some suggestions or ideas for improving teamwork with participants. It is therefore necessary to think ahead of time for examples and ways of explaining the research process to the participants, with a special emphasis on making it very clear how the study will intervene with their everyday work and what it will require of them. A well-planned data collection need not disturb the natural flow of social interaction all that much, especially if utilizing automatic saving of data. Making the low-interference by the researchers explicitly clear might help overcome reservations of potential participants with regard to having to sacrifice their valuable time.

Recording technology-mediated communication – Being dependent on technology for data collection is both an opportunity and a threat. While technologically mediated communication typically offers a variety of ways of saving material, it also brings with it a number of potential problems. Sometimes applications and tools for technology-mediated communication allow for automatic saving of data. At other times, a separate program might be needed. Whatever the case, it is possible that the programs work in one environment but not in another. For example, a program that functions flawlessly in the IT environment of the research institute might not be supported by the organization's technological infrastructure. It is also possible that even if a

suitable technical solution for saving material exists, the organization's IT department does not approve of its use. In some cases everything works perfectly while testing, but two months later it comes to attention that nothing has been saved because of an unexpected technical problem or because the research participants forgot to keep up with the procedure. At times, in addition to the researchers and the participants of to the study, one needs to involve technical support staff from both sides to solve such issues.

Advantages of working with naturally occurring data

The history of studies into group communication is filled with research that has utilized zero history student groups (Lindlof & Taylor 2002, 22). This trend has continued with research into distributed teams (Connaughton & Shuffler 2007). Sometimes this has been because of the idea that these groups offer a more "pure" platform on which to test the effect of various factors such as technology (e.g., Andres 2006) or a particular style of leadership (e.g., Hambley, O'Neill & Kline 2007; Purvanova & Bono 2009; Huang, Kahai & Jestic 2010). At other times, the choice has been a more practical one, with researchers pointing out the difficulty of gaining access to real-life groups and teams, or 'real-life inconveniences', like the incomparability of different teams' activities: "Nearly all of these studies have been conducted as laboratory studies simply because it is difficult to find existing computer-mediated and face-to-face teams that accomplish comparable tasks" (Hertel, Geister & Konradt 2005, 76). However, contrasting something that does not necessarily even exist in reality might prove more problematic than the advantage of being able to do so can compensate. The challenges and difficulties in the compilation of (and working with) authentic data, again, are easily outweighed by a number of worthwhile benefits and opportunities this kind of material implicates. With regard to the context of virtual teamwork, for example, technology provides the ground for being able to remain almost entirely unobtrusive as a researcher. Further, gathering naturally occurring data facilitates staying close to the lived reality of working life. Both aspects are at the center of the following paragraphs.

Benefits of collecting data in genuine, technology-mediated settings

Minimized intrusion – One benefit we noted in our project is that gathering material in a technologically mediated setting allows for the minimization of what is called intrusion or interference. Because so much of the technologically mediated communication between our informants could be saved without the presence of researchers, it was possible for us to reach a high degree of non-interference. For example, in some organizations we succeeded in gaining access to team members' email correspondence and instant messaging discussions from a period of several months. In the case of email and many instant messaging programs, it may even be possible to go back in time and get to see messages that predate the point in time when the research participants became aware of the research project. In these instances, the researcher has little to no influence on the emergence of the data, which adds to the data's reliability (Silverman 2006, 285).

Unmodified picture of the reality – Another interesting advantage of working in a technology-mediated setting is that it is often possible to record interaction in almost the exact same form as it unfolds to the participants themselves. For example, a recording of a virtual team meeting using a group support system will show what the participants see, that is, the "camera" angle and the shared workspaces are the same from the observer's perspective as they are for the participants. The researcher does not need to choose a camera-angle, or what part of the setting is to be recorded, and what has to be left out. Additionally, the camera in these cases is a natural part of the interaction, which is a particular benefit regarding the minimization of interference.

Authentic data in the context of virtual teams in working life – Potential and possibilities

New and unexpected findings – One advantage of working with naturally occurring data arises from not having to rely on student samples, or artificial conditions for the study. Coupled, in particular, with an inductive approach, this enables naturalistic studies to shed light on real virtual collaboration in working life. What type of data can be retrieved from genuine settings is often unpredictable, and so are analysis and possible findings. While this can be seen as challenging, it also contains important possibilities: *Because* the collection of authentic data simply cannot happen (at least entirely) within the boundaries of theoretical assumptions or a priori conceptions, it may provide access to yet unknown and even unexpected phenomena or allow for a new look at already established notions (see e.g. Siitonen & Olbertz-Siitonen, 2013, on the interactive construction of social presence in technology-mediated work meetings).

Applicability of findings – Being retrieved mostly from controlled laboratory settings, findings on social interaction in virtual teams in general appear to be out of balance. The research field is in need of studies that take real work life into account and, instead of blending them out, *ask* about and *accept* the eventualities and peculiarities of authentic distributed work interaction. An advantage of research that utilizes naturally occurring data is that its results can offer insights into issues that are of actual relevance to organizations ‘out there’, or developers of ICTs, which in turn can be taken up by future studies. In other words, in scrutinizing authentic data, research can achieve authentic results.

Insights into long-term dynamics – What research overlooks when utilizing zero-history student groups is the temporal dimension that is so important in human relationships. For example, in our research project, some participants had known one another for well over ten years, learning together to utilize the affordances of the changing communication landscape around them. Negotiating the role of different communication media, and knowing their strengths and weaknesses, allows for different kinds of collaboration to emerge than in a short-term situation generated for the benefit of a particular study. The team members in our partner organizations not only had a shared history, but also an anticipated future together. This means that a single conflict, misunderstanding or technical hiccup is not as serious as it possibly is in a one-off group situation. The other side of the coin is that team permanence means that there is more at stake than in a one-off meeting between strangers. As Scott (2013) notes, teams that are ongoing are at risk of suffering more negative consequences of ineffective interactions and negative conflict. Studying zero-history groups does not allow insights into the important dynamics arising from continued social interaction.

In many of the experimental studies the lack of a mutual history between the student subjects (either relational or with regard to previous group work) seems to play a significant role. It is seen and presented as important that participants did not know each other beforehand. How this relates to real-life, however, is never considered. That working life would actually function on the basis of complete strangers meeting up and making random decisions is – even intuitively – a far-fetched assumption which can be dismissed by looking not only at our own data, but also at previous research focusing on real-life virtual teams (e.g. Baba et al. 2004; Dekker, Rutte & Van den Berg 2008; Dixon & Panteli 2010; Hakonen 2010; Reed & Knight 2010; Virolainen 2010; Klitmøller & Lauring 2012).

Conclusions

The development of technology-mediated communication has changed and challenged working life in many ways. Understanding the practices of social interaction in this setting is of continuous importance, both from theoretical and practical points of view. In this paper, we have argued for using naturally occurring data in the study of social interaction in virtual teams, and embracing the difficulties and possibilities this approach brings with it.

While studies conducted in laboratory settings definitely have their positive sides, they often go too far in simplifying reality. For example, many studies on virtual teaming conducted in laboratory settings focus on one channel or tool only (see e.g. Hambley, O'Neill & Kline 2007, who compare face-to-face teams with videoconference and chat teams). In reality, clear-cut differences like this are unlikely to occur, with people using multiple channels in a simultaneous, complementary, and overlapping fashion. Research utilizing naturally occurring data is perhaps difficult to control and predict, but it does fulfill one of the fundamental promises of open-ended qualitative research. It is this kind of research that is, in the words of Lindlof and Taylor (2002, 253), "[...] especially useful for providing fine-grained data about an often-mystified social phenomenon. This research is valuable *because* its findings contradict conventional wisdom [...]." Using naturally occurring data can help us appreciate the complicated but powerful human element in technology-mediated communication, and to gain insights into human communication behavior that would quite simply not surface in controlled laboratory settings.

In addition to speaking to researchers, we would like to extend our message to possible partners outside of academia as well. In order to respond appropriately to the society's expectations concerning research and its applications, academics will continue to need access to and support from working life organizations. In order to truly understand contemporary virtual teaming, for example, access to actual contemporary virtual teams is of essence.

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