

Teamwork at a Distance:

A Qualitative Study on the Teamwork Experiences of Diverse Teams Facing Transformations in Team Dynamics During the COVID-19 Pandemic



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Preface

So, for example, in the media industry, they always say, "New media doesn't eliminate an old one, it just modifies it." Participant W. – Interview 23 – Company 3 - Creative Team

This thesis presents the final paper of my M.Sc. degree in Business Administration majoring in Strategic Human Resources Leadership at the Radboud University in Nijmegen, the Netherlands. Beginning with the exploration of the research subject and finishing with the data analysis and conclusion, this study was conducted from December 2019 to June 2021. The motivation underlying this research is the sudden shift in the work context for a majority of the workforce due to the progression of the COVID-19 pandemic in March 2020. Working from home is not a new phenomenon, but the pandemic has turned this work context from an optional possibility for employees into a necessary full-time context. Although the nature of the work to be performed by teams has not drastically changed, the implementation of tasks and the associated interactions between team members have been strongly shaped and adapted by the home office work context.

The development of the research was a great learning experience through immersion in the experiences of those who lived it. I am particularly pleased with the feedback from some participants as the interviews have guided them to personal reflections that they can incorporate into their work experiences. I thank all participants for their time and for sharing their experiences. I thank Dr. Dorenbosch, my thesis supervisor, who supported me in my understanding of research with a background in anthropology and facilitated the research journey through his advice by staying open to my interests. Furthermore, I thank my master thesis group members who have encouraged each other throughout the process. I thank Lisanne, whom I appreciate for sharing her reflections with me, especially at the end of the research process. I especially thank Annelie, who has inspired me with her creative ideas as well as her mental support. Our collaboration assisted me several times in enhancing my research process. Furthermore, I thank my sister Emilia, because she supported every step of the process of my work with her creativity, understanding, and command of the English language, enabling me to further develop my thesis. I thank my boyfriend Frederick who supported me in devising ideas and improving my writing. He encouraged me when I needed a boost of motivation and an incentive to progress. A big thank you applies to my best friend Nicola, who encouraged me to succeed in developing valuable research. She supported me with her feedback, which kept me motivated during the phases in which my process stagnated. Finally, I thank my parents, my mom, who accompanied me through the research process in the phase of developing the research topic and during brainstorming activities, and my dad, without whom I would not have gained access to valuable interviewees and who wished me a productive day every morning.

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C.P. Tenbrock

Abstract

As a precaution against contagion during the COVID-19 pandemic, teleworking arrangements have been expanded, and many employees are working from home. Existing research has focused on ‘what’ the various outcomes of telework are, but ‘why’ these rather ambiguous outcomes occur has often been overlooked. One explanation for the paradoxical outcomes of telework is the neglect of the nature of teamwork, the dynamics of which transform in a telework setting. To examine the experience based on the nature of teamwork, this research addresses *how teams that are performing in telework settings as a consequence of the COVID-19 outbreak experience teamwork*. This study examined the experiences and perceptions of four teams that have differing task interdependencies and task types. In the shift to telework, they faced transformations in communication and cohesion and, in response, implement maintenance activities to adapt to their work context. The results suggest that teams with a generative or creative nature to teamwork experience major unfavorable effects of the telework context on team effectiveness, while teams that essentially perform information sharing and administrative tasks experience small or even beneficial effects. Expanding on Whillans, Perlow and Turek (2021)’s study, this study reinforces their researched concepts regarding teamwork experiences in telework, but also contributes novel insights into the consequences of transformation in the formalization of communication, the lack of passive information intake through overhearing surrounding conversations, and the difficulties of integrating new team members.

Keywords

Teamwork, Telework, Co-Work, Working from Home (WFH), COVID-19 Pandemic

Introduction

Originating in Wuhan City, China, in December 2019 (Liu, Kuo, & Shih, 2020) and expanding since then, the COVID-19 pandemic has posed challenges to societies around the world. Consequently, organizations and their employees are obligated to adapt to changing work arrangements, determined by governmental measures and organizational policies (ILO, 2020; WHO et al., 2020). One example of change in work arrangements is the expansion of working from home (WFH), in research also referred to as *teleworking*. This measure was adopted to limit interpersonal contact and reduce the transmission of the virus (WHO, 2020). Since the outbreak of the pandemic more than one year ago, telework arrangements began to shape the workday of many employees whose jobs allowed for a remote alternative. Even though back in the 1970s and 1980s various observers in the area of practice and research anticipated a substantial implementation of teleworking towards the year 1990 (Illegems, Verbeke, & S'Jegers, 2001), Böll, Cecez-Kecmanovic and Campbell (2016) concluded that “companies are still reluctant to fully embrace the idea of telework” (p. 128). The context of the COVID-19 pandemic, however, dictated that many organizations had no choice in maintaining their reluctance as the switch from co-work to home-based work became necessary to minimize the risk of infection. As a

result, the pandemic has urged employees to adopt new digital and collaborative tools and to embrace innovative ways of communicating with colleagues, supervisors, and customers (Milasi, González-Vázquez, & Fernández-Macías, 2021). With the increasing prevalence of online communication and virtual group collaboration, an extensive need for organizations to support their employees in integrating their communicative practices into virtual environments emerges (Olaniran, Rodriguez, & Williams, 2012).

Previous research debates on telework show contradictory and paradoxical results that have led researchers to propose ambiguous definitions of telework (Böll, Cecez-Kecmanovic, & Campbell, 2014; Böll et al., 2016). Managerial literature identifies a variety of potential drivers of telework-related experiences for employees and their organizations, including satisfaction, trust, and productivity (e.g., Collins, Hislop, & Cartwright, 2016; Nakrošienė, Bučiūnienė, & Goštautaitė, 2019; Timmerman & Scott, 2006). Other studies reveal contradictory results including the impact telework has on sharing knowledge and collaborating (van der Lippe & Lippényi, 2020). Therefore, in the field of telework, the questions of how employees experience telework are still left unanswered. Thus, this study aims to present a contribution that provides new perspectives on the answer to this question.

Teleworking, as a phenomenon experienced by employees, is strongly situationally dependent on the nature of tasks and work contexts (Böll et al., 2016); two decisive factors that are often neglected in existing research. Although these two factors are often overlooked, they represent important determinants of the benefits or shortcomings of telework. Thus, where previous research omits the nature of tasks and work context, this study addresses them as a central research focus. In this context, it seeks to develop a more nuanced perspective of analysis that considers a differentiated group of teleworkers. Classifying teleworkers into different groups based on the nature of their work allows for generating a greater understanding of why work activities and practices are experienced as potentially beneficial or detrimental. (Böll et al., 2016; Miglioretti et al., 2021; Neirotti, Raguseo, & Gastaldi, 2019; Shin et al., 2000).

Böll et al. (2016) focus on the inherent nature of work and the associated diversity of work activities in the context of the individual teleworker. This study builds on the research of Böll et al. (2016) and adds the consideration of the dynamics of teamwork. Therefore, this study recognizes the complex and diverse nature of teamwork practices that involve a variety of communications and interactions within team dynamics. Especially in work settings, teams share the responsibility of generating expected work outcomes and are perceived by others and themselves as a social unit within a larger organizational system. Studies of teamwork have identified the degree of interdependence, purpose, configuration, and situational context of a team as key elements in understanding team processes and interactions (Marks, Mathieu, & Zaccaro, 2001; Salas, Reyes, & McDaniel, 2018). The situational context of teleworking central to this study is understood as inherent to teleworkers' experiences and perceived effectiveness in teamwork. The nature of teamwork in this study is determined by team configurations, task interdependencies, and task types. Due to the multiple different

characteristics of individual teams, no team is identical (Salas, Burke, & Cannon-Bowers, 2000; Salas et al., 2018), and thus, the situational context of telework settings can affect teams differently. Expanding on previous studies, this research asserts that the shift to a remote work context is related not only to the characteristics of telework, but also to the characteristics of the teamwork performed in the telework context.

Qualitative research requires research in how interactions occur between teleworkers within a working team in firms (van der Lippe & Lippényi, 2020). While research considers telework as an individual choice and recognizes it as complementary to face-to-face communication (Timmerman & Scott, 2006; van der Lippe & Lippényi, 2020), in this study the context of the COVID-19 pandemic causes telework practices to become an imperative for infection control. Due to the expansion of virtual work settings, a better evaluation of teamwork is required to uncover differentiated team processes. Most recent research by Whillans et al. (2021) on teleworking teams during the COVID-19 pandemic generated knowledge about employees' perception at the beginning of the pandemic. This research, however, examines teleworking teams more than one year after the teleworking expansion imposed by the pandemic. With the ongoing timeframe of the pandemic, the perceived sudden shift to teleworking teams turned into stability. Therefore, this study examined potential transformations in the performance of core team activities and the resulting consequences in a context that required collaboration to be performed through virtual efforts. Furthermore, the study by Whillans et al. (2021) has a narrow focus on the diversity of team configuration and various task interdependencies. They propose to explore how characteristics such as the foundational nature of a team shape teams' experiences with WFH.

Accordingly, this research considers the nature of teamwork, different team configurations, and task interdependencies, and examines how telework experiences differ in the extent to which different aspects of teamwork practices support or hinder teams. In this regard, this study contributes insights into how teamwork experiences in a telework setting are effectively perceived by teleworking members of unique teams. Therefore, this study aims to explore how different teleworking teams as imposed by the COVID-19 pandemic experience teamwork interaction, leading to the research question: *How do teams that are performing in telework settings as a consequence of the COVID-19 outbreak experience teamwork?*

To answer the research question, emphasizing the experience of team processes in real situational contexts, the transformations of teamwork dynamics in telework settings over the year of the pandemic, and its implications for team effectiveness, the following sub questions were formulated:

- 1) *How did different teams experience teamwork prior to the COVID-19 pandemic?*
- 2) *How have different teams experienced teamwork shifting to a teleworking context imposed by the COVID-19 pandemic?*
- 3) *How is the shift to telecommuting experienced affecting the effectiveness of different teams?*

Academic and Practical Relevance

Complementary to quantitative research studies and in order not to negate the complexity and diversity of teams in telework settings, this research inductively investigated the subjective experience of teleworkers within teams. This enabled to identify how the use of virtual communication technology affects the interactions between team members and how this is reflected in the change of teamwork activities. Regarding the fact that a generalization of whether telework has a positive or negative impact on teamwork is oversimplified and thus subject to criticism, it is argued that this study goes beyond a one-dimensional assessment and instead examines the fundamental diversity of participants' experiences. Therefore, this research approaches the accounts and perspectives of those working in IT, marketing, application management for software and hardware, and administration within a federation who are involved in the phenomenon and thus have the knowledge to express how they experience teamwork in telework settings in practice. In addition, the results of previous research indicate that research is needed to obtain a more thorough assessment of team members' needs related to specific teamwork practices in order to evaluate telework in practice and subsequently develop telework policies (Böll et al., 2014). By including the perspective of co-workers (van der Lippe & Lippényi, 2020), and different interdependence constellations of teams (e.g., Franz, 1998; Saavedra, Earley, & Van Dyne, 1993; Van de Ven, Delbecq, & Koenig Jr, 1976), this study provides organizations with implications to include co-workers' interrelations in their assessment of teleworking effects. Especially human resource professionals with intentions to evaluate employee perception and change management processes to improve teamwork effectiveness can apply the research outcomes as valuable advice. As a result, it can contribute to increasing the productivity and efficiency of technologically driven teamwork arrangements, more specifically in a home-based work arrangement. With the underpinning action-theoretical references, organizations can realign their human resources practices, and managers can empower employees to work more effectively in teams by identifying the mechanisms and processes by which employees collaborate in teleworking teams.

Theoretical Background

This section presents the key concepts of telework and teamwork in the context of this research. This allows for a comprehensive explanation of how the concepts are commonly understood in research and practice, and how they were integrated within the framework of this research. Due to their generally broad conceptual understanding in research and practice, the terms are explained and presented in more detail in the following based on sub-aspects and theoretical frameworks.

Telework

The International Labor Organization's (2020) 'employers' guide on working from home in response to the outbreak of COVID-19' addresses the elucidation of the difference between telework and working from home (WFH). Advancements in communications technology have enabled

organizations and individuals to embrace a variety of alternative work arrangements. Telework, virtual work, and WFH are used interchangeably and term the work arrangement if employees work outside the traditional organized office rooms (Wiesenfeld, Raghuram, & Garud, 2001). Differences may be based on temporary or long-term arrangements, while others differentiate between working in the home office (WFH) or from elsewhere (telework) (ILO, 2020; Wiesenfeld et al., 2001). For this research and especially in the context of COVID-19 the terms may be used interchangeably.

A Definition

In literature, telework is viewed as an expanding phenomenon providing an evolving central role within organizations. Most commonly, highly skilled workers who need to perform “in dynamic, flexible, technology-enabled organizations” (Wiesenfeld et al., 2001, p. 214) are frequently working from home. Whereas some job characteristics and activities are not suitable to be performed from home, for instance, due to location dependency, knowledge workers, who are merely dependent on information exchange, require information centralization rather than physical centralization (Illegems et al., 2001). In other words, teleworking diverts “the visible, tangible dimensions of organizations” (Wiesenfeld et al., 2001, p. 214) from typical job characteristics and work arrangements towards psychological dimensions including employees' perceptions and interactions with others. Nevertheless, to contain the COVID-19 infection to the greatest possible extent, telework had to be expanded and only those jobs for which it was impossible were not included in the scope of a telework expansion. In the situation of COVID-19, WFH was introduced as a “temporary public health measure” (ILO, 2020, p. 7). However, if in the beginning employees set up their workstation on the ironing board, by now they are required to have an entire office arranged in their homes. What began temporarily has now become commonplace.

Effects of Telework

Previous research does not indicate a clear divide between beneficial and detrimental aspects of telework for individual employees. What employees perceive as positive for one task, situation, or event, they may regard as negative for another (Böll et al., 2014). Some of the conflicting findings of previous research include improvement in work-life balance while others examined an increase in work-life conflict. Some other findings indicate high levels of trust in the organization while others negotiate a decrease in trust; researchers have explored increased employee satisfaction while others have found a decrease in satisfaction (Timmerman & Scott, 2006). One positive frequently presented finding is the enabling role of autonomy and freedom. These factors create flexibility for the individual teleworker, which potentially allows for more efficient coordination of work (Böll et al., 2014). Teleworking can also lead to higher productivity as a result of reduced interruptions from co-workers or eliminated time spent commuting to work (Böll et al., 2014).

Virtual working arrangements enable employees to communicate and collaborate through information and communication technology (ICT) which can facilitate the interaction between two or

more employees (Dixon & Panteli, 2010). Face-to-face interaction with the aid of computer-mediated communication (CMC) can easily be shifted on demand (Dixon & Panteli, 2010). “Employees previously isolated from communication networks due to being located away from headquarters or main company locations can now become active members of the network via technology” (Sias, 2009, p. 187). CMC technologies provide organizations with innovative ways of arranging work and managing employees. The disadvantages, however, are primarily that collaboration is hindered, and necessary knowledge sharing is reduced. Besides, family members may interrupt work and a fixed work schedule is extended to working continuously at any location, or in the recent context primarily at home (Böll et al., 2016).

The Management of Telework

The management of teleworkers generates key challenges for organizations in terms of convenient centralization of information (Wiesenfeld et al., 2001). Due to physical distancing, it is assumed that an increased autonomy of teleworking individuals complicates the coordination and control of employees (Dimitrova, 2003). Besides, research on the part of employees has examined “feelings of isolation, greater need for self-organization, and sometimes greater stress” (Wiesenfeld et al., 2001, p. 214) which indicates the need for providing insights into the multi-level consequences of telework for organizational management and employee work roles. Compromised, as stated by Sias (2009), “the effects of communication technology on organizing processes are somewhat paradoxical in that such technologies both connect and separate people and organizations.”(p. 187).

Gibson and Gibbs (2006) state that in the framework of telework and ‘virtualness’, teams in the teleworking setting need to be described as operating on a ‘continuum of virtuality’. Their research identifies the need to acknowledge the multidimensional nature of telework and describes its relationship to teams. This, however, is merely framed within the multifaceted nature of telework, disregarding the dynamic dimensions of teamwork as work processes. ICT and especially CMC can have an “ambivalent role in supporting different work activities, teamwork, and interaction” (Böll et al., 2016, p. 121). The question of *who* participates, *why*, and *what* happens when employees participate in teleworking arrangements often remains unanswered, as research focuses primarily on the general distribution of beneficial and detrimental effects that telework can entail.

It can be argued that the ambiguous results in the findings on telework are a reflection of questionable conclusions that have been drawn and therefore research approaches to the study of telework phenomena need to be reconsidered (Böll et al., 2016). The frequent attempt to answer the question of how employees experience telework often yields uninformed results, implying that perhaps an oversimplification of the associated context is being made. Concerning its dynamic nature, “the manifestation of potential benefits or drawbacks of telework for an individual can change on a daily basis along with their current work activities and work demands” (Böll et al., 2016, p. 121). In practice, there are examples of governmental institutions and universities that have addressed the question of

whether all the tasks associated with a job position or role can be performed from home (*Telework Managers: Assessing Job Tasks*, n.d.; *Telework policy*, 2021). Recognizing that jobs are a collection of tasks, teleworkers can perform some tasks with varying degrees of comfort in the teleworking setting. In teleworking guides designed to assist in determining the suitability of telework for employees, the question of whether several tasks can be performed away from the office is central (*Telework Suitability Guide*, 2021).

Along with the progressive acceptance of the benefits working teams provide (Offermann & Spiros, 2001), teleworking arrangements and respective organizational structures place special emphasis on virtual teams and their significance for teleworking employees and organizations. Telework is a situational setting that “can be practiced in different ways, and using one label for all its various forms glosses over these differences and can thus be contra productive for research” (Böll et al., 2014, p. 2). Therefore, this research examines the communication and interaction of different teams in telework settings to appreciate telework practices as a multifaceted concept.

Teamwork in the Context of Telework

The literature describes a fundamental gap between practice and theory in the context of teams and teamwork (Salas et al., 2018). Accordingly, the situational context of the COVID-19 pandemic may have a significant impact on how team interactions are designed and, as a result, how the effectiveness of team processes should be defined (Böll et al., 2016; Neirotti et al., 2019). Since teamwork configurations, processes and interdependencies are context-specific and vary from team to team, as well as from individual to individual, it is important to investigate the team members’ perceptions and experiences about their team interactions. In addition, a situational telework setting is associated with the richness and complexity of the type of work performed in this setting and the role that virtual communication plays in it (Böll et al., 2016). Böll et al. (2014) found that accounting for the versatility of the work type and the use of virtual tools for the work type are important to improve understanding of the differences in telework experiences and their evaluations. Therefore, this study suggests that a nuanced exploration of teleworking settings can be developed by examining differentiated characteristics of teams and teamwork patterns in practice. The following sections are distinguished based on key sub-sections which will emphasize the diversity of teams and teamwork and form the theoretical framework of this research.

A Definition

The term teamwork adopts the notion of work being done within or by a team. The Cambridge Dictionary (2021) defines teamwork in its essential meaning as “the activity of working together in a group with other people, especially when this is successful”. This simplified definition, however, underestimates the diversity of distinctive teams, their task processes, and task interdependencies. A team in its collective nature can achieve tasks that demand collaborative action by individual team

members (Rousseau, Aubé, & Savoie, 2006). Notably, Schermerhorn et al. (1995) state that the application of the term *team* includes diverse classifications of groups, however, their unitary perspective and synergy differentiate a team from any other arbitrarily formed work collective (in Ingram et al., 1997). Teams can exist in various organizational settings and are jointly responsible to contribute to or undermine organizational objectives (Gladstein, 1984).

According to Böll et al. (2014) “The ‘nature of work dimension’ is frequently absent in current research on telework” (p. 6). This study addresses the aforementioned nature of work more specifically as the *nature of teamwork* in which specific processes, activities, and interactions are embedded. Similarly, the need for this approach, emphasizing a collaborative type of work, was previously stressed in research, as the results indicated that “the needs of participants may vary considerably” (Böll et al., 2014, p. 9). Fundamental to this research is the perception of teamwork as a multifaceted concept. The versatility of needs can refer not only to the versatility between teams but to the versatility within teams.

The design of telework is often characterized as suitability-based planning, where selective criteria in choosing the appropriate teleworkers and tasks are applied. Suitability requirements are discussed in terms of personality, demographics, tasks, and occupations (Shin et al., 2000). Böll et al. (2014) state that “for some participants, the dynamic and complex teamwork required and is more effectively completed when team members are collocated and can meet face-to-face.” (p. 9). This suggests that telework can have strong adverse impact on team members' experiences of teamwork in telework settings but does not exclude contradictory experiences. Consequently, this study is concerned with the individual meaning that each team member attaches to the teamwork implications of teleworking. For this reason, a better understanding of the nature of teamwork is needed and forms the focus of this research.

Team Task Interdependencies

Teamwork requires interpersonal interaction between individuals, and a certain interdependence is indispensable. Interdependencies enable or hinder mutual exchange, depending on the structure, dependency, and connections between the individual members (Wildman et al., 2012). It implies that team members must share knowledge, information, and materials to achieve their task objectives (Rico & Cohen, 2005). A term commonly stated in literature is *task interdependence*. Courtright et al. (2015) explain task interdependence as a type of taskwork design that describes dependency patterns in accessing critical resources and workflows that require coordination and collaboration. Generally, previous research assumes that while task interdependence increases, process requirements of collaboration, communication, and management between team members expand (Saavedra et al., 1993). The complexity of task interdependence, however, is undervalued by the given definitions. Therefore, researchers have examined different dynamics of dependency. Pooled task interdependence, sequential interdependence, and reciprocal interdependence are almost universally represented (Franz, 1998;

Thompson, 2017); however, Van de Ven et al. (1976) introduced the fourth type of interdependence (*see* Figure 1).

To address the most common types first, pooled interdependence describes the dependency between team members in which members contribute individual parts to the team's work and do not depend on another member for performing work steps (Kumar, van Fenema, & von Glinow, 2009; Wildman et al., 2012). “The total production function is cleanly separable into discrete, completely independent but similar sub-tasks performed by different actors” (Kumar et al., 2009, p. 647). One example is a team of word processors that receive their word processing tasks in their inboxes (Saavedra et al., 1993). Second, the term sequential interdependence is used to describe a linear sequence of tasks, i.e. the completion of one task is necessary to proceed to the following task (Wildman et al., 2012). Each unit of work adds value to the work incrementally and serially, following tasks in a stipulated order (Franz, 1998; Kumar et al., 2009). The best-illustrated example is given by an assembly line in which employees can only begin their work when the predecessors finished their tasks (Saavedra et al., 1993). Third, reciprocal task interdependence has the scope to be reassigned to the initial task owner as well. Thus, compared to sequential dependency, there is no closure between the individual tasks within the workflow and thus the dependency is iterative (Kumar et al., 2009). However, the one-to-one relationship between team members remains and multiple members are never addressed in one cycle (Wildman et al., 2012). An example is provided by any team with individual specialists that work together to accomplish one work task, such as employees involved in a surgery procedure (Saavedra et al., 1993).

Van de Ven et al. (1976) introduced team interdependence. Since the previous three types of interdependence suggest rather independent work units that interact, team interdependence completes the range of interdependencies with its focus on multiple member interaction. Accordingly, not individuals, but all team members together interact as a unit “jointly collaborating to complete the team task” (Wildman et al., 2012, p. 116). Therefore, the movement of work between team members does not have a detectable temporal interval (Van de Ven et al., 1976). Especially in creative teams that require knowledge sharing for instance to develop a product, and are responsible for deciding on the design, the steps necessary to create that product, and the role each member takes on, represent team interdependence (Saavedra et al., 1993). In this study, the distinction in task interdependencies, considered to be part of the diversity in the nature of teamwork, facilitates the understanding of how different teams experience the impact of telework on teamwork.

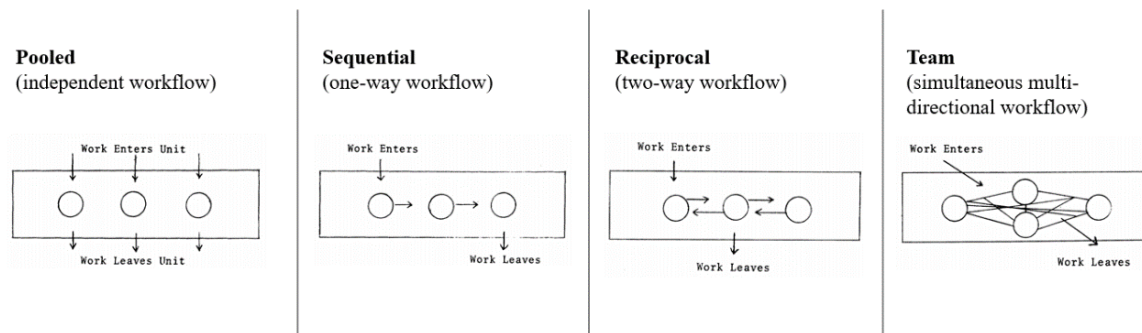


Figure 1 Workflow models of task interdependencies (adapted from Van de Ven et al., 1976)

Teamwork Processes: From Input to Throughput to Output

Generally, a team can be referred to as a system steadily interacting “with its environment in the process of transforming inputs to outputs” (Ingram et al., 1997). Teams as systems require resources such as tasks, skills, time, and people, using them as input to establish outputs reflected in performance and the development of solutions (Ingram et al., 1997). McGrath (1964) introduced the framework of input – process (*throughputs*) - outcome (*see* Figure 2) which is determined by the individuality of the team (in Salas et al., 2018). Inputs, simply put as the antecedent of team interaction, “are conditions that exist before a performance episode and may include member, team, and organizational characteristics” (Rousseau et al., 2006, p. 541). In this study, inputs relate to group configuration (Ingram et al., 1997), specifically the diversity of team configurations, task types, and task interdependencies that characterize the sample teams. The nature of the configuration of teams determines the processes, cohesiveness, communication, decision-making, task activities, and maintenance activities which collectively are understood as *throughputs*. In other words, throughputs describe the interactions between team members (Wildman et al., 2012) and link “variables as member, team, and organizational characteristics with such criteria as performance quality and quantity, as well as members' reactions” (Marks et al., 2001, p. 356). They translate inputs into team deliverables and serve as an indispensable facilitating transition for an efficient teamwork flow (Ingram et al., 1997).

Team interactions are conducted with a clear goal in mind. As a system composed of diverse team members, teams plan centered team meetings to promote and confirm the common objective and align the throughputs as coherent activities and behaviors (Ingram et al., 1997). Team throughputs represent how members engage with each other and their working environment and apply a variety of tools, including capabilities and equipment to achieve tangible results (e.g., work pace and team engagement) (Marks et al., 2001). In this respect, cohesion, and communication form key aspects of teamwork throughputs (Ingram et al., 1997). Cohesion goes hand in hand with cooperation, solidarity, dedication, and positively perceived interdependence. Communication between team members must be transparent, concrete, and open (Ingram et al., 1997).

In the context of this study, there are two main factors to consider. First, the COVID-19 pandemic shifted teams' work environments from a co-work context to a distanced individual home-

based work context. More importantly, it has shifted to a permanent distanced work context that remained non-optional to change. Second, the variety of team communication and interaction in the displaced work context is likely to be driven by virtual means of exchange to coordinate throughputs and achieve the common objective. Furthermore, team dynamics of communication and interaction can be disrupted by sudden events that require maintenance solutions that may change the workflow as needed at any time. As a result, teams need to monitor the context and adapt the processes with adequate techniques accordingly (Ingram et al., 1997). Therefore, the context of this study suggests that team throughputs have shifted along with the situational context, driven by the complexity and diversity of team configurations. Accordingly, this study identifies teamwork experiences related to how team members engage with each other in the shifted environment. Consequently, this study focuses on the notion of throughputs, related to the dynamic processes of activities, tasks, and interactions that occurred before the COVID-19 pandemic and their perceived shifts as a result of the pandemic-induced telework.

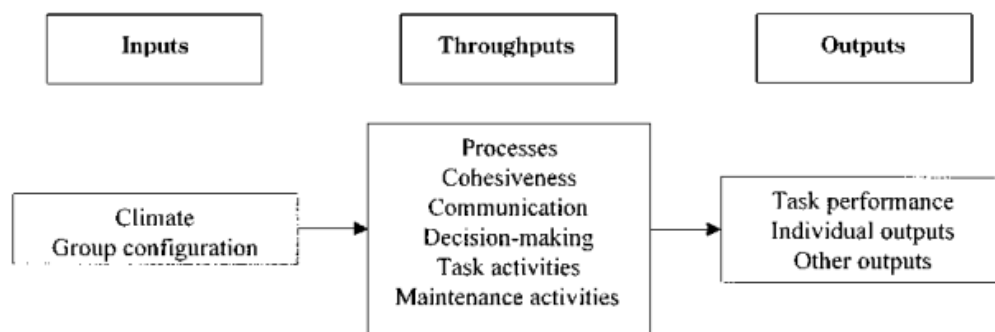


Figure 2 An open systems model of teamwork (Ingram et al., 1997)

Team Effectiveness

Previous research indicates that effectiveness requires different models for different types of teams (Cohen & Bailey, 1997). This is explained by substantive participation in interaction, creation, and execution of teamwork objectives that can differ from team to team in various organizational contexts (Cohen & Bailey, 1997). There is a popular assumption that effectiveness is associated with a successful performance of a team and includes the productive and profitable results in multiple organizational settings and promotes higher adaptability, efficiency, and innovation than any individual employee may provide (Xyrichis & Ream, 2008).

Cohen and Bailey (1997) made a more nuanced distinction of effectiveness, in which effectiveness is assessed from the perspective of the individual team member. In the present study, the perceived subjective effectiveness of team members concerns the impact of the pandemic-conditioned telework on team effectiveness and possible limitations and improvements reflected in it. Salas et al. (2000) indicate that efforts taken by researchers to define the effectiveness of teams include “how *team inputs* (e.g. task design, individual characteristics, and team characteristics) affected *team outputs* (e.g. performance, satisfaction)” (p. 341). Although these approaches provide a more nuanced differentiation of team inputs that can influence team effectiveness, rather than focusing only on organizational

effectiveness, they still overlook the versatile dynamics in the nature of team throughputs. As a result, the notions of teamwork interaction and effectiveness remain vague.

Criticism of the oversimplified quantification of effectiveness in the form of productivity can have essential relevance in the context of virtual teams. Previous research has emphasized that the effectiveness of virtual teams must be assessed by including aspects of trust, communication, cohesion, and shared experiences which can be influential in affecting employees' satisfaction with the work environment (Dixon & Panteli, 2010; Martins et al., 2004). Besides, De Croon et al. (2005) emphasize that the effectiveness of telework, in terms of employee satisfaction and productivity, can be better assessed by the suitability of the workplace, which, in the context of COVID-19, refers to the establishment of a tele-workplace at home. Consequently, this study examines individual perceptions of effectiveness and evaluates teamwork effectiveness based on the nature of team configurations, type of work, and task interdependencies.

Methodology

This chapter presents the methodological choices to answer the research question how teams that are performing in telework settings as a consequence of the COVID-19 outbreak experience teamwork. The chapter will first introduce the philosophical assumption of the research, from which subsequently, the collection of data, the choice of sampling, and the data analysis approach in the context of this research derive. The following sub-chapters will afterward emphasize the development of intended research quality criteria and the essential research ethics that were considered.

Philosophical Assumption

This research draws on the philosophical approach of interpretivism. First, the sense-making and experience of teamwork in teleworking settings for the individual team member cannot be gained from pure observation. Second, the meaning is subjective and therefore constructed, primarily by the involved team member but also by the researcher who interpreted the meaning to achieve an explanation. One variant of interpretivism is phenomenology (Mees-Buss, Welch, & Piekkari, 2020). The epistemological principles of phenomenology are especially helpful in exploring teleworking teams in their practice setting to provide an empirical description of the real situation in practice. This research aims to address teamwork in telework settings from a practical perspective. Based on the approach in Böll et al. (2016), "the practice perspective [...] [adopted] in this paper draws from interpretivist tradition." (p. 118).

To grasp the situational phenomenon of teleworking teams and the diversity of teams, this research followed an inductive qualitative approach. To achieve an enhanced comprehension of the effects of telework on teamwork, it was examined in more detail what teleworkers do, how the teamwork is done, and how it is perceived effectively (Böll et al., 2016; Gibson & Gibbs, 2006). The literature emphasizes that "experiences with telework and the assessment of telework appropriateness and

effectiveness are deeply contextual and embedded in work practices” (Böll et al., 2016, p. 125). By following an inductive research approach, this research avoids and contests a generalization of both, a teamwork and telework definition and stresses the importance of their multifaceted nature. Of greatest interest to the researcher are the types of work and interactions between colleagues that are requisite to certain work practices, and how technologically mediated communication is perceived in influencing the perceived effectiveness of teamwork.

The more contemporary phenomenological approach of Interpretative Phenomenological Analysis (IPA) is applied to allow for in-depth convergent and divergent investigations of participants’ perceptions, which are useful to compare the uniqueness of teams. Additionally, it emphasizes the distinctive versus the generic, which assists the researcher to explore the individuality of different team configurations and relationships. It is important to stress that phenomenology is primarily concerned with the details of processes, activities, and experiences that are often taken for granted and, as a result, can be overlooked. In most cases, these are everyday occurrences of teams that now involve virtual teamwork through imposed telework arrangements. Due to the associated changes in contrast to previous face-to-face exchanges, telework has become an everyday phenomenon that can have a major impact on teamwork processes and therefore needs to be explored for a better understanding.

Data Collection

Following the research question and the principles of phenomenology, qualitative research methods and research design indicate an explorative approach. Primary data was gathered through semi-structured interviews, to generate insights from the participants about team interactions in telework and the perception of an improved or diminished impact of telework on teamwork processes. Considering the outbreak of the pandemic, the interviews were conducted with online tools, for instance, Microsoft Teams or Zoom, or by phone. The researcher was therefore not geographically restricted and conduct interviews flexibly when those tools provide simple scheduling of interviews (Hanna & Mwale, 2017). The goal of qualitative research is not to create a representative sample, but to gain deep insights into the context of participants’ experiences. Therefore, 25 interviews were conducted, 20 of which were included in the data analysis.

Being knowledgeable about the key notions of the research topic and conducting semi-structured interviews an interview guide was developed, including the following main topics that guided the researcher in the conduction of interviews (Appendix 2): *teamwork activities and interactions; individual work activities, and responsibilities within teams; the perceived effectiveness of teamwork in the teleworking setting*. To investigate teamwork comprehension in a periodical development of COVID-19, all topics involved questions that include a perspective inquiry of a time *prior to COVID-19, at the beginning of COVID-19, and recently*. The COVID-19 outbreak required a sudden change in work arrangements, and participants’ perceptions of the current setting compared to previous teamwork arrangements (prior to the pandemic and at the beginning of the pandemic) could only be asked with

retrospective questions. In this study, a retrospective approach is used for exploratory purposes and proposes a simple and efficient way to obtain dimensions of change and to interpret stories of an individual or team experiences (De Vaus, 2011). This was, however, dependent on the ability of the participants to recreate their subjective experiences dating back to a time prior to the COVID-19 outbreak and the beginning of the outbreak; in Europe primarily at the beginning of last year (WHO et al., 2020).

Sampling

Foundations to Explore Team Versatility in Telework Settings

In this study, the system model of effective teams by Ingram et al. (1997) is considered as the theoretical framework, and thus, team configurations, task interdependencies, and the nature of the task as the basis of team composition form the main delineation of team versatility. Accordingly, one team inherently differs from another team. It follows that the diversity of teamwork, interpreted as team throughput, is determined by the fundamentals by which the team is configured. In other words, the construction of unique teams shapes the nature of teamwork. Furthermore, teams operate in a working context in which they approach and carry out their teamwork. Before the COVID-19 pandemic, this work context consisted of a shared co-work context in the traditional office setting. With the expansion of the pandemic, however, this work context shifted to telework among individual team members at their home offices. In this study, the objective is to explore how the shift in work context has affected teams and their communication, interaction as well as their collaboration, to further expound the convergence, divergence, and paradoxes associated with telework experiences that prevail in literature. Based on the exploration of these experiences, how the shift to a teleworking context has affected the effectiveness of teamwork can be further assessed. The following model reflects this line of reasoning (Figure 3).

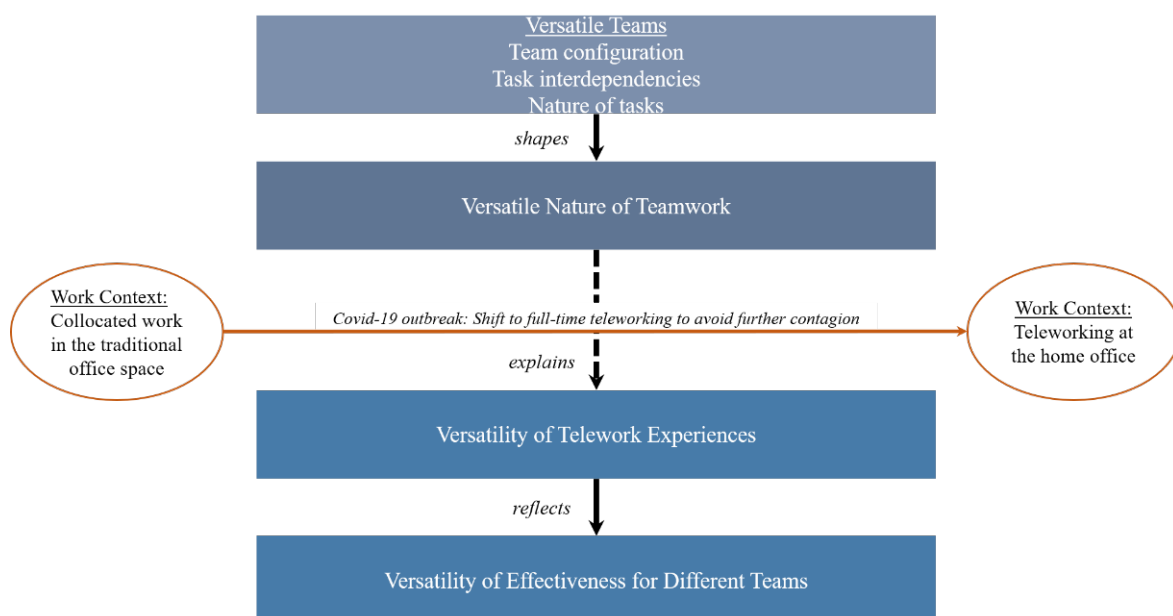
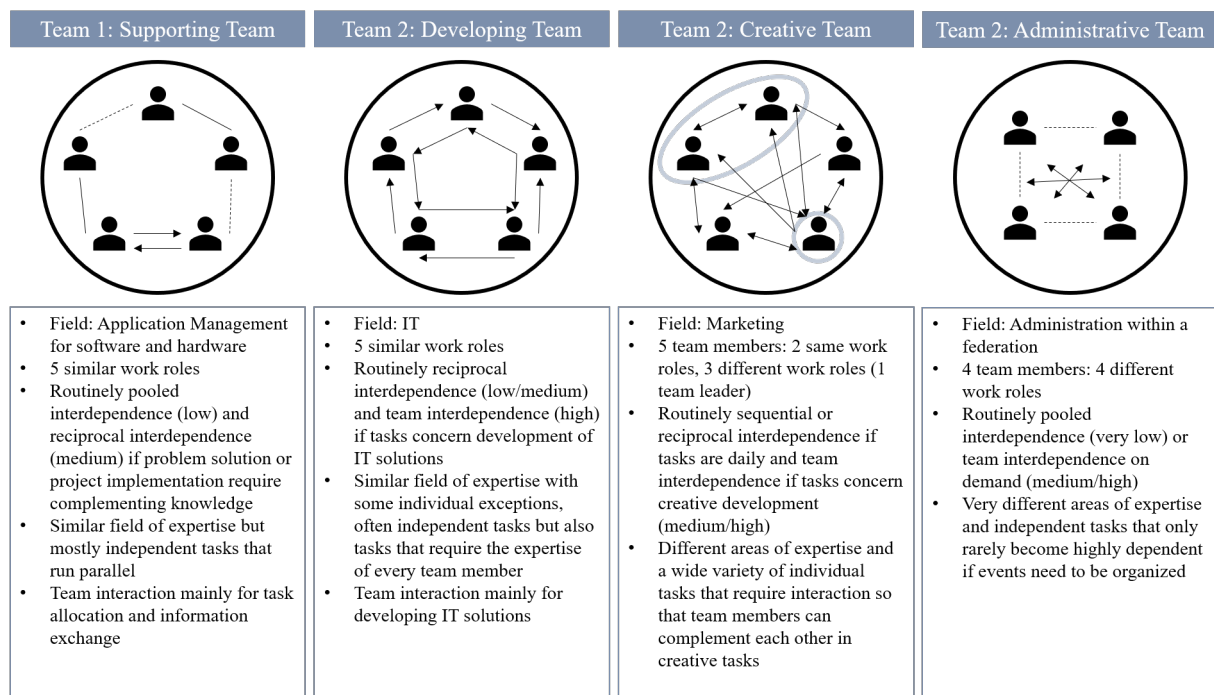


Figure 3 Model of Thought: Team Versatility Approach

Sampling Strategy

To determine a clear research environment, the sample was chosen in the context of Germany. For a more detailed consideration of the context, the Federal Ministry for Labor and Social Affairs in Germany promulgated an amendment to the Occupational Safety and Health Act in January 2021 that requires organizations to allow employees to perform work that can be done from home in their homes, unless compelling business reasons are justifying otherwise ("SARS-CoV-2-Arbeitsschutzverordnung (Corona-ArbSchV)," 2021). The pandemic offers a unique context for research and the given regulation enables the research focus of teams in telework settings. By the specified requirement of working in a team that works from home, the sample pool in itself forms a homogeneous group of participants, nevertheless, this does not preempt the underlying valuable diverse experiences of individuals (Alase, 2017). Through the selection of a specific homogeneous group, however, an understanding could be developed in the context of teleworking teams, because this group shares similar experiences in the situational context in which its members are working (Alase, 2017).

The sample was approached by purposive sampling (Luborsky & Rubinstein, 1995). It provides an open but directed approach to choosing teams as a sample and is most suitable because of the predetermined population of teams from different organizations working in a teleworking setting in Germany. Considering that measures introduced due to the COVID-19 pandemic do not merely affect individual industries and that various activities can currently be performed from home, an industrial research context is not further restricted at this point. This is, however, envisaged as a crucial comparative aspect following data analysis. The predetermination of the sample assumes the necessary expertise and knowledge of the participants to provide insights into the situational context of teamwork in teleworking arrangements (Alase, 2017). The sample studied consists of a team represented by five members responsible for support activities, a team represented by six members involved in development activities, a team represented by five members performing creative activities, and a team represented by four members carrying out administrative activities (*see* Figure 4). To capture the experiences and diversity of whole teams, individual team members of a team were approached. In other words, the team, instead of a single respondent, forms the sample in the teleworking population. With the ratio of teams of four to five team members, complex task interdependence structures were examined by investigating the roles and tasks of single team members and gain multiple perspectives from different people within a team. To enable a more valuable and precise comparison between various teams and their teamwork in teleworking settings, the selection of the sample teams was based on various types of task interdependencies, team types, and work roles. The work-related dissimilarities between the teams allowed for a subsequent analysis that can focus on different team contexts in the assessment of telework influencing teamwork.

**Figure 4** Sample Team Configuration

Data Analysis Approach

Along with the phenomenological research approach, the data collection and data analysis emphasize in-depth inductive processes (Alase, 2017). After conducting interviews, the interviews were proverbially transcribed. To develop a clearer understanding and to capture the first patterns, the transcripts were read by the researcher several times. While reading the transcripts, the first interesting and significant statements and observations of the researcher were annotated (initial noting) (Miller, Chan, & Farmer, 2018; Smith & Shinebourne, 2012).

The analysis of the collected data proceeded by inductive single case coding. Therefore, the researcher gained knowledge while analyzing the conducted data and developing theoretical assumptions (Walle, 2015). The initial focus was on participants' connotations that include fundamental data to eventually develop a deeper understanding of the phenomenon. In the first iteration, the available data from the interview transcripts were coded by determining the descriptive representation of the participants' narratives (Miller et al., 2018). Staying as close as possible to the gathered data and the expressions by the interviewees, statements on how respondents have experienced their reality of teamwork in teleworking settings formed the superordinate codes. In the first iteration of all transcripts, one following the other, already detected convergence and divergence aspects were noted (Smith & Shinebourne, 2012).

In a second iteration, initial coding evolved on a more generic level towards major theoretical concepts that synthesize the processes and experiences of the participants in the teams. The subordinate themes guide the researcher in exploring related statements and cases more closely. This iteration

focused on initial analytical structuring to allow the first identified associations between emerging themes to be linked in a meaningful way.

From second-order analysis onwards, the researcher moved toward interpretation beyond mere illustration by the participants, exploring the importance which participants assign to aspects of their stories. Previously investigated themes were, in this iteration, pooled into a higher-level cluster of themes that aim to suggest analytical and theoretical concepts that represent the key experiences and concerns of the participants according to the influence of telework on their teamwork (Smith & Shinebourne, 2012). During coding, data was iteratively revised to reflect emerging codes, themes, and interpretations of the researcher. Based on potentially new data observations that emerge from the iterative process, some themes were emphasized, and others were neglected.

The focus of the analysis was subsequently on the elaboration of convergent and divergent comparisons between the transcripts. Participants encountered thematically similar elements of the phenomenon of teamwork in telework arrangements, but with fundamentally different perceptions of single aspects of the phenomenon. Finally, after each transcript was analyzed, the emerging codes have been represented in a codebook that shows the researcher's analysis development from quotes to clustered themes (*see examples* Appendix 1). In the process of 'writing the analysis up' themes needed to be prioritized and the analysis was textually expanded including quotes taken from the interviews (Smith & Shinebourne, 2012). As the interviews were conducted in German, all quotes have been translated from the original into English. It was based not only on the repeated occurrence of themes but especially on the richness of information that a particular theme describes (Smith & Shinebourne, 2012). Besides, often what was not said, what emerges as hidden meanings from participants, or what is diverging from other cases provided valuable data. The analysis generated a real-life impression of teamwork in teleworking arrangements based on the interviewed sample. The *what* and especially the *how* were answered throughout the analysis by clearly distinguishing between what was expressed by the participants and what was analyzed to understand it on a more theoretical level.

Quality Criteria

Following a qualitative research approach, the quality criteria for this research followed Guba and Lincoln's criteria of credibility, transferability, dependability, and confirmability (Symon & Cassell, 2012). First, the sample was chosen based on their presumed expertise and lived experience of teamwork that is performed in a teleworking setting that can be presented to the researcher in detail (Miller et al., 2018). Given that this research aimed at thoroughly supporting the participants' stories and represent their accounts for teamwork in telework arrangements, separated from the researcher's interpretations, the gathered data and informative background information about the participants and their situational conditions have been transparently provided if it did not contradict the research ethics. More precisely, the information has been provided to the reader in detail to emphasize its credibility. Furthermore, it

was discussed and exemplified with a balance of convergence and divergence between the teams' representations. This resulted in a thick description of the data.

Especially following the IPA approach and the explorative nature of this research, the iterative aspects of the research analysis were emphasized while incorporating the researcher's reflection on the interpretations. Therefore, it is important to state clearly, explicate, and reflect on these adjustments for future researchers and practitioners. This also includes emphasizing the process of data collection towards data analysis and the associated intermediate steps showing how the coding of the data led to the results presented accordingly. The retrospective exploration of the subjective experience of teamwork prior to and at the beginning of the COVID-19 pandemic required a careful interpretation because participants may misremember the subjective information (De Vaus, 2011). This approach, however, was needed to compare the development of team members' experiences with teamwork in telework during the respective periods and provide valuable information about the meaning-making on the account of the team members. Transparently describing the gathered data and reflecting on the contextual situation of the participants has provided an opportunity for other practitioners to project the unique findings onto their own experiences. It is, therefore, depending on the specifics of the evaluated results.

Research Ethics

Following the quality criteria about transparency, the most meaningful aspect of this study is the reflexivity of the researcher. This study analyzed participants' narratives in the situational context, more respectively the team members in teleworking arrangement, authentically. In this regard, the researcher adopted an external position. In this process, the emic and etic perspectives were identified and, therefore, reflexivity has been a key aspect in the holistic research. As a result, biased assumptions and interpretations could be limited. To emphasize the idiographic intention of IPA, this research emphasized raw, data including quotes and illustrative representations exemplifying participants' narratives, processes, and interpretative frameworks of analyzed theoretical concepts (Miller et al., 2018).

Furthermore, it had to be ensured that each respondent felt comfortable. A 'most appropriate setting' had been provided, i.e., a location that was neutral, easily accessible, and comfortable to promote a more familiar interview setting (Longhurst, 2016). In the virtual setting of online technologies, the interviews were not conducted face-to-face. In particular, because of teleworking arrangements in which employees commonly work from home, privacy was a key aspect, especially when the interaction between the participant and the researcher took place with video and the living space was visible in the background. Therefore, the researcher asked for permission to record the interview and provided the opportunity to not turn on the camera if not desired, to ensure privacy. Visual communication, however, provided more dynamic and interactive interviews. Any occurring disruption needed to be handled as conveniently as possible for the interviewee and the researcher was prepared for alternatives if technical

issues occur; the tool was changed, or the date and time of the interview were rescheduled. In addition, some questions may have made individual respondents feel uncomfortable in the interview if they did not have an immediate answer or did not want to answer the question. If it was required, the researcher provided pause and support. More difficult questions were only asked if the interviewee represented an open attitude (Donalek, 2005).

A key aspect of this research was the gaining and maintaining of access to the field. Therefore, the “quality of social interactions between researchers and the participants may facilitate or inhibit access to information” (Orb, Eisenhauer, & Wynaden, 2001, p. 94). An informed consent form was provided to ask for participants to take part in the research. The personal interaction between researcher and participant determined the extent to how far the researcher has access to the single team members but also the teams. Any required form of anonymity was ensured by exchanging real names and company names with alternative naming. To guarantee anonymity also in the participants' comprehension, the transcripts were sent to the respective participants for verification. The anonymized data was to no time accessible to others than the participants themselves and information have remained confidential. Furthermore, a summary of the results will be provided, if requested, and any indication of publication will be communicated to the participants. To ensure confidentiality and anonymity, the participants were asked for consent when quotes have been published in the research report.

Results

The following section addresses the question of *how teams that are performing in telework settings as a consequence of the COVID-19 outbreak experience teamwork*. It discusses how the shift to virtual work has shaped the way teams handle remote communication and interaction throughout their home office team activities. In addition, team members' perceptions of positive and negative teamwork experiences related to the shift from a co-work environment before the COVID-19 pandemic to a home office telework environment, now dating back more than a year, will be presented. An elaborate description of concepts can be found in Appendix 1.

Team Input: The Role of Team Configuration, Task Interdependence and Nature of Task

In this study, based on the systems model by Ingram et al. (1997), the group configuration of the participating teams, referred to as team input, sets the framework for data analysis. Furthermore, the variations in the core of the teams, reflected in the group configurations, shape the team throughputs. The table below (Table 1) introduces the participating teams. This facilitates the interpretation of subsequent aspects of analysis on teamwork throughputs in the co-work context before the COVID-19 pandemic and the shift that has occurred as a result of the teleworking context during the COVID-19 pandemic.

Team	Company Context	Basic Characteristics	Team Tasks
Team 1: Supporting Team	Large corporation in the transportation industry Application management department for software and hardware function verification of control devices	<ul style="list-style-type: none"> • 5 team members • Age: 26 - 43 and 60+ • 1 team member joined during the pandemic • Two-person offices → Open-plan office • Home office since March 2020 	<ul style="list-style-type: none"> • Application centers are the interface between the operator and the distribution: the requirements by the carriers must be tested, implemented and then passed on to the operators. • The operators control the customers' documents with the control devices and if an error with the equipment is detected, the team is informed. • If necessary, the software needs to be adjusted. • Hardware for application management corresponds to the management of test equipment.
Team 2: Developing Team	International corporation (industry anonymized) Area of IT	<ul style="list-style-type: none"> • 5 team members • Age: 50 to near retirement • No team member joined during the pandemic • Open-plan office • Restructuring of the company along with pandemic • Home office since March 2020 	<ul style="list-style-type: none"> • Forming the interface between the requirements of a company - essentially accounting - and the requirements of the customer. • IT Software Development, Solution Design and Consultancy • Designing IT solutions (products, platforms) and monitoring their realization, implementation and development.
Team 3: Creative Team	Company in the medical sector Area of Marketing	<ul style="list-style-type: none"> • 5 team members • Age: 23 – 42 • 2 team members joined during the pandemic • 1 team leader • Open-plan offices and two-person offices (by specialization) • Home office since March 2020 	<ul style="list-style-type: none"> • Graphic and Design: Print product creation (flyers, business cards or brochures) and digital design of website elements • Editing: Specification of texts for products and digital platforms. • Project Management and customer acquisition via social media, Google, email campaigns • Team leader as coordinator of all areas.
Team 4: Administrative Team	Federation in the medical field Administration and Management	<ul style="list-style-type: none"> • 4 team members • Age: unknown • 1 team member joined during the pandemic • Two-person offices (small office) • Home office in March – June 2020 → hybrid model 	<ul style="list-style-type: none"> • Organization of training and education events: Preparation of events for registration of participants and organization of physical events • Assistance to the CEO and the Board of Directors: office organization, management for the CEO, secretary tasks (e-mail traffic, incoming mail, telephone service). • Processing for accounting: contribution invoices, cancellation, review of incoming invoices, preparation of outgoing invoices, billing of events with invoicing, dunning. • Internal and external communication: newsletter and media booking, calendar interfacing, implementation of digital events.

Table 1 Team Profiles (simplified)

Team Throughput: Transforming Communication, Transforming Cohesiveness and Emerging Maintenance Activities

Related to the COVID-19 pandemic, team throughputs must operate in the context of teleworking compared to the traditional co-work situation at the office. Participants in all teams express that the teamwork that was required to be accomplished in the traditional work context prior to the pandemic was also required to be performed at the home office. On the one hand, the participants indicate that team processes, task activities and decision-making have not changed fundamentally. Participant B. (Supporting Team) claims, *'it's always the same, the work hasn't changed, let's put it that way. It's the same, except that you do it from home,'* and with his statement exemplifies similar statements by other participants from all teams. On the other hand, what was expressed most strongly by teams in the transition to telework was the change in communication, the associated change in

cohesiveness, and resulting from the transformation in communication, the maintenance activities that emerged.

Transforming Communication

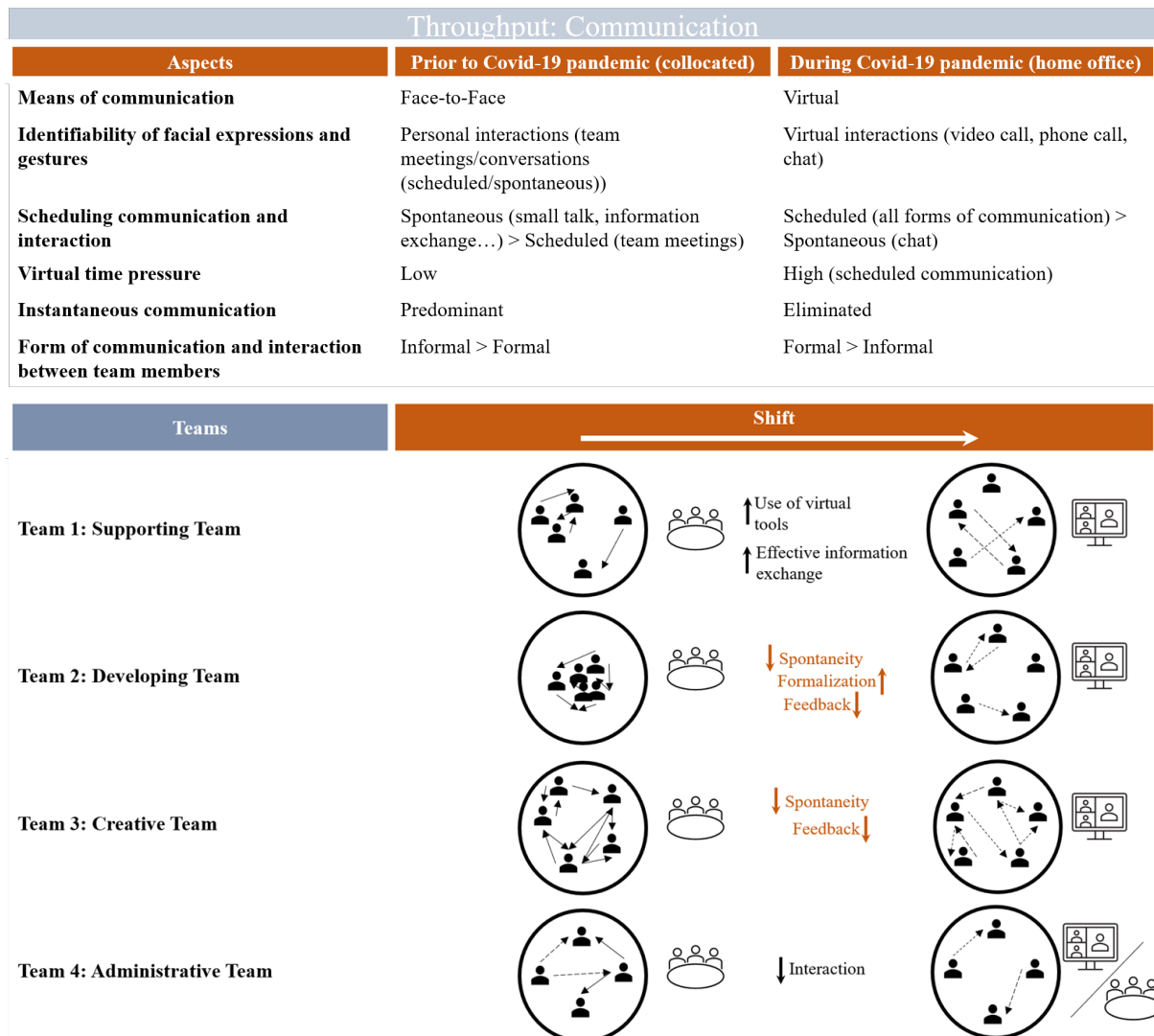


Figure 5 Transforming Communication Within Teams in the Transition to Teleworking

Communication Prior to the COVID-19 Pandemic

In the traditional co-work environment prior to the COVID-19 pandemic, communication, and personal interaction occurred face-to-face and spontaneously. In addition, team meetings were regularly scheduled with the entire team, but, when problems arose, team members also conferred spontaneously. For instance, participant A. (Supporting Team) describes the supporting team scheduled ‘a team meeting once a week for an hour, where different topics are addressed, different tasks, whether they have been completed, whether you still need help, what is still missing or similar matters. We simply sat together in a meeting room and reviewed the various tasks.’ Unlike the other teams, the members of the

administrative team generally meet in the office only when major events occur e.g., a congress that requires the performance of all functions represented within the team.

Predominantly, however, communication consisted of spontaneous personal interactions. Especially in the team environment of open-plan offices - as it is the case with the supporting team, the developing team, and parts of the creative team - questions were asked, and conversations initiated by simply leaning toward each other's desks and speaking out directly. Participant N. (Developing Team) describes *'the short call from desk to desk 'Do you have a minute?' is easier than something else. That is the shortest way.'* Within the creative team, participant K. (Creative Team), whose tasks concern the graphic design, points out that the physical proximity between them enabled individual work processes to be immediately enriched by seeking input from other team members. She describes how *'[there was] a merging moment; you'd open up a YouTube video and watch it and then immediately talk across the screen, 'I'm watching this right now, are you familiar with this [method of design]?' - in face-to-face exchanges, discussions, and conversations were stimulated. In this regard, participants do not only describe fast communication channels but also the associated ability to complete tasks immediately. For example, participant O. (Creative Team) demonstrates that 'at the office, you go to someone, and you say 'Is this okay? Is that okay?' 'Yes, it's okay.' Done.'*

In addition, participant B. (Supporting Team) points out that within the supporting team, the team interaction was often accompanied by informal private conversations. The developing team even emphasizes that meeting other team members e.g., in the common coffee kitchen, promotes important information exchanges that impart a great deal of knowledge for their work processes. Besides knowledge exchange, participant J. (Developing Team) notes that the timely face-to-face contact with other team members at the office provided the impetus to *'take a short break from business, just to refresh the mind. [...] I always found it very inspiring, [...] you could also talk about all and sundry, and when you dived back in again, you might have seen new perspectives.'*

Alongside direct exchange, participants of all teams highlight that much information at the office is received indirectly by overhearing surrounding conversations. In this context, participants explain that casually picking up information even vitalizes work processes. In the traditional offices of the creative team, participant Q. (Creative Team) describes that before the pandemic *'the offices were located directly next to each other [...] That was really helpful and you knew what the others were doing and you were [...] involved in what was going on and you kept an eye on what was going on [...] even if you weren't involved in the subject yourself, you were still aware of what the other person was doing at the time and you could help out when there was a situation that required it.'* Similarly, within the open-plan office of the developing team, participant N. (Developing Team) highlights *'you listened to what the other person was saying because you simply overheard it and could respond immediately [...] [you could] spontaneously get involved in a topic or 'oh, you're talking to him about this, I have [some information] about this too' [...] [this] "overhearing communication" [between team members]'*. As a result of overhearing conversations, participants within the developing and the creative team, reveal that

work achievements were always acclaimed with direct positive feedback from other team members. Within the developing team, participant M. (Developing Team) depicts when team members accomplished tasks, they immediately reacted: *“Totally cool, it works, great” and then someone else stood up and said “Great”*. Furthermore, within the creative team, participant Q. (Creative Team) describes *‘you always received an immediate reaction and feedback and yes, there was some kind of dynamic.’*

While many participants from the creative and the development team emphasized the benefits of spontaneous communication, the supporting and the administrative team felt disturbed in their individual work processes. For example, participant A. (Supporting Team) notes *‘at the office [there is someone] who feels like starting a conversation or who is on talking on the phone and that distracts me, or someone says, ‘come on, let’s have a cup of coffee’*. Similarly, participant D. (Supporting Team) states that if one desired to work in tranquility, one had to isolate oneself in a small, enclosed space provided at the office. Within the administrative team, especially participant S. (Administrative Team) in her role as secretary mentions that she is *‘the woman for all cases [...] before Corona someone would always come to me and ask me something, although they could have done it alone, they passed it on to me.’*

Apart from all face-to-face interaction at the office, all participating teams had access to digital communication tools, including video calls and digital chats. However, due to their co-work setting, participants did not see virtual internal team communication as necessary to sustain their teamwork. In fact, within the supporting team, participant A. (Supporting Team) even states *‘it always annoyed me, because I simply could not work, because you were always distracted [...] I simply not [want to] have to search in some chats afterward who said what, so I tried to avoid these chat programs.’* She found the use of chat in the office to be a disadvantage because the written form of conversation provided the opportunity to share information but not to reproduce it in an orderly fashion. If she needed information that was shared in the chat, she could not intercept the information directly.

Communication During the COVID-19 Pandemic

In times of a pandemic, the need to maintain a physical distance means that teams must use alternative methods of communication and interaction. The range of *virtual means of communication* is expansive because any form of communication that took place face-to-face at the office before the COVID-19 pandemic had to be initiated via virtual alternatives. Participants of all teams refer to the chat function as a common communication tool used within the team to bridge the distance between the team members. Depending on the nature of the task, numerous participants of all teams mention that they choose the means of communication they consider most efficient to share their respective information. For example, within the creative team, on the one hand, participant O. (Creative Team) states that *‘if you can write or if you can clarify it through simple questions, then via the chat, otherwise call’*. On the other hand, questions, which require a more elaborate explanation, are more likely to be

addressed by calling. Within the supporting team, however, the digital chat appears to be the predominant communication tool for the respective internal team communication. Participant C. (Supporting Team) describes *'we have a group chat, so if there are disruptions somewhere or something is conspicuous in the server, [...] they enter it in our team chat, and then you just enter who is currently taking care of what.'* The team members perceive the digital chat as beneficial for the exchange of information which is inherently related to the team's work processes. For instance, participant B. (Supporting Team) recognizes an enhancement in receiving necessary information and states *'if you are facing [the team members], then you could perhaps evade [the conversation][...] But you can't do that now if you receive a question, you have to answer it or [if you ask a question] you receive the information directly and it's better that way.'* On the contrary, members of the developing team claim that the use of digital chat delays work processes and decreases the intensity of team interaction. In this regard, participant J. (Developing Team) claims *'for internal team communication it is, [calling it] a crutch may be expressed meanly, [...] but it is less qualitative than direct contact.'* Furthermore, within the administrative team, participant T. (Administrative Team) points out *'in terms of teamwork, I don't have any advantages [through virtual communication tools], because I'm alone at home and, as I said, if I want to know something, I write to my colleagues on [Microsoft] Teams [...] they get back to me at some point. [...] The disadvantage is [...] that if you wait for an answer, you're probably not making any progress in your own project process.'*

In this regard, a major consequence of virtual communication noted by participants is the *limited identifiability of facial expressions and gestures*. Apart from the fact that facial expressions and gestures cannot be recognized during a phone call or chat, participants from all teams agree that turning on cameras during virtual team meetings cannot replace face-to-face communication. Within the developing team, this appears to be especially relevant when new information or extensive information is presented and explained. Participant N. (Developing Team) explains that *'especially when you're talking about more complex topics, it's important to see if they have understood and if the other side doesn't say anything and you only have a black screen you're talking to, but you receive no feedback, it's, of course, a bit difficult to be able to assess [the reaction to information content]'*.

By the fact that all teams are spatially separated, participants describe that only the virtual exchange can maintain their communication – this results in *scheduling communication and interaction*. Consequently, team members across all teams describe a shift to an increased regularity and amount of virtual team meetings, especially at the beginning of the pandemic. Within the creative team, participant P. (Creative Team), in its role as team leader, opted to set up *'a call every day at relatively the same time. [...] At the beginning, that had more of a psychological aspect [...], so that everyone felt involved, and no one was sitting alone in front of the computer, lost in space, because we used to see each other every day.'* This is likewise mentioned within the supporting team, as due to the initial difficulties in the home office a virtual meeting was held for every arising problem. Within the supporting team, however, several participants felt the regularity of team meetings was overly frequent because it limited their

ability to work independently. Participant E. (Supporting Team) indicates that *'if you only have teleconferences, you can't always get your work done.'* She continues *'a few appointments were combined or shortened, and you notice that the communication has improved and that you don't need as many appointments as you did in the beginning. You learn from it. You adapt to the situation.'*

Through the required scheduling of communication in the shift to an exclusively virtual form of interaction, participants describe a *virtual time pressure*. Participant B. (Supporting Team) explains *'Appointments are scheduled from 9 - 10 and then there is usually a cut at 10 and then we stopped [the appointment] [...] and schedule a follow-up appointment. So, there is now [...] more discipline [...]* Furthermore, participant A. (Supporting Team) adds *'things have to be clarified in that half hour [...] and you have to leave for the next appointment [...] that means you have a completely different sense of urgency to reach your goal within the appointed time.'* As a result, particularly team members from the supporting team, as well as the administrative team, emphasize the increased preparation, productivity, and effectiveness of team meetings due to time constraints.

As a result of the requirement to plan team interactions, *instantaneous communication* between colleagues is *eliminated*. This shift is primarily emphasized by the developing team, for instance, by participant N. (Developing Team) who states that *'You must actively seek communication, which might have been more passive before, walking around the room, just talking to others at the coffee machine.'* Furthermore, participant J. (Developing Team) states that *'it was extremely important that [the team members] were also informed from across the desk if there was a problem somewhere [...] That just doesn't happen anymore.'* Consequently, he is *'sometimes [...] very surprised that things happen or don't happen that you hear about after the event.'* As a result, within the creative team, participant P. (Creative Team) describes the emergence of possible miscommunications. He indicates that it can occur that *'two people are working on the same project by mistake, because you can't just call somebody over and say, "I'm doing the poster," and suddenly you have two posters, and then one person thinks, "Why is the other doing that, isn't mine good enough?"'* Especially regarding these misunderstandings, participant P. (Creative Team) claims that the home office poses *'dangers or imponderables that [...] wouldn't otherwise [occur] if [team members] were sitting next to each other.'*

Moreover, participants perceive the elimination of ad hoc feedback. Within the developing and the creative team, the experience of shared joy over successful teamwork was rated regrettable and even as detrimental to team motivation and cohesion. For example, participant Q. (Creative Team) indicates *'when the home office period commenced, [...] one always sought this feedback from others.'* Further, she continues *'[it] lacks a bit of [...] this appreciation and this feedback, to sometimes be told, 'Oh, that was great' or 'That looks good' or whatever, so that's a bit unfortunate.'* Likewise, participant M. (Developing Team) perceives the common exchange of feedback as a noticeably missing factor, *'of course, that does not work anymore, I mean, I can sit down at home and yell how super cool I've done something again, but nobody notices.'*

Due to the lack of collocation, and therefore restricted communication and interactions, many participants state that they do not know and, more respectively, cannot identify what other team members are doing while they are working at home. For example, within the developing team, participant N. (Developing Team), who was seated with his team members in an open-plan office, states *'this I-know-what-my-colleague-is-doing-because-I-see-what-my-colleague-is-doing [...], I've sometimes just checked [in the office], can I talk to him now or not or should I leave it alone or is the mood [...] bad, you'd better go later, he's under a lot of stress right now. Of course, that's not the case now and that's why [...] I tend to [...] just chat with him and say, 'Do you have time for a short consultation?' The threshold is greater, so it's different to approach a conversation [at the home office]. Due to the virtual approach.'* For many participants, the choice of the opportune moment to approach another team member leads to the *formalization of communication and interaction*. Within the developing team, participant N. (Developing Team) claims *'communication has changed [...] One used to harness a conversation more, which was done occasionally, and [now] one has to be more formal to inform the other [...] That's also the big change.'* Furthermore, participant J. (Developing Team) describes the shift that *'before Corona, you also asked questions, of which today you say, do I have to bother someone now for this [question][...], you actually only truly ask the things that are important, that have at least a minimum priority already.'*

Transforming Cohesiveness

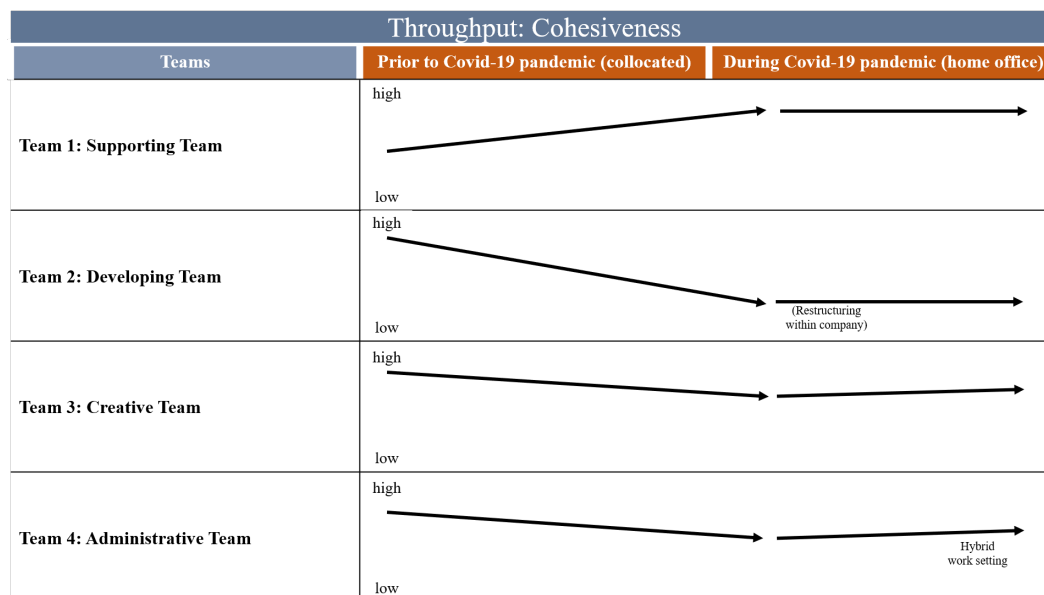


Figure 6 Simplified Representation of Altering Cohesiveness

Cohesiveness Prior to the COVID-19 Pandemic

Prior to the COVID-19 pandemic, cohesion within the various teams reflected diverse experiences. Within the developing, the creative, and the administrative team, the team members mention a high level of cohesion. Especially within the developing and the creative team, this cohesion

is described as valuable for their teamwork. For example, participant P. (Creative Team), who is the team leader, stresses that the team forms a homogenous group. Furthermore, in the co-work setting, he states that, for example, the team members involved in design and graphics *'sit across from each other [...] they also talk to each other all day about all and sundry, about the projects, but also about private things [...] because they share this office, which is also the intention, because that's what triggers creative processes.'* Additionally, participant F. (Developing Team) describes the team as *'a well-rehearsed team'*. In contrast, team members within the supporting team experienced micro group formations within the team.

The promotion of team building resulted particularly from face-to-face team meetings. Members of the creative and the developing team emphasize that team-building benefits are fostered. For example, during team meetings before the pandemic, the developing team would order pizza to stimulate social exchange between teams. During team meetings of the creative team, participant K. (Creative Team) states that *'team-building was also very high. [...] it was also good to talk a bit about how the other person was doing.'* In addition, team members from the supporting team show how face-to-face team meetings expanded the schedule due to social sharing or informal conversations between team members. Participant B. (Supporting Team) assesses that before the pandemic *'at [face-to-face] meetings it often turned out that you stayed seated for a long time because you were still chatting [...] "Oh, we'll talk a bit more. We're sitting together so pleasantly right now,"'*

Cohesiveness During the COVID-19 Pandemic

At the beginning of the COVID-19 pandemic and the first lockdown, all participants experienced the sudden confluence of work and living in their own homes. If previously the routine was largely predetermined by the company and its offices, the home office required *self-organization and familiarization*. Participants from all teams described that during collaborative virtual team meetings, they were facing the inevitable influences of working from home, such as interruptions and distractions by other people in the household. Since everyone is in a similar situation, in which private and professional life merge, a strengthening *mutual understanding* has evolved. Especially within the creative team, depending on the individual's home office situation, mutual understanding extends to postponing or rescheduling tasks. In this regard, participant P. (Creative Team) who holds the position of the team leader often must accommodate the demands of his team members. He emphasizes that during the home office, he was asked by members of his team to adjust the completion of work during the workday to fit the (family) situation and, if necessary, complete tasks late in the evening. When he, as team leader, decides about these matters, he feels that *'due to the flexibility [of teleworking], it is possible to implement it that way.'* In this regard, within the developing team, participant M. calls the necessity *'that core working hours, or response times, are defined and agreed upon. I can do my 8 hours home office, which I can of course also do excellently from 4 in the afternoon until midnight. But then*

there's no one there. [...] In the past, this was called core working hours. It was very clear that we had to be there from 10 a.m. to 4 p.m., and I think that would be very helpful for the home office as well.'

Although mutual understanding has grown, team members from the administrative and the creative team also cite the emergence or reinforcement of behavioral patterns related to individual team members' motivation to work. Team members from the administrative team mention that some colleagues seem to no longer have a desire to complete certain tasks. They explain this as a daily routine they fall into due to the home office, causing them to lose the drive and motivation to accomplish tasks that can be essential to accomplishing a team objective. In addition, participant N. (Developing Team) emphasizes that because of working at the home office the motivation to work sometimes decreases as a result of the distance from the team and a dwindling sense of team spirit.

In this context, numerous participants from all teams mention that the decrease in cohesion is often related to the shift in communication. As a result of the threshold for contacting other team members, the statement of participant R. (Administrative Team), *'in the home office you have basically become a lone fighter,'* is representative of the experience of participants across all teams. Numerous participants avoid interfering with other team members, which encourages participants to first attempt to resolve their difficulties on their own. Especially members of the developing team perceive that working at the home office *'creates greater self-organization, which is necessary somehow.'* Participant N. (Developing Team) continues *'it is like the harbor is gone somewhere to a certain extent. You're still there somewhere as a team, but only virtually, and somehow that's missing, that simply [...] between the pure work [...] that communication, that [...] simply works in the office. It's just gone [...] and missing.'* Additionally, participant F. (Developing Team) assesses within the area of IT, a permanent home office is counterproductive and clarifies *'when you're working creatively, when you have to analyze something new, investigate it, develop it, then being a lone-fighter isn't always good. So, it's quite good to have a phase where you can focus, but with larger problems, larger topics, you actually need the exchange, which is then constructive, where new ideas come in'.* Within the supporting team, participant B. (Supporting Team) likewise reflects that the shift to the home office has led to more individualized completion of tasks but expresses his appreciation for the increased use of an information platform that he is *'now [forced] to use [...] [to be] able to access information quickly.'* He states that *'everything [necessary] is described in there, everyone puts [information] in there about what he or she knows, and you just look up a lot of [information] yourself, now.'* Furthermore, although the work context of the administrative team does not fundamentally rely on constant interaction, participant R., who is currently working along with some team members to work at the office, identifies the transformation of communication has also led to *'become a bit estranged from each other [at the office]'*. However, she distinguishes between those team members with whom one had a closer relationship before the home office, and who maintain their regularity of interactions, while the distance from other team members increases.

With the shift to telework, different teams perceive different effects of a permanent home office on team cohesion. On the one hand, within the administrative team, participant R. (Administrative Team) states that even though she rejects a full-time home office *'it depends on each individual whether it works, just as it works in the office, the collaboration.'* In this regard, only the perceptions of the supporting team describe an increase in team cohesion. For example, perceived as equated with collaboration, participant B. (Supporting Team) depicts *'the cooperation has [...] somehow become better. Because of the information you need, you usually have to get in writing, so with [Microsoft] Teams you write to someone, here I have the question and then you actually receive [the information].'* In addition, participant D. (Supporting Team) explains the increasing cohesion in the home office by saying: *'Everyone has now found their task and is satisfied with it, and that helps you to work together better.'* On the other hand, within the developing team, participant F. (Developing Team) elaborates *'the cohesion of the team, goes down significantly. [...] well, 50% [...] if you imagine that this is a long-term solution, then this is actually no longer a team.'* He and other team members on his team emphasize that what is most critical to team cohesion in the context of teleworking is the time that team members worked together before the pandemic. Participant F. (Developing Team) highlights *'the [team members] have known each other now for 10 years [...] or even longer, and then, of course, a lockdown [...] doesn't fundamentally change [the cohesion], but if I imagine someone new joining in a situation of this kind, it won't become a real team relationship.'*

Regarding the *integration of new team members*, numerous participants of all teams reflect that the teleworking circumstances pose ongoing challenges, especially for new team members. For example, within the supporting team, participant C. (Supporting Team), being a new team member herself, mentions the challenge that due to only knowing her team members virtually, she *'can't say with one hundred percent certainty what role [she] take[s] on in [her] team or that [she has] both feet on the ground in [her] team'*. Additionally, she perceives difficulties in establishing a distinct position in the team. Within the creative team, participant K. (Creative Team) emphasizes that the existing relationship with team members who previously worked collocated makes it more difficult for new team members to build relationships with the team while working at home. She states *'I would also call [the new team member] at some point, come on, let's [...] chat a little bit, but it's different now, if I call [the team at the home office], then we first completely freak out on the phone and laugh our heads off [...] and you wouldn't do that with a new employee, because you're serious first and then you let your hair down.'* She ponders that the home office creates a different context for getting to know and integrating new team members, precisely because spontaneous exchanges in the office facilitate the process of acquainting. Additionally, within the administrative team, participant U. (Administrative Team) claims *'We didn't have these integration problems, for example, because we didn't recruit any new [team members] during this time. [...] You have to get to know the people first [...] Otherwise, you don't know how to estimate the others, i.e., the personal estimation of the others, [...] to see these nuances, that is*

somehow very difficult in digitization, you have to know each other for a long time beforehand to prevent misunderstandings.'

Generating Maintenance Activities

Throughput: Maintenance Activities		
Teams	Communication	Cohesiveness
Team 1: Supporting Team	<ul style="list-style-type: none"> Implementation of a moderator to cope with the virtual time pressure Schedule appointments for individual working hours into own calendar; being displayed as busy 	<ul style="list-style-type: none"> Virtual team events (e.g., game evenings)
Team 2: Developing Team	<ul style="list-style-type: none"> Preparing and presenting presentations more extensively from the outset to avoid ambiguities and misunderstandings due to lack of identifying facial expressions 	<ul style="list-style-type: none"> Virtual informal team meetings ('coffee breaks') and virtual team events (e.g., wine tastings, escape rooms)
Team 3: Creative Team	<ul style="list-style-type: none"> Increased regularity of team meetings with the entire team to compensate for elimination of instantaneous communication 	<ul style="list-style-type: none"> No activities initiated
Team 4: Administrative Team	<ul style="list-style-type: none"> Information lack due to dislocated working context compensated by sharing important information concerning other team members via email 	<ul style="list-style-type: none"> No activities initiated

Figure 7 Examples for Maintenance Activities

As a result of the transformation aspects in communication and its influence on cohesiveness, all teams report generating maintenance activities to compensate for the perceived deficits. Maintenance activities to cope with the occurrence of virtual time pressure are especially present in the supporting team. During scheduled team meetings, participant A. (Supporting Team) describes the implementation of a moderator. She depicts that the chosen moderator *'always guides back to the topic and then simply says, ok, all right, the question is settled, [...] we'll move on to the next topic. And if someone digresses and [the moderator] repeatedly says, "Guys, maybe we should plan a separate meeting for this, this is getting a bit out of hand, it doesn't seem like it can be resolved, then we'll schedule a new meeting,"'*. In addition, for individual work activities participant D. (Supporting Team) points out that, she changes her status in Microsoft Teams to 'do not disturb' or adds an appointment to her calendar to be displayed as 'busy' in her status. Knowing that many of her colleagues are guided by the status displayed, they do not disrupt her workflow when she needs to work on her tasks individually by contacting her via the digital platform.

Within the developing team, participant N. (Developing Team) explains that due to the lack of identifying facial expressions and gestures, he had to adapt to the circumstances and therefore prepares and presents his presentations more extensively from the outset to avoid ambiguities and misunderstandings. Consequently, participant N. (Developing Team) states that *'communication [...] adapts accordingly [to the home office situation].'* Furthermore, during team meetings before the

pandemic, the developing team used charts and whiteboards to visualize ideas. As a result, participant J. (Developing Team) stresses that team members *'simply must use the virtual tools differently to do things that simply weren't necessary for the past due to the regular workflow [in the office], but that is simply due to this virtual way of working.'* A common example is the function of screen sharing.

Similarly, the added value of screen sharing is mentioned in the work processes of the creative team. Participant O. (Creative Team) depicts if he receives *'a graphic [from the graphics department] and [says] yes, but I would like to have that moved there [...] you can also share the screen, then one can play around with it a bit, and the other can give his opinion directly.'* In addition, regular meetings with the entire team were scheduled by the team leader participant P. (Creative Team), as direct communication was eliminated. In this context, he claims *'a lot of [team members] don't notice or know about the processes, [...] everyone has their own project, but everyone is still a little bit up to date on [the other team member's] project, because of the chatter in the office [...] that's a little bit of a hassle [...] to catch up on that [at the home office], you can do that [at the home office], [...] we've introduced these regular phone calls so everyone feels a little bit involved and they know what is going on elsewhere in the company, not only in their own world.'* Furthermore, to counteract the effects of a lack of facial expressions and gestures, the team leader (participant P.) has made it a requirement from the beginning of the home office that everyone must turn on the cameras during team meetings. He explains the purpose of turning on the cameras within his team is because of *'this psychological aspect, do I continue to feel that I'm always being carried along? Am I aware of what the others are doing? Do I perhaps notice a bit of facial expression in the face after all?'* Even though members of the creative team point out the many possibilities of creative interaction from a distance, participant P., emphasizes that the virtual idea generation process cannot compensate for the regular face-to-face exchange that characterizes the office community.

Within the administrative team, participant T. (Administrative Team) describes that important information that team members do not receive because they do not work in a collocated manner is forwarded via email to other team members for whom the information may be of interest.

In the context of cohesiveness, the supporting, and the developing team mention in particular the compensatory scheduling of informal conversations or team events. For example, participant J. (Developing Team) states *'now, of course, virtual coffee breaks are initiated.'* Additionally, participant M. (Developing Team) explains *'this is supposed to be an informal get-together, not about business issues.'* As part of this, these meetings are also intended to interrupt the formalization of work during the workday at the home office. Furthermore, within the supporting team, participant D. (Supporting Team) indicates that *'some of the colleagues [have met] for a virtual after-work beer, which has been quite nice or [we have] organized a game evening or game afternoon, then [...] officially scheduled as a team event'*. However, especially according to participants of the developing team, virtual informal meetings or virtual team events generally offer weaker alternatives than team events where team members are physically together. Participant I. (Developing Team) states *'to the team cohesion, [the*

organization of virtual team events] has contributed little, but this is also difficult at a time when we can't really meet in person.' However, while the developing team perceives these meetings as 'of course [...] better than nothing' (Participant J. - Development Team), the creative and the administrative team did not organize virtual team events or informal exchanges during the workday in the home office. For example, participant U. (Administrative Team) feels that the elimination of team meetings, which were commonly scheduled before the pandemic, means that 'above all, the reward aspect is completely missing.'

Discussion and Conclusion

To investigate the impact of the shift from a pre-pandemic co-work context to an ongoing telework context imposed by the COVID-19 pandemic, qualitative research was conducted to analyze the experiences of teams that differ in their nature of tasks and work context. For this purpose, 20 interviews with team members of a supporting team, a development team, a creative team, and an administrative team were analyzed. The results show that the varied experiences of team members reflect the impact of team throughputs transformations on team effectiveness (Ingram et al., 1997). On the one hand, the teams' experiences indicate that the shift to telework has a profoundly disadvantageous impact on teamwork in teams that have a high level of task interdependence and whose task nature is generative and creative. In this study, this type of team is represented by the developing and the creative team. On the other hand, teams with lower task interdependence and the nature of tasks based primarily on information exchange, as well as management and planning, experienced less negative impact or even advantageous effects on teamwork in the telework context (see Figure 8). This team type is represented by the supporting and the administrative team.

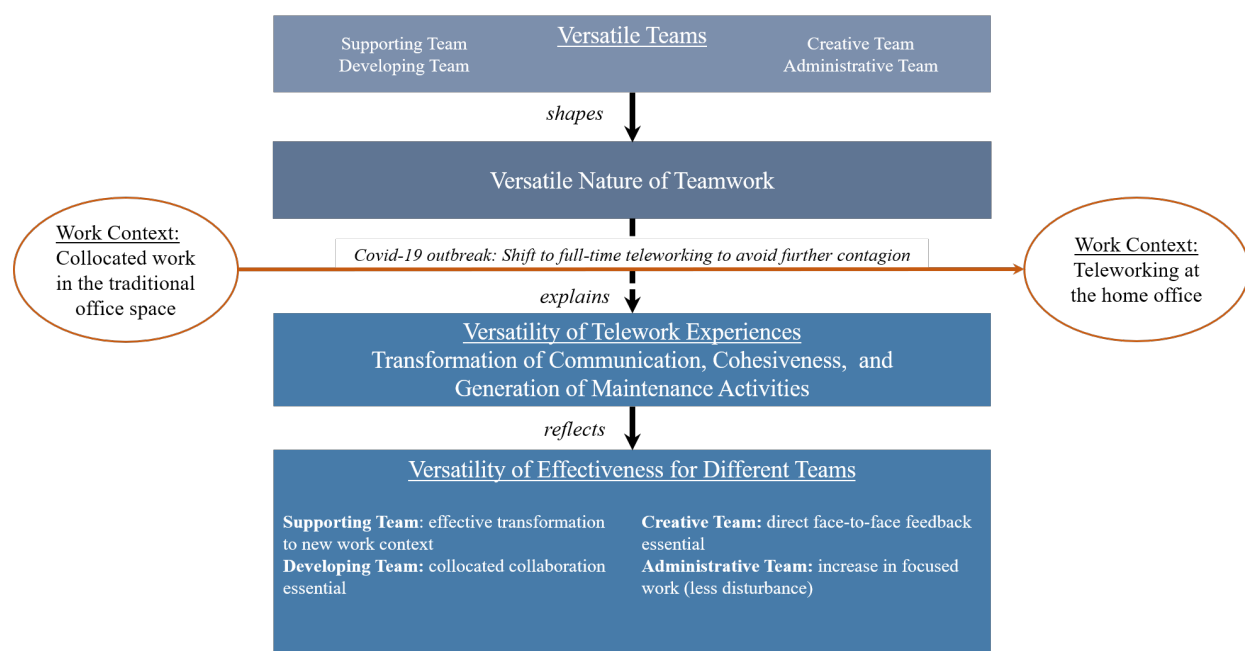


Figure 8 Model of Thought: Team Versatility Approach (incl. Results)

Interpretation of the Results and Theoretical Contribution

Transformed Communication

Based on the data, it was noticeable that for the creative and the developing team members the traditional co-work context was specifically important to maintain proximity to each other to enrich work processes on time. Only the direct exchange of ideas in the team led to satisfactory outcomes. Instant and direct communication, either formal or informal, promoted team members' motivation and idea generation. Whillans et al. (2021) summarized in their study different spontaneous interactions under the terms of “social interactions” for establishing ties with team members, “huddle interactions” for informal interactions promoting debate and understanding, and “development interactions” for constructive feedback. Basically, this research supports Whillans et al. (2021)’s results, regarding the importance of spontaneous interactions. However, particular relevance was shown in the passive information intake by overhearing surrounding conversations as a multilayered source of information for team processes.

Considering that the teamwork of the developing and the creative team is fundamentally a collaborative creation, these teams need to receive information and immediate feedback at critical moments. Comparing these results to existing research studies, brainstorming, collaboration, asking for help, and offering help were found to be favored or disfavored depending on the type of work when performed in a telework environment (Böll et al., 2016). This study has shown that the importance of the nature of work of individuals in the telework environment (Böll et al., 2016) also applies in the team constellation. Furthermore, following the findings of Cohen and Bailey (1997) and Saavedra et al. (1993), particularly in creative teams which require knowledge sharing for developing products and deciding on designs, team interdependence is essential for creating products. The present study has shown that the importance of all individuals and their interactions plays a key role in creative teamwork, which cannot be performed in the same way in the context of telework. As a result, the teleworking environment during the pandemic had a major damaging impact on these teams.

On the contrary, the supporting and the administrative team experienced distractions in their work due to constantly being approached by others. As a result, these types of teams perceive facilitation in sharing information virtually and working on it more efficiently in the context of telework. Virtual means of communication enable to pass on information in a concise and targeted manner; if necessary, information can even be accessed a priori. Lam and Schaubroeck (2000)’s study found that virtual information sharing is beneficial only when information is evenly distributed among team members. In this study, the information exchange within the support team through digital group chats enables to evenly share information allowing everyone to have access to the same information. This confirms the results of the study by Lam and Schaubroeck (2000) but explored in the context of team teleworkers.

Furthermore, the virtual time pressure increased the discipline and focus during team meetings at the home office of all teams. As a result, all team members perceived that they were more effectively achieving their objectives that had been determined before the team meeting. In contrast to the fact that

the team members of the developing and creative team prepare for the team meetings in a more disciplined way, it remains to be emphasized that the creative process is restricted during the meetings. That is why both teams recognized the need for face-to-face communication, especially when dealing with more complex issues related to generative and creative work. This examination is congruent with the study of Bierly, Stark and Kessler (2009), who found that the impact of objective precision of work tasks differs within the virtual context. The formulation of clear objectives promotes independence between team members in carrying out their assigned tasks. As a result, they emphasize a decreased communication and interaction within the team. In this study, this tendency was particularly revealed within the supporting team. As the pandemic progressed, the trend toward reducing the regularity of team meetings was driven by perceived limitations in completing individual work. Therefore, this study suggests that the perceived positive change in terms of accomplishing individual tasks came at the expense of teamwork and face-to-face interaction. However, because the supporting team performs with limited task interdependence, the increase in individual work within the teleworking context implies a minor adverse impact on the effectiveness of teamwork. Conversely, the increase in individual and independent working approaches in the developing and creative team has an unfavorable effect on the development of creative processes.

Another aspect of this study addresses the novel insight into the transformation of communication towards a generic formalization of communication between team members, which is particularly present in the developing team. It must be emphasized that formalization leads to increased verbal distancing in addition to physical distancing. This important aspect was not revealed in the study of Whillans et al. (2021), which took place in a similar context as this study. Therefore, this study presents new insights regarding the transformations of team communication in the telework context, which are not to be neglected, especially in creative teamwork. As a result of formalizing communication, team members within the developing team have experienced a reduction in contact and exchange of spontaneous thoughts. They found this change in communication to be particularly disruptive to their teamwork.

Transformed Cohesiveness

The results revealed that the transformation of communication between team members had a decisive influence on the development of cohesiveness. In the absence of physical interpersonal interaction, the prominence of being part of a collaborative team diminishes among multiple team members within all teams. Above all, it has become apparent that teamwork, on the one hand, is influenced by the working context it is operating in and, on the other hand, is not only a work-related context but also constitutes a social environment. In particular, the developing team in association with its nature of teamwork has undergone an influential shift as both their interdependence and their teamwork approach of co-creating and developing ideas has evolved into high levels of individual work. Evaluating this transformation concerning the effectiveness, the elimination of co-working has caused

a disengagement of teamwork for the developing team. Referring back to the notion by Bierly et al. (2009) regarding the increasing independence between team members in the virtual transformation of communication, the researchers assessed the decrease in shared team identity. This examination was confirmed in this study and indicates particularly damaging effects on the team identity of the developing team. Due to the interdependence of their tasks, effective cooperation in their work processes for creative results is inevitable. This applies equally to the creative team. Examining the notion of Bierly et al. (2009) in the context of the administrative team, it becomes apparent that although the members are minimally task interdependent, they distance themselves even more from each other through virtual exchange. As a result, they experience distance and alienation from other team members even in the co-work context. Therefore, this study reflects Marks et al. (2001)'s perspective that the social interactions among team members form the key to assessing team effectiveness, rather than the unique skills and competencies of team members. The one exception presented in this study is the exploration of increased cohesion in the supporting team. The reason for identifying this finding can be attributed mainly to the critical role of positive team communication transformation within the team during the pandemic.

The general finding of increased distancing explored in this study contrasts with the results presented by Whillans et al. (2021). In their results on the characteristic of social interactions, they found the team members getting to know each other much more intimately. This study, on the other hand, revealed the progressive distance between each other that has a harmful effect on creative teams in their collaborative team-based processes. In addition, this study presents novel insights into the implications for the integration of new team members during the pandemic. It was found that team members who joined their respective teams while working from home during the pandemic experienced additional challenges integrating into the team. The study by Whillans et al. (2021) did not indicate these results. By considering team configurations, the present study demonstrated that the aspect of prolonged collaboration before the pandemic positively influenced the perceived effectiveness of teamwork experiences in telework.

In this respect, on the one hand, the developing team indicated that working together for more than 10 years laid the foundation for team cohesion at the home office. Given the adverse effects they experience despite their years of collaboration, it is important to consider what the impact would have been if they had only worked together temporarily before the pandemic. On the other hand, the supporting team shows that new joining team members do not perceive to gain a settled position in the team even over a longer period. Since the home office has already been in place for more than a year due to the ongoing pandemic, the impact on team cohesion is particularly crucial. Specifically, the transformation of communication in the telework context can have an unfavorable impact on team cohesion in the long term.

Generated Maintenance activities

In the context of teamwork, the shift from face-to-face communication to exclusively virtual communication as a new team interaction context can be related to an emergent state (Marks et al., 2001), to which the team must adapt its teamwork approach and performance. Especially due to the major shift in communication and interaction in all teams, these developed maintenance solutions (Ingram et al., 1997; Martins, Gilson, & Maynard, 2004) to compensate for the perceived detriments. Compared to the other teams, the supporting team has invested in creating activities that support the management of virtual time pressure while fostering individual task completion time. In the context of their teamwork, this has fostered perceived cohesion through clear and purposeful team interactions. This exploration can be framed within the theoretical groundings by Ingram et al. (1997) defining that “effective teams are those which are aware of internal forces and monitor and review them.” (p. 124). The teams’ approach of compensating the transformation of internal team processes as a result of the external shift in the work context, has promoted an effective teamwork adaptation in the teleworking context. The other teams have been less effective in replacing perceived deficits inherent to teamwork at the home office. However, it should be emphasized that the deficiencies of teamwork in telework within the developing and creative team cannot be compensated by virtual interaction.

Besides maintenance activities in formal interaction, the alternatives of informal exchanges during the COVID-19 pandemic in the teams studied have also remained during the pandemic (Whillans et al., 2021). However, only within the supporting and the developing team, the discontinuation of spontaneous social exchanges in the hallway or the ‘coffee kitchen’ was substituted by virtually scheduled appointments at the home office. On the downside, however, this study has affirmingly revealed that the effectiveness in strengthening the teams was especially in the developing team perceived as very weak, which likewise reduces the participation in such a meeting. Members of the developing team emphasized that during team meetings in person, the team-building experience relied on face-to-face interaction. This suggests that the home office failed to account for and compensate for the extent of prior interaction.

Limitations

This research poses four major limitations. First, the selected sample provided a considerable degree of differentiation by the nature of the work and the associated differences in approach to teamwork. However, within the limited research time frame, the purposive sampling of the teams was restricted by the willingness of teams, predominantly determined by the legal framework of their companies. In addition, this study has revealed the prevalent role of characteristics and home office circumstances of individual team members which impacts the team and its work. In specific terms, team members indicate e.g., that age and having children plays a major role in the teamwork experiences of all team members. However, due to the focus on transforming teamwork throughputs, this study focused narrowly on personal characteristics. Furthermore, this research examined the impact of the home office

on teamwork by comparing participants' retrospective experiences before the pandemic, at the beginning of the pandemic, and as the pandemic progressed. Specifically, participants' experiences were often presented in the context of a comparison between face-to-face and virtual interaction. The retrospective approach of this research caused a limitation in terms of participants' recollection of actual experiences. However, the inclusion of the critical context of the pandemic in this research has not allowed the initial experience to be examined at the very moment of experience. In addition, due to the methodological approach of conducting interviews only, this study was limited in its consideration of the corporate context in terms of external cues besides the pandemic that may impact teamwork processes.

Further Research Suggestions

One topic for future research is the further qualitative investigation of different teams and their experiences in the telework context. This involves exploring which other types of teams exist and how they respond in the context of the home office. This could provide researchers with the opportunity to identify findings that allow for a broader differentiation of the complexity and diversity of teams and their work dynamics at the home office. It is suggested to include observations and focus groups to explore a more comprehensive understanding of the situation.

Another future research topic is to further elaborate on the influence of individual characteristics and how they impact on the individual influences the teamwork experience. To this end, a subsequent qualitative study could further examine how individual and corporate circumstances during the COVID-19 pandemic impacted the effectiveness of the team. The focus of attention should not only be on the deficits for the cooperation of individual team members, but also on the effects of distractions of one team member that affect all team members. Triangulation of data must be applied, including observations and document analysis, to better contextualize the experiences of the different teams.

Finally, some experiences, particularly those involving supervisory positions, suggest that the use of virtual meetings, face-to-face meetings, or hybrid meetings can promote strategic purposes. As part of future research, it would therefore be particularly interesting to examine how different positions within a team choose and use the range of communication tools in specific contexts of teamwork. In this regard, it can be of relevance to find out which strategic approach to using a dedicated virtual tool is best suited for which team configuration and their nature of teamwork.

Furthermore, future research can complement the results of this study by considering temporal frameworks concerning team dynamics. Following Delice, Rousseau and Feitosa (2019) developmental theories in the field of team dynamics (e.g., Ford, 2014) can help examine how teams change in the context of time. Considering episodic models (e.g., Marks et al., 2001), teams may complete different tasks in different periods that activate different team dynamics at different times. In this context, the course of the pandemic, viewed as a periodic time course, provides a specific time frame in which teams developed, transformed, and acclimatized to the work context. Especially regarding the continuation of the home office and a potential introduction of the home office as a long-term solution - after it has

proven successful for some teams during the pandemic - this type of temporal assessment can be reconsidered in a theory-driven manner. In this perspective, it is possible to examine whether the experience of imposed telework during the pandemic would result in a similar or different way in the voluntary context of telework.

Conclusion

Compliant with Böll et al. (2014); (2016), this study has shown that the nature of teamwork has an essential function in the team's adoption and evaluation of telework in terms of the approach and execution of teamwork. In reflection, this study indicates that the social aspect of teamwork, determined by the physical interaction, has an indispensable value for the teamwork of generative and creative teams because it stimulates and enriches creative processes. This is demonstrated by the significant influence of the transformation of communication on team cohesiveness. It should be noted that, contrary to general expectation, the increasing distance between team members affects even the administrative team, whose need for interactions to complete tasks is low. Their experiences led to a feeling of detachment between team members even at the office. Emphasis should also be placed on the critical role of the formalization of communication, which unexpectedly has an enormously unfavorable effect on team cohesion, leading to the limitation of effective teamwork in generative and creative teams. The critical role of the approach of team dynamics as existing at the office cannot be replaced by the variety of virtual tools. Furthermore, the importance of the passive reception of information through the overhearing of conversations must be highlighted, because although employees also experience distractions through the office surroundings, they lack a decisive inflow and confluence of valuable information.

Considering the implementation of the ongoing home office during the pandemic as a critical context, the interviews provided an important contribution to the literature on team communication and interactions in a teleworking setting. This study provides new insights beyond the apparent factors outlined in Whillans et al. (2021) by examining 1) the emergence of formalization of communication between team members that both reflects and promotes distancing between team members, 2) the significant impact of the lack of passive information intake for creative processes, and 3) the challenges of integrating new employees to build a collaborative unit.

Practical Implications

The concrete situation of the ongoing home office due to the pandemic also represents a context that is above all practically relevant for a future-oriented home office concept. Based on the statements of the participants, three aspects were highlighted. First, in the individual context, the relevance of an equipped office space was mentioned and, in this respect, support from the company was requested. Second, it was emphasized by all participants that the loss of social interaction between team members, as well as the completion of some tasks, is only compensated for or enabled by face-to-face interaction. Therefore, a hybrid model is recommended, allowing some days to work at the office and some days to

work at home, to offer employees and especially teams the benefits of both. Naturally, this preference is not feasible within the context of the pandemic, but especially for teamwork, alternatives must be identified and designed to strengthen team collaboration and cohesion at the home office. Finally, after initiating future research with a view to the strategic use of communication tools, the planning of different team meetings could be used in a targeted approach, for instance when it comes to discussions, agreements, and decision-making within the team.

Personal Reflection

Considering research ethics, some challenges arose during the research process. Under the circumstances of the pandemic, it was particularly challenging to reach participants who could dedicate their time to participate in this study. Furthermore, because the interviews were conducted virtually or by telephone, it was challenging to identify participants' responses to various questions, especially when questions were perceived as uncomfortable or difficult. Additionally, inductive analysis presented its challenges, as increasing the number of interviews led to greater difficulty in differentiating between the notions expressed by individuals and teams. It was essential to ensure that each participant's statement was understood and interpreted within its own context. Furthermore, by conducting the interviews with several members of one team, it was often somewhat challenging for me as a researcher to keep the statements of one team member confidential to the other. Frequently, questions were raised as to whether another team member would have answered the questions in the same way. Additionally, to let the interview flourish as a natural conversation, I also shared my own experiences, which were not supposed to be the focus of the interview. As a result, some interviews digressed from the topic at hand.

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Appendices

Appendix 1: Concept Elaboration

Concept	Elaboration	Example
Nature of task	Nature of task determines the type of effectiveness and productivity at the home office	<i>Well, I think that for this kind of work, what we do in our industry, this direct communication is actually much better than just virtual communication.</i> Participant Q. - Interview 17 - Company 3 - Creative Team
Self-organization and familiarization	The home office demands to arrange the mingling of working and living at home. One is required to get familiar with the situation when working at the home office for more than one year.	<i>We all had to get used to teams, of course, and everyone was like Oh my God, okay, all right. You just didn't have a chance to resist, you just had to live with it, and you just got used to it [...]</i> Participant A. - Interview 1 - Company 1 - Supporting Team
Mutual understanding	All team members share the same situation of working from home, which leads to increased mutual awareness of each other's concerns.	<i>Generally, in any case, for dealing with each other, I can well imagine that this is more empathetic, so everybody is, it's not like one of us is miserable and of course, if somebody is sick, then logically, but basically, we are all in the same situation and everybody has a mutual understanding. For example, if someone says, I have to pick up the kids. I think people have grown together faster because everyone is in the same situation.</i> Participant G. - Interview 7 - Company 2 - Developing Team
Virtual means of communication	Virtual means of communication that enable communication from home limit communication engagement.	<i>Well, [Microsoft] Teams, for example, such things as video conferencing did not take place de facto. At least in my surrounding field. Chat, so Skype Chat, that existed, yes, but also not as a video conference, but if sometimes to share the screen, yes, also to write messages, but that is actually with Corona, that has established itself and that went amazingly fast, I have to admit that that has also worked well, I mean with us are also then some 1000 employees who had to be served within three / four weeks and it has worked.</i> Participant J. - Interview 10 - Company 2 - Developing Team
Limited identifiability of facial expressions and gestures	Impersonal communication between team members limits mutual perception and sensitivity.	<i>The personal, the interpersonal, body language, all that, the facial expressions, that is all missing, you see, you hear the voice differently, you see the person differently when you communicate with him through the monitor and these are these soft skills that are no longer given, simply and that is definitely different. One now misunderstands also perhaps some things even that one thinks [...]</i> Participant P. - Interview 16 - Company 3 - Creative Team

Scheduling communication and interaction	Any kind of communication must be planned in the home office	<i>It's not as if, of course, there are now virtual coffee breaks and also virtual events that are supposed to substitute that a little bit, but it's not the same, of course. It's still planned, and I mean, I never used to plan a coffee break whenever I took a coffee at the coffee machine. That's why, so, it's not the same, but well, it's better than nothing.</i> Participant J. - Interview 10 - Company 2 - Developing Team
Virtual time pressure	Focusing team meetings on the work objective to the detriment of team-inspiring and animated communication.	<i>[...] virtual teamwork is limited to video conferencing, so that's the bulk of it. There are significantly more meetings or jour-fixes, whatever you want to call them, to coordinate things that didn't need to be coordinated before. [...] I think that's definitely the most important and main point. That you simply have to use, [...], the virtual instruments differently or have to use them to do things that simply weren't necessary for the past due to the normal workflow, but that are [now necessary] due to this, this virtual way of working.</i> Participant J. - Interview 10 - Company 2 - Developing Team
Elimination of instantaneous communication	Timed interactions lead to the elimination of instant communication exchanges.	<i>[...] it's simple, you don't see your colleagues. You can't just when you're heading to the coffee machine or on your way back, stop by and have a quick chat. So, sometimes a chat or sometimes the brief matters that one has now sometimes to consider because someone has called, you simply walk to the next door and ask. That's the disadvantage of the home office for me.</i> Participant T. - Interview 20 - Company 4 - Administrative Team
Formalization of communication and interaction	Timed exchanges formalize informal exchanges between team members.	<i>Yes, it's become a bit more formal, I'll just give you a call or something, or you come across an official topic in front of the coffee machine, this simple, this, how you come to a conversation [...]. I have to consciously call him now, and before that, I might have seen him at the coffee machine earlier, I wanted something from him, I'll talk to him [...] That has changed completely, this impulse to talk to someone, [...] especially with us in the team, it happens regularly.</i> Participant N. - Interview 14 - Company 2 - Developing Team
Integration of new team members	Integrating as a new team member from the home office is a challenge.	<i>Yes, so I've been with the company since October 1, [...] I think one or two weeks at the office and then it went directly very briefly to the rotating shift, before it then completely changed to the home office and yes what was of course, in the beginning, a pity, because at the office you can get to know the team a little bit better and yes, you can also talk a little bit longer, whatever and that unfortunately was omitted for most of the time, but well, I hope that I can make up for that sometime this year. Well, I'm 23 years old, so I'm still relatively young and yes, as I said, I hope that this office work will come back at some point.</i> Participant O. - Interview 15 - Company 3 - Creative Team

Appendix 2: Interview Guide

Introduction

First, I would like to thank you for collaborating with me on this interview. I am a master's student at Radboud University in Nijmegen, and I am conducting this interview as part of my master's thesis to complete my master's Strategic Human Resources Leadership.

The research is supervised by Dr. Luc Dorenbosch. The interview will take approximately one hour. With your permission, I would like to record the interview. This recording is to prevent information from being misunderstood and will help me later to achieve an accurate result. The information will be reproduced anonymously. After the interview, I will offer you the opportunity to review the interview on paper and adjust quotes if desired. The interview will be kept confidential, will remain the property of Radboud University, and will not be accessible to third parties.

In this research, I am exploring your experience of teamwork and your perceived effectiveness of teamwork interactions and activities in the telecommuting situation. In this interview, your view and opinion matter. After some introductory questions about your background and work profile, I will ask you about your team processes, activities, your role on the team, and your perception of how telecommuting affects teamwork on your team.

Finally, I would like to emphasize that these are your opinions and experiences, there are no right or wrong answers to the questions asked.

Do you have any questions about this interview? If not, we will begin the interview now.

Number interview:

Date interview:

Time interview:

Location interview:

Name interviewer: Catharina Tenbrock

Company and position participant:

>>>> INTERVIEWER STARTS RECORDER <<<<

Topic <i>Specification</i>	
Introduction <i>Personal information</i>	<ul style="list-style-type: none"> • Could you briefly describe yourself (personal characteristics)? • Can you describe the type of activities that you do in your job? • Do you have a management position? • How long have you been teleworking?
Timeline 1) <i>Effectiveness</i> 2) <i>Cohesion</i>	<p>I am particularly interested in understanding how you and your team experienced the pandemic and how it impacted your teamwork in terms of its effectiveness and your perception of it as a cohesive team.</p> <p>1) Therefore, before we begin with the questions, I would like you to first describe, for example, using a graph that you think represents your perception of your team's effectiveness, starting from before the COVID-19 pandemic, then the lockdown that followed, or the day you started working from home, and continuing to the present day. Could you indicate where things have changed (e.g., highlight the first lockdown)?</p>

	2) Now, in a second step, please describe a development, which represents the extent of cohesion following the same timeline, thus from a time before the pandemic until the present day.
Prior to the COVID-19 outbreak <i>In-depth timeline: teamwork</i>	<ul style="list-style-type: none"> • If we look at it in more detail, could you describe a day in 2019 (a day at which COVID-19 was not determining our lives) at which you worked together as a team? Think about activities, interactions, communication, your feeling of being a team. <ul style="list-style-type: none"> ○ How did you organize your teamwork? ○ How would you describe the atmosphere? ○ How did you communicate and interact? ○ How did you integrate technology, more respectively for communication and interaction?
Impact of COVID-19 <i>In-depth timeline: change/technology/working from home</i>	<ul style="list-style-type: none"> • How did COVID-19 impact your organization? • How did COVID-19 impact your team? <ul style="list-style-type: none"> ○ What are the most important three aspects you would identify as impacting your team? Why? • Can you describe what this change meant to you? • How did you experience virtual teamwork at that time? • How did telework promote a change in the use of technology for teamwork activities (prior to COVID-19, at the beginning of COVID-19, currently)?
Teamwork <i>Effectiveness/execution of activities/interaction</i>	<ul style="list-style-type: none"> • To what extent do team members interact to accomplish tasks? • How do you perceive the responsibilities team members within your team are taking? • How have responsibilities and interdependencies been changing during the outbreak of COVID-19? <ul style="list-style-type: none"> ○ What role do leadership and decision-making play? • With whom do you interact to accomplish tasks within your team? <ul style="list-style-type: none"> ○ With whom do you interact at most or at least? • What is your position within the team? <ul style="list-style-type: none"> ○ What kind of responsibilities do you have? • Do you prefer to work in a team, or independently? <ul style="list-style-type: none"> ○ How did this preference change due to working in a teleworking setting? • How did you experience differences in results (comparing teamwork prior to the COVID-19 outbreak, at the beginning of the outbreak, and currently)? • Which teamwork success can you identify? <ul style="list-style-type: none"> ○ Why do you consider it a success? • Which teamwork failures can you identify? <ul style="list-style-type: none"> ○ Why do you consider it a failure?
Conclusion	<ul style="list-style-type: none"> • Looking back at the evolution and adaptation of teamwork to the new work environment, what has changed? • Considering all the obstacles, experiences, and benefits, to what extent do you favor or oppose teleworking?