Advancing Emerging Themes in Team Research with an Interaction Perspective

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Abstract

Team dynamics are at the core of modern organizations and shape the everyday work of many. And as the world of work changes, the way work teams interact changes as well and new and relevant topics of team research emerge. Therefore, the present dissertation aims at addressing three emerging themes of team research: the interplay of team dynamics and wellbeing in the workplace, team interactions in face-to-face team meetings, and effects of virtual meetings on employees. Study 1 systematically reviews and critically reflects previous research on team dynamics and employee wellbeing in terms of conceptualizations, empirical approaches, and empirical associations. Study 2 then zooms in on team dynamics in the field by systematically observing and analyzing verbal and nonverbal team interactions in elderly care teams. Study 3 explores the stressors of remote work and videoconferences through qualitative surveys and qualitative phone interviews. Findings of Study 1 reveal that research on team dynamics and employee wellbeing has been limited by conceptual ambiguities, inconsistent operationalizations, and methodological approaches that cannot capture the dynamism and complexity of team dynamics and employee wellbeing. Study 2 suggests that elderly care workers verbal behaviors are dominated by information sharing which is often done via neutral or positive gossip statements. Additionally, findings of Study 2 suggest that verbal and nonverbal team interaction behavior are not independent from one another. Study 3 identified the work-home interface, technology, and communication issues as key challenges of remote work. Further, Study 3 found camera usage, early meeting phases, and multitasking as central stressors of videoconferences. I deduce that team research on wellbeing, interaction behavior, and virtuality will benefit from applying behavioral approaches.

Keywords: Team Dynamics, Wellbeing, Team Interactions, Virtual Meetings

Table of Contents

List of Figures

List of Tables

Introduction

Most of today's organizations rely on team structures, which increases the prevalence and importance of social interactions at work. To adapt to rapidly changing market conditions and the increasing complexity of tasks and projects, organizations increasingly shift toward collaborative and cross-functional approaches (Gagné et al., 2022). Teams allow for the pooling of diverse skill sets and perspectives, leading to more creative and effective solutions (Reiter-Palom et al., 2012). Additionally, teams can foster a sense of belonging and community within an organization, which can improve employee wellbeing in terms of engagement and motivation (Robijn et al., 2020). Furthermore, technological advancements increase the number of virtual teams that allow for greater collaboration across geographic boundaries (Seo et al., 2020). Therefore, the ability to understand team interactions both in face-to-face and in virtual contexts will be critical to effectively leading and managing teams to navigate the future of work (Larson & DeChurch, 2019).

Team interactions refer to the ways in which team members communicate and coordinate with each other to accomplish their work tasks (Gamero et al., 2008). Team interactions play a critical role in determining the effectiveness and efficiency of employees as they can significantly affect their daily work experiences (Mathieu et al., 2017), and their wellbeing (Sonnentag, 2015). However, research on team interactions has traditionally focused on performance outcomes (e.g., job performance, e.g., Lu & Fan, 2017; Morgan et al., 2002) or job attitudes (e.g., job satisfaction, e.g., Oetzel et al., 2012; Song et al., 2017), leaving a gap regarding the effects of team interactions on other facets of wellbeing, such as mental and physical wellbeing.

Studies investigating team interactions have mostly relied on static survey approaches to assess team constructs of interest, falling short in capturing the dynamism that is inherent to teams. Although self-report surveys are a well-established and economic approach to

gather large amounts of data, research designs employing self-report surveys are unable to untangle dynamic processes because they capture only post-hoc subjective experiences (Lehmann-Willenbrock & Allen, 2018). Only few studies have used behavioral approaches to investigate industrial teams (e.g., Kauffeld & Lehmann-Willenbrock, 2012) or white-collar workers (e.g., van der Meer et al., 2022). The specific work context in which team interactions occur can vary widely (e.g., industry vs. military) and affect the level and importance of collaboration and communication between team members (Mathieu et al., 2017). For example, while white-collar workers may rely on teamwork to improve their performance which is associated with financial consequences for the company (Sung & Choi, 2012). The stakes can be higher in other professions like healthcare, where teamwork is necessary not only for organizational success, but also for the health and, ultimately, for the life of patients (Rosen et al., 2018). However, healthcare has received less attention in the field of behavioral team research (for an exception, see Kolbe et al., 2014). Therefore, it is important to explore the characteristics of team interactions in healthcare settings using behavioral approaches.

As the working world changes, the contexts where team interactions happen change as well. The recent COVID-19 pandemic has not only highlighted the relevance of healthcare work for modern societies but also accelerated the relevance of remote work. With the advent of technology and the need for social distancing during the COVID-19 pandemic, team interactions in virtual settings have become the mode of work for many (Wang et al., 2021). The recent rapid digitization of the world of work has changed the way teams interact (Blanchard, 2021), making it important to examine team interactions in virtual settings as well. Remote work necessitates all communication and interaction to be realized in an online setting, which is possible through various technologies such as video conferencing (e.g., Microsoft Teams, Zoom), instant messaging (e.g., Slack, Discord), and email. While virtual

collaboration allows to overcome geographical borders, which can increase diversity (Morrison-Smith & Ruiz, 2020), it also involves challenges. Videoconferences have been found to be particularly demanding experiences for employees that may increase fatigue (e.g., Bennett et al., 2021; Shockley et al., 2021; Nesher Shoshan & Wehrt, 2022). While first investigations have proven the fatiguing effects of team interactions in videoconferences, the "why" and "how" of the fatiguing effects remain yet to be uncovered.

In short, teams are dynamic in nature and this dissertation will focus on three emerging themes in the field of team interaction research in three studies. Specifically, the first objective of this dissertation is to provide a comprehensive overview of the existing literature on team dynamics and employee wellbeing, with a focus on applied conceptualizations, operationalizations, methodological approaches, and study designs (Study 1). As the relevance of employee wellbeing increases, it is crucial to understand its interplay with team interactions. The second aim is to study the verbal and nonverbal interaction behaviors of real teams in an understudied area of team interaction research, namely elderly care (Study 2) since little is known about how actual team interactions unfold in such settings. The third aim of this thesis is to explore and discuss the key challenges of remote and virtual work for team interactions in the context of virtual meetings (Study 3). While initial studies have provided important insights into the effects of virtual work and virtual meetings on individual employee experiences (e.g., Bennett et al., 2021; Shockley et al., 2021), this dissertation extends these findings by exploring why virtual team interactions are particularly challenging.

Social Interactions in Teams

Social interactions are at the heart of organizational behavior (Kozlowski & Bell, 2013). They influence the way individuals communicate, work together, and make decisions, and are therefore crucial for the success of organizations regarding their performance (Ilgen

et al., 2005). What happens in teams can manifest and become visible in team interactions (Lehmann-Willenbrock & Allen, 2018). For example, a positive team climate can become visible through prosocial interactions between team members and high levels of team conflict can manifest in frequent blaming behavior. Such team interactions can take place both in informal contexts (e.g., during the lunch break; Koch & Denner, 2022) or in more formal contexts (e.g., team meetings; Hallett et al., 2009). Team interactions are crucial for the organization as a whole as they affect performance outcomes of individual employees and teams (Lu & Fan, 2017). However, their influence can go beyond and affect other individual-level outcomes, such as their job satisfaction (Proneca, 2007). For instance, positive team interactions such as communication, cooperation, and team reflexivity have been found to lead to higher levels of job satisfaction (Campion et al., 1996; Rutishauser & Sender, 2019). On the other hand, negative team interactions, such as work group incivility and intragroup conflict, have been found to be associated with dissatisfaction among team members (Miner-Rubino & Reed, 2010; Santos et al., 2015).

Furthermore, social interactions in teams can be broadly categorized into verbal and nonverbal forms. Verbal interactions refer to the use of spoken language (i.e., any verbal communication) to convey information and ideas between team members (Beattie, 1983). Nonverbal interactions, on the other hand, refer to the use of body language, facial expressions, and gestures to convey meaning including eye contact, body posture, and tone of voice (Beattie, 1983). Both verbal and nonverbal interactions are important in the context of team communication because they can convey different types of information and influence how team members perceive and interpret each other's actions and intentions (Jones & LeBaron, 2002).

Team Dynamics as a Central Part of Team Interactions

As one aspect of team interactions, team dynamics refer to dynamic processes that occur within teams (Cronin et al., 2011; Kozlowski & Bell, 2013) and play a central role when examining social interactions in the workplace (Mathieu et al., 2019). Team dynamics include both team processes and team emergent states (Mathieu et al., 2020; Rapp et al., 2021). Differentiating between team processes and team emergent states here is crucial for a comprehensive understanding of team behavior and dynamics, and for the development of effective strategies for improving team performance (Marks et al., 2001).

Team processes refer to the ways in which team members interact and work together to achieve a common goal (Marks et al., 2001). Examples of team processes include planning, coordination, and conflict management (Mathieu et al., 2020). Team processes involve dynamic interactions between team members and occur in varying cycles (Mathieu et al., 2020), ranging from milliseconds to years. Team emergent states, in contrast, are collective attitudes, values, and cognitions of the team that arise over time, such as team efficacy and team cohesion (Marks et al., 2001). Team emergent states are not the team interactions themselves but rather serve as input factors that affect team interactions or output factors that are the consequence of team interactions (Rapp et al., 2021). For example, uncivil interactions as a team process (input) may increase experienced conflict levels in the team as a team emergent state (output). As an example of the other direction, cohesion as a team emergent state (input) may affect the extent to which team members are supportive of each other in their interactions (output). Team emergent states take more time to develop than team processes (Rapp et al., 2021). Especially team emergent states that rely on cognitive processes, such as a shared understanding of a problem, require a longer time to evolve.

The Relevance of Team Processes for Employee Wellbeing

Wellbeing is a multi-faceted concept that is influenced by various factors (Warr et al., 1979; Sonnentag, 2015) with the social context being one major field that can impact wellbeing. For instance, life satisfaction and happiness have been found to be linked to social ties (Helliwell & Putnam, 2004). As adults spend considerable amounts of their daily time at work, their social context not only consists of friends, family, and neighbors, but also of their work team (Salas et al., 2015). Thus, it is crucial to acknowledge the importance of work teams affecting wellbeing.

Employee wellbeing has been of major interest in organizational psychology for decades as it is known to affect various relevant organizational outcomes, such as performance, productivity, or creativity (for an overview, see Sonnentag et al., 2022). As a result, wellbeing has been conceptualized and operationalized in numerous ways across a wide range of disciplines (Wright et al., 2017), making it challenging to establish precise definitions and to clearly outline its conceptual limits. The World Health Organization's (1946) definition refers to wellbeing as a broad, multifaceted concept that encompasses mental, physical, and social components. Additionally, employee wellbeing is a dynamic construct that can vary considerably within a person across time (Podsakoff et al., 2019). The multi-faceted and dynamic nature of wellbeing makes it an interesting but at the same time challenging topic for team research.

Conceptualizations of mental wellbeing can be divided into hedonic and eudaimonic perspectives (Fisher, 2014). The hedonic understanding of wellbeing entails positive life assessments, subjective experiences of pleasure, and a lack of negative emotional states (Diener, 2000). On the other hand, eudaimonic perspectives on wellbeing emphasize the significance of attaining self-determination and the experience of meaning (Waterman, 1993).

Conceptualizations of physical wellbeing refer to the state of having a healthy body and are composed of a combination of objective physiological measurements and subjective factors (Grant et al., 2007). Physical wellbeing is often operationalized regarding possible constraints in physical, emotional, and social activities, general mental health, physical pain, and overall health perception (Wilson & Cleary, 1995). Physical wellbeing in this context encompasses more than just basic determinants like biochemical and physiological elements. Instead, the understanding of physical wellbeing takes into account a person's judgments of their physical health state as well as their social functioning.

Conceptualizations of social wellbeing focus on interpersonal interactions and describe the nature of a person's relationships with other people (Keyes, 1998), suggesting that it is a relevant component of wellbeing in the context of team research. Despite the growing scholarly interest in social facets of wellbeing (Gallagher et al., 2015), conceptualizations and operationalizations of social wellbeing in the workplace still remain in their infancy (Fisher, 2014). While there is a gap in team research concerning the interplay of team interactions and social wellbeing, a connection seems plausible given the proximity of the concept of social wellbeing to relationships within teams.

Verbal and Nonverbal Team Interaction Behavior

One aspect that can affect employee wellbeing is verbal team interaction behavior. Verbal team interaction behavior refers to any verbal communication between team members. Such interactions can concern both professional topics (e.g., discussing a problem, sharing organizational knowledge) and socioemotional topics (e.g., encouraging, blaming; Kauffeld & Lehmann-Willenbrock, 2012) and can happen both in formal (e.g., team meetings) and informal (e.g., coffee break) contexts. Research on verbal interaction behavior has found that blaming or talking off-topic in meetings decreased employee voice and trust (Allen, Yoerger et al., 2015). Other verbal communication behaviors in meetings, such as contributing

solutions or structuring statements, were found to increase engagement and decrease exhaustion (Lehmann-Willenbrock et al., 2016).

In Study 2, an additionally focus is placed on workplace gossip as a specific verbal interaction behavior given its relevance for workplaces with high intensities of necessary interaction (Babalola et al., 2019). Workplace gossip is an informal verbal interaction behavior referring to evaluative communication between two members of the same organization about an absent third person (Brady et al., 2017). Such communication can be evaluative and of positive or negative valence or non-evaluative and of neutral valence. Gossip behavior is traditionally regarded as undesirable with previous studies mainly focusing on its negative effects. Previous research for instance found that gossip was associated with lower wellbeing (Brady et al., 2017) and higher workplace cynicism (Kuo et al., 2015). Even though gossip is a verbal interaction behavior, it can possibly affect nonverbal behavior in terms of affective states as well (Kuo et al., 2018).

Nonverbal interaction behavior refers to anything that is not expressed through words but instead through nonverbal signals such as body posture, gestures, or facial expressions. In teams, nonverbal interactions can lead to the emergence of shared affective experiences through dynamic processes in real time (Kelly & Barsade, 2001). For example, if a particular organizational event affects the mood of one person, this person's mood will in turn affect the nonverbal behavior they display (Elfenbein, 2014). Through imitating the other person's post-emotional behavior another coworker can experience a similar mood. The described affective process falls under the umbrella term of emotional contagion, which describes the process of behaviors and emotions of one person triggering behaviors and feelings in another (Hatfield et al., 1993). Studying nonverbal visible behavior that expresses affect can help to understand affective processes in teams but requires adequate research methods.

Team Interactions in Team Meetings

Team interactions can happen in many organizational settings, with team meetings being one of the more clearly definable ones (Meinecke & Lehmann-Willenbrock, 2015). As regular organizational events where team members come together and interact, team meetings provide a gateway for revealing team interaction processes, emergent patterns, and dynamics of social influence (Meinecke & Lehmann-Willenbrock, 2015). Previous research using team meetings for their investigations discovered behavioral linkages between meeting attendees and that specific meeting behaviors connect to both meeting-related and more general outcomes (Kauffeld & Lehmann-Willenbrock, 2012). By studying team interactions in the context of team meetings, researchers can gain valuable insights into how teams operate, how they can be more effective, and how to improve team collaboration and communication (Meinecke & Lehmann-Willenbrock, 2015). Therefore, team meetings can function as a "magnifying glass" on the social interactions that occur within a team and provide a useful setting to study team interactions.

Different team interaction behaviors can be examined by observing meeting participants. For instance, team members were found to show positive team interactions in terms of actively engaging in discussions with other team members or offering constructive feedback to their colleagues (Lehmann-Willenbrock et al., 2016). On the other hand, meeting attendees were also found to display negative team interaction behavior such as engaging in side conversations or interrupting others (Allen, Yoerger, et al., 2015). These previous findings highlight that meetings provide a context where a variety of team interactions can be studied.

Interaction Behavior in Elderly Care Teams

Like many other modern organizations, care facilities today organize their work in teams as well (Dinh et al., 2020) to cope with the complexity and the frequent changes and changing requirements of their work. For instance, demographic changes and the resulting increase in the number of high-aged, mostly bedridden people are already increasing the need for and demands on elderly care workers and will continue to do so in the future (Ogura & Jakovljevic., 2018). This confronts elderly care teams with major challenges: Clients in nursing homes are increasingly characterized by complex care needs and multimorbidity (Yarnall et al., 2017). At the same time, a recent statistic shows that already today a position for a specialist in elderly care in Germany remains unfilled for about 175 days until a qualified person is found (Bonin, 2020). Due to the shortage of skilled workers in the care sector, employees in nursing homes are not only confronted with a very demanding work environment but also with an understaffed one. At the same time, there is good availability of job offers in the nursing sector, leading to a very high fluctuation, so that team compositions change regularly (Chegini et al., 2019).

How well care teams collaborate and how effectively they reach their goals as a team significantly shapes organizational outcomes and ultimately affects patient health outcomes (Dinh et al., 2020). In the case of nursing, this means that collaboration in the care team affects the quality of care and thus, as a direct consequence, the health of patients (Anderson et al., 2019). For instance, communication and teamwork in rapid response teams in hospitals can affect patients' safety (Leach & Mayo, 2013). At the same time, the experienced quality of collaboration in the care team also has an impact on the caregivers themselves in terms of their wellbeing (Manser, 2009). Therefore, when investigating social interactions in the workplace, it is worth taking a closer look at the team dynamics that take place in care teams.

Team Interactions in Virtual Contexts

The COVID-19 pandemic has boosted the shift to remote work overnight. While using digital tools at work, such as word processing applications or presentation software has been commonplace for many white-collar workers already prior to the pandemic (Desilver, 2020), the shift to fully remote work required also realizing all social interactions in virtual contexts. Team interactions in virtual contexts refer to the ways in which team members communicate and collaborate using technology-mediated communication tools, such as video conferencing (e.g., Zoom), instant messaging (e.g., Slack), and online project management platforms (e.g., Asana). Remote work brought multiple new challenges among employees, including blurring lines between work- and private life, feelings of loneliness, and procrastination (Wang et al., 2021).

Like remote work in general, virtual team interactions also pose both advantages and challenges for organizations and employees. On the one hand, virtual interactions can increase flexibility as it enables team members to work together from different locations. On the other hand, virtual interactions were found to come with less effective communication, difficulties aligning schedules with colleagues from different time zones, and cultural misunderstandings (Wang et al., 2021). Research has shown that virtual team interactions can be just as effective as face-to-face interactions, given that team members can trust each other, experience psychological safety, and receive continuous feedback (Feitosa & Salas, 2021). This includes initiatives to facilitate connecting with each other (e.g., virtual coffee breaks), training team members to communicate clearly and consistently in virtual communication, and the establishment of clear roles, responsibilities, and expectations (Feitosa & Salas, 2021).

Possibly the biggest change that came with the sudden remote work mode was the transfer of all team meetings to virtual formats. Tools that enable virtual team meetings

experienced a massive increase in user numbers after the COVID-19 outbreak (Iqbal, 2021).

Virtual team meetings differ from face-to-face meetings in various aspects. For instance,

virtual meetings come with less informal interaction than face-to-face meetings as the pre-

meeting phase is shorter, more task-oriented, or even nonexistent (Bennett et al., 2021).

Further, the virtual format allows attendees to do multiple things on the side, increasing the

risk of multitasking to appear (Cao et al., 2021). While being in the same room with others

may prevent meeting attendees from multitasking due to social desirability, the possibility to

turn off the video helps to multitask undetectedly.

Virtual Meeting Fatigue

As virtual meeting characteristics differ from face-to-face meetings, they put new

additional challenges on employees. Shortly after the COVID-19 pandemic forced employees

to work remotely, employees started to report symptoms of exhaustion due to the increased

number of daily virtual meetings (Wiederhold, 2020). This kind of exhaustion is colloquially

known as "Zoom fatigue" (e.g., Fosslien & Duffy, 2020; Wiederhold, 2020) due to the market

dominance of the Zoom platform early in the pandemic (Iqbal, 2021). However, the term

"Zoom fatigue" can be misleading as it could lead to misassumptions of the platform Zoom

being responsible for the experienced exhaustion. The broader term "videoconferencing

fatigue" (VCF), which describes experiences of exhaustion that are directly connected to the

participation in videoconferences is more inclusive in this regard (Iqbal, 2021).

VCF continues to be a topic of public and media interest, while empirical

investigations of VCF only began to appear slowly. Theoretical elaborations on VCF

discussed continuous alertness (Spataro, 2020) and cognitive overload as reasons for virtual

meetings being fatiguing (Bailenson, 2021). Empirical investigations focusing on

contributing factors of VCF identified experiences of loss, technology issues, (Nesher

Shoshan & Wehrt, 2022), microphone- (Bennett et al., 2021), and camera-usage (Shockley et

al., 2021) as key factors. Against the background of team interactions, collaborating virtually decreases the opportunities for informal social interactions and the chances to communicate via nonverbal communication cues (Blanchard, 2021). Further, a sense of group belongingness, which may be difficult to keep up in times of social distancing, was found to prevent experiences of VCF (Shockley et al., 2021). Whereas previous work in the just recently emerged field of VCF has provided evidence on possible contributors to VCF (e.g., Bennett et al., 2021; Shockley et al., 2021), the underlying mechanisms that might explain how and why VCF comes about and what role the team interactions play in it are less clear.

Overview of Studies

The current dissertation aims to investigate three emerging themes in team interaction research using different approaches. Namely, this thesis reviews research on the links between team dynamics and wellbeing through a systematic review of empirical work in this area, analyzes verbal and nonverbal interactional behaviors through systematic behavioral observations, and explores the challenges of working in teams in virtual contexts through qualitative interviews with remote meeting leaders.

The first emerging theme of team research examined in this thesis concerns the interplay between team dynamics and wellbeing. In an era of skills shortages in many sectors, the role of wellbeing at work is becoming increasingly important in ensuring that the remaining workforce is healthy and productive. Given that team structures in the workplace are a widespread standard in most modern organizations, it is reasonable to expect that team dynamics in the workplace will influence employee wellbeing. The first research question of Study 1 aims to systematically review and organize the conceptualizations and operationalizations that have been used in empirical studies of team dynamics and wellbeing. The objective of the second research question of Study 1 is to identify the methodological

approaches and study designs that have been used to date in empirical investigations of team dynamics and wellbeing.

As a second emerging theme in team research, the present thesis takes a closer look at the actual social interactions of teams in the field. Social interactions in teams are regarded as complex phenomena that occur at both verbal and nonverbal levels and serve important social functions. Previous research suggests that verbal and nonverbal interaction behaviors are not independent of each other (Jones & LeBaron, 2002). Thus, the first research question of Study 2 is to uncover the verbal interaction behaviors that characterize care team meetings. The second research question of Study 2 focuses on understanding the functions and valence of gossip as a specific verbal interaction in care team meetings. Finally, the third research question of this study focuses on the development of group affect over the course of a meeting.

The third and most recent emerging theme in team research examined in this thesis are stressors of remote work in general and of videoconferences in particular from team leaders' perspectives. With the onset of the COVID-19 pandemic, employees suddenly had to work remotely and conduct all work-related social interactions in virtual formats. Empirical work on the challenges of remote teamwork began to emerge (e.g., Bennett et al., 2021; Wang et al., 2021). Researchers quickly agreed that remote work and the increased burden of daily virtual meetings can be fatiguing. However, the root causes of why remote work and virtual meetings are so challenging remained unclear. Thus, the research questions of Study 3 explore the main challenges of working remotely and perceptions of virtual work meetings in depth.

Three independent studies (i.e., a systematic literature review and two empirical studies) were conducted to address the three emerging themes and related research questions in this thesis. Data for the two empirical studies (Study 2 and Study 3) were collected

between May 2019 and June 2021. Both empirical studies received ethical approval from the Institutional Review Board of the University of Hamburg. Figure 1 provides an overview of the three emerging team research themes investigated in this thesis, a brief description of why these themes are relevant, and information on the approaches that were applied for each study.

Figure 1

Three Emerging Themes of Team Research

Study 1	Study 2	Study 3
Team dynamics and wellbeing	**Verbal and nonverbal team interactions in care teams**	**Team interactions in virtual settings**
As maintaining employee wellbeing is increasingly important in times of skill shortages, understanding influences of ubiquitous work team dynamics is crucial.	As team interactions manifest in actual behavior, behavioral studies are particularly relevant.	As the future of work will continue to happen in virtual spaces, team interactions at work will permanently change.
Systematic literature review	*Quantitative behavior observation*	*Qualitative interview*

Study 1 addresses the emerging relevance of employee wellbeing in the context of teams at work. To do so, we conducted a systematic and extensive review on views, conceptualizations, research designs, and methods of previous empirical work on associations between team dynamics and employee wellbeing. The review revealed that research on team dynamics and employee wellbeing has been limited by conceptual ambiguities, inconsistent

operationalizations, and methodological approaches that fall short of capturing the dynamism and complexity of team dynamics and employee wellbeing.

Study 2 examines the emerging relevance of observations of actual interaction behaviors in real teams. Particularly, we focused on general verbal interactions, gossiping as a specific verbal interaction behavior, and nonverbal interaction behavior as a gateway to investigate group affect. To do so, we systematically analyzed eight video-recorded team meetings of nursing teams working in elderly care homes using established coding systems. Results of quantitative interaction coding indicated that elderly care teams primarily used their team meetings for information sharing, both in formal statements as well as packed in neutral, positive, or negative gossip statements. Regarding nonverbal interaction behavior, we identified that the groups' affect was rather negative and passive with only a few changes over the course of the meetings.

Study 3 focuses on the emerging topic of virtuality in teams. To understand what stressors come with remote work and videoconferences as a particular characteristic of virtual work, we performed two qualitative studies. We applied thematic analysis to open-ended survey data from employees in the U.S. and in-depth telephone interviews of meeting leaders from the U.S. and Germany. Qualitative analyses detected the work-home interface, technology, and communication issues as key challenges of remote work. Further, we found camera usage, early meeting phases, and multitasking as central stressors of videoconferences. Finally, we identified that teams applied individual- and team-level coping strategies to reduce the impacts of virtual meeting stressors on themselves.

In sum, the research insights of the present thesis add nuances to the field of organizational research on team interactions and to various branches in the literature, namely the interplay of team dynamics and employee wellbeing, verbal and nonverbal team interactions of elderly care workers, and leading teams in remote contexts and

videoconferences. The variety of applied research approaches including a systematic literature review, quantitative behavior observations, and qualitative in-depth interviews, allows for examining the emerging themes of team research from different angles. The findings of this thesis make a unique contribution to the field of team research in organizations by providing both an exhaustive theoretical overview of previous empirical work on team dynamics and employee wellbeing as well as behavioral insights from actual teams in the field. Furthermore, this thesis highlights crucial areas of focus for the growing field of virtual teams that require more attention as virtual work becomes increasingly prevalent.

Impact of the COVID-19 Pandemic on this Thesis

The development of my PhD work and this thesis was severely affected by the COVID-19 pandemic. The review that now serves as Study 1 was developed as an alternative to my planned empirical work. In Study 2, I was forced to cease data collection due to regulations that completely prohibited access to the facilities where the data was being collected. Study 3 was originally designed to examine physiological responses to team interactions in a specially equipped laboratory at the University of Utah, where Prof. Dr. Allen had kindly invited me for a research visit. I had also obtained research funding for this visit, which I was not able to use due to the pandemic. Unfortunately, prolonged travel restrictions prevented me from traveling to the U.S. during my time as a PhD student at the University of Hamburg. Due to these restrictions, I also was not able to embark on the PhD scholarship awarded to me by the DAAD (German Academic Exchange Service). My originally planned project for Study 3 had to be completely abandoned, and the current Study 3 was developed as a compromise.

Despite these challenges, I was able to adapt and utilize the data I had already collected, as well as develop an entirely new study that was feasible to conduct during times

of social distancing. I am very grateful to my supervisors, Prof. Dr. Nale Lehmann-Willenbrock and Prof. Dr. Joseph A. Allen, who were always there to help me refocus my studies during these challenging times.

Study 1: Team Dynamics and Employee Wellbeing: A Systematic Review and Future Research Agenda

Introduction

As the building block of modern organizations, teamwork shapes the organizational workflow, provides the key organizing principle for achieving coordination and collaboration, and considerably affects employees' everyday workplace experiences (Salas et al., 2015). Given the prevalence of teams in organizations, employee wellbeing as an outcome of teamwork has caught the interest of organizational scholars over the past years (e.g., Dinh et al., 2020). Several studies have examined associations between team variables and employee wellbeing (see Sonnentag, 2015 for an overview). For example, positive social interactions in terms of social support in the team have been found to be positively related to work engagement (Xanthopoulou et al., 2008), whereas team conflict has been associated with negative affective states (Ilies et al., 2011). Other studies have demonstrated associations between team cohesion and individual wellbeing (Markova & Perry, 2014), team reflexivity and satisfaction with the team (Schippers et al., 2003), and team problem-solving interactions and positivity (Lehmann-Willenbrock, Chiu et al., 2017).

Although extant empirical work offers valuable insights into relationships between team variables and employee wellbeing, we observe problems in the current literature related to construct clarity, measurement, and research designs. Team scholars have emphasized that teams are complex dynamic systems that involve multiple levels and are subject to changes over time (e.g., Klonek et al., 2019; Kozlowski, 2015). The concept of team dynamics emphasizes the dynamic multilevel components of teams, including both team processes (e.g., team coordination and conflict management; Marks et al., 2001) and team emergent states (e.g., team trust and cohesion; Jehn et al., 2008).

The concept of wellbeing introduces additional complexity to the study of associations between team dynamics and employee wellbeing. It has been acknowledged that wellbeing is not stable but changes over longer periods of time and fluctuates with short time cycles (Sonnentag, 2015). In addition, employee wellbeing is a broad and multi-faceted construct that comprises both work-related and general wellbeing and includes both psychological and physiological aspects (Wright et al., 2017).

Given their complex and dynamic nature, team dynamics and employee wellbeing may affect each other in different ways over time. The temporal dynamism and complex interdependencies between team dynamics and wellbeing have not yet been sufficiently addressed. This lack of consideration is reflected in conceptual and methodological issues of current studies investigating associations between team dynamics and wellbeing. Inconsistent theoretical conceptualizations and methodological approaches make it difficult to integrate research findings and limit conclusions about the full set of associations between team dynamics and employee wellbeing.

To map the state of research on team dynamics and employee wellbeing, identify shortcomings, and derive a future research agenda, we conduct an extensive systematic literature review. This review focuses on identifying what is known, what is problematic, and what is promising. From our perspective of the dynamic multilevel nature of team dynamics and employee wellbeing, we discuss insights and limitations of current studies, and we develop detailed future directions for research efforts that can improve the understanding of associations between team dynamics and employee wellbeing.

We contribute to the literature on team dynamics and employee wellbeing in several ways. Our review and integration of the conceptualizations and measures used in research on team dynamics and employee wellbeing, along with our evaluation of research designs and methodological approaches, provides clarity and highlights important research gaps. We

identify specific problems and limitations inherent in current studies on team dynamics and

employee wellbeing and emphasize promising directions for future research. By providing a

"how-to" guide for designing studies on team dynamics and employee wellbeing, we

illustrate how theorizing and testing of relationships between both might benefit from

applying a dynamic multilevel perspective. This "how-to" guide builds on current calls for

more dynamic behavioral approaches in team research (e.g., Klonek et al., 2019; Waller &

Kaplan, 2018) and provides actionable theoretical and methodological recommendations for

future research. Finally, the insights obtained from this extensive review give an overview of

the research on team dynamics and wellbeing that may help practitioners develop team

development programs to improve employee wellbeing.

Clarifying Team Dynamics

The concept of team dynamics is commonly used as an umbrella term that comprises

both team processes and team emergent states (e.g., Cronin et al., 2011; Delice et al., 2019;

Kozlowski & Bell, 2013). Team processes refer to "members' interdependent acts that

convert inputs to outcomes through cognitive, verbal, and behavioral activities directed

toward organization task work to achieve collective goals" (Marks et al., 2001, p. 357). In

contrast to team processes, team emergent states do not represent team interactions but rather

qualities of the team that may function as team-level inputs or outcomes of team processes

(Rapp et al., 2021). Team emergent states refer to relatively dynamic properties that form

over time and include collective attitudes, values, and cognitions of the team, such as team

efficacy or team cohesion (Marks et al., 2001).

Whereas several reviews on team dynamics did not separate team processes and team

emergent states (see Cronin et al., 2011; Delice et al., 2019), we emphasize that a clear

distinction between team processes and emergent states is critical in order to acknowledge the

time-dependent nature of relationships between team dynamics and employee wellbeing and

identify unique temporal patterns. Team processes such as team coordination and goal formulation involve interactions of team members that are highly dynamic and occur in varying episodic cycles (Mathieu et al., 2020). As teams cycle back and forth between different phases to accomplish a common goal, the temporal lenses and methodological approaches for studying team processes may range from live observations of a distinct episode to surveys in longitudinal diary designs to capture full cycles of episodes. Team emergent states require some time to develop. Depending on the nature of the team emergent state of interest, different temporal lenses are necessary (Rapp et al., 2021). Whereas affective emergent states, such as team cohesion, may evolve within a relatively short timeframe (Kozlowski & Chao, 2012), cognitive emergent states such as team cognition develop over longer time periods because they are based on information sharing processes (Rapp et al., 2021). To untangle the temporal effects of team processes and emergent states on employee wellbeing, this review examines team processes and team emergent states separately.

Clarifying Employee Wellbeing

Wellbeing has been conceptualized and operationalized in many different ways across a broad range of disciplines (Wright et al., 2017). Consistent with the definition of the World Health Organization (1946), we understand wellbeing as a broad and multidimensional concept that includes mental, social, and physical aspects. Concerning mental wellbeing, a major conceptual divide can be drawn between hedonic and eudaimonic views (Fisher, 2014). Hedonic wellbeing involves subjective experiences of pleasantness, the absence of negative affective states, and positive evaluations of one's life (Diener, 2000). Eudaimonic views on wellbeing, in contrast, emphasize the importance of pursuing self-realization and meaning (Waterman, 1993). As the outer-directed component of wellbeing, social wellbeing focuses on interpersonal interactions and refers to the quality of one's relationships with others (Keyes, 1998). Although interest in this component of wellbeing is growing, the

conceptualization and operationalization of social wellbeing in the work setting are in their

infancy (Fisher, 2014; Gallagher et al., 2009). Physical wellbeing refers to bodily health and

functioning and is measured through objective physiological measures and subjective

experiences of bodily health (Grant et al., 2007).

To organize the literature in this review, we further draw on Warr (2013) to

distinguish wellbeing concepts according to their domain specificity (i.e., work-related vs.

general). General wellbeing is the broadest form of wellbeing and includes concepts such as

satisfaction with life and global happiness (Fisher, 2014). Work-related wellbeing, in contrast,

focuses on wellbeing in the work setting. Examples of work-related wellbeing include job

satisfaction (i.e., positive evaluations of one's job; Locke, 1969), work engagement (i.e.,

feelings of vigor, dedication, and absorption at work; Schaufeli & Bakker, 2004), and job

strain (i.e., psychological and physiological reactions to job stressors; Karasek, 1979).

Traditionally, wellbeing has been examined in terms of relatively stable differences

between employees (Ilies et al., 2015). However, conceptualizations of wellbeing may vary in

their temporal stability (Warr, 2013). In addition to the trait-like components of wellbeing

that may change over longer periods of time, wellbeing also has state-like components that

fluctuate with shorter time periods (e.g., weekly, daily, and momentary; Sonnentag, 2015).

For example, job satisfaction, work engagement, and thriving have been found to vary

considerably within person from day to day (e.g., Ilies & Judge, 2004; Niessen et al., 2012;

Sonnentag et al., 2010). Other studies showed within-day fluctuations of work engagement

and affect (Bakker et al., 2016; Reis et al., 2016). Given the dynamic nature of wellbeing, it is

important to include (short-term) changes and intraindividual variability in conceptualizations

of employee wellbeing.

Guiding Theoretical Framework

To review and integrate the research on team dynamics and wellbeing, we draw on the input-mediator-output (IMO) framework. The IMO framework provides a useful heuristic for explaining relationships among team variables by considering how inputs result in outputs via various mediating mechanisms (Mathieu et al., 2017). In this model, inputs are grouped into compositional features of teams, such as demographic diversities, and structural features of teams, such as interdependence. The mediating mechanisms link team inputs with outputs and include both team processes and team emergent states. Outputs are the products of the input components via the mediating mechanisms. Typical examples of outputs are team performance, team effectiveness, and team productivity (Ilgen et al., 2005).

The most recent version of the IMO model moves beyond this static view and acknowledges that categories of team variables may overlap and coevolve (Mathieu et al., 2017). Some team variables may represent more than one of the three components of the model. The classification of team variables as team inputs, mediating mechanisms, and outputs is largely determined by the conceptualization and research design (Mathieu et al., 2019). For example, psychological safety can be considered a team compositional feature (i.e., an input) when treated as a characteristic of the team climate. In contrast, psychological safety is a mediating mechanism that links inputs and outputs when it is conceptualized as a team variable that emerges through the interaction of team members. Consistent with this view, we argue that team dynamics and employee wellbeing affect each other reciprocally over time. That is, both constructs may function as input, mediating mechanism, and output variables depending on the theoretical framework and research design.

In addition to helping organize the literature in this review, the IMO framework is useful for understanding relationships between team dynamics and wellbeing as it acknowledges the importance of temporal dynamics and adopts a multilevel perspective that

differentiates between variables that reside at the team level and variables at the level of

individual team members. Given that teams are multilevel in nature (Kozlowski, 2015), it is

important to explicitly consider multiple levels in the conceptualization, measurement, and

analysis of team dynamics and employee wellbeing. When investigating associations between

team dynamics and employee wellbeing, the team and the individual team members are the

focal units of interest. Team dynamics traditionally originate from the individual level but

emerge theoretically as team-level constructs (Cronin et al., 2011). In this treatment,

individual perceptions and experiences of team processes and emergent states may manifest

as shared or configural properties of the team. Shared constructs describe teams' properties

that are shared by all members. Examples of shared team dynamics include team cohesion

and team climate. In contrast to shared constructs, configural constructs reflect the pattern,

configuration, distribution, or variability of individual team member perceptions and

experiences (Klein & Kozlowski, 2000). For example, trust asymmetry is a team-level

configural construct that reflects the degree to which team members differ in their perception

of how much trust there is in the team (De Jong & Dirks, 2012).

Multilevel considerations also have implications for the conceptualization and

measurement of employee wellbeing. Although individual team members have unique

properties and everyday experiences that influence their individual wellbeing, team members

may experience similar levels of wellbeing because they work closely together and

experience the same work environment (e.g., Klasmeier & Lehmann-Willenbrock, 2020).

That is, wellbeing may reside both at the individual and the team level. At the team level,

wellbeing can be conceptualized as an emergent state that develops over time from individual

interactions among team members. As with all shared constructs, a critical task is to explain

how and why consensus emerges from team members' individual properties and interactions

among team members and to align the measurement of the team-level construct with its

conceptualization.

Survey-based studies may use different approaches to operationalize team-level

constructs (e.g., team dynamics and employee wellbeing) when gathering data at the

individual team member level. The way individual-level data is aggregated to the team level

influences construct meaning. In direct consensus models, the referent for the items in the

measure is the individual team member (e.g., "I believe ..."), and team-level scores are

created by averaging individual team members' responses. Referent-shift consensus models

focus on individual perceptions of a particular team phenomenon and require individual team

members to respond to items that refer to the team (e.g., "My team believes..."; Chan, 1998).

Another option is to use external sources to measure team-level constructs, such as team

leader reports of team variables and objective indicators of team variables (e.g., generated

revenue and accomplished work tasks as indicators of team performance).

Aims of the Present Review

Given that both team dynamics and wellbeing are broad concepts that include various

aspects, the first aim of this systematic literature review is to organize and integrate

conceptualizations and operationalizations employed in research on team dynamics and

employee wellbeing. By integrating and critically discussing the conceptualizations and

operationalizations, we aim to reveal ambiguities and disagreements in the conceptualization

and measurement of team dynamics and employee wellbeing and improve conceptual clarity

and measures of the constructs.

Research Question 1 (RQ1): What conceptualizations and operationalizations were

used in research on team dynamics and employee wellbeing?

The second aim of this review is to examine the methodological approaches and study

designs that were used in research on team dynamics and employee wellbeing. By reviewing

the methodological approaches and study designs, we seek to discuss important issues of the study of team dynamics and employee wellbeing and highlight key points to consider in future research efforts.

Research Question 2 (RQ2): What methodological approaches and study designs were used in research on team dynamics and employee wellbeing?

Method

Literature Search

The systematic literature search involved two steps. First, we searched the databases PsycINFO, Medline, Web of Science, and EBSCO using a combination of synonyms of the terms "team dynamics" (team dynamics, group dynamics, team processes, group processes, team interaction, group interaction, teamwork), "work" (work, organization, workplace, occupation), and "wellbeing" (well-being, wellbeing, subjective well-being, subjective wellbeing, job satisfaction, engagement, positive affect, general health, physical well-being, physical wellbeing, physical functioning, ill-being, burnout, irritation, negative affect, physical limitations, pain). Searches were conducted on 22 August 2021 using MeSH terms, keywords, and free text words in accordance with the respective database requirements. Second, we conducted a manual search for relevant articles not found in the initial search in the above listed databases by screening the reference lists of the retrieved articles and contacting experts in the fields. The review process followed the PRISMA statement.

Literature Review

The search yielded 2021 articles, which were screened by two independent researchers for inclusion criteria. A total of 180 articles met the criteria for being included in the full-text screening. We included studies that were 1) empirical (i.e., quantitative or qualitative), 2) published in international journals, and 3) written in English or German. We decided to focus on peer-reviewed articles and excluded book chapters, dissertations, and

conference papers because this ensured that the studies were subjected to a rigorous peer review process. In addition, articles had to examine working adult samples, which led to the exclusion of studies using student samples. Finally, studies had to investigate team dynamics in the context of employee wellbeing. We included both psychological and physical wellbeing constructs. Psychological indicators of wellbeing that were of interest were life satisfaction, job satisfaction, engagement, happiness, motivation, irritation, and burnout. As physical indicators of wellbeing, we included outcomes of general health, physical wellbeing, physical functioning, and physical impairments. Based on the conceptualization of team dynamics, we included both indicators of team processes, such as team goal orientation and coordination, and indicators of team emergent states, such as cohesion and conflict. An overview of the screening and selection process can be found in the supplemental material.

After the full-text screening, 36 articles were retained for inclusion in the review. The final sample of articles was coded by two independent researchers. To answer RQ1, the conceptualizations and operationalizations of team dynamics and employee wellbeing were coded. To answer RQ2, the methodological approaches and study designs were coded. In addition to coding data collection procedures, we coded whether the studies used single-level individual-as-unit-of-analysis models, single-level teams-as-unit-of-analysis models, or multi-level analyses. In addition, we summarized the key findings of the studies.

Results

Table 1 provides an overview of the reviewed articles, including information about the conceptualization and measurement of team dynamics and employee wellbeing (RQ1) and the study design and methodological approaches (RQ2). Regarding the IMO heuristic, 26 studies treated team dynamics as an input variable, seven studies included team dynamics as a mediating mechanism, and three studies examined team dynamics as an output variable. For instance, team knowledge sharing was examined as an input variable that affects job

satisfaction as an output (Fleury et al., 2017). In another study, team cohesion was

investigated as a mediating mechanism explaining why team member similarity affects job

satisfaction (Lu & Fan, 2017). Wellbeing was examined as an input variable in only two

studies. For instance, wellbeing in terms of mood as an input variable was found to be related

to team reflexivity as an output (Knight, 2015). In the remaining 34 studies, wellbeing was

treated as an output variable. None of the included studies investigated wellbeing as a

mediating mechanism. Overall, our review indicates that studies have primarily examined

how team dynamics affect employee wellbeing as an outcome and have largely neglected

effects of wellbeing on team dynamics and reciprocal associations. Importantly, the extant

studies on team dynamics and wellbeing have not yet addressed the fact that an output at a

specific point in time (e.g., job satisfaction) likely becomes an input variable at a later point

in time (cf. Ilgen et al., 2005).

Table 1

Systematic Review of Associations between Team Dynamics and Wellbeing in Organizational Research: N = 36 Included Studies

Authors	Sample	Study Design	Conceptualization of Team Dynamics	Team Process	Team Emergent State	Conceptualization of Wellbeing	Multi-level	Single Level Individuals	Single Level Team	Findings
Ahronson & Cameron (2007)	*N* = 447 USA Military	Cross-sectional survey study	Cohesion *Measure:* Group Environment Questionnaire (Carron et al., 1985)		X	Job satisfaction, psychological distress *Measure:* Job satisfaction, general symptomology (instrument developed by the Canadian Forces)		X		Group cohesion positively related to job satisfaction and psychological distress
Antoni (2005)	*N* = 127 (nested in *N* = 21 teams) Europe Factory	Cross-sectional survey study	Group process *Measure:* group process items based on Alper et al. (1998)	X		Job satisfaction *Measure:* Job Satisfaction Questionnaire (Neuberger & Allerbeck, 1978)			X	Management by objectives as a method for leading self-regulating teams increased job satisfaction through group processes
Barsade et al. (2000)	*N* = 239 USA Business	Cross-sectional survey study	Task conflict, emotional conflict *Measure:* Intragroup Conflict Scale (Jehn, 1995)		X	Trait positive affect *Measure:* Multidimensional Personality Questionnaire (Tellegen, 1982)	X			Low trait positive affectivity related to greater task and emotional conflict and less cooperation
Benitez et al. (2021)	*N* = 398 Europe Service	Cross-sectional survey study	Interpersonal conflict *Measure:* Interpersonal conflict at work questionnaire (CIT)		X	Work-unit burnout, Work-unit job satisfaction *Measure:* Maslach Burnout Inventory (Maslach & Jackson, 1981), Hartline and Ferrell's scale (Hartline & Ferrell, 1996)	X			Interpersonal conflict positively related to work-unit burnout and negatively to work-unit job satisfaction
Campion et al. (1996)	*N* = 450 USA Business	Longitudinal survey study	Communication, cooperation *Measure:* Work Team Characteristics (Campion et al., 1993)	X		Employee Satisfaction *Measure:* Self-developed	X			Communication and cooperation as a sub scale of process characteristics showed the strongest

Authors	Sample	Study Design	Conceptualization of Team Dynamics	Team Process	Team Emergent State	Conceptualization of Wellbeing	Multi-level	Single Level Individuals	Single Level Team	Findings
										associations with satisfaction
Carayon et al. (2006)	*N* = 20 USA Business	Longitudinal survey study	Group cohesiveness, open group process *Measure:* (Seashore et al., 1982)	X	X	Anxiety, hand-arm-discomfort *Measure:* (Smith et al., 1982)		X		Group cohesiveness was a relevant predictor of anxiety and hand-arm-discomfort
Carson et al. (2001)	*N* = 75 USA Business	Cross-sectional survey study	Within-team cooperation *Measure:* Self-developed	X		Job satisfaction *Measure:* An Index of Job Satisfaction (Brayfield & Rothe, 1952)		X		Across department cooperation showed stronger relationships with job satisfaction than within-team cooperation
Chen et al. (2018)	*N* = 630 Asia Factory	Cross-sectional survey study	Team reflexivity *Measure:* Intervention group with recurring debriefs vs. control group	X		Burnout *Measure:* Maslach Burnout Inventory (Maslach & Jackson, 1981)	X			Participants of the reflexivity intervention showed lower levels of burnout
Chi & Huang (2014)	*N* = 263 Asia Business	Cross-sectional survey study	Team goal orientation *Measure:* Team Goal Orientation (Van de Walle, 1997)		X	Group affective tone *Measure:* PANAS (Watson et al., 1988)		X		Transformational leadership was positively associated with positive group affective tone through team goal orientation
Costa et al. (2015)	*N* = 217 Europe Business	Cross-sectional survey study	Relationship conflict, task conflict *Measure:* Intragroup Conflict Scale (Jehn, 1995)		X	Team work engagement *Measure:* Team Work Engagement (Costa et al., 2014)			X	Relationship conflict decreased work engagement
Dobbins & Zaccaro (1986)	*N* = 203 USA Military	Cross-sectional survey study	Group cohesiveness *Measure:* Five scales by Libo (1954), Beehr (1976), Seashore et		X	Job satisfaction *Measure:* Survey of Organizations (Tayler & Bowers, 1972)		X		Members of highly cohesive groups were more satisfied than those

Authors	Sample	Study Design	Conceptualization of Team Dynamics	Team Process	Team Emergent State	Conceptualization of Wellbeing	Multi-level	Single Level Individuals	Single Level Team	Findings
			al. (1982), Festinger (1950), Zaccaro & McCoy (1985)							of groups that were low in cohesion
Fleury et al. (2017)	*N* =313 USA Business	Cross-sectional survey study	Team processes, team emergent states *Measure:* Team support, team interdependence, familiarity between co-workers, team conflict, knowledge sharing, informational role-efficacy, team autonomy, team reflexivity, team collaboration, recovery-oriented services, trust, affective commitment to the team, team climate, belief in the advantages of interdisciplinary collaboration, work role performance (various validated scales)	X	X	Job satisfaction *Measure:* Job satisfaction (Spector, 1985)	X			Team processes contributed the greatest number of variables to job satisfaction in comparison with team emergent states
Fortuin et al. (2021)	*N* = 120 Europe Business	Cross-sectional survey study	Team boosting behavior *Measure:* Self-developed (developed and validated within this study which is composed of 3 sub studies)	X		Work engagement, positive team mood *Measure:* Utrecht Work Engagement Scale (Schaufeli & Bakker, 2004); Affective Well-being Scale (Gonzáles-Romá & Gamero, 2012)	X			Team boosting behaviors that include mood-enhancing behaviors, energizing behaviors, and unitizing behaviors were positively linked to positive team mood and team engagement
Gamero et al. (2008)	*N* = 156 Europe Business	Longitudinal survey study	Team member interaction, relationship conflict, task conflict *Measure:* Self-developed, Intragroup Conflict Scale (Jehn, 1995)	X	X	Affective climate *Measure:* Affective Well-being Scale (Segura & Gonzales-Roma, 2003)			X	Relationship conflict mediated the association between task conflict and team affect

Authors	Sample	Study Design	Conceptualization of Team Dynamics	Team Process	Team Emergent State	Conceptualization of Wellbeing	Multi-level	Single Level Individuals	Single Level Team	Findings
Guerra et al. (2005)	$N = 496$ Europe Business	Cross-sectional survey study	Relationship conflict, task conflict *Measure:* Intragroup Conflict Scale (Jehn, 1995)		X	Job satisfaction, wellbeing *Measure:* Job Satisfaction Scale (Melia & Peiro, 1989), Affective Well-being Scale (Warr, 1990)		X		Relationship conflict depleted wellbeing both in private and public organizations, while task conflict was associated with decreased wellbeing in the private sector only
Hedderich (2016)	$N = 10$ Europe Education	Cross-sectional qualitative interview study	Conflict, communication, cooperation *Measure:* Qualitative interview	X	X	Strain *Measure:* Qualitative interview		X		Team dynamics are highly relevant to prevent strain for teachers of inclusive classes
Jackson (2005)	$N = 8$ Europe Business	Cross-sectional qualitative interview	Relationship with others, team dynamics, use of humour, support *Measure:* Interview	X		Experience of a good day *Measure:* Interview		X		Teamwork emerged as one of five relevant factors contributing to the experience of a good day in newly qualified nurses
Jex & Thomas (2003)	$N = 2403$ USA Military	Cross-sectional survey study	Altruistic behavior *Measure:* Altruism dimension of Organizational Citizenship Behavior (Organ, 1988)	X		Job satisfaction, wellbeing *Measure:* Job Diagnostics Survey (Hackman & Oldham 1975), General Health Questionnaire (Goldberg, 1978)		X		Group perceptions mediated the relationship between interpersonal conflict and job satisfaction and wellbeing
Knight (2015)	$N = 381$ USA Military	Longitudinal survey study	Team exploratory search *Measure:* Self-developed	X		Mood *Measure:* Mood (Larsen & Diener, 1992)		X		Mood affected the extent of team exploratory search throughout a time span of 4 months
Koberg et al. (1999)	$N = 612$ USA Business	Cross-sectional survey study	Group effectiveness, intragroup trust, mutual influence *Measure:* Group Behavior Inventory (Friedlander, 1966)		X	Job satisfaction *Measure:* Job Satisfaction (Forgionne & Peeters, 1982)		X		Group effectiveness, intragroup trust, and mutual influence were all positively related to job satisfaction

Authors	Sample	Study Design	Conceptualization of Team Dynamics	Team Pro-cess	Team Emer-gent State	Conceptualization of Wellbeing	Multi-level	Single Level Indivi-duals	Single Level Team	Findings
Lehmann-Willenbrock, Chiu et al. (2017)	*N* = 259 Europe Business	Cross-sectional behavior observation study + survey	Problem-focused and solution-focused interaction *Measure:* Act4teams coding scheme (Kauffeld & Lehmann-Willenbrock, 2012)	X		Positivity *Measure:* Positivity behavior based on act4teams (Kauffeld & Lehmann-Willenbrock, 2012)	X			Solution-focused behavior and previous positivity increased positivity
Lu & Fan (2017)	*N* = 338 Asia Business	cross-sectional survey study	Team cohesion *Measure:* The Group Integration Scale (Chang & Bordia, 2001)		X	Job satisfaction *Measure:* Michigan Organizational Assessment Questionnaire (Camann et al., 1979)		X		Perceived similarity between group members lead to higher job satisfaction through perceived team cohesion
Miner-Rubino & Reed (2010)	*N* = 203 USA Business	Cross-sectional survey study	Workgroup incivility *Measure:* Workplace Incivility Scale (Cortina et al., 2001)		X	Job satisfaction, job burnout *Measure:* Michigan Organizational Assessment Questionnaire (Camman et al., 1979), Oldenburg Burnout Inventory (Demerouti et al., 2001)		X		Trust mediated the association of workgroup incivility with job satisfaction and burnout; also direct relations of incivility and job satisfaction and burnout
Oetzel et al. (2012)	*N* = 562 USA Factory	Cross-sectional survey study	Group interaction climate *Measure:* Self-developed		X	Group satisfaction *Measure:* Self-developed	X			Group interaction climate was positively related to group satisfaction
Olguín Olguín et al. (2009)	*N* = 22 Europe Businedd	Longitudinal survey study and sensors measuring physical proximity	Communication, social proximity *Measure:* Real e-mail communication, sensor based proximity data	X		Job satisfaction, group interaction satisfaction *Measure:* Self-developed one item scales		X		Physical proximity predicted job satisfaction
Proneca (2007)	*N* = 171 USA Business	Cross-sectional survey study	Team atmosphere *Measure:* The Team Effectiveness Model (Anacona et al, 1996)		X	Job satisfaction *Measure:* Job Diagnostics Survey (Hackman & Oldham, 1975)		X		Team atmosphere was related to job satisfaction, this process was also mediated by team empowerment

Authors	Sample	Study Design	Conceptualization of Team Dynamics	Team Process	Team Emergent State	Conceptualization of Wellbeing	Multi-level	Single Level Individuals	Single Level Team	Findings
Rutishauser & Sender (2019)	*N* = 6664 USA, Asia, Europe Business	Cross-sectional survey study	Team member exchange *Measure:* Self-developed	X		Job satisfaction *Measure:* Self-developed		X		Team member exchange positively related to job satisfaction
Santos et al. (2015)	*N* = 735 Europe Lab	Longitudinal survey study	Relationship conflict, task conflict, process conflict, temporal conflict *Measure:* Intragroup Conflict Scale (Jehn, 1995)		X	Team satisfaction *Measure:* Job Satisfaction Scale (Spector, 1997)			X	Team conflict mediated the relation between shared mental models and team satisfaction
Schippers et al. (2003)	*N* = 406 Europe Business	Cross-sectional survey study	Reflexivity *Measure:* Reflexivity in Teams Questionnaire (Schippers et al., 2002)	X		Satisfaction with group *Measure:* Satisfaction with Group Scale (Van der Vegt & Emans, 2000)			X	Group reflexivity mediated the association of group diversity on satisfaction
Skaret & Brüning (1986)	*N* = 96 USA Business	Cross-sectional survey study	Work group cohesion *Measure:* My Fellow Workers (Scott, 1970)		X	Job satisfaction *Measure:* Job Descriptive Index (Smith et al., 1969)		X		Cohesiveness was a relevant moderator of the association between leader behavior and job satisfaction
Song et al. (2017)	*N* = 548 USA Business	Cross-sectional survey study + qualitative interview	Team dynamics *Measure:* Primary Care Team Dynamics Instrument (Song et al., 2017)	X	X	Work satisfaction *Measure:* HealthCare Tracking Physician Survey (Center for studying health system change, 2010)		X		Better team dynamics positively related to higher work satisfaction which in turn lead to better patient care
Song et al. (2019)	*N* = 363 Asia Business	Cross-sectional survey study	Communication, coordination, mutual support, work norms, cohesion, conflict resolution *Measure:* Team Interaction Scale (self-developed)	X	X	Burnout *Measure:* Two-Item Burnout Scale (West et al., 2009)		X		Development of a scale to measure team interaction that is comprised both of team processes and emergent states; multiple dimensions were related to burnout

Authors	Sample	Study Design	Conceptualization of Team Dynamics	Team Process	Team Emergent State	Conceptualization of Wellbeing	Multi-level	Single Level Individuals	Single Level Team	Findings
Sonnentag et al. (1994)	*N* = 200 Europe Business	Cross-sectional survey study + qualitative interview	Quality of team interaction *Measure:* Democracy, Openness to Criticism, Competition, Dominance	X		Burnout *Measure:* Self-developed	X			Quality of social interaction was related to burnout
Steinhardt et al. (2003)	*N* = 160 USA Business	Cross-sectional survey study	Group cohesion *Measure:* Proprietary Employee Attitude Survey (self-developed)		X	Job stress, job satisfaction *Measure:* Perceived Work Stress Scale (Mackie et al., 2011), self-developed		X		Group cohesion was associated with job stress and job satisfaction
Taylor & Aldridge (2017)	*N* = 48 Europe Business	Cross-sectional qualitative interview	Team functioning, team conflict *Measure:* Interview		X	Wellbeing at work *Measure:* Interview		X		Teamwork in terms of team functioning and team conflict appeared as central for hospice workers wellbeing
Vinokur-Kaplan (1995)	*N* = 98 USA Business	Cross-sectional survey study	Cohesion *Measure:* Self-developed		X	Individual wellbeing *Measure:* Self-developed		X		Development of a self-administered questionnaire; cohesion predicted effectiveness and increased wellbeing

Conceptualizations and Measures of Team Processes and Team Emergent States

In terms of RQ1 regarding conceptualizations of team dynamics, we found 13 studies that examined team process concepts, 17 studies that examined team emergent states, and six studies that examined a mix of both. Conceptualizations of team processes are vague or non-existent in this literature. For example, Song et al. (2017) described team processes as the "shared understanding and supportive processes, which encourage group members to act and feel like a team" (p. 30) and Antoni (2005) did not provide a conceptualization of the team process under investigation. Moreover, one study that set out to investigate team processes examined team atmosphere (Proneca, 2007), which is a team emergent state (Ancona et al., 1996). Overall, studies on team processes and wellbeing investigated broad team process constructs such as open group process (Carayon et al., 2006) and team member interaction (Gamero et al., 2008). In contrast, studies on team emergent states and wellbeing used more specific conceptualizations and primarily focused on specific emergent states such as team conflict (Costa et al., 2015) and trust (Fleury et al., 2017).

Furthermore, we found that studies used many different operationalizations of team processes. Several studies measured broad constructs, such as group process (Antoni, 2005) with group process items from a scale by Alper et al. (1998) and teamwork (Jackson, 2005) with open-ended interview questions. Other studies assessed more specific team processes, such as problem- and solution-focused team interaction (Lehmann-Willenbrock, Chiu et al., 2017) using the act4teams coding scheme for verbal team interaction behavior (Kauffeld & Lehmann-Willenbrock, 2012).

Regarding team emergent states, the operationalizations are more homogeneous, with cohesion and conflict emerging as the most frequently investigated concepts. The six studies on group cohesion all used different survey measures. The shortest scale comprises two self-developed items (Steinhardt et al., 2003). Another study (Ahronson & Cameron, 2007)

operationalized group cohesion using subscales from the group environment questionnaire (Carron et al., 1985). Team conflict was investigated in five studies, which primarily used the intragroup conflict scale by Jehn (1995) to measure team conflict but included different subscales. For example, Costa et al. (2015) measured relationship and task conflict, whereas Santos et al. (2015) additionally measured process and temporal conflict. In six studies, the measures assessed a mixture of team processes and team emergent states. For example, Carayon et al. (2006) employed a scale that measures both open group process (i.e., a team process) and group cohesiveness (i.e., a team emergent state).

Overall, we found that the studies provided vague conceptualizations of team processes, perhaps because the authors felt that it was not necessary to provide clear conceptualizations given prior research, or because they pursued their own working definitions. In contrast to this lack of specificity regarding team processes, conceptualizations of team emergent states were more specific and more directly related to the applied operationalizations. Task and relationship conflict were studied frequently, whereas other types of conflict such as process conflict related to task strategy and coordination (e.g., Behfar et al., 2011) and temporal conflicts regarding the timing and duration of team tasks (e.g., Mohammed et al., 2017) received less scholarly attention. Other prominent team emergent states such as team psychological safety have been neglected. Given its affective characters (Rapp et al., 2021), it seems likely that psychological safety is related to employee wellbeing. Regarding team processes, none of the included studies examined conflict management as a potential influence on employee wellbeing, which is surprising given the vast body of research on team conflict and employee wellbeing. Moreover, we found that several studies used self-developed measures of team processes and team emergent states (e.g., Carson et al., 2001; Gamero et al., 2008; Knight, 2015). This use of non-validated measures is problematic because it limits the interpretability of the results. Finally, several

studies conflated team processes and team emergent states in their measures, which is an important issue because team processes and team emergent states require different temporal lenses, both conceptually and methodologically.

Conceptualizations and Measures of Employee Wellbeing

To address RQ1 in terms of conceptualizations of wellbeing, we reviewed whether the studies included work-related vs. general wellbeing, physical vs. psychological, and state- vs. trait-like aspects of wellbeing in their conceptualizations. Across the studies, we found that the conceptualizations focused mainly on work-related aspects of wellbeing. A total of 18 studies examined job satisfaction as an indicator of employee wellbeing. Indicators of psychological wellbeing were used substantially more often than indicators of physiological wellbeing. Only one study (Carayon et al., 2006) examined hand-arm-discomfort as a physiological aspect of wellbeing. Regarding state- and trait-like aspects of wellbeing, only eight studies focused on how wellbeing changed over time in relation to team dynamics. For example, Knight (2015) examined associations between team mood and team exploratory search using five time-points over 16 weeks.

Although the conceptualizations of wellbeing were very similar across most studies with a focus on job satisfaction, the measures that were used differed substantially. Measures of job satisfaction included Spector's (1985) job satisfaction scale (Fleury et al., 2017; Santos et al., 2015), Hackman and Oldham's (1975) job satisfaction subscale of the Job Diagnostic Survey (Jex & Thomas, 2003; Proneca, 2007), and Hartline and Ferrell's scale (1996) in a Spanish version (Benitez et al., 2021). Five studies used self-developed scales. For example, Oetzel et al. (2012) developed four items that asked participants how satisfied they were with their team's performance and how well they thought their team performed. Rutishauser and Sender (2019) used one item to ask how satisfied participants were with their current job. Four studies measured satisfaction by globally asking employees for their satisfaction with

the team (Oetzel et al., 2012; Olguín Olguín et al. 2009; Santos et al., 2015; Schippers et al. 2003).

Three studies that assessed job satisfaction also included measures of general wellbeing. Specifically, Jex and Thomas (2003) measured psychological wellbeing using the General Health Questionnaire (Goldberg, 1978). Other studies used Warr's (1990) affective wellbeing scale (Guerra et al., 2005) and a self-developed scale for measuring general symptomology (Ahronson & Cameron; 2007). Two studies investigated affective components of wellbeing that were non-work-related by using scales for assessing general mood (Knight, 2015) and trait positive affect (Barsade et al., 2000). As work-related affective components of wellbeing, several studies assessed emotional experiences in the context of work (e.g., Chi & Huang, 2014; Gamero et al., 2008; Lehmann-Willenbrock, Chiu et al., 2017) and one study measured team positive mood (Fortuin et al., 2021).

Only one study (Steinhardt et al., 2003) examined job stress as an aspect of wellbeing using the Perceived Work Stress Scale (Mackie et al., 2001). Other concepts that were closely related to stress were burnout, anxiety, and strain. The four studies that assessed burnout employed different measures. One study (Song et al., 2019) used a two-item burnout scale developed by West et al. (2009). Regarding well-established and psychometrically validated scales, Miner-Rubino and Reed (2010) used the Oldenburg Burnout Inventory (Demerouti et al., 2001), and Chen et al. (2018) and Benitez et al. (2021) used Maslach's Burnout Inventory (Maslach & Jackson, 1981).

An advantage of the focus on job satisfaction as a wellbeing indicator could be the comparability across studies. However, the inconsistent use of measures for the same construct limits the comparability of findings. Although general and facet-based job satisfaction are conceptually and empirically related, correlations between measures of job satisfaction that include subscales focusing on supervision, contingent reward, operating

procedures, co-workers, and the nature of the work (e.g., Fleury et al., 2017) and wellbeing indicators likely differ from correlations between measures that include only one general question on how satisfied employees are with their work overall (Olguín Olguín et al., 2009) and wellbeing measures. Moreover, while job satisfaction certainly represents a relevant work-related psychological aspect of wellbeing, the focus on job satisfaction does not reflect the diversity of the wellbeing construct. Other aspects of employee wellbeing, such as indicators of general and physical wellbeing, remain understudied. Notably, none of the studies examined social wellbeing (e.g., Page & Vella-Brodrick, 2009), which is a particularly interesting outcome of team dynamics given its dependence on interpersonal interactions and relationships with others.

Methodological Approaches and Study Designs

To address RQ2, we reviewed the methodological approaches and designs of the studies. A total of 28 studies were cross-sectional, and only eight studies used longitudinal designs. The scope of the longitudinal studies ranged from two measurement points over six months (Gamero et al., 2008) to three points in time over a period of nine weeks with an implemented intervention (Knight, 2015). Self-report surveys were the most frequently used method, with 31 studies reporting such an approach.

Three studies were based on a qualitative interview approach. These studies did not specifically focus on team dynamics but on general aspects of work, such as work-related factors that contribute to feeling good at the end of a workday (Jackson, 2005). Two studies combined quantitative survey data with qualitative interview data to enrich the understanding of relationships between team dynamics and employee wellbeing (Song et al., 2017; Sonnentag et al., 1994). For example, Sonnentag et al. (1994) used interviews to assess cognitive, learning, and communication requirements in teams and assessed all other variables via questionnaires. Only one study used a behavioral approach to assess team

dynamics (Lehmann-Willenbrock, Chiu et al., 2017). No study gathered data on physiological indicators of wellbeing via an external source, such as trained observers or sensor recordings.

In terms of the study samples, participants in the studies were mostly white-collar workers, with 29 studies investigating working samples from the service sector. Other studies focused on school settings (Hedderich, 2016), military settings (Ahronson & Cameron, 2007; Dobbins & Zaccaro, 1986), and factory/production workers (Antoni, 2005; Chen et al., 2018; Oetzel et al., 2012). When comparing findings across studies, attention to the sector in which data were collected is important because the extent to which individual team members interact and the nature of the interactions varies considerably across sectors. For instance, soldiers must not only work closely together to perform their work task, but also to protect their own lives and the lives of team members (Knight, 2015). White-collar workers also need to work closely together to achieve their team's work goal, but their lives typically do not depend on this collaboration. In addition, research has yet to examine how virtual team dynamics relate to employee wellbeing, which would be particularly interesting given the growing importance of digital teamwork (Kniffin et al., 2021). For example, employees report experiences of fatigue due to virtual meetings (Bennett et al., 2021; Shockley et al., 2021; Nesher Shoshan & Werth, 2022).

Regarding countries of origin, most studies ($n = 18$) used U.S. samples, followed by 14 studies with European samples and four studies that collected data from employees in China. None of the studies investigated team dynamics and wellbeing in samples from South America and Africa, and cross-cultural investigations are missing. The lack of cross-cultural investigations is an important oversight given that team dynamics may be influenced by culture, such as the level of collectivism (Rutishauser & Sender, 2019).

In terms of levels of analysis, most studies (*n* = 23) used single-level analyses focusing on the individual team-member level, while five studies applied single-level analyses focusing on the team level. Only eight studies applied multilevel analyses, which considers the individual and team levels simultaneously. Related to the level of analysis, we noted that sample sizes at the team level varied greatly across studies, ranging from 21 teams (Antoni, 2005) to 161 teams (Santos et al., 2015). Furthermore, team size ranged from three members (Costa et al., 2015) to 38 members (Oetzel et al., 2012). Interestingly, only one study (Schippers et al., 2003) reported within-team response rates, stating that at least 66% of the team members had to complete the questionnaire in order to be included in the analyses. Although reporting response rates is essential for the interpretation of results given that aggregating individual responses of only a small number of members of a team to reflect the team-level phenomenon likely yields biased estimates, none of the other studies reported response rates within teams.

The multilevel studies in this review aggregated individual-level data to the team level using different consensus models. While the items for assessing team dynamics always asked for individual perceptions of the team (i.e., referent shift; e.g., "In my team..."), items for assessing employee wellbeing were mostly referred to the individual (e.g., "I am satisfied…"). Only one study assessed team work engagement by asking about the experiences of the team instead of the individual (i.e., "We are excited about this project"; Costa et al., 2015).

The Interplay of Team Dynamics and Employee Wellbeing

Table 1 summarizes the key findings of the reviewed studies. In several studies, the reported associations between team dynamics and wellbeing were a by-product of research efforts that had a different focus. For example, one study found that management by objectives as a method for leading self-regulated teams affected job satisfaction via group

processes (Antoni, 2005). Other studies focused on developing scales for measuring team interaction (Song et al., 2019) and team boosting behaviors (Fortuin et al., 2021), and found associations with burnout and team positive mood, respectively.

The reported associations between team dynamics and wellbeing were mainly correlational in nature. Both functional team processes (e.g., within-team cooperation; Carson et al., 2001) and functional team emergent states (e.g., cohesion; Lu & Fan, 2017) showed positive associations with employee wellbeing in terms of job satisfaction. Team conflict generally impaired employee wellbeing in terms of employees' satisfaction with the team (Santos et al., 2015) and affective wellbeing (Guerra et al., 2005). However, the effects of team conflict on wellbeing outcomes seem to vary depending on the type of conflict, with relationship conflict undermining employee wellbeing and task conflict improving employee wellbeing (Costa et al., 2015; Guerra et al., 2005).

Generally, the reported correlations between team emergent states and employee wellbeing were higher than the correlations between team processes and wellbeing. Trust as a team emergent state showed the strongest association with job satisfaction (Miner-Rubino et al., 2010). Other emergent states such as team cohesion (e.g., Campion et al., 1996; Lu & Fan, 2017) and team conflict (e.g., Gamero et al., 2008; Santos et al., 2015) were moderately related to employee wellbeing. Team processes, in contrast, had weaker correlations with employee wellbeing (e.g., Fleury et al., 2017; Knight, 2015; Song et al., 2019). This difference might be due to the fact that the conversion of team processes into outputs depends on the specific context in which they occur, including timing and team emergent states (Marks et al., 2001). Using one-time assessments that aggregate team processes over time to understand team process-wellbeing relationships rules out the opportunity to consider the influence of the temporal order of team processes and situational conditions. This is less of a problem in investigations of emergent states and employee wellbeing because many emergent

states tend to be relatively stable (e.g., cohesion; Marks et al., 2001), making it more likely to detect associations between emergent states and wellbeing. In addition, emergent states might be more strongly related to employee wellbeing because they describe the quality of employees' social context, which is an important antecedent of many wellbeing aspects, including burnout (Maslach, 2001), work engagement (Bakker et al., 2011), and thriving (Spreitzer et al., 2005). However, it is important to note that these findings are not conclusive as the overall number of studies is relatively small and there are more studies on team emergent states than on team processes. We found no differences between team processes and team emergent states regarding the specific aspects of wellbeing as both were associated with work-related wellbeing (e.g., job satisfaction; Carson et al., 2001; Jex & Thomas, 2003) and general wellbeing (e.g., positive affect; Fortuin et al., 2021; Gamero et al., 2008).

Discussion

In organizing and integrating the extant literature on team dynamics and employee wellbeing, we focused on conceptualizations and measures, methodological approaches, study designs, and empirical findings. One of the main issues that we identified is that both team dynamics and employee wellbeing have been vaguely conceptualized and operationalized in many different ways. This heterogeneity of constructs limits the comparability of findings across studies and the generalizability of individual study conclusions. Given that both team dynamics and employee wellbeing are broad concepts that include several different aspects, the results of the various studies could not be pooled, and the limited number of studies on team dynamics and wellbeing to date prevented us from conducting a meta-analysis. This is unfortunate because meta-analytic approaches would enrich the insights into associations between team dynamics and employee wellbeing. A second issue that we identified is that current studies are dominated by study designs that fail to capture the dynamic multilevel nature of team dynamics and employee wellbeing. To

facilitate future research efforts, we discuss these issues thoroughly and provide a "how-to"

guide for designing studies on team dynamics and wellbeing.

Implications for Conceptualizations and Measurement Approaches

Although team scholars have emphasized that team processes and team emergent

states are distinct phenomena (Marks et al., 2001), this distinction lacks clarity in research on

team dynamics and employee wellbeing, with several studies conflating team processes and

team emergent states (e.g., Antoni, 2005; Fleury et al., 2017). This is problematic because it

limits insights into the unique associations of team dynamics and wellbeing. Future research

should improve conceptual clarity by drawing on the comprehensive conceptualizations of

team dynamics and employee wellbeing that we provided in this review. In addition, many

measures of team processes and emergent states have not been subjected to systematic

examinations of their psychometric properties (e.g., Oetzel et al., 2012, Rutishauser &

Sender, 2019). Before creating measures of team dynamics, researchers should (1) develop

clear conceptualizations that distinguish between team processes and emergent states, (2)

consider the dynamics and the multilevel nature of these types of constructs, and (3) ensure

the alignment between conceptualization and measurement.

Whereas many studies have investigated associations between team dynamics and job

satisfaction, investigations on team dynamics and other aspects of wellbeing are sparse.

Given that team dynamics are inherently social phenomena, investigations of social

wellbeing in terms of one's social functioning (Keyes, 1998) are a fruitful area of future

research. As work teams constitute a substantial part of employees' social context (Salas et

al., 2015), such research efforts would advance the understanding of how social contexts at

work shape employees' social functioning.

Furthermore, several scholars have emphasized the value of physiological measures

for inspiring new insights in organizational research (e.g., Christopoulos et al., 2019; Laborde

et al., 2017). Physiological measures are non-invasive, pain-free, and economic, and the assessment of physiological indicators does not necessarily require medical personnel. One particularly promising area of future research on team dynamics and employee wellbeing is the investigation of the autonomic nervous system (ANS). Insights into ANS activity advance the understanding of emotional processes that occur outside of conscious awareness (Massaro & Pecchia, 2019). Potential approaches to include the ANS in research on team dynamics and wellbeing are cardiovascular measures (e.g., heart rate and heart rate variability (HRV)) and electro dermal activity (EDA; e.g., galvanic skin response). For example, including HRV – i.e., the change in the time interval between consecutive heartbeats (Laborde et al., 2017) – contributes to understanding the role of emotions in the workplace (Massaro, 2014) and the underlying processes of stress and burnout (Morgan et al., 2002; Sosik & Godshalk, 2000). Although physiological measures are not a panacea for research on team dynamics and wellbeing, including HRV and EDA might offer insights into the role of within-team emotional processes (e.g., emotional contagion) in employee wellbeing.

Collecting behavioral data to operationalize aspects of employee wellbeing (e.g., behavioral strain) is another promising direction for future research. Behavioral markers of employee wellbeing can be collected not only through human observers but also via sensor technology. Sensors may capture relevant behavior indicators of strain, such as sleep quantity and quality (Bliese et al., 2017). The measurement of behavioral wellbeing indicators offers the opportunity to understand how team dynamics translate to team members' (work-related) behavior.

Implications for Methodological Approaches and Study Designs

Most studies used cross-sectional survey designs to assess team dynamics and employee wellbeing. Survey-based studies are limited in that questionnaires typically ask participants for their subjective perceptions, which are prone to social desirability bias

(DeMaio, 1984), possibly preventing participants from reporting dysfunctional team dynamics (e.g., team conflict). The advantages of behavioral approaches to team constructs have been discussed in several methodological overview papers (e.g., Lehmann-Willenbrock & Allen, 2018; Waller & Kaplan, 2018), and research on team dynamics and wellbeing would benefit from adopting a stronger focus on actual behavioral expressions of team dynamics as well. Behavioral observations of teams in real time shed light on micro-level relationships between team dynamics and wellbeing. For example, team meetings offer an excellent opportunity to observe actual team behaviors and social interactions (Meinecke & Lehmann-Willenbrock, 2015) and examine how behavioral patterns in the team relate to member wellbeing. Relevant wellbeing outcomes might be directly linked to the team meeting, such as meeting satisfaction (e.g., Kauffeld & Lehmann-Willenbrock, 2012), but should also include physiological wellbeing outcomes, such as bodily reactivity to stress.

Another issue that comes with the reliance on cross-sectional survey designs is the lack of consideration of temporal processes, which limits the understanding of the underlying mechanisms of relationships between team dynamics and employee wellbeing. Specifically, team processes and team emergent states require different temporal lenses because they develop over different time spans. Given that team emergent states typically need some time to evolve and manifest at the team level, researchers may fail to detect associations when using time frames that are too short. In contrast, examinations of the interplay of team processes and employee wellbeing likely benefit from using shorter time frames. For example, emotional contagion – the dynamic process of behaviors and emotions of one person triggering behaviors and feelings in another person (Hatfield et al., 1993) – occurs in relatively short time cycles (e.g., seconds), and may affect momentary wellbeing. The effects of team negative climate on more stable aspects of wellbeing (e.g., overall job satisfaction), in contrast, may evolve over longer time periods, such as months or even years. Longitudinal

research is necessary to consider these temporal dynamics and to improve the understanding

of how associations between team dynamics and employee wellbeing unfold over time.

Although self-reports have advantages, fine-grained observations of teams in real-time may

offer insights into the micro-dynamics of team dynamics and wellbeing.

To enable conclusions regarding causal mechanisms, we encourage researchers to

adopt experimental approaches. Researchers may manipulate the content of team interactions

(e.g., tasks) to examine effects on employee wellbeing. Another option is to bring in a

confederate to realize a manipulation (e.g., initiating conflict) in experimental laboratory

settings. Once causal effects are established in controlled laboratory settings, investigations

of real teams in the field should follow to replicate the findings and help build external

validity of the findings.

Researchers should also consider the value of qualitative interviews, which are

particularly useful for addressing exploratory research questions. Phenomenology, which

focuses on describing individuals' experiences of certain phenomena (Field & Morse, 1990),

might offer insights into how different team processes or emergent states are subjectively

experienced and whether participants consciously experience how they affect their wellbeing.

As Song et al. (2017) demonstrated, qualitative interview data can help understand the

specific types of team dynamics that are relevant to employee wellbeing.

From our review, we can conclude that little is known regarding the emergence of

wellbeing at the team level. This might be due to the fact that theoretical models and

empirical research on employee wellbeing have been traditionally focused on the individual

(Bliese et al., 2017, Oades & Dulagil, 2016). Yet, when investigating relationships between

team dynamics and employee wellbeing, it is important to incorporate multilevel

considerations to avoid misalignment between theory, measurement, and analysis. Multilevel

approaches can promote insights into associations between team dynamics and employee

wellbeing within and across multiple levels. For example, multilevel studies may help establish homology of relationships through comparisons across levels, which would advance research by indicating theoretical parsimony (Chen et al., 2005). Another potential of multilevel approaches is the modelling of cross-level relationships, which would advance the understanding of the role of the team context in individual-level relationships between team dynamics and employee wellbeing. We encourage the use of multilevel designs to illuminate how the strength and direction of associations between team dynamics and employee wellbeing might depend on contextual features. In addition, the inclusion of multiple levels of analyses offers the opportunity to understand how heterogeneity (i.e., within-team variance) of team members' perceptions of team dynamics are related to team wellbeing.

A "How-to" Guide for Research on Team Dynamics and Wellbeing

To offer theoretical and methodological guidance for future research on team dynamics and wellbeing, we provide a "how-to" guide based on key challenges of current research on team dynamics and employee wellbeing that highlights promising directions for future research (see Table 2). This guide addresses questions regarding the level of interest, constructs of interest, relevant timeframes, observability, and subjectivity. Additionally, we provide key reflections to consider in the research process. To illustrate the application of the guide, we describe an exemplary hypothetical study.

Table 2

Guideline for Future Research on Team Dynamics and Wellbeing

Guiding Questions	Choices	Details
Team Dynamics		
(1) What level is the team dynamic of interested located in?	• Team level • Individual level	• Generally, investigations of team dynamics need to include the team level (Klein & Kozlowski, 2000) • Team-level examinations can include shared or configural team dynamics • Individual-level team dynamics include individual perceptions and experiences of team dynamics • Team-level constructs can be operationalized using direct consensus (i.e., aggregation of individual perceptions of the respective participants in a team) or referent-shift consensus (i.e., aggregation of individual perceptions of the team as a whole; Chan, 1998)
(2) What kind of team dynamic construct is of interest?	• Team process • Team emergent states	• Team processes are members' actions that are displayed to transform inputs into outputs, they can either develop over time or happen in a closed episodic cycle (Marks et al., 2001) • Team emergent states are teams' attitudes, values, and cognition; these states usually accompany team processes (Rapp et al., 2021)
(3) What timeframe is needed to measure the team dynamic construct?	• Milliseconds • Seconds • Minutes • Hours • Days • Weeks • Months • Years	• Both team processes and team emergent states are dynamic by nature, therefore multiple measurement points are beneficial (Klonek et al., 2019) • Team processes are observable from minutes (e.g., team coordination) to years (e.g., team adaptive processes) • Team emergent states can be measured in timeframes ranging from milliseconds or seconds (e.g., emotional contagion) to years (e.g., team negative climate)
(4) Is the team dynamic construct observable?	• Observable • Not observable	• Team processes are observable via the observation of team interaction behavior (e.g., in organizational meetings; Lehmann-Willenbrock & Allen 2020) • For observations following steps are necessary: 1. Identification of relevant behavior, 2. Definition of behavioral units, 3. Decision for unitizing rules and coding scheme, 4. Gathering behavioral data, 5. Choosing software for analysis, 6. Choosing analysis procedure (cf. Lehmann-Willenbrock & Allen, 2018) • Consent by all observed team members is obligatory and can be difficult to obtain • Some team emergent states are difficult to observe, therefore surveys could be a beneficial add on for observational studies (e.g., experienced cohesion can be stronger than observed cohesion because of a teams' history outside the observed context) • When observations are not possible, multiple survey measures exist for measuring team processes or team emergent states (e.g., Jehn, 1995; Mathieu et al., 2020) • Survey measures should be applied with respect to the timeframe and level (team or individual) of interest
(5) Is the team dynamic construct accessible through subjective or objective measures (or both)?	• Objectively accessible • Subjectively accessible only	• Objective analysis of observations of verbal behavior (e.g., Kauffeld & Lehmann-Willenbrock, 2012) or nonverbal behavior (e.g., Barsade, 2002) • Team dynamics that are subject to a team members own perception (e.g., perceived team climate) require survey or interview approaches

Wellbeing		
(1) What level is the wellbeing construct of interested located in?	• Team level • Individual level	• Given that team members interact and are exposed to similar external factors, a collective wellbeing is likely to evolve • Individually experienced wellbeing can be relevant when interested in different effects of team dynamics on the individual as effects of team dynamics may differ depending on third variables (e.g., personality)
(2) What kind of wellbeing construct is of interest?	• Psychological work-related • Psychological general • Physiological work-related • Physiological general	• Wellbeing can be psychological or physiological and work-related or general (Sonnentag, 2015) • Psychological wellbeing can be work-related (e.g., job satisfaction) or general (e.g., feeling good) • Physiological wellbeing can be work-related (e.g., hand-arm discomfort in the workplace) or general (e.g., physical functioning
(3) What timeframe is needed to measure the wellbeing construct?	• Milliseconds • Seconds • Minutes • Hours • Days • Weeks • Months • Years	• Psychological wellbeing is usually accumulated by experiences over time, therefore timeframes ranging from hours to days make sense, longer periods will only yield to diffuse appraisals of one's own wellbeing • Physiological wellbeing indicators can range from milliseconds (e.g., ANS activity) to years (e.g., overall physical functioning), generally immediate physiological reactions to external influences (team dynamics in our case) are of relevance
(4) Is the wellbeing construct observable?	• Observable • Not observable	• Some wellbeing indicators, can be observable, e.g., affect in teams can be observed using video-recordings and an established rating scale for group affect (Lehmann-Willenbrock et al., 2011) • Individual affect can be approached through behavior observations or observations of mimicry; experienced affect though is only accessible through self-report measures • Subjective experiences, such as job satisfaction, are not observable and need to be assessed with self-report measures
(5) Is the wellbeing construct accessible through subjective or objective measures?	• Objectively accessible • Subjectively accessible only	• Physiological indicators of wellbeing and can be objectively assessed, but can potentially be voluntarily affected by participants, HRV for example can be manipulated through actively controlling one's own pace of breathing • Wellbeing indicators that appear to be subjectively accessible only can possibly be assessed through peer reviews, job satisfaction on the team level for example could be estimated by team leaders

Suppose that a group of researchers decides to learn more about the relationship between team conflict and team members' experiences of stress. First, the researchers need to specify the research question and determine the level of analysis. The following research question guides the research efforts: How does team-level conflict affect individual and shared experiences of stress? At the team level, team conflict may emerge via bottom-up processes through shared team members' perceptions of conflict situations in their team (Lee et al., 2018). Stress at the individual level refers to individual experiences of stress whereas

stress at the team level can be construed as a shared experience of stress within a team via social interactions (Bliese & Halverson, 1996).

Regarding potential temporal lenses, team conflict can either be understood as a relatively stable characteristic of team atmosphere or as episodic, occurring in distinct episodes (Lee et al., 2018). The researchers in our example are interested in immediate effects of team conflict and therefore decide to capture discrete behavioral expressions of team conflict in distinct episodes in team meetings (cf. Lehmann-Willenbrock & Chiu, 2018). To increase the external validity of their results, the research team plans to investigate real virtual team meetings in the field. Furthermore, the researchers decide to focus on team members' verbal interactions. To assess verbal expressions of team conflict, they adapt an existing coding scheme for group interaction, and they extensively train coders who are blind to the hypotheses. As the researchers aim to investigate how the moment-to-moment development of team conflict affects members' experienced stress, they decide to examine individual members' momentary stress in the meeting. Individual stress levels likely fluctuate during the meeting, requiring fine-grained timeframes for stress assessments. They decide to ask participants to rate their subjectively perceived individual stress every five minutes using a one-item measure in a smartphone app. Furthermore, the researchers account for participants' general stress level using a more extensive survey measure before and after the meeting.

This example illustrates the complexity and number of decisions necessary to develop future research avenues that can advance our understanding of the link between team dynamics and employee wellbeing. Of course, beyond the decisions described above, additional details will need to be decided upon in the process of planning a concrete study.

Practical Implications

The findings of this review may guide the development of team interventions to improve employee wellbeing. To date, the vast body of research demonstrating associations between individual-level factors and employee wellbeing has resulted in various individual-focused occupational health interventions (e.g., stress management training). Although meta-analytical findings suggest that these interventions are effective in terms of individual wellbeing (Estevez Cores et al., 2021), there is evidence that intervention effects on higher-level outcomes are weaker (Richardson & Rothstein, 2008). Based on the findings of this review, we overall suggest that research on occupational health interventions might benefit from including teams as a target group of interventions to improve employee wellbeing.

Several studies found that team cohesion is related to higher levels of employee wellbeing (e.g., Dobbins & Zaccaro, 1986; Carayon et al., 2006; Lu & Fan 2017), indicating that team members' wellbeing might benefit from interventions that target team cohesion. When building new teams, interventions that are designed to encourage members to explore their similarities might improve the wellbeing of the team members (Lu & Fan, 2017). Potential team development approaches include leadership training, team debriefing, team training, and team building (Lacerenza et al., 2018). Irrespective of the type of intervention, it is important that an intervention addresses the team's developmental needs. The need to improve team cohesion might occur during performance processes. Among the appropriate approaches to address this issue are team building interventions that aim at improving the interpersonal relations and social interactions within teams (Shuffler et al., 2011).

Group conflict has been found to have ambiguous relationships with employee wellbeing, with differing effects depending on the type of conflict and organizational settings. For example, relationship conflict in the team has been shown to undermine work engagement, whereas task conflict in the team was found to be positively related to work

engagement (Costa et al., 2015). Additionally, the effects of the two types of conflict on job satisfaction and affective wellbeing were found to vary depending on the organizational setting (Guerra et al., 2005). While relationship conflict was negatively related to job satisfaction and affective wellbeing in both the private and public sector, task conflict was negatively related to job satisfaction and affective wellbeing only in private-sector organizations. The differential effects of conflict in work teams might be addressed in leadership training programs by sensitizing leaders to the different types of conflict and teaching them how to prevent relationship conflict in their teams (Shuffler et al., 2011). In teams with relationship conflict, team building interventions that train team members ways to resolve relationship conflict and improve their interpersonal relationships might be beneficial to team members' wellbeing.

Conclusion

This review advances the literature on team dynamics and employee wellbeing by providing clarity about conceptualizations and measurement approaches of team dynamics and wellbeing, proposing research designs that use dynamic and multilevel perspectives, providing concrete theoretical and methodological recommendations for future research, and suggesting actionable starting points for team development programs. Acknowledging the complexity of team dynamics and employee wellbeing and using research designs that capture the temporal dynamism of the constructs is crucial for future research in the domain of team dynamics and employee wellbeing. We provide five key recommendations for future research on associations between team dynamics and employee wellbeing. First, we strongly recommend distinguishing team processes from team emergent states and using operationalizations that align with the conceptualizations and dynamism of the constructs. Applying innovative methodologies that capture temporal dynamics will benefit the understanding of the mechanisms underlying associations of team dynamics and wellbeing.

Second, we encourage researchers to move beyond the narrow focus on job satisfaction as a work-related aspect of employee wellbeing and apply more holistic perspectives that focus on other components of wellbeing as well (e.g., social wellbeing). Third, we propose to integrate physiological assessments of wellbeing that capture emotional processes in teams in real time. Fourth, we suggest considering team meetings as an appropriate study setting to explore natural temporal processes via fine-grained behavior observations. Finally, for organizational practice, we propose to design and thoroughly evaluate team interventions that target team cohesion and relationship conflict to improve employee wellbeing.

Supplemental Material

Appendix A: PRISMA flow diagram

Identification

Records identified through
database searching
(*n* = 2409)

Additional records
identified through other sources
(*n* = 0)

Records after duplicates removed
(*n* = 2021)

Screening

Records screened
(*n* = 2021)

Records excluded
(*n* = 1841)

Full-text articles assessed
for eligibility
(*n* = 180)

Full-text articles excluded,
with reasons
(*n* = 144)

Eligibility

Included

Studies included in
qualitative synthesis
(*n* =36)

Study 2: An Exploratory Analysis of Verbal and Nonverbal Team Interactions of

Elderly Care Teams

This chapter builds on the following two publications:

Begemann, V., Lübstorf, S., Meinecke, A. L., Steinicke, F., & Lehmann-Willenbrock, N.

(2021). Capturing workplace gossip as dynamic conversational events: First insights from

care team meetings. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.725720

and

Lehmann-Willenbrock, N., & Lübstorf, S. (in press). Teams in Pflegeeinrichtungen. In B.

Wollesen, A.-K. Otto & L. Bischoff (Eds*.), Gesundheitsförderung im Pflegeheim - Praktische*

Umsetzung für Führungskräfte. Springer.

While the focus of the first publication was on developing an annotation system to analyze

workplace gossip in team meetings, the following study provides a more comprehensive

overview of verbal and nonverbal interactions of elderly care teams. The second publication

was of a theoretical nature and summarizes research insights regarding team interactions in

elderly care teams with the intent to help leaders understand teamwork in care institutions,

which differs from the in-depth behavioral analyses presented in the present study.

Introduction

  Mrs. Leiter[1] regularly meets with her team on a monthly basis. Only six out of 11 team

members are present at today's team meeting. With only one male member, the gender

composition of the team is very homogeneous. Their cultural background, however, is more

diverse: The team includes people from Germany, Turkey, Ghana, and Poland. Today, Mrs.

Yilmaz, a new colleague, joins the meeting for the first time. She can hardly understand or

speak any German (the language spoken in the meeting).

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[1] Please note that this is the summary of a real meeting but that all names in this example are fictional.

The meeting agenda was publicly available before today's meeting and everyone was supposed to add additional items to the agenda by today - but, as usual, no one did. As always, the team meeting does not start on time. Mrs. Leiter begins the meeting with a friendly greeting and then moves quickly on to the content of the agenda. Following the organization's rule, one team member is taking minutes today, knowing that no one will ever read them. First, Mrs. Leiter talks about the poor quality of work and wants to discuss ways to improve it. She thought that this topic would lead to a lively discussion, but her team members are holding back. She has to repeatedly address different team members directly to get them to participate in the discussion. All other topics of the agenda also proceed without active participation from the team. Because Mrs. Yilmaz cannot understand what is being said, another Turkish colleague translates for her from time to time, which interrupts the flow of conversation. In addition, another colleague's work phone rings several times. She takes the calls, but then quickly ends them. Overall, participation is very low, and the atmosphere is somewhat tense and characterized by a lot of negativity and blaming behavior. Mrs. Leiter ends the meeting after one hour with a bad feeling. She feels helpless because she never learned how to lead team meetings and did not receive any meeting guidelines from her employer.

This is not a fictional example, but the summary of an actual team meeting of an elderly care team which represents their team interactions. Due to the shortage of skilled workers in the care sector (Bonin, 2020), employees in nursing homes are confronted with a highly demanding work environment. In consequence, time pressure and a lack of available resources lead to severe stress levels among healthcare workers (Testad et al., 2010). As a consequence, elderly care employees frequently suffer from back and joint pain, emotional exhaustion, tiredness, sleeplessness, and headaches (Teng et al., 2010). The resulting poor wellbeing of care workers leads to a high number of absenteeism days, further increasing the

workload and stress levels for the remaining staff. This results in a vicious cycle of understaffed teams, high workloads, and deteriorating employee wellbeing. Poor employee wellbeing does not only affect individuals but also their whole team regarding the team performance (e.g., Costa et al., 2015; Lu & Fan, 2017).

Teamwork plays a crucial role in elderly care homes. To remain capable of delivering high-quality care in times of ever-increasing demands for care due to demographic developments, work in elderly care institutions is mainly organized in interdependent and interdisciplinary team structures (Dinh et al., 2020). Elderly care teams are interdependent as their tasks are structured in a way where they must rely on each other for essential resources and collaborate on specific work processes (Lemieux-Charles & McGuire, 2006). Interdisciplinary elderly care teams are composed of care professionals from different disciplines who work together to provide comprehensive care to patients. While the specific structure of an interdisciplinary elderly care team can vary depending on the organization, such teams usually include professional nurses, nursing assistants, physiotherapists, occupational therapists, social care workers, service workers, and other specialists as needed (Kresevic & Holder, 1998). All team members work together, with each member contributing their unique skills and expertise to the care of the clients.

The effectiveness and efficiency of these interdependent and interdisciplinary healthcare teams are significantly impacted by the way that team members communicate and collaborate with one another (Rosen et al., 2018). Positive team interactions in healthcare can not only improve the wellbeing of care workers regarding their job satisfaction but even lead to improved patient outcomes as well (for an overview see Poghosyan et al., 2016). Effective team interactions in elderly care teams are crucial as they can help mitigate the effects of demanding workloads and high stress levels, which improves patient outcomes (Bonin, 2020; Testad et al., 2010). On the contrary, negative team interactions in care worker teams, such as

a lack of communication, were associated with decreased productivity and decreased job satisfaction (Poghosyan et al., 2016).

Our social interactions have the power to influence and shape the experiences and behaviors of those around us (Spears, 2021). These interactions are highly complex and can take both verbal (e.g., what is said) and nonverbal forms (e.g., facial expressions). Verbal interactions help to understand what is happening in interactions (Kauffeld & Lehmann-Willenbrock, 2012) while nonverbal communication can provide insights into affective processes (Lehmann-Willenbrock et al., 2011). As our interactions are not isolated events in a social vacuum, both types of communication can reciprocally impact one another (Lehmann-Willenbrock et al., 2011). For instance, when person A is blaming person B for something she did, person C may feel intimidated, because she was involved in the event person B is receiving blame for, which unconsciously affects her facial expression (e.g., flushed cheeks, lowered eyebrows). Furthermore, verbal and nonverbal communication often work together to convey meaning and facilitate understanding in interactions (Jones & LeBaron, 2002). For example, by conveying their emotions or intent, the tone of voice and facial expressions can underpin what was said. However, besides reinforcement, verbal and nonverbal communication can also contradict one another (Jones & LeBaron, 2002). For instance, a person may say one thing, but their body language or facial expressions may indicate that they do not mean what they are saying.

Workplace gossip is a specific form of verbal communication that can considerably impact employees' performance (Tian et al., 2019), relationships with co-workers (Ellwardt et al., 2012), and perceptions of justice and fairness in the organization (Kim et al., 2019). It is usually defined as "informal and evaluative (i.e., positive or negative) talk from one member of an organization to one or more members of the same organization about another member of the organization who is not present to hear what is said" (Brady et al., 2017, p. 3).

Workplace gossip can lead to undesirable outcomes such as lower wellbeing (Brady et al., 2017; Tan et al., 2021) or higher workplace cynicism (Kuo et al., 2015). However, at the same time, gossip fulfills important social functions, such as information exchange, social bonding, and emotion venting (Baumeister et al., 2004; Foster, 2004; Grosser et al., 2012). These two sides of gossip show that it is relevant to examine gossip as a specific form of verbal interaction to better understand the impact of such behavior on employees.

Team meetings provide a gateway to investigate team interactions by revealing interaction processes, emergent patterns, and dynamics of social influence (Meinecke & Lehmann-Willenbrock, 2015). As working together in teams requires a continuous exchange of information and coordination of work, workplace meetings are regular organizational events. They provide a platform for information sharing, decision-making, and action coordination (for an overview, see Allen, Lehmann-Willenbrock, & Rogelberg, 2015). Meetings are purposeful work-related interactions that occur between two or more individuals, are somewhat structured, usually scheduled in advance, and can occur in different formats (e.g., face-to-face or a distributed setting such as conference calls; Rogelberg et al., 2006). Due to the interdisciplinary and interdependent teamwork (Dinh et al., 2020), team meetings were found to be pivotal for the successful performance of work tasks in elderly care settings (Deacon & Cleary, 2013). Nevertheless, interactions of elderly care teams appear to be understudied to date. And while meetings are supposed to be events that facilitate communication and help structure work, they can turn the other way and, as in the described example, become an unpleasant experience that may ultimately affect employee wellbeing, team performance, and patient health negatively. Therefore, it is relevant to examine both verbal and nonverbal interaction behavior to understand complex team interactions and their impact.

The present study contributes to building initial knowledge about team interactions in

the elderly care sector to identify starting points for the improvement of their teamwork. Specifically, we explore verbal and nonverbal as well as formal and informal interaction behaviors of elderly care teams observed during regular team meetings. By doing so, we offer three main contributions. First, we systematically analyze the verbal interactions of elderly care teams to understand how they actually interact with each other. Doing so, we provide fine-grained insights into the current under-researched venue of elderly care meetings, shedding light on team interactions and complementing literature on interdependent teams, health care workers, and meetings. Second, we examine the valence and function of a specific informal verbal interactional behavior, namely gossip, in more detail to connect the valence and function dimensions of gossip which have been previously examined as isolated from one another and in a static way. Looking at the functions of gossip in elderly care teams, we provide insights into the motives of gossip. Finally, we explore nonverbal behavior of care workers in meetings. Analyzing elderly care team interactions at both verbal and nonverbal levels allows for connecting the dots between spoken words and accompanying cues and providing a more comprehensive view.

Verbal Interaction Behavior in Elderly Care Team Meetings

There are different modalities of simultaneously occurring interaction behavior that are usually differentiated between verbal and nonverbal interaction behavior. Verbal interaction behavior encompasses all audible utterances of team members (i.e., spoken words), while nonverbal interaction behavior includes all other non-audible behavior, such as facial expressions and gestures. Despite being fast and fleeting, interaction behaviors can - even on a micro-level - lead to different outcomes depending on the type of behavior (Lehmann-Willenbrock, Chiu et al., 2017). Looking at verbal interaction behaviors in the context of team meetings, counterproductive meeting behavior, which refers to behaviors that are dysfunctional and hinder the accomplishment of meeting goals (e.g., blaming or talking

off-topic), was found to decrease employee voice and trust (Allen, Yoerger, et al., 2015). On the other hand, meeting citizenship behavior, which includes functional and desirable communication (e.g., contributing solutions or structuring the meeting), was found to increase engagement and decrease exhaustion (Lehmann-Willenbrock et al., 2016). Those studies, however, assessed the interaction behavior in meetings using questionnaires, which neglects the dynamism of team interactions. Observing real behavior is an approach to study teams as the dynamic entities they are (Lehmann-Willenbrock & Allen, 2018). Fine-grained interaction analyses are essential to make sense of behavioral data.

Different validated coding schemes are available to systemize behavioral data, such as the interaction process analysis (IPA; Bales, 1950) or the system of multiple-level observations of groups (SYMLOG; Bales, 1980). One validated coding scheme that was specifically developed to study interaction behavior in the context of team meetings in all its details is the act4teams coding scheme (cf. Kauffeld & Lehmann-Willenbrock, 2012). This scheme provides behavior codes for analyzing functional and dysfunctional verbal interaction behavior as the dynamic phenomena they are. While this scheme assumes problem-focused communication as inherently functional, procedural, socioemotional, and action-oriented communication can be either functional or dysfunctional depending on its valence.

To date, research on interaction behavior utilizing behavioral approaches has been scarce (Lehmann-Willenbrock & Allen, 2018). Systematic analyses of verbal interaction behavior are highly relevant as they provide insights into how and why specific behaviors relate to specific outcomes (Allen & Lehmann-Willenbrock, 2022). For example, systematic analyses of structuring behavior during meetings showed that they positively influence teams' effectiveness (van der Haar et al., 2017). Positive social interactions, such as laughing together were found to increase performance (Lehmann-Willenbrock & Allen, 2014). In the case of elderly care teams, very little is known about how care team members actually

interact with one another in practice (Dinh et al., 2020). This is a critical oversight, given that interacting with others is a key component of elderly care teams' jobs (Kerr, 2002). This research gap motivates the following research question:

Research Question 1 (RQ1): Which verbal interaction behaviors characterize elderly care team meetings?

Workplace Gossip as a Specifically Relevant Verbal Interaction Behavior

Verbal team interactions are not always of a formal nature but can also include informal talk, such as gossip (Carrim, 2016; Hallett et al., 2009). Gossip is a ubiquitous behavior in work settings (Grosser et al., 2012) and refers to the informal and evaluative talk of at least two persons (i.e., the gossiper and the gossip receiver) about an absent person (i.e., the gossip target; Brady et al., 2017; Ellwardt et al., 2012). The valence of such talk can be either negative, positive, or neutral and can change back and forth between either of the valences throughout the conversation (Dores Cruz et al., 2021).

Independent of its valence or function, the chances of gossip occurring are affected by the context individuals are embedded in (Mills, 2010). For instance, working under stressful conditions increases the chances for workplace gossip in teams to happen as it can be used to cope with stress (Waddington, 2005). Given that work in the healthcare sector is commonly facing high levels of stress (Zhang et al., 2014), gossip is more likely to occur here. Further, frequent interactions and the need to communicate with others increase the possibility of gossip to occur (Babalola et al., 2019). As a substantial part of nursing jobs is interacting and communicating with others (i.e., both colleagues and patients; Kerr, 2002), the chances of gossip occurring in this context are high making it a relevant context for investigations of valence and functions of gossip behavior in teams.

While gossip usually has a negative reputation (Tan et al., 2021), it also serves important social functions in teams (Grosser et al., 2012). Gossip can be used for information

sharing (Foster, 2004), for example, to collect information on an absent person. Further,

gossip can facilitate establishing group norms and values (Baumeister et al., 2004) to

introduce a new employee to the group's unwritten rules for example (Chase & Stuart, 1995).

Gossip can also be used to protect the group as it may let group members know from whom

to stay away (Beersma & van Kleef, 2012). Another function of gossip can be entertainment

of the group (Foster, 2004), especially in rather monotonous work settings. As a social

function that is relevant to wellbeing, gossip can be used for venting negative emotions to

cope with stress (Dores Cruz et al., 2019). In line with its negative reputation, gossip can also

be used for exerting negative influence on someone else's opinion of an absent person

(Beersma & van Kleef, 2012). While the functions of gossip are well-established, it remains

unclear how they interact with the valence of the gossip statement. Some gossip functions

may not be possible in specific valences, for example, using gossip to tell the group whom to

stay away from means badmouthing someone outside the group, which most likely will be of

a negative valence. Other gossip functions, however, such as information sharing, may be

possible to come in any valence.

Despite research insights into the different social functions of gossip (e.g., Baumeister

et al., 2004; Foster, 2004), to date little is known about how these functions are linked to the

valence of the respective gossip statement (Sun et al., 2022). In the context of elderly care

homes, this is particularly relevant, as some gossip might be needed because of the nature of

their job (e.g., exchanging information about an absent patient; Nübling et al., 2010).

Examining the functions against the backdrop of the valence of respective statements will

help to understand which gossip statements might be undesirable and which statements are

needed and actually contribute to the successful performance of work tasks. Previous studies

have not only investigated gossip valence and function independently but further mainly

relied on survey approaches and did not capture actual gossip behavior (Sun et al., 2022). As

we assume that functions and valences interact and are dynamically connected, the following research question is guiding our efforts:

Research Question 2 (RQ2): What are the functions and valence of gossip in elderly care team meetings?

Affect as Nonverbal Interaction Behavior in Elderly Care Team Meetings

Besides verbal interaction, employees also engage in nonverbal interaction behavior. Nonverbal interaction behaviors encompass facial expressions, gestures, body movement, and positioning within the room. Nonverbal behaviors can provide information on affective experiences (Bartel & Saavedra, 2000).

When interacting with one another, shared experiences of group affect can emerge (Barsade & Gibson, 2014; Lehmann-Willenbrock et al., 2011). Group affect refers to the experience of a very similar affect in a group through the convergence of individual affect (Barsade & Knight, 2015). Group affect can develop through top-down processes where group affect evolves based on all influences acting on the group or through bottom-up processes where it emerges from the sum of each group member's affect (Barsade & Knight, 2015). Group-level affect can also be created through social interactions (Barsade & Gibson, 2012). For example, Lehmann-Willenbrock et al. (2016) found that experiencing frequent counterproductive behavior (such as complaining or running off-topic) in the context of team meetings resulted in less engaged and more emotionally exhausted employees. In contrast, productive meeting behaviors (such as structuring the meeting or contributing ideas) resulted in higher engagement and lower emotional exhaustion. This cross-over effect of individual affect onto the other interaction partners is called emotional contagion and can explain how group affect can emerge (Barsade, 2002; Hatfield et al., 1993). Research shows that group affect convergence does not only develop over longer periods of time (e.g., in real teams with a shared history; Totterdell et al., 1998) but also within minutes in experimental settings

(Barsade, 2002).

Most previous studies assessed group affect in a rather static way by measuring only post-meeting group affect (Schneider et al., 2018), neglecting changes in group affect over time (Kelly & Barsade, 2001; Klonek et al., 2019). To address this, more nuanced investigations of group affect in real team interactions are necessary. Additionally, in the context of healthcare, group affect is particularly relevant as it was found to influence the quality of delivered care (Barsade & O'Neill, 2016) as well as overall team functioning (Knight & Eisenkraft, 2014). To address both the lack of behavioral research when studying group affect and the lack of research on the development of group affect in elderly care teams, the following research question is guiding our research efforts regarding the nonverbal interaction behavior:

Research Question 3 (RQ3): How does group affect develop over the course of an elderly care team meeting?

Method

The study was approved by the local ethical committee at the University of Hamburg (title: Team dynamics in stationary care teams). Participation was subject to informed consent, voluntary, and the right to opt out of data gathering at any point in time was given to every participant. Each of the included teams was observed during only one meeting to allow for independent measures.

Sample and Procedure

The context for this study were team meetings of elderly care teams of four different elderly care homes in Northern Germany belonging to the same organizational group. In total, eight teams were recruited with team sizes ranging from six to 10 members, which are representative team sizes for elderly care teams (Moser et al., 2019). The participating teams included a total of 61 employees, where 90.2% were female, which reflects the general

gender distribution in care jobs. Teams were organized hierarchically, meaning that one head care worker, a skilled care worker, led the meeting. The rest of the team consisted of one to two more skilled care workers, two to three care assistants, one service staff, and one ergo- or physiotherapist. We recorded the teams in one of their monthly meetings using a video camera.

The meetings are carried out on a regular monthly basis. Multidisciplinary members came together to discuss work issues, organize work, and to give feedback. Usually, the head care worker led the meeting and prepared an agenda. Due to shift work, not all team members of each team could be present. The main focus of the meetings was information-oriented, they were used to exchange work-related information, mainly on specific patient cases but also general information. Further, the team leader gave feedback to all team members, provided work instructions, and organized work schedules. Team members also had the chance to talk about current work issues or ask questions. The monthly meeting also provided a context for general small talk, since the whole team does not work together in the same constellation often due to shift work.

Data were collected between May 2019 and March 2020. All teams participated voluntarily and received detailed feedback on their teams' behavior during the meeting in return for their participation. Teams were provided with information on the study purpose and procedure prior to the recording of the meetings and gave their informed consent. The teams were then instructed to carry out their meeting as usual and to ignore the camera. To control if the recorded meetings were authentic, we informally asked the participants whether the recorded meeting corresponded to a typical meeting after. All participating teams described the videotaped meeting as representative of their regular meetings. Meeting length varied widely, ranging from 17 minutes to 73 minutes.

Verbal General Meeting Behavior Coding

To code observed verbal behavior, we applied the act4teams coding scheme. The unit of analysis was sense units which are the smallest speech segment that expresses a complete thought (Bales, 1950). The coding scheme consists of 44 behavioral codes, which can be summarized into four broader categories of team interaction: problem-focused statements, procedural statements, socioemotional statements, and action-oriented statements. Each of the broader categories includes several divisions that offer finer-grained sets of behavior categories. We summarized the codes into the following sub-categories: differentiating a problem, cross-linking a problem, differentiating a solution, cross-linking a solution, statements about the organization, statements about knowledge management, positive procedural statements, negative procedural statements, positive socioemotional statements, negative socioemotional statements, proactive statements, and counteractive statements (cf. Kauffeld & Lehmann-Willenbrock, 2012).

Two intensively trained coders were coding the verbal general meeting behavior. To establish inter-rater reliability, the first coder segmented sense units and ascribed behavior codes and participant IDs to the data then cleared the behavior code columns and passed the pre-cut file to the second rater. We calculated interrater reliability with Cohen's Kappa. Across 2815 behavioral units coded by both raters and obtained an inter-rater agreement of κ = 0.70 which can be considered a substantial agreement (Cicchetti, 1994). Once this level of inter-rater agreement was reached, both coders coded the remaining date independently. At the behavioral event level, the relevant sample size included $N = 4322$ behavioral units.

Verbal Gossip Behavior Coding

To code verbal gossip behavior in the meetings, the coders used a gossip coding scheme that was developed for a different sub-study of a larger research project (see Begemann et al., 2021 for details on the development process). Applying this coding scheme,

gossip behavior was coded regarding its valence and function. Valence was coded with four mutually exclusive categories that were positive, negative, neutral, or ambiguous, which was used to code sarcasm or statements where the tone of voice did not match with the content of the statement. Codes for gossip functions were not mutually exclusive as gossip can serve different functions at the same time (Beersma et al., 2019). Therefore, each event could be ascribed multiple functions. The gossip function codes differentiated between the following six gossip functions according to existing research in that field (e.g., Beersma & van Kleef, 2012): information sharing, enforcing group norms and values, group protection, entertainment, emotion venting, and negative influence. For the purpose of the present study, we focus on gossip as a mechanism for emotion venting as we were interested in understanding how gossip was used to cope with stress (Waddington, 2005).

Verbal gossip behavior was coded by another two independent coders in a two-step approach. As a first step, one coder segmented the entire recordings into sense units. Following, both coders independently coded whether a segment could be classified as gossip or not. Gossip was coded when a speaker was talking about someone who was absent. Once the coders reached an excellent interrater reliability (absolute intraclass correlation coefficient, *ICC*) of *ICC* = .99 according to Cicchetti (1994), the detailed coding of the gossip events was executed. To do so, two coders assessed the valence and function of each gossip statement. All statements were coded by both raters. The two coders achieved an excellent agreement with *ICC* scores between .88 and 1. In total *N* = 626 events of gossip were coded.

Nonverbal Affect Rating

To assess nonverbal group affect, we applied a rating scheme for group affect based on prior work by Lehmann-Willenbrock et al. (2011) with which pleasure and arousal of the team are rated on a scale of one to nine. Additionally, this scheme provides behavioral anchors for the most extreme ratings of the arousal and pleasure continuum respectively.

While coding refers to ascribing a behavioral code to a discrete unit (e.g., speaker turn or sense unit) which can be of very short duration, rating refers to the use of a predefined rating scale that describes the extent to which a phenomenon is shown within a specific timeframe (Klonek et al., 2020). Regarding the length of the specific timeframe, we chose to rate pleasure and arousal every 30s throughout the whole observed meetings, to allow for investigations of changes in group affect over time (Lei & Lehmann-Willenbrock, 2015).

Two intensively trained raters rated all recorded videos in 30s intervals. These two raters were different from the coders who coded the verbal behavior. Following suggestions by Klonek et al. (2020), we calculated an *ICC* comparing agreement among all ratings to check interrater reliability. Overall, the coders reached an excellent agreement (*ICC* = 0.86) according to Cicchetti (1994) over a total of $N = 704$ 30s-interval of rated affect.

Data Analysis

All analyses were conducted using Interact software (Mangold, 2021). To analyze verbal interaction behavior the coders assigned one of the mutual exclusive 44 act4teams codes to each cut sense unit. As the meeting length varied across the different teams, we related all coded interaction data to a 60min period by dividing the frequencies of the act4teams codes by the discussion length in minutes and then multiplying by 60. We calculated means and standard deviations for each behavior code of the observed teams. Next, we summarized all eight observed meetings into one large data set for all following analyses. We calculated the total and relative frequencies of the identified behaviors, based on the mere appearance of a behavior instead of the length of an observed sense unit in a next step.

For the analyses of verbal gossip behavior, we calculated relative frequencies of identified valence categories of the gossip events. In the next step, we looked at the relative frequencies of functions per valence. Note that more than one function could be ascribed to

the same gossip event because we assume that gossip can serve more than one function at the same time.

To analyze nonverbal affect, we calculated means and standard deviations of the pleasure and arousal ratings. We further calculated a general combined group affect which was composed of the mean between group pleasure and arousal scores. To analyze the changes in group affect over time, we counted the changes in group affect over time for pleasure, arousal, and combined group affect ratings. A change in group affect was present when a rating of pleasure, arousal, or the combined rating changed by at least one step between two successive intervals. For example, a change in group affect was detected when a pleasure rating changed from 4 in one 30s interval to 5 in the immediately following 30s interval.

Results

Characteristics of Verbal Interaction in Elderly Care Team Meetings

Regarding our first research question, which focused on exploring verbal interaction behavior in elderly care teams, we found that conversational shares, which refer to each team member's percentage of verbal participation in the meeting based on speaking duration, differed greatly between members ranging from 0.2 to 74.2% ($M = 11.4$, $SD = 18.5$). Zooming in on the conversational shares of the meeting leaders only, we identified that they were taking up the majority of the conversational shares with percentages between 46.9 to 74.2% ($M = 59.6$, $SD = 11$). The number of speaker turns per meeting, referring to how often the speaker role switched from one member to another, varied between 127 and 687 ($M = 412$, $SD = 175.8$).

Table 3 provides an overview of total and relative frequencies as well as means and standard deviations for all observed verbal interactions. Focusing on the different types of verbal interaction behavior in elderly care team meetings, we found that the observed

meetings were strongly characterized by statements about knowledge management with 26% of observed behavior ($M = 56.6$, $SD = 31.4$) as well as by sharing of organizational knowledge, taking up 25.1% of all observed behavior ($M = 187$, $SD = 63.5$). Statements about knowledge management refer to knowing who knows what, such as knowing which co-worker has insider information on a specific client. Sharing organizational knowledge includes all knowledge about the organization, such as knowing who is responsible for what or how things work. As for problem- and solution-focused statements, differentiating statements appeared frequently with percentages of 7.9% for solution-differentiating behavior ($M = 63.2$, $SD = 23$) and 7.7% for problem-differentiating behavior ($M = 68.2$, $SD = 14.6$). Differentiating statements refer to explanations or illustrations of problems or solutions respectively. Interestingly, cross-linking statements were hardly found in any of the meetings (cross-linking a solution: 0.9%, $M = 9.6$, $SD = 8.3$; cross-linking a problem: 0.1%, $M = 4.7$, $SD = 10.4$). Cross-linking means linking information that relates to a solution or a problem respectively, such as pointing out consequences, advantages, and prerequisites of a solution or a problem.

Further, we identified that positive procedural statements (5.5%, $M = 43.3$, $SD = 14.9$) were more prevalent that negative procedural statements (0.4%, $M = 7$, $SD = 12.6$). Positive procedural statements for example include goal orientation, clarifying, and prioritizing behavior, whereas negative procedural statements refer to losing the train of thought with sprawling descriptions of examples and details.

Looking at socioemotional behavior, we found that positive socioemotional behavior (5.9%, $M = 158.7$, $SD = 14.9$) and negative socioemotional behavior (4.8%, $M = 46.4$, $SD = 36.3$) were nearly evenly present. Positive socioemotional behaviors include behaviors that support team members, such as encouraging others to participate, providing support to others, or active listening. Negative socioemotional behaviors, on the other hand, are behaviors that

adversely affect other team members such as running someone down or interrupting someone.

Moreover, we found a high prevalence of counteractive statements, taking up 10.3% of all observed behavior ($M = 39$, $SD = 24.1$). Counteractive statements are destructive for the meeting as they include being not interested in trying out new things, complaining that things simply cannot be changed, or even leaving the room. Proactive statements, on the other hand, were only found half as often (5.5%, $M = 39$, $SD = 24.1$). Being proactive means expressing positivity towards changes, overtaking responsibility for changes, or planning action to improve situations.

Table 3

Frequencies, Means, and Standard Deviations of Verbal Interaction Behavior

act4teams Categories	Total Frequencies	Relative Frequencies	*M*	*SD*
Problem- and solution-focused statements				
Differentiating a problem	469.8	7.7%	68.2	14.6
Cross-linking a problem	7.2	0.1%	4.7	10.4
Differentiating a solution	476.9	7.9%	63.2	23
Cross-linking a solution	56.9	0.9%	9.6	8.3
Statements about the organization	1520.3	25.1%	187	63.5
Statements about knowledge management	1577.2	26%	56.6	31.4
Procedural statements				
Positive procedural statements	331.6	5.5%	43.3	14.9
Negative procedural statements	23.7	0.4%	7	12.6
Socioemotional statements				
Positive socioemotional statements	355.3	5.9%	158.7	59.7
Negative socioemotional statements	289.3	4.8%	46.4	36.3
Action-oriented statements				
Proactive statements	334.8	5.5%	39.1	11.9
Counteractive statements	624.1	10.3%	39	24.1

Note. Statements per 60-minute period; *N* = 8 teams

Valence and Function of Gossip in Elderly Care Team Meetings

Table 4 gives an overview of averages of relative frequencies of each gossip function depending on the valence of the gossip event. Regarding the first part of our second research question, which addressed the distribution of valence of gossip over the meetings, we calculated averages of the coded valences over all observed meetings. We found that close to half of all coded gossip events were of neutral valence (45.7%). Around a quarter of all gossip events were negative (27.2%), followed by gossip of ambiguous valence (20.1%), and positive gossip (7%). Further, we calculated the averages of functions of all observed meetings and identified information exchange to be the most frequent gossip function (98.8%) with a considerable distance to the other functions. Enforcing group norms and values was the second most frequent function with an average of 34.2%, followed by emotion venting (29.1%), negative influence (12.1%), group protection (9.9%), and entertainment (4.7%). Of note, in comparison to valence codings, function codings were not mutually exclusive, meaning that more than one function could be assigned to one gossip event.

In a next step, we examined the second part of our second research question which was about the interplay between gossip valence and function. We found that neutral gossip was mainly used to share information (99%) and to establish group norms and values (25.9%). Similarly, positive gossip appeared to be also used mainly for information sharing (100%) and group norms and values (35%) and only very scarcely for entertainment purposes (0.7%). The most diverse interactions were found for negative and ambiguous gossip, with all six different social functions being present in both valence categories. Gossip of negative valence was mainly used for information sharing (98%), followed by emotion venting (74.7%), group norms and values (40.9%), negative influence (36.4%), group protection (31.2%), and entertainment (9.1%). Ambiguous gossip was, just as all other valence categories, most frequently used for information sharing (99.5%), then followed by emotion

venting (43.6%), group norms and values (40.9%), entertainment (12.5%), negative influence

(7.1%), and group protection (5.6%).

Table 4

Average Percentages of Gossip Functions for Each Valence

Function	Valence			
	Positive	Negative	Ambiguous	Neutral
Information	100%	98.0%	99.5%	99.0%
Group norms and values	35.0%	43.8%	40.9%	25.9%
Group protection	/	31.2%	5.6%	/
Entertainment	0.7%	9.1%	12.5%	/
Emotion venting	/	74.7%	43.6%	/
Negative influence	/	36.4%	7.1%	/

Note. The table indicates averages of each function (row) depending on the valence of the

gossip event (column). Valence categories were mutually exclusive while multiple functions

could be assigned to the same gossip event which is why presented percentages do not

necessarily add up to 100% per row.

Development of Group Affect in Elderly Care Team Meetings

To address our third research question which focused on the development of group

affect in a meeting, we looked at the group affect of all observed meetings. Overall, group

affect seemed to stay within a relatively small range of variation. This notion is supported by

the overall small variance of group affect that is presented in Table 5. Looking at the average

group affect ratings (i.e., arousal, pleasure, and the combined average) across all teams, the

group affect appears to be rather passive-unpleasant.

Table 5

Means and Standard Deviations of Group Affect Ratings

Rating	Min	Max	M	SD
Arousal	2	7	3.3	1
Pleasure	2	8	4.3	1
Combined average group affect (arousal and pleasure)	2	7	3.8	0.8

Note. Statements per 60-minute period; $N = 8$ teams.

Diving deeper into the development of group affect, we examined changes in group affect over the course of a meeting, we found a total average over all observed meetings of 55.6 changes in arousal ($SD = 9$), 45.9 changes in pleasure ($SD = 8.3$), and 51.9 changes of overall group affect ($SD = 9.2$). Given that overall 704 30s intervals were rated for group affect, this means that changes in all dimensions of group affect only occurred in around 6.5% to 7.9% of cases. A change in group affect was present if the group affect rating changed by at least one step between two directly consecutive intervals. These findings illustrate that, despite its only small variance, group affect is not a static phenomenon but instead dynamic. Figure 2 illustrates the temporal dynamics and changes of group affect over the course of one exemplary meeting.

This meeting lasted for 58.2 minutes, resulting in a total of 117 individual 30-second intervals of group affect ratings. Even across the fine-grained temporal intervals which were coded, group affect (i.e., arousal, pleasure, and the combined average) rapidly changes throughout the meeting. In this particular meeting, 63 arousal changes, 58 pleasure changes, and 54 changes of group affect were detected.

Figure 2

Group Affect of a Selected Team
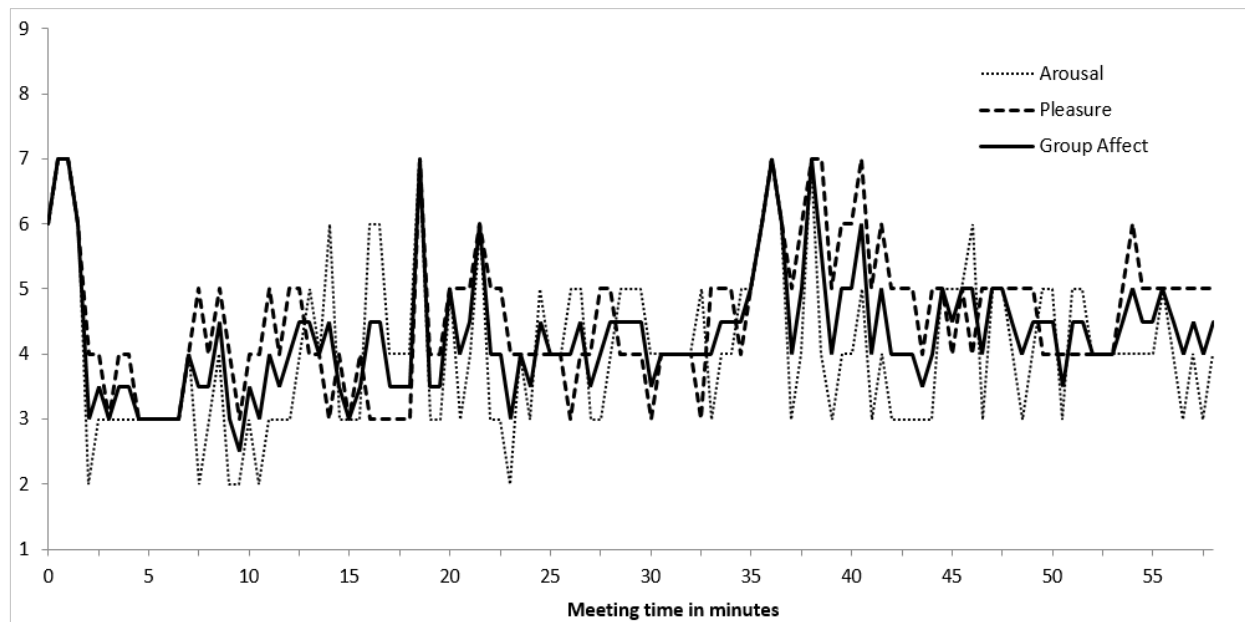
Note. Dynamics of group affect in a selected team over the course of the meeting.

Ancillary Observations

Beyond the observed verbal and nonverbal meeting behaviors, our field notes revealed further specificities of elderly care teams. First, employees in elderly care teams often came from various cultural backgrounds and thus language barriers could have made participation in meetings difficult. For example, in one of the observed meetings, one attendee did not understand the spoken language at all and was completely dependent on another attendee to translate shared information into her native language from time to time, just like in the introductory example. Further, meetings were typically interrupted multiple times due to various reasons. Elderly care workers need to be available for patients all day round, which is why at least one attendee was always on call throughout the meeting and usually had to leave the meeting several times to help patients in need. Additionally, the meeting location, which was usually the kitchen of the living area of the elderly, made the

meeting prone to interruptions by people walking by.

Discussion

The present study explored interaction behavior in the context of team meetings in stationary elderly care. Applying quantitative interaction analysis, we explored dynamisms of both verbal and nonverbal interaction behavior. Specifically, we examined (1) characteristics of verbal interaction behavior, (2) the valence and functions of gossip as a particular verbal interaction behavior, and (3) the development of group affect as a nonverbal interaction behavior in elderly care teams. To do so, we systematically observed and analyzed eight team meetings of elderly care teams. The findings revealed a prevalence of statements concerning organizational knowledge and knowledge management, as well as problem-focused and solution-focused statements, and counteractive statements. Having a closer look at gossip as a specific verbal interaction behavior, we identified that such behavior was mainly of neutral valence, followed by negative and ambiguous valence, and only rarely of positive valence. Gossip was most often used to share information. Other frequently identified functions of gossip were enforcing group norms and emotion venting. Looking at the interplay of gossip valence and function we found that information sharing and enforcing group norms was mostly of positive or neutral valence. Regarding the nonverbal interaction behavior during the observed meetings, we found that group affect was rather negative and passive with only a few changes over the course of the meetings.

Theoretical Implications

Regarding our first research question, we identified knowledge sharing as the main type of verbal interaction behavior, which in fact is a critically relevant component of care workers' work (Nübling et al., 2010; Tobiano et al., 2020). Interestingly, other behaviors, such as discussing current problems and planning specific next steps, appeared to be less central in the context of the observed meetings. A possible reason for the high prevalence of

knowledge sharing is that the team members only rarely all get together due to the shift system they work in (Gifkins et al., 2018). Another factor explaining the high prevalence of information sharing can be the interdependent nature of elderly care teams, where information simply has to be exchanged to be able to fulfill work tasks that are interdependent (Lemieux-Charles & McGuire, 2006). It would be interesting for future research to qualitatively examine why knowledge sharing is that dominant in elderly care team meetings and to identify conditions that need to be created to allow for behavior that goes beyond the sharing of knowledge (e.g., cross-linking information, deriving actionable next steps).

Regarding our second research question, our finding that gossip behavior was mainly of neutral valence and used for information sharing is theoretically meaningful because of the high prevalence of gossip we found. Traditionally, gossip has a rather negative reputation and is often seen as malicious behavior with studies focusing on its negative consequences (e.g., Kuo et al., 2015; Tan et al., 2021). The high frequency of gossip behavior in the team interactions that were observed in the present study can lead to the assumption that those meetings must have been highly unpleasant experiences. However, looking more closely at the valence and functions of identified gossip behavior you can see that mainly neutral gossip for information-sharing purposes was used. Information sharing is very common in the context of elderly care teams and is also often inevitable; there are even meetings that only exist for the sake of information sharing about third absent parties (i.e., patients), called handover meetings (Tobiano et al., 2020). Our findings indicate that when investigating gossip behavior, it is important to consider the work context in which the behavior is observed to avoid misinterpretations. Having a closer look at the valence of gossip statements can also help to prevent prejudices of gossip being inherently malicious. Furthermore, when conceptualizing gossip, it should be kept in mind that gossip is not an undesirable behavior

per se but can also happen in order to fulfill specific and important social functions.

Additionally, our findings indicate that workplace gossip might serve more relevant functions beyond the mere exchange of information. For instance, many scholars argue that nurses in particular use workplace gossip primarily to vent emotions, socially bond, and cope with stress and negative feelings (Altuntaș et al., 2014; Thomas & Rozell, 2007; Waddington, 2005; Waddington & Fletcher, 2005). Especially in service-oriented jobs, where interacting with clients and always remaining friendly is an indispensable job requirement, employees rarely get a chance to show their "real" emotions. This phenomenon is described as surface acting, defined as the regulation of emotion to express positive emotions without actually experiencing them (Beal et al., 2006). The finding that gossiping behavior was often used for emotion venting purposes can be explained by the high stress levels elderly care nurses are facing (Testad et al., 2010). The extent to which the effects of gossip on employees and their work are positive or negative is not yet clearly drawn out (Kuo et al., 2015), making it relevant to examine whether using gossip for emotion venting is a functional coping strategy or not. Taking an ancillary finding into account that the majority of the workplace gossip was targeted at people outside of the team, this could be another indicator of the social bonding function of gossip. By talking about people outside of the team (e.g., patients, relatives of patients, colleagues from other departments) and venting negative emotions (negative gossip was the second most common gossip after neutral gossip), gossip might both serve as a short-term coping mechanism and a social glue – to stick together through thick and thin. Future research could reach to further investigate those functional parts by qualitatively analyzing the content of displayed gossip behavior.

Regarding our third research question, ratings of nonverbal group affect seemed to stay within a relatively small range of variation which is in line with the dominance of information-sharing behaviors and neutral gossip valence observed in our behavioral

analyses. Group affect is more prone to be affected by verbal behavior that is more emotionally charged, such as prosocial or antisocial behaviors (George, 1990). Sharing information in comparison is more of a functional and needed behavior in health care meetings (Kane & Luz, 2011) and thus potentially less emotional. Another factor influencing the low variability of group affect levels could be that the meetings were dominated by one person, namely the team leader. If this person has a certain group affect, it is possible that this group affect infects the rest of the team (Barsade, 2002). Looking at the average group affect ratings (i.e., arousal, pleasure, and the combined average) across all teams, the group affect appears to be rather passive-unpleasant. This is in line with the observed verbal interaction behavior, where counteractive statements and negative socioemotional behavior frequently occurred pointing to the direction that verbal and nonverbal interaction behavior do not happen independently from one another. Counteractive statements and negative socioemotional behavior can disrupt a meeting in terms of goal achievement which in turn can affect group affect (Allen, Yoerger, et al., 2015). The small variance in group affect in general in the observed meetings prevents us from linking it to verbal interaction behavior. Future studies could try to observe meetings that display more variance in group affect levels. This would allow discovering linkages between verbal behavior and different nonverbal affect expressions to look for patterns. Additionally, future empirical work could qualitatively examine the instances where changes in mood occurred to understand why it changed. Furthermore, including physiological measures, such as measurement of the autonomic nervous system (ANS) activity could provide another approach to understanding nonverbal emotional processes that occur outside of conscious awareness (Massaro & Pecchia, 2019).

Practical Implications

The findings of the present study contribute to the understanding of team interactions in healthcare settings and offer a foundation for developing meeting guidelines and training for meeting leaders working in healthcare. As the observed care meetings in our study were primarily used to share information, it could be useful for practitioners to create additional settings for elderly care teams to exchange information. Such settings could be writing down information and sharing it digitally (e.g., via e-mail or digital whiteboards) or weekly information update sessions that are shorter in duration than the monthly meetings. This would leave more room for other interactions during the monthly team meetings to occur.

The temptation to use gossip to vent negative emotions in stressful work situations is human, understandable, and can even create a sense of camaraderie within a team. From a practitioner's perspective, it would be beneficial to improve both team processes and the quality of shared work by discussing problems together and seeking solutions, rather than "venting" negative emotions on other team members. Managers in healthcare facilities can support this change process by setting a good example themselves and shaping interactions with team members as they expect from the team. In the case of entrenched communication patterns, structured team development programs may be needed. Such initiatives could include psychoeducational interventions on how to cope with stress or stress management training.

Further, team members should be made aware of their affect being connected with the affect of other team members. Specifically, their own behavior and emotions can also affect other team members, and in case of a negative affective experience, to the disadvantage of the entire team. In the worst case, an elderly care team is so caught up in negative group affect that the social interaction is only perceived as exhausting and draining. This would turn the team into an additional stress factor instead of a social resource. Encouraging positive

humor and shared laughter within teams can help to create a more positive group affect.

Limitations and Future Research Directions

While our exploratory approach to team interactions in elderly care teams provides valuable first insights into the fine-grained verbal and nonverbal team dynamics in elderly care, the presented research also comes with several limitations that indicate opportunities for future studies. While the sample sizes at the behavioral event levels for interaction behavior ($N = 2815$), gossip statements ($N = 626$), and group affect ($N = 704$) which were used to address the three research questions were relatively large, the total number of observed team meetings was small ($N = 8$). The small number of observed team meetings does not allow for drawing conclusions on elderly care team meetings in general. Further, the presented findings are limited to elderly care institutions and are not generalizable to other healthcare settings. Future investigations of team meetings in other healthcare settings, such as hospitals or ambulatory care will expand the understanding of interaction processes that are characteristic for the healthcare sector.

As we used recording instruments to collect data for the present study, a potential risk that observed behaviors were biased by social desirability may be present (Wicklund, 1972). To reduce this risk, recording devices were kept to a minimum (i.e., using only one camera with a built-in microphone instead of recording the meetings from multiple angles). It seemed that participants increasingly tuned out the camera as the meetings progressed, as no one looked directly at the camera. Additionally, observed participants frequently showed socially undesirable behavior such as blaming or gossiping, which adds to the assumption that participants did not react to the camera. To control for social desirability, we asked participants after the meetings whether the recorded meeting was typical for their usual meetings which all participants affirmed. Nevertheless, using a social desirability survey (e.g., Clancy & Gove, 1974) can help to provide clarity on the extent of observed behavior

being possibly biased.

Finally, the fact that the coding and rating of behavior were human-powered made the study both less economical and prone to biases. Coding verbal and nonverbal behavior is a time-consuming and labor-intensive effort, which is why such methods are regarded as rather unattractive by most scholars (Kolbe & Boos, 2019). Further, even though all raters and coders were exhaustively trained, they may still have been susceptible to biases, such as assigning negative behavior (e.g., negative gossiping) to a person they perceive as less likable more often. To address such issues, future work in this area could apply additional analyses that are not human-powered and compare them against the human-coded data. For instance, humanly-annotated gossip valence could be compared with the results of a computer-powered text analysis of transcribed meeting talk such as LIWC (Pennebaker et al., 2015).

Overall, we encourage researchers to use behavior observation methods when studying teams to be able to capture the dynamism, complexity, and fine nuances of team interactions. By observing actual team interactions, most preferably in real teams in the field, behavioral data allows for running a variety of analyses that take the temporal and structural embeddedness of teams into account. Researchers should take advantage of regular team meetings as a setting for behavioral studies of team interactions.

Conclusion

The present research took an important step toward improving scholarly understanding of team dynamics in the underexamined context of elderly care by systematically analyzing verbal and nonverbal team interaction behaviors among elderly care teams. The findings indicate that elderly care team meetings are primarily used for sharing information, leaving little room for other interaction behaviors that could enrich their work lives, such as positive socioemotional interactions in the form of socially supporting each other. Additionally, the information is often shared through gossip, which serves various

important social functions in the teams as well. The group affect of the observed teams appeared to be consistently low, and given the generally poor wellbeing of care teams, future research should explore what can be done to create more active and cheerful group affect. Linking it to verbal interaction behavior may be promising in this regard which is why we encourage future researchers to use behavioral approaches and examine the interplay of verbal and nonverbal interaction behaviors more closely.

Study 3: Digging into "Zoom Fatigue": A Qualitative Exploration of Remote Work

Challenges and Virtual Meeting Stressors

In accordance with the supervisors of my dissertation, Prof. Dr. Nale Lehmann-Willenbrock and Prof. Dr. Joseph A. Allen, this chapter was published in a slightly different version as Luebstorf, S., Allen, J. A., Eden, E., Kramer, W. S., Reiter-Palmon, R., & Lehmann-Willenbrock, N. (2023). Digging into "Zoom Fatigue": A qualitative exploration of remote work challenges and virtual meeting stressors. *Merits*, *3*, 151–166. https://doi.org/10.3390/merits3010010

Introduction

The ongoing COVID-19 pandemic has revolutionized the working world, with a sudden and rapid shift to remote work across the globe. Trends show that remote work is here to stay (Wang et al., 2021). A year into the pandemic, about half of U.S. employees (52%) report wanting to keep the possibility to work remotely occasionally in a hybrid model with in-office and remote workdays, and 11% prefer a completely remote workplace (Alexander et al., 2021). Along with the global shift to remote work, workplace meetings had to be transferred to one of various videoconferencing solutions such as Zoom, MS Teams, or Google Meet. For example, Zoom went from hosting 10 million meetings per day in December 2019 to 300 million meetings per day in April 2020, a trend that continued during 2021 (Iqbal, 2021). At the same time, employees started to report symptoms of exhaustion from those meetings (Wiederhold, 2020), colloquially called Zoom fatigue (e.g., Fosslien & Duffy, 2020; Morris, 2020). Zoom fatigue or videoconferencing fatigue refers to the extent to which people experience exhaustion that is directly linked to the participation in videoconferences, including various software options (Bennett et al., 2021). Since remote working will continue to be the mode of choice for many employees in the future (Alexander et al., 2021), the challenges of virtual meetings will remain relevant issues of work, even

beyond the COVID-19 pandemic.

Despite a great amount of media attention concerning the Zoom fatigue phenomenon, the scientific understanding of why remote work and videoconferences are particularly stressful is just beginning to emerge given the novelty of remote work policies for broad groups of employees. Recent research efforts found that the sudden shift to remote work came with specific key challenges such as ineffective communication and loneliness (Wang et al., 2021). Furthermore, initial empirical evidence showed that virtual meetings trigger specific fatigue symptoms that are not explainable by other typical workday routines (Bennett et al., 2021; Nesher Shoshan & Wehrt, 2022) or by a generally increased meeting load (i.e., frequency and duration; Nesher Shoshan & Wehrt, 2022). In terms of virtual meeting stressors that may be particularly demanding, scholars have pointed to the role of camera usage (Bennett et al., 2021; Shockley et al., 2021), technical problems (Bennett et al., 2021; Nesher Shoshan & Wehrt, 2022), distractions (Bennett et al., 2021), less informal communication (Bennett et al., 2021; Blanchard, 2021) as well as experiences of loss and comparison to the 'good old times' (Nesher Shoshan & Wehrt, 2022). Theoretical papers discuss continuous alertness (Spataro, 2020) and cognitive overload (Bailenson, 2021; Fosslien & Duffy, 2020) as possible stressors of videoconferences that are associated with videoconferencing fatigue.

When studying new and complex phenomena and situations, qualitative study designs are particularly beneficial (Field & Morse, 1990). To date, we have a small but growing empirical research space in the area of remote work and videoconferencing stressors that affect employees. The present study joins the line of research by Bennett et al. (2021), Nesher Shoshan and Wehrt (2022), and Wang et al., (2021) by investigating remote work as well as stressors of virtual meetings from a qualitative perspective. We aim to move the conversation around remote work and virtual meetings "upstream" to the root causes of possible fatiguing

effects. We aim to go beyond identifying stressors of remote work and videoconferences and additionally examine why they are impairing employees.

To this end, we apply a root cause analysis and conduct two qualitative studies using a surface-level approach (Study 3.1.) followed by a deep-level approach (Study 3.2.). Study 3.1. was conducted among suddenly remote U.S. employees in spring 2020. This first study followed a broad approach to discover what challenges suddenly remote workers were facing. Study 3.2. was conducted over a year later when employees had time to adapt to the new normal of work (Reed & Allen, 2021, 2022) and includes leaders of videoconferences from the U.S. and Germany. This allowed us to check for potential cultural differences in the virtual meeting context. The inclusion of these two particular cultural settings was inspired by previous research on face-to-face meeting interactions, which found distinct differences in the behavioral patterns that emerge in meetings in Germany and the US, respectively (Lehmann-Willenbrock et al., 2014; see also Köhler & Gölz, 2015). Furthermore, Study 3.2. was designed to generate novel insights by focusing on meeting leaders' experiences in videoconferences, rather than regular attendees as investigated in prior research. Meeting leaders spend considerable amounts of their daily work time in virtual meetings (Porter & Nohria, 2018) and are usually the ones in charge of organizing and leading these meetings (Lehmann-Willenbrock et al., 2018).

Our research contributes to the emerging field on the effects of virtual work and videoconferences on employees in five important ways. First, we provide an overview of the challenges of remote work and virtual meetings at the early stages of the pandemic. Second, we present an overview of stressors that emerge in virtual meeting environments. Third, we discuss first insights on why characteristics of virtual meetings may affect employees and provide guidance for future research in the field of videoconferences. Fourth, we present a cross-cultural comparison of virtual meeting stressors between German and U.S. samples.

Finally, we equip meeting leaders with actionable practical recommendations to improve their virtual meetings.

Remote Work and Virtual Meetings as Job Demands

In remote work (also called telework, work from home, or home-office), workplaces are located in various locations beyond the central offices or production facilities of a company, and workers communicate using technology (Di Martino & Wirth, 1990). Traditionally, remote work has been a privilege of higher-income earners and white-collar workers (Desilver, 2020) and has thus not been a commonly used practice for many years (Kossek & Lautsch, 2018). With the outbreak of the COVID-19 pandemic in spring 2020, however, remote work became a necessary part of many workers' daily lives (Kniffin et al., 2021). Current trends show that remote work is here to stay with the majority of employees reporting wanting to continue working remotely or in hybrid models with in-office and remote workdays (Alexander et al., 2021).

As a central characteristic of modern organizations, teamwork shapes the organizational workflow and provides the key organizing principle for achieving coordination and collaboration. Therefore, the sudden shift to remote work included a rapid increase in virtual collaboration to keep up the team-structured work. To help coordinate work, maintain relationships, and ensure organizational functioning, team meetings play an important role (cf. Lehmann-Willenbrock & Allen, 2018). Indeed, as of December 2021, employees attend between 11-15 meetings per week (Nizio, 2021). Given the ongoing remote work practices even at the point of manuscript revision in April 2022 for many employees, many or all of these meetings take place virtually. Given the prevalence of teamwork in modern organizations, it is particularly relevant to examine the effects of remote work and virtual meetings on employees in team contexts.

Research on face-to-face team meetings has shown that those meetings affect

employee experiences. For example, the mere number of daily meetings was found to affect employee wellbeing (e.g., Rogelberg et al., 2006). As any meeting interrupts the workflow and consumes valuable work time, the mere existence of a meeting can become a workplace stressor (Luong & Rogelberg, 2005). Face-to-face meetings tend to generally have a bad reputation being often perceived as ineffective and of questionable value (Mroz et al., 2018). Scholars found that employees' perception of face-to-face meetings as ineffective affects how they feel at the end of the day as well as their general job satisfaction (Rogelberg et al., 2006). However, there is no established and clearly outlined construct such as face-to-face meeting fatigue as there is for videoconferencing fatigue.

The concept of fatigue itself originated in physiology, where it is understood as a decline in performance due to preceding physical exertion (Sharpe et al., 1991). Mental fatigue is a psychophysiological change or "suboptimal psychophysiological state or condition" (Phillips, 2015, p. 35) due to sustained effort while performing a task (Desmond & Hancock, 2001). Any activity that requires continuous exertion can be fatiguing, which includes the widespread practice of virtual meetings. Workplace fatigue has been a well-known phenomenon in organizational research for decades and can either fluctuate over time depending on workplace factors or become a stable experience (Caldwell et al., 2019). Task disengagement or impaired performance on cognitive tasks are possible consequences of workplace fatigue (Hopstaken et al., 2015) which is why workplace fatigue can be a serious threat to employees' health and safety (Williamson & Friswell, 2013). Fatigue from virtual meetings has been established as a relevant fatigue phenomenon on its own (Bennett et al., 2021; Nesher Shoshan & Wehrt, 2022).

One characteristic of virtual meetings that has been identified as particularly stressful is camera usage (Bennett et al., 2021; Shockley et al., 2021). Theoretical discussions assume an increased cognitive load when being on camera for all participants as a central reason for

feeling drained after videoconferences (Bailenson, 2021). Both signal senders (i.e., the person who is speaking) and signal receivers (i.e., all other participants of the meeting) are expected to need to make an extra effort to send nonverbal signals and to receive nonverbal signals. Empirical findings showed that camera usage in virtual meetings comes with increased costs due to self-presentation which refers to the feeling of having to manage one's own impression (Shockley et al., 2021).

Nevertheless, employees in the time of a global pandemic are not exclusively affected by virtual meeting experiences but also by other factors that came with the shift to mainly remote work and other COVID-19-related life changes outside of work. For example, masking and social distancing as well as the need to conduct homeschooling due to closed schools and childcare institutions can also affect employees (Collins, 2020). Additional challenges of remote work such as procrastination (Chun Chu & Choi, 2005) and a lack of social support from co-workers and supervisors (Karasek et al., 1982) may also strain employees. To untangle the relevance of general remote work challenges and stressors of virtual meetings for employees, we decided to conduct a two-study approach. The goal of Study 3.1. was to explore the general stressors suddenly remote employees experienced in the early stages. Study 3.2. builds on these findings and examines stressors of virtual meetings more specifically.

We base both studies on the Job Demand-Resources Model (JD-R) by Bakker and Demerouti (2007) which describes demand-strain relationships as well as resources. In general, this model postulates that high job demands are causing exhaustion and low resources reduce work engagement. Job demands are aspects of the job that require effort and result in a depletion of energy. Against the background of this model, stressors of remote work, as well as stressors of virtual meetings, can be classified as job demands that, if not moderated or mediated by resources, increase employee strain. The JD-R model provides a

useful framework for understanding workplace stressors' impacts on employees.

Study 3.1.: Challenges and Opportunities of Virtual Work

The COVID-19 pandemic introduced the known phenomenon of remote working overnight upon billions of people (Wang et al., 2021) who were not necessarily equipped to handle the sudden shift to remote work and virtual communication. Employees were facing completely new demands they had not experienced before. Their physical work situation for example changed drastically. Some employees may not even have had a chance to set up an office at home with all the comforts they were used to from their offices, such as external screens or ergonomic chairs (Karl et al., 2021). Given the increasing digitalization of most workplaces already prior to the pandemic, working virtually while being co-located with colleagues is something employees were already used to before the pandemic (Wang et al., 2021). The main change with the onset of the pandemic was that employees were not working co-located anymore and were suddenly distributed across many different locations. The new situation further required to move literally everything to the virtual context, which included turning face-to-face meetings into videoconferences. This meant that no form of collaboration, may it be working processes as well as formal and informal work interactions, was possible to be executed face-to-face anymore.

To overview the complex and novel situation that the sudden shift to virtual work brought, qualitative research is a useful approach. To investigate the challenges of remote work in a timely manner and to reach a large sample in order to get representative insights, we decided to use open-ended questions in an online survey. This method has already been used by other influential studies in the field of videoconferencing fatigue research (cf. Bennett et al., 2021, Shockley et al., 2021; Nesher Shoshan & Wehrt, 2022). Using open-ended questions in an online survey is an economic way to get a quick first overview, but also reaches its limits when it comes to depth of detail, as situation-specific follow-up

questions are not possible. As our main goal of Study 3.1. was to reach a large sample within a short time, however, this was our approach of choice.

Study 3.1 explores the early reactions people had to working suddenly remote. In an effort to understand the lived experience of remote workers at the beginning of being suddenly remote, we took an exploratory approach to investigate the following research question:

Research Question 1 (RQ1): What were the main challenges that employees perceived at the early stages of the pandemic?

Additionally, we were curious about how people's experiences with virtual meetings changed as they suddenly had substantially more of them. For example, Reed and Allen (2021) found that in October 2019, 77% of office workers' meetings were face-to-face, compared to only 11% in May 2020, when 66% of their meetings had moved to a video conferencing platform. Given the dramatic increase in the numbers of daily virtual meetings and the recent findings that fatigue from these meetings may be real (see Shockley et al., 2021), we explore the following research question:

Research Question 2 (RQ2): How do participants experience virtual work meetings at the early stages of the pandemic?

Methods Study 3.1.

Sample and Procedure Study 3.1.

Data for Study 3.1. were collected in May 2020 as a part of a larger survey study. The present study focused on the qualitative part of it. Using Amazon Mechanical Turk, we sought out working adults in diverse occupations from the U.S. who worked full-time and usually had at least one meeting per week. All participants were presented with questions about their perceptions of the last meeting they had. We excluded participants who reported on meetings of over 100 people, because larger group meetings differ from smaller group

meetings. Additionally, we removed participants who reported on meetings with fewer than three people, since dyadic meetings differ from team meetings regarding ephemerality, emotion, and group phenomena (Moreland, 2010; see also Flinchum et al., 2022). We further excluded those who had their last meeting occurring more than two weeks prior to the survey to avoid biases by recall errors (Dex, 1995). After deleting incomplete data, our final dataset consisted of 349 individuals, comprised of 51.6% females, with an average age of 36 years ($SD = 7.9$), and an average organizational tenure of 6 years ($SD = 5.7$).

To explore people's experiences during the early days of the pandemic, questions were developed based upon qualitative interview research methods (Sofaer, 2002) and consistent with previous research using surveys for qualitative studies (Allen et al., 2014). The qualitative survey took about 5 minutes to answer and included four open-ended questions that were stated as follows: "If you are working from home due to COVID-19, please list all the obstacles that have prevented you from effectively carrying our your job", "If you are working from home due to COVID-19, please describe any changes you've experienced in the work you do and how you complete it.", "Please think of all the meetings you have engaged in since working from home due to COVID-19 and compare your experiences with face-to-face and virtual meetings", and "If you are working from home due to COVID-19, think of the last virtual meeting you had and list all the challenges (if any) that emerged due to conducting the meeting online."

This study received ethical approval from the second author's Institutional Review Board. We obtained written informed consent from all participants included in the study before answering the survey questions. To ensure participants' anonymity, we deliberately did not collect any identifying information. If any such information was provided in the answers to the open-ended questions, we removed it.

Data Analysis Study 3.1.

Two raters applied thematic analysis. In a first step, both raters read independently through all responses and identified themes. Next, both raters generated initial codes, searched for themes, and reviewed their themes. The two raters then discussed, combined, and defined themes to create a mutually exclusive list of themes. In the following step, both raters coded the first 100 responses from the first two questions independently based on the theme list. Given the high interrater agreement based on the codes for both questions ($\kappa = .82$ for question 1 and $\kappa = .85$ for question 2), the remaining data was coded individually.

Next, we conducted a second-level coding process within each question. In this process, we identified themes across the first-level codes within each question and grouped them into themes to assist in interpreting the results more clearly. Following current qualitative analysis conventions, all first-level codes and associated responses were sorted and grouped into themes according to commonality between individual responses (Brown, 1980). With the first-level codes sorted into the correct second-level theme, percentages of the frequencies of themes and second-level coding that were mentioned in the data were calculated.

Results of Study 3.1.

Table 6 shows the identified themes, theme definitions, example codes, exemplary transcripts, and frequencies of themes.

Theme 1: Work-Home Interface

As a first relevant theme of remote work, we identified troubles concerning the work-home interface. Codes that emerged around this topic were distractions as well as family and childcare obligations. Participants reported having difficulties remaining focused and being distracted by their pets, neighbors, or by background noises. In some cases, background noises were caused by employees' families. To limit the spread of the COVID-19 pandemic,

the closure of most daycares, schools, and other social institutions was unavoidable. This left many employees with the challenge of managing other duties that were previously outsourced, such as educating their children or caring for dependents in addition to their day-to-day work. Participants explained having to fulfil housework or homeschooling, which prevented them from working to their fullest.

Theme 2: Technology Issues

Another central topic we discovered were technological issues that appeared when working from home at the beginning of COVID-19-caused remote work policies in spring 2020. Technology-related issues included problems with connectivity (e.g., internet connection issues, delays in data uploads), hardware issues (e.g., a lack of appropriate equipment, a lack of knowledge of how to use the equipment), and software issues (e.g., access issues, data sharing issues).

Theme 3: Communication Issues

Communication issues emerged as our third relevant theme. This theme included experiences of videoconferences as less productive than face-to-face meetings. Participants stated that they perceived a lack of engagement, focus, motivation, support, and social interaction in their virtual meetings. Further, we found that communication in virtual contexts was perceived as less natural. Having difficulties interacting with co-workers due to missing social cues, a lack of immediate feedback and less flexibility contributed to experiencing videoconferences as less natural. Interruptions of the communication flow were also identified as relevant communication issues.

Table 6

Themes and Codes Identified from Study 3.1.: Challenges of Remote Work and Virtual Meetings

Theme	Definition	Example Codes	Exemplary Transcripts	Frequencies
Work-home interface	Blurring of the lines between work- and private life	Distractions, family, and childcare obligations	"Home noise." "Things that my child needs during the day prevent me from working my fullest."	123 (35.2%)
Technology issues	Technology-related aspects including hardware and/or software equipment	Hardware issues, software issues, connection issues	"No webcam/mic so I have to type my questions, which often are ignored." "Having everyone understand how to use the software and be on time to conduct the meeting has been a challenge." "My wifi cutting out so my colleague could not hear me."	255 (73.1%)
Communication issues	Act of conveying meanings from one entity or group to another using mutually understood signs, symbols, and semiotic rules.	Interrupted flow of communication, less natural communication, less productivity	"Everyone wants to talk at the same time." "It was hard to rely on social cues to tell when different people are going to talk, so there were many interruptions." "Physical meetings (face to face) are generally more productive than virtual meetings"	120.83 (34.6%)

Study 3.2.: Contributors of Videoconferencing Fatigue

The COVID-19 pandemic occurred in multiple waves and even continued to keep the whole world busy until the end of 2022. Therefore, remote work regulations persisted longer than initially expected. Furthermore, independent of the pandemic's development, well-known organizations such as Airbnb or PwC integrated permanent remote work options into their general working policies (Goldberg, 2022). And while remote work gradually morphs into the new normal for many, employees feel increasingly fatigued by the regularly necessary events of videoconferencing (e.g., Fosslien & Duffy, 2020).

Videoconferences per se are similar to face-to-face team meetings with the important difference that they take place in a virtual context and are facilitated by videoconferencing software. Both videoconferences and face-to-face meetings are led by a meeting moderator and have a specific purpose (e.g., problem-solving; Allen, Lehmann-Willenbrock, & Rogelberg, 2015; Blanchard, 2021). Face-to-face meetings are usually scheduled in advance and come with an agenda, and so do many virtual meetings. A difference regarding virtual meetings is, that in addition to scheduled and well-prepared virtual meetings, many videoconferences take place with short notice or no notice in advance, and without preparation of a detailed agenda. This happens when they are used to compensate for spontaneous gatherings such as unplanned and informal social interactions which are not possible to be held face-to-face anymore and thus replaced by a videoconference (Blanchard, 2021).

Given that videoconferences come with specific characteristics that are different from face-to-face meeting characteristics, they also come with different stressors. After employees had some time to adapt to their new remote working situation due to the ongoing COVID-19 restrictions with their increased videoconference load (Reed & Allen, 2021, 2022), one year after Study 3.1., we investigated employees' experiences of virtual meetings to understand

what stressors they were perceiving in videoconferences.

To identify stressors of virtual meetings and get first insights on why they are stressful, Study 3.2. focuses on virtual meeting experiences of meeting leaders during the ongoing pandemic. A focus on meeting leaders provides important insights for two reasons. First, they are the ones facing the highest virtual meeting loads, thus being confronted with virtual meeting stressors particularly frequently (Lehmann-Willenbrock et al., 2018). Second, they are usually the facilitators of the virtual meeting and thus have the possibility to reduce virtual meeting stressors as they are responsible for meeting preparation, execution (i.e., meeting moderation), and follow-up (Porter & Nohria, 2018). The following research questions are guiding our efforts in Study 3.2.:

Research Question 3 (RQ3): What stressors do meeting leaders perceive in videoconferences?

Research Question 4 (RQ4): How do leaders and their teams cope with stressors of videoconferences?

Methods Study 3.2.

Sample and Procedure Study 3.2.

Participants were recruited through the personal networks of the author team and student assistants and through a snowball technique where we asked interviewees to name other potential participants. We decided to rely on a snowball approach here, as our inclusion criteria were more specific, and we were interested in wellbeing which can be a sensitive topic (Biernacki & Waldorf, 1981). To be included in the study, participants had to (1) work either in Germany or the USA, and (2) consider themselves meeting leaders who (3) lead a minimum of one internal virtual meeting per week to avoid recall errors (Dex, 1995) with (4) at least three participants including the meeting leader. We did not have to apply an upper-level cut-off because none of our participants reported on meetings with more than 100

participants, with 80 participants being the largest reported meeting. Our final sample

consisted of 50 virtual meeting leaders, of which 30 worked in Germany (15 female and 15

male) and 20 (14 female and six male) worked in the U.S. The average age was 39 years for

the meeting leaders in Germany (SD = 11.7), and 45 years (SD = 12.7) for the U.S.

participants. German participants reported an average of seven participants per meeting (SD =

3.5) and a mean of 12 meetings per week (SD = 9.6). In the U.S. sample, participants reported

a mean of 13 participants in their regular meetings (SD = 19.2) and an average of 16 meetings

per week (SD = 10.1). Interviewed meeting leaders mentioned using a wide range of different

software solutions to conduct their videoconferences, including popular solutions like Zoom,

Microsoft Teams, or WebEx.

Data for Study 3.2. were collected from March 2021 to June 2021 through semi-

structured interviews with an average duration of 30 minutes and an accompanying survey

that took approximately 5 minutes. Interviews were conducted by the first author and three

student assistants via telephone or an online videoconference platform using audio only. All

interviews were audio-recorded and later transcribed. The interview questions were open-

ended and neutral. The guideline was broadly divided into four main sections with 27 more

detailed sub-questions that focused on the following topics: (1) the current work situation, (2)

changes in meetings during the pandemic, (3) characteristics of good and bad virtual

meetings, and (4) participants' wellbeing. The interview protocol can be found in the

supplemental material. The accompanying survey covered general information on

demographic data, position, time spent in current employment, meeting frequencies, and the

size of meetings.

Written informed consent, as well as verbal consent for recording the interviews, was

obtained from all participants before the interview and survey. Participation was voluntary,

could be aborted at any time, and all data were processed anonymously. Participants were

offered to receive the results of the study as a compensation for their time. This procedure of the study was approved by the Local Ethical Committee at the first author's institution.

Data Analysis Study 3.2.

Based on the interview transcripts, we developed a coding system according to the principles of thematic analysis (e.g., Braun & Clarke, 2006) and used the software MAXQDA (VERBI Software, 2020) to conduct our analyses. As a first step, the first author and the three student assistants, who also conducted the interviews and were familiar with the research question, familiarized themselves with the data transcripts which involved multiple rounds of reading and re-reading transcripts. In a second step, the coder team systematically generated initial codes and assigned transcript parts to each code. Third, the four coders summarized codes into potential themes and in a next step checked whether the themes and codes fit with other exemplary transcripts. Finally, the first author and the three student assistants developed a preliminary thematic coding system that included themes and sub-codes. After trying out the preliminary coding system, the coder team refined the themes and codes as needed and then generated theme and code names, and definitions and supplied each code with an exemplary segment from the transcripts (Table 7). Our final coding system consisted of seven themes with a total of 16 singular codes. Based on this coding scheme, the first researcher and the three student assistants, independently double-coded five transcripts. The first author and the three student assistants formed two coding dyads for establishing interrater reliability. Discrepancies were resolved by discussion within the coding dyads. Interrater agreement was substantial for both coding dyads with $\kappa = .7$ and $\kappa = .69$ for the respective teams. After reaching this level of agreement, all raters coded the transcripts independently.

Results of Study 3.2.

Table 7 shows identified themes, second-level codes, and exemplary quotes as well as frequencies of Study 3.2.'s results.

Theme 1: Camera Usage

Most virtual meeting platforms enable attendees to use an integrated or external webcam, but this often remains an individual choice in the meeting. Interestingly, we found that it was perceived as stressful by participants when cameras were not used in a virtual meeting. Meeting leaders reported that using the camera is pivotal for the experience of a good virtual meeting. They explained that turning on the camera and seeing each other's faces in a meeting helped them to feel more connected and to have a more natural social interaction, compared to using audio only. Meeting leaders also reported that they require visual cues to improve non-verbal communication as the video frame allows them to see team members' facial expressions, body posture, and hand movements. Additionally, interviewees explained that throughout the years of 2020-2021, norms on camera usage emerged. Some interviewees described this as a deliberate process prescribed by management while others explained that it is an unwritten rule when to use the camera and when not to. Generally, most team leaders mentioned that turning the camera off in large meetings or when having low bandwidth is acceptable, whereas attendees in team meetings would generally be asked to turn their video on. However, cases in which someone cannot or prefers not to turn on the camera due to privacy concerns are usually met with understanding.

Theme 2: Early Meeting Phases

As another stressor of videoconferences, meeting leaders mentioned the lack of pre-meeting interaction. Our interview findings highlight that pre-meeting interaction phases are substantially different and more rare - or non-existent - in videoconferences. Videoconferences were generally described as more task-focused and shorter in duration with

less room for informal communication. Virtual meeting rooms typically open just in time and therefore preclude pre-meeting talk. Some interviewees reported that pre-meeting small talk was partially transferred to the early meeting phase and that they encouraged attendees to exchange informal information if desired. Others mentioned to only work through the meeting agenda without any compensation of pre-meeting informal communication. Moreover, interviewees reported that virtual meetings that were not well-prepared triggered a great sense of frustration due to the waste of time. They explained that it would have been less frustrating in a face-to-face setting because they could have still used that meeting to chat and exchange information on other, possibly non-work-related topics.

Theme 3: Multitasking

We identified both work-related and private multitasking which refers to switching back and forth between different work tasks in a relatively short time (Baethge & Rigotti, 2013) as crucial stressors of videoconferences. Multitasking was more likely to occur in larger meetings, when the camera is turned off and when participants have the feeling that the discussed content is irrelevant to them. Most prominently described work-related multitasking activities were reading and writing e-mails, followed by organizing one's calendar or editing documents, and programming or analyzing data. Notably, fewer participants reported doing non-work-related activities while being in a virtual meeting, such as checking the phone for private messages or doing household duties. Even though interviewed meeting leaders stated that they actually do a fair amount of multitasking, they explained generally not liking it as it is perceived to threaten meeting quality and as an indicator of an unnecessary meeting. On the other hand, some meeting leaders mentioned that multitasking makes virtual meetings more efficient for them because they can complete multiple tasks within one time slot that would usually be blocked exclusively for a meeting. Multitasking of others was generally seen as acceptable by meeting leaders as long as it is

work-related and team members are still contributing to the meeting.

Theme 4: Individual-Level Coping Strategies

Interviewed meeting leaders described applying individual strategies to cope with the stressors of videoconferences. Interviewees reported intendedly scheduling breaks from virtual meetings to create room for movement or off-screen time. They further explained that they schedule the virtual meetings for shorter time periods than they would do in face-to-face settings to not overload attendees and to not end up with back-to-back meetings. Some meeting leaders even mentioned blocking 30min timeslots in their calendar to make sure they have enough time off from meetings to recover. Additionally, participants reported trying to reduce the time looking at the screen because they experience the continuous attention on the screen as particularly stressful. To do so, they for example walked away from the screen when not being in a meeting or in a meeting with the camera turned off, or by looking slightly over the screen. Improving technical equipment, including audio-, video-, and lighting equipment, was mentioned as another individual approach to cope with virtual meeting stressors. Improving audio quality was reported to improve the flow of communication, whereas better lighting equipment was described to make participants more comfortable with their own video representation.

Theme 5: Team-Level Coping Strategies

Team-level coping strategies are created collectively and help the team as a whole to cope with the stressors of videoconferences. To cope with the lack of informal communication, team members reported planning regular virtual after-work events together on a monthly basis. To facilitate informal communication in everyday work, participants schedule regular meetings for coffee or lunch dates without an agenda or topic and just as an occasion for non-work-related talk. Further, meeting leaders stated that they try to have more one-on-one meetings with their team members and actively ask them about how they were

doing outside of work as well. Participants reported that they started to use digital tools that are available in the meeting software to improve the team atmosphere and the structure of meetings. They mentioned utilizing different emoticons such as clapping or a happy face to express the emotion of being happy or a thumb up icon or a hand raise icon for showing their reaction to something or wanting to talk to avoid crosstalk throughout the meeting.

Table 7

Themes and Codes Identified from Study 3.2.: Stressors Concerning Videoconferences and Coping Strategies

	Theme	Definition	Example Codes	Exemplary Transcripts	Frequencies
Stressors	Camera usage	Utilization of the camera in videoconferences	Camera usage preventing VCF Norms for camera usage	"And, I mean, it is nice to see smiling faces every now and then." "I let my team know, like, my expectation is, when we have a meeting, that they are going to be present on video."	41 (82%)
	Early meeting phases	Pre-meeting or early meeting interactions (e.g., small talk)	Informal communication Preparation	"[In] Face-to-face meetings we would kinda sit around and talk, you know, "How's life? […]". When we would have these meetings, we'd bring them up in the same room, so we could all talk. Since then, it's been less of that, just because of the time constraints, of trying to get these meetings off on time and getting to the next meeting for myself. There's less of that interaction." "What has changed in terms of content is that suddenly there was a lot more desire for structure, so we also tried to keep the physical meetings with a certain structure, but that sometimes got out of hand. And with the online meetings, everyone is very concerned that it always has a certain structure."	44 (88%)
	Multitasking	Switching back and forth between different work tasks in relatively short time	Work-related multitasking Private multitasking Evaluation of multitasking	"I definitely will send e-mails. I always usually during the day have a to-do list of like e-mails I need to send or things that I need to do, so I'll sometimes have that pulled up on the side." "If somebody sent me a text, I usually answer the text." "If you do other things multitasking, I think you are missing out of the meeting."	35 (70%)
Coping strategies	Individual-level coping strategies	Coping strategies that are applied individually to cope with stressors of videoconferences	Breaks Reducing screen time Camera equipment	"I try to build breaks into our day, especially with long virtual meetings you just need it mentally." "So, you just have to train yourself to look out of the window from time to time, away from the computer."	31 (62%)
	Team-level coping strategies	Coping strategies that are applied together as a team to cope with stressors of videoconferences	Creating room for informal communication Digital tools	"We compensate for this social aspect with our coffee calls, whether in the morning or in the afternoon." "And so, I saw as a team, we're continuously looking at ways we can leverage the tools better and the tools are evolving as well."	34 (34%)

Additional Findings

Interviewing meeting leaders from the U.S. and Germany allowed us to examine cultural differences in videoconferences. Our findings indicated that meeting leaders in the U.S. already had more experience with videoconferencing than German meeting leaders prior to the pandemic. Regarding informal communication, U.S. meeting leaders mentioned having less trouble than German meeting leaders with integrating informal talk into their virtual meetings. This may be explained by the fact that the meeting leaders from the U.S. were already more familiar with the format and thus more experienced with making meeting attendees feel comfortable. Apart from the mentioned differences, the experiences of U.S. and German meeting leaders appeared similar. Table 8 provides a brief cultural comparison.

Table 8

Cultural Comparison from Study 3.2.: Topics Where Cultural Differences Emerged

Topic	U.S. Sample	German Sample
Previous experiences with videoconferencing	Videoconferencing was already more a part of everyday work before the pandemic due to collaboration in international teams or locally distributed teams within the US	Fewer experiences with videoconferences prior to the pandemic; German teams were usually working in the same location; in case of international collaboration, telephone conferences were applied
Informal communication	More confident approaches to integrate informal communication into virtual contexts e.g., through virtual after hours or more frequent one on ones	Difficulties to integrate informal communication into the virtual context; more liking of the strong task-focus of videoconferences (i.e., perceived meetings as more efficient)

General Discussion

With this study, we contribute to a better understanding of the drastic increase in remote work, the new normal in today's organizations, and stressors of virtual meetings in particular by applying qualitative approaches in two studies and probing experiences at different stages of the COVID-19 pandemic. Our findings highlight the work-home interface,

technology issues, and deteriorating communication as key challenges at the beginning of the global shift to remote work. A year later, we identified camera usage, a lack of pre-meeting interactions, and multitasking as stressors of videoconferences. We also discovered individual- and team-level coping strategies that employees and team leaders came up with to cope with these new stressors of everyday remote work.

Challenges of Remote Work

The findings from our first study lend further support to the notion that overlaps between work- and private life constitute a central challenge of remote work during the COVID-19 pandemic (Wang et al., 2021). Transferring workplaces to remote settings in private households brings new and different distractions. For example, the physical distance barrier from home that exists when going to an office in another location no longer exists. Thus, childcare obligations, housework, or leisure opportunities (e.g., watching television or napping on the couch) become more proximal and more distracting, but also detaching from the workplace in the evening can be difficult.

Our qualitative insights further show that technology issues make remote work particularly stressful, which is consistent with current qualitative findings (Nesher Shoshan & Wehrt, 2022). With IT support or helpful colleagues no longer at arm's reach, receiving technical support when problems arise is less convenient or even impossible for remote employees. Additionally, in some cases, the technology that is available at home differs from the technology available at the office, requiring additional training that remote IT support may not be able to provide. This incompatibility and training issue also arises when companies use a range of different software solutions to conduct their videoconferences. Because there is no universal videoconferencing or virtual collaboration platform, employees need to be familiar with a broad range of tools.

Stressors Associated with Videoconferences

Interestingly, our findings indicate that turning off the camera in videoconferences was perceived as a stressor of videoconferences which is opposite to current quantitative results by Shockley et al. (2021) who found that turning off the camera in videoconferences was perceived as less stressful. This may be explainable by the fact that we interviewed meeting leaders, who possibly have a different perspective on camera usage in virtual meetings than the meeting participants. Another explanation, which would extend from meeting leaders to other meeting attendees as well, concerns the timing of the data collection. Shockley et al. (2021) collected their data at the beginning of the second wave of the COVID-19 pandemic, after a summer characterized by increasing relaxation of restrictions and the associated freedoms, and before things became increasingly restrictive again. We, on the other hand, collected our data in the spring of 2021, after the long-lasting COVID-19 winter of 2020/2021 that was characterized by strict restrictions affecting everyone's lives. Thus, the individuals we interviewed had already been exposed to a long period of social distancing beforehand. The lack of social interaction in all spheres of life (e.g., Collins, 2020) may have meant that, at this point, camera use has become a welcome opportunity to connect with others. We would argue that our finding regarding camera use continues to be relevant during the ongoing pandemic and the changing nature of work beyond the pandemic. Moreover, turning the camera on not only promotes virtual meeting etiquette (e.g., Reed & Allen, 2021) but has benefits for team dynamics as well, as also discussed by the meeting leaders in our sample. This should be weighed against the preferences of individual attendees who might prefer their camera off (with the possibilities to disengage from the meeting that come along with that choice). Individual participants for example may want their camera off because of family members working in close proximity or children at home which can be distracting for other attendees to watch. Another possible reason could be bandwidth issues,

where using the camera is simply not possible. However, the general opinion of the meeting leaders we interviewed was that turning on the camera helps improve videoconference experiences. It would be interesting to investigate the effects of camera usage in customer meetings, virtual educational meetings such as training workshops, or virtual coffee break meetings to untangle controversial effects.

Furthermore, we identified a lack of pre-meeting interaction as a stressor of videoconferences. Pre-meeting interaction, the talk that happens immediately before a formal meeting begins (e.g., when all team members arrive early and wait for their leader to arrive while having a coffee), is a vital component of face-to-face meetings that makes for a smoother and more enjoyable meeting experience, particularly for introverts (Allen et al., 2014). Given that videoconferences usually start on time with all participants opting in just at the minute the meeting begins, there is no room for informal social interaction. Our findings align with research showing that informal communication indeed appears to be neglected in virtual meetings (Blanchard, 2021). Given that informal communication is crucial for remote workers, finding and evaluating ways to incorporate informal communication into the virtual context is a relevant area for future research.

Multitasking was reported to happen frequently in videoconferences which aligns with recent quantitative insights that the virtual format invites attendees to multitask (Cao et al., 2021). Our qualitative insights regarding the evaluation of multitasking correspond to previous research showing that work-related multitasking is more accepted among co-workers than non-work-related multitasking (De Bruin & Barber, 2020). However, our data also indicate that multitasking can be both boon and bane for remote workers. While some reported perceiving multitasking as useful for maintaining productivity, particularly when a meeting is not relevant to them, the general opinion of our sample was that multitasking threatens meeting quality and should thus be avoided. We would argue that following best

practices to make meetings relevant for participants should be the priority (Allen & Rogelberg, 2013), rather than normalizing multitasking.

Coping with Virtual Meeting Stressors

Meeting leaders appeared to recognize the stressors that virtual meetings bring and reported that they developed coping strategies over time both individually and together with their team to cope with them. Current qualitative findings already revealed that employees have begun to actively engage in reducing negative effects of virtual meetings (Nesher Shoshan & Wehrt, 2022). We expand this literature by showing that meeting leaders both come up with ideas on how to improve their virtual meeting experiences for them personally (e.g., looking away from the screen or walking around), but also with team interventions where team members together discovered what they needed and what they could do to achieve it. For example, this can include establishing team meeting norms for when to use the camera or not or the active incorporation of software tools to structure meetings. Using the hand raise emoticon to show that a person wants to contribute something to the meeting or using an emoticon to show an emotion or a reaction to something can help to avoid interruptions in the communication flow. Additionally, our qualitative insights indicate that teams have created their own virtual spaces to compensate for the informal communication that normally takes place in face-to-face meetings and developed virtual socializing sessions, including virtual coffee breaks and happy hours.

Multilevel Consequences of Virtual Meeting Stressors

Our in-depth analysis of meeting leaders' experiences in Study 3.2. revealed that effects of virtual meeting stressors occur both at the individual and team levels. We identified individual-level consequences of virtual meeting stressors (e.g., impaired eyesight, feeling lonely) and consequences at the team level (e.g., impaired team cohesion). This is not surprising given that teams are multilevel in nature (Kozlowski, 2015) and meetings are

contexts in which teams come together to interact (Meinecke & Lehmann-Willenbrock, 2015). When investigating stressors in virtual team meetings, depending on the specific research question, the team and the individual team members can be the focal units of interest.

While previous research has primarily focused on the individual level (e.g., Shockley et al., 2021), our findings suggest that researchers should consider potential stressors of videoconferences residing at either of these levels. This is in line with recent occupational stress research indicating that multilevel perspectives are necessary to understand how stressors emerge in team contexts (Razinskas & Hoegl, 2020; Roczniewska et al., 2022). In essence, how do individual team members' characteristics and team-level factors interplay to turn virtual meeting characteristics into stressors? Individual factors, such as personality traits (e.g., introversion) and individual work experiences (e.g., weekly virtual meeting load), may predispose a person to perceive virtual meeting characteristics as stressful. At the same time, static aspects of the team, such as team composition, and more dynamic components, such as team members' interaction behaviors, likely influence the experience of virtual meeting characteristics as stressors. Future research should adopt multilevel approaches to advance the understanding of the role of the team context in the emergence of virtual meeting stressors. The consideration of team-level factors also has practical implications in terms of intervening at the appropriate level.

Limitations and Future Directions

Our qualitative approach highlights that the sudden shift to remote work and videoconferences came along with new workplace stressors. Yet, our set of studies also has several limitations that indicate opportunities for future research. While using surveys for qualitative studies, as in Study 3.1., is a common and justified approach to conduct qualitative research in an economic way (e.g., Allen et al., 2014; Shanock et al., 2013), this

may fall short in data richness when compared to in-depth semi-structured interviews where the interviewer can specify her/his questions in situations of uncertainty. We addressed this in Study 3.2. However, our cross-sectional approach in Study 3.2. still does not allow for causal inferences. Hence, our data provides first indications of the underlying mechanisms of stressors explaining why they are stressful. This, however, still needs additional clarification in future research.

Further, the applied sampling methods of Study 3.1. and Study 3.2. differed, which may have affected the results. For Study 3.1., we recruited a convenience sample using Mturk, whereas we relied on personal networks and a snowball approach for participant recruitment in Study 3.2. Although Mturk is a widely accepted possibility in the social science research community, it may fall short in terms of validity (Behrend et al., 2011). We nevertheless decided to use Mturk for Study 3.1. because it gave us a chance to reach a large number of participants in a short time. In order to increase the validity of our Mturk-based findings, we applied strict inclusion criteria, included an attention check, and constrained the sample to only participants in the U.S. to avoid bots or mass Mturk groups in other countries. For Study 3.2., we pursued a snowball approach because it was more important for us to reach the right people than to collect our data in a short period of time (Biernacki & Waldorf, 1981). However, snowball sampling comes with drawbacks regarding representativeness and external validity of the data as the people who are starting the snowball stem from the researchers' private networks. To address this issue, we set off five different snowballs using the networks of different people. However, the generalizability of Study 3.2.'s results remains limited. Future research could address this by defining specific diversity criteria that their sample has to match, such as specific cultural backgrounds or industries that should be included.

Another limitation is that our in-depth approach in Study 3.2. (i.e., in-depth

interviews) required a smaller sample size and a focus on a particular type of meeting attendees (i.e., meeting leaders). We included meeting leaders from the U.S. and Germany to allow for some cultural diversity but acknowledge that our conclusions do not necessarily generalize to other cultural settings. Restricting the inclusion to meeting leaders in Study 3.2. certainly limits the generalizability of our findings but should be still regarded as a strength of our work at the same time, given the role meeting leaders play in the context of meetings. Future research can go further and see how meeting leaders' awareness of virtual meeting stressors impacts how they run their meetings, what adjustments they make naturally, and what benefits they gain by implementing recommended practices. Meeting leaders spend a considerable amount of their daily work time in meetings and are usually the ones who schedule and facilitate the meeting (e.g., Lehmann-Willenbrock et al., 2018). If these leaders perceive stressors in videoconferences, they will likely trickle down to all other attendees in the meeting. Therefore, our focus on meeting leaders was motivated by their high meeting load (Porter & Nohria, 2018) as well as by their impact on all other meeting attendees. Additionally, it would be of interest to evaluate the perceptions of meeting participants, as opposed to leaders, more in depth using semi-structured interviews. This will provide a different perspective on perceptions of videoconferences.

Conclusion

In sum, our studies' findings help explain why remote work and virtual meetings can be stressful experiences for employees and leaders alike. The videoconference-related stressors we identified may contribute to increased feelings of fatigue of employees and leaders. As we collected our data at the beginning of the drastic shift to mainly remote working and one year later, employees in our sample had already had time to adapt to the new situation. Our findings show that even after that period of adaptation, multiple characteristics of virtual meetings were still perceived as stressful, which warrants additional

research attention as well as consideration for the practice of virtual meetings and their

management.

Supplemental Material

Interview Guideline

1. Thank you very much for participating in this interview study and by doing so supporting my dissertation/bachelor's thesis/master's thesis. I greatly appreciate you taking time for this. The interview will take approximately 30mins. With the interview, I aim to get an idea of how the trend towards virtual meetings affects your daily work. For research purposes, this interview will be recorded. Are you okay with that?
   All questions about virtual team meetings refer to internal meetings, i.e. with your own team and not with external parties (e.g., customers or cooperation partners), both spontaneous and planned. Do you have any questions before we begin?

2. During the Corona pandemic, the everyday work of many changed drastically. Please tell me about your current work situation and especially your experiences with virtual meetings.
   a. To what extent do you use the video function or audio only? How do the other meeting participants handle that? To what extent do you use other communication options parallel to the virtual meeting (e.g., Zoom chat), for formal or informal exchange?
   b. What has changed in your team meetings since they have been primarily virtual?
   c. Please think back to your last virtual meeting. How did you feel during the meeting? How did you feel afterwards? How does this manifest?
      If needed: Concentration, exhaustion/tiredness, motivation, bodily aspects such as headache or eye problems

3. Virtual meetings already existed prior to the pandemic. Please tell me about your experiences with virtual meetings prior to the pandemic.

4. How have things changed?
   Examples if needed: Setting (Office vs. kitchen table)? Software? Frequency? Participants? Duration?
   a. How do you start your virtual meetings? Is there anything different about this compared to face-to-face meetings?
   b. How do you end your virtual meetings? Is there anything different about this compared to face-to-face meetings?
   c. Please, think about a specific virtual meeting that went well from your perspective. Please describe this meeting. What are aspects that make a good virtual meeting? How have you felt during this good virtual meeting? How did this manifest?
      If everything is "the same" or "normal": Are all meetings similarly good or bad? What means normal? Then, please think back to your last meeting.
   d. Please think of a specific virtual meeting that went poorly from your perspective. Please describe this meeting. What are aspects that make a bad virtual meeting for you? How did you feel during this bad virtual meeting? How did this manifest?

5. During virtual meetings other things can possibly be done on the side.
    a. What work-related things do you do parallel in virtual meetings?
       If needed: Reading mails, writing mails, working on documents, reading, calendar organization
    b. What private things do you do parallel in virtual meetings?
       If needed: Cooking, baking, homeschooling, caring for a relative, smartphone, cleaning, tidying up, laundry
    c. How do you like doing other things parallel to virtual meetings? To what extent does this depend on the nature of the things you do on the side (work-related vs. private)?
    d. To what extent do you recognize that other team members are doing things on the side? How do you recognize this? How do you feel about it (if they do not answer: what do you think about this)?

6. How does your team experience the virtual meetings, from your point of view?
    a. What do you notice when you think about the behavior of your employees in virtual meetings?
       If needed: Supporting behavior like active listening, content that is talked about, speech shares, motivation
    b. To what extent have your team members mentioned how they feel about the virtual meetings? Straining or positive, why?
    c. Do you yourself observe stress in your team during virtual meetings? What do you specifically identify as the cause of this?
       If needed: Are participants distracted, not concentrated, appear as tired?

7. What would you prefer in the long term? Virtual meetings or face-to-face meetings? Why?

8. Recent news articles discuss the idea of virtual meeting fatigue (Zoom Fatigue). This phenomenon means the exhaustion or fatigue that is directly triggered by a virtual meeting. Have you experienced this with your meetings? What makes virtual meetings to exhausting from your point of view?

9. We have now discussed several topics and I want to thank you for your answers. Beyond what we've discussed, is there anything else you'd like to address or that has come to mind regarding virtual meetings? Do you have any other questions?

General Discussion

Teams are at the core of modern organizations, which is why understanding teams in workplaces has been a main interest of organizational research for decades (Mathieu et al., 2017). Given that teams are complex and dynamic entities, they are constantly adapting and not an easy research field. Previous research has highlighted the key role that teams play in influencing outcomes at organizational levels (e.g., organizational success; Kauffeld & Lehmann-Willenbrock, 2012), team levels (e.g., team performance; Oetzel et al., 2012), and individual levels (e.g., job satisfaction; Rutishauser & Sender, 2019), indicating that it is important to broaden the understanding of teams at work. The present thesis addressed three emerging themes of team research: wellbeing in teams (Study 1), verbal and nonverbal interactions of elderly care teams (Study 2), and teams in virtual contexts (Study 3). Across the studies, I used a variety of approaches including a systematic literature review (Study 1), systematic behavior observations (Study 2), and qualitative in-depth interviews (Study 3). Before discussing directions for future research on the three emerging themes, I briefly summarize the key findings of the three studies and outline their theoretical, methodological, and practical implications.

Overview of Key Findings

Study 1 had a conceptual focus and aimed to synthesize and integrate the existing literature of empirical studies on team dynamics and employee wellbeing through means of a systematic review. To do so, 2021 articles were screened, resulting in a final sample of 36 articles that were retained for inclusion in the review. The comprehensive literature review revealed that both team dynamics and employee wellbeing have been variously and ambiguously conceptualized as well as operationalized in previous empirical work. The heterogeneity in the use of constructs impaired the comparability of findings across studies as well as the generalizability of individual study conclusions, thus precluding meaningful

pooling of data for meta-analytic analyses. Furthermore, the results of Study 1 indicated that previous empirical investigations of team dynamics and wellbeing have been largely limited to cross-sectional survey designs, which fall short of capturing the dynamic nature of team dynamics and employee wellbeing.

Study 2 built knowledge on the emerging theme of verbal and nonverbal team interactions of elderly care nurses. Despite the prevalence of team structures in elderly care institutions (Dinh et al., 2020), team meetings of elderly care workers have received limited empirical attention to date. In a sample of 8 elderly care teams, the verbal and nonverbal team interactions of elderly care workers were investigated. To do so, their regular monthly meetings were videotaped and analyzed using established coding systems (i.e., the act4teams coding scheme (Kauffeld & Lehmann-Willenbrock, 2012), a gossip coding scheme (Begemann et al., 2021), and a group affect coding scheme (Lehmann-Willenbrock et al., 2011)). Quantitative analyses of coded sense units showed that team interactions in elderly care teams were primarily characterized by information sharing through both general verbal communication as well as through neutral, positive, and negative gossip statements. Furthermore, nonverbal behavior in terms of group affect was predominantly negative and passive, with only limited variation over the course of the observed meetings.

Study 3 focused on virtual collaborations as a current emerging theme of team research. To explore the stressors associated with remote work and videoconferences, thematic analysis was applied to open-ended survey data from employees in the U.S. ($N =$ 349) and in-depth telephone interviews of 50 meeting leaders from the U.S. and Germany. Results showed that the work-home interface, technology issues, and deteriorating communication were perceived as key challenges of remote work. Focusing on virtual meetings, findings revealed that camera usage, a lack of pre-meeting interactions, and multitasking were perceived as stressors of videoconferences. Results of this study further

revealed that meeting leaders and attendees came up with strategies to cope with the stressors of videoconferences that refer either to the individual attendee or to the team level in a meeting.

In summary, the three studies included in the present thesis highlight both the relevance and the complexity of team interactions at work. All three studies showed that what happens within teams affects employee wellbeing. Specifically, Study 1 showed that team dynamics can affect employee wellbeing, Study 2 demonstrated that group affect is embedded into verbal interaction behavior, and Study 3 illustrated how interacting in virtual settings can become stressful experiences for employees.

Theoretical and Practical Implications

The findings of the present thesis enhance the knowledge of teams in the workplace from an interaction perspective. Specifically, these findings contribute to the understanding of the interplay of team dynamics and wellbeing, verbal and nonverbal interactions in elderly care teams, and team interactions in virtual contexts. In this section, I will provide a brief summary and integration of the theoretical and practical implications that emerged from the three studies together.

First, Study 1 illuminated that what happens in teams can considerably impact employee wellbeing (e.g., Lu & Fan, 2017; Santos et al., 2015). Employee wellbeing is a multifaceted construct with social wellbeing being one central aspect of it. As empirical work on the interplay of team dynamics and social wellbeing is sparse to date, future investigations of social wellbeing, referring to one's social functioning (Keyes, 1998) could aim to build knowledge on how social contexts at work shape employees' social functioning. However, when doing so, attention should be paid to the conceptualizations of team constructs. Specifically, Study 1 and Study 2 emphasize the need to conceptualize teams as dynamic entities and to choose operationalizations and study design accordingly. To do so, researchers

should develop clear conceptualizations of the team construct they are interested in, consider the possible multilevel nature of the team construct, and make sure that conceptualizations and measurement are aligned.

Second, results from all three studies suggest that research on team interactions will greatly benefit from applying alternatives to traditional survey approaches. One promising alternative is to use observational approaches that focus on actual behavior. Researchers agree on the advantages of behavioral approaches to study teams as they allow to shed light on how interaction unfolds and how team interactions impact employees (e.g., Lehmann-Willenbrock & Allen, 2018; Waller & Kaplan, 2018). As shown in Study 2, team meetings can provide an excellent context for gathering behavioral data on team interactions because they provide a regulated but also natural setting in which team members come together and have to interact with each other to exchange and discuss. In addition to observational approaches, Study 3 highlighted the value of qualitative interviews for understanding how and why team interactions influence employee experiences. Furthermore, the results of Study 3 indicate that meeting leaders can provide important insights into team interactions in team meetings. Meeting leaders are usually responsible for the preparation and conduction of the majority of meetings and spend the majority of their daily work time in them as a result (Porter & Nohria, 2018).

In terms of practical implications, the findings of all three studies indicate that teams are a relevant target group for organizational interventions to improve employee wellbeing. Specifically, based on the findings of Study 1, increasing cohesion and managing conflict could increase employee wellbeing. Furthermore, Study 2 indicates that creating awareness about the impact of gossip in meetings and the interplay of verbal interactions and affective responses could improve team experiences and group affect. In addition to interventions that target teams directly, such as team debriefings, team training, or team building activities,

leadership training provides another relevant area for practitioners. As Study 3 highlighted the important role of meeting leaders for team interactions, focusing on them helps to design education programs for the ones who are in charge of meetings and thus have the power and status to alter how teams interact. Such leadership training programs could educate leaders on how to lead teams in virtual environments.

Limitations and Future Research Directions

While the three studies that I included in the present thesis provide important contributions to emerging fields of team research, the studies also have limitations that should be addressed in future research. First, the findings of Study 1 and Study 3 are limited regarding the generalizability to workplaces in other cultures than western ones. The empirical studies that were included in our systematic review (Study 1) mainly comprised samples of employees from western cultures, such as Europe or the U.S. To consider cultural diversity in Study 3, we collected data from meeting leaders from both the U.S. and Germany. However, this still does not allow to extend our conclusions to other cultural contexts. In Study 2, which had a culturally diverse sample, our ancillary observations actually showed that cultural diversity affected the flow of interaction due to misunderstandings and language barriers. However, we did not assess the cultural background of the team members systematically to minimize our perceived presence by team members during the observations. Future research could address this by defining cultural diversity criteria that their study sample should fulfill. This does not necessarily have to be limited to the cultural background but could be extended to gender or industry diversity.

Another limitation concerns the small sample sizes of the two empirical studies (Study 2 & Study 3). In Study 2, we collected data in the field to increase the external validity of our findings. In Study 3, we collected data from real meeting leaders, which made participant recruitment complicated. However, exploring new phenomena or understanding

team interactions in an understudied field will benefit from gathering data from actual employees and from examining teams in the field. Future studies could address the difficulties in finding employees who are willing to participate by offering attractive incentives. Such incentives do not necessarily have to be financial but could instead be brief team development initiatives, maybe even based on the teams' results from data assessments. To reach a broad audience of possibly interested employees, calls for participation could be spread via social networks, such as LinkedIn.

Furthermore, data analyses in all three studies were human-powered, which is not only time-consuming but can also be prone to biases. Despite receiving exhaustive training and frequent meetings within the rater teams to make sure there was a common sense on how to code what, the raters and coders involved in the three studies may have still been vulnerable to biases. For example, they may have included a study in the literature review (Study 1) because they liked how it was written, they may have attributed negative behavior more often to a person they perceived as less likeable in Study 2, or interpreted a statement of a meeting leader more positively because they felt sympathy for them in Study 3. To address such issues, future work could use additional data analyses that are not human-powered. For instance, humanly-annotated behavior could be compared against computer-powered text analysis (e.g., LIWC, Pennebaker et al., 2015), or humanly-developed emerging themes from qualitative data could be compared with emerging themes that were detected by artificial intelligence in the transcripts.

The Role of Leadership in Team Interactions

Leaders played a central role in Study 2, as their high speech percentages highlighted that they dominated the observed care team meetings. Additionally, Study 3 illustrated that leaders are relevant interview partners when it comes to exploring how teams interact in virtual contexts. Indeed, leadership can play a critical role in shaping team interactions by

setting the tone for how team members work together and thus significantly impacting team dynamics and, in turn, associated outcomes (Zaccaro et al., 2001). For instance, functional leadership, where the leader takes care of both goal accomplishment and team management can impact team effectiveness (Zaccaro et al., 2001). Team meetings are organizational events where the role of leadership for team interactions becomes particularly present as their behaviors are crucial for the meeting's success (for an overview see Allen & Lehmann-Willenbrock, 2022). An eye-tracking study showed that when a team does not have a designated leader and a member of the group emerges as the leader this person receives more attention than the rest of the group (Gerpott et al., 2017). Additionally, leadership styles can affect how team members interact in meetings as transformational leadership style was found to increase functional problem-solving behavior in meetings (Lehmann-Willenbrock et al., 2015).

In contexts where stress levels are high, such as in elderly care, team leaders often feel overwhelmed and not prepared for their responsibilities (Ekholm, 2012). Another challenge for team leaders is leading teams in virtual contexts (Hoch & Kozlowski, 2014). Future research avenues in the area of leadership and team interactions may include understanding the role of leadership in facilitating successful team interactions both from the leader's and from the team members' points of view. Based on such investigations, leadership development programs could be designed to train leaders to manage team interactions in their teams. Further research could then focus on evaluating such leadership development programs.

Assessing and Analyzing Interaction Behavior with New Technologies

Many previous studies investigating teams applied cross-sectional surveys to assess the team constructs of interest (e.g., Guerra et al., 2005; Miner-Rubino & Reed, 2010; Schippers et al., 2003). Using cross-sectional surveys to measure psychological constructs is

a widely known, accepted, and economic approach in organizational research (Bartlett, 2005). However, survey designs can come with drawbacks when investigating teams. Usually, survey questions ask participants about their own perceptions, and the resulting subjectivity can be prone to social desirability bias (DeMaio, 1984), possibly causing biased information on team constructs that are perceived as socially non-desirable. Additionally, survey designs may produce common method bias, such that some of the observable covariance between different constructs that are assessed with the same method may be a result of the fact that they share the same methodological approach (Podsakoff et al., 2012).

Furthermore, cross-sectional approaches, where data is collected at only one time point (e.g., Costa et al., 2015; Song et al., 2017) are highly economic but can limit the understanding of temporal processes in teams as they do not allow to examine dynamic changes over time. This is problematic as dynamics in teams can evolve and change within time spans ranging from milliseconds to years (Klonek et al., 2019). For instance, emotional contagion, referring to the process of behaviors and emotions of one person triggering behaviors and feelings in another person (Hatfield et al., 1993), is a team dynamic that can evolve within very short time periods such as seconds. In contrast, team negative climate requires more time to evolve and should therefore be studied over longer time periods, such as months or even years. Future research efforts on team interactions should aim at addressing these issues.

As discussed before, researchers agree about the merits of behavioral approaches, including investigations of actual behavior, insights on interaction patterns within teams, and temporal sensitivity (Lehmann-Willenbrock & Allen, 2018; Waller & Kaplan, 2018). However, collecting and analyzing behavioral data is especially labor-intensive, requiring many hours of human-powered work (e.g., Lehmann-Willenbrock, Chiu, et al., 2017), which often deters researchers from realizing such approaches despite the repeated call of

organizational research to embrace behavioral methods. Technological advancements provide the potential to make behavioral approaches less costly. However, when applying technology to collect data (e.g., sensors) in organizational studies, it is necessary to collect complementary data (e.g., survey data) in addition to receiving reliable data via the applied technology (Müller et al., 2019).

In this regard, interdisciplinary collaborations between psychologists and computer scientists can be a promising opportunity (Lehmann-Willenbrock, Hung, & Keyton., 2017). For instance, previous interdisciplinary empirical work on the interplay of speech prosody and meeting performance applied automatic measures to assess acoustic-prosodic features (Niebuhr et al., 2021). Other interdisciplinary research teams successfully used algorithms to analyze nonverbal behavior in negotiation settings (Dudzik et al., 2021). There are various technological advancements that could move research on team interactions forward and make observational approaches more economic. Technologies like automated speech recognition (e.g., Jayagopi et al., 2009) could be used to shed light on paralinguistic cues of team interactions. Automated processing of affect in groups (for an overview see Böck, 2021) could be applied to investigate larger sets of interaction data when investigating the interaction of verbal and nonverbal behaviors efficiently and allow for quantitative analyses. Interaction data for such analyses does not necessarily have to be collected in laboratory settings, as there are also possibilities available for automatic assessments of natural behavior in the field (e.g., laughter; Vargas-Quiros et al., 2022).

Team Interactions in the Future of Work

Changes in the workplace are not uncommon, but the COVID-19 pandemic has greatly accelerated them, causing phrases such as "the new normal of work" and "the future of work" to become widely used by both public media and scholarly work (e.g., Fosslien & Duffy, 2020; Sonnentag et al., 2022). What do those buzzwords mean for organizational

research? The pandemic-induced changes with the increased relevance of remote work and virtual collaboration appear to persist beyond the pandemic (Alexander et al., 2021). Many employees learned to enjoy working remotely and report wanting to continue this mode of working. Several major corporations like AirBnB or PwC have also convinced themselves of the advantages of remote work and made remote work the default working mode for their employees (Goldberg, 2022).

However, in general, remote work did not become the most prominent working mode, instead, a majority of workers (52%) reported not necessarily wanting to work remotely full time neither wanting to return to the office full time and instead preferring hybrid work arrangements (Alexander et al., 2021). Therefore, investigating team interactions in hybrid work setups will become increasingly relevant (Reed & Allen, 2022). Hybrid collaboration refers to work arrangements where some team members work co-located and interact in face-to-face communication while others work from other locations (e.g., their home office) and need to participate in any synchronous interaction virtually (Neumayr et al., 2021). For example, in a team meeting in a hybrid setting, three team members could be in the same meeting room and communicate with each other normally (i.e., without technical support), while three other team members are connected via video conference and need to rely on their camera and microphone to communicate. Areas for further exploration of hybrid teams include the process of building and maintaining team culture as it is possible that co-located versus fully remote employees develop different bonds because virtual collaborations leave less room for informal interaction (Blanchard, 2021). Furthermore, future research efforts could study the role of social cues in hybrid teams. For example, nonverbal social cues, such as body posture, may be only available for co-located employees and not for remote colleagues leading to a misbalance of available interaction information. In this regard, technology may play a critical role in enriching virtual interactions.

Immersive virtual reality technologies might contribute to enriching virtual interactions by creating a completely immersive environment that allows users to feel more present and engaged (Campbell et al., 2020). By using head-mounted displays or other virtual reality devices, employees can enter a virtual reality where they can interact with others as if they were in the same room, thus enhancing entitativity. Group entitativity refers to how an individual perceives a social unit as a cohesive group (Blanchard et al., 2020) and can be increased through interactions and co-presence in meetings (Allen & Blanchard, 2022). Against the background of our findings regarding VCF (Study 3), suggesting that the lack of informal interactions in pre-meeting phases is perceived as a stressful characteristic of virtual meetings, virtual reality solutions could provide a solution. Future research is needed to understand how these experiences of presence and closeness come about and how they can increase experiences of entitativity. Future studies could explore the impact of virtual reality environments on employee wellbeing and productivity, as well as the factors that contribute to entitativity in virtual settings.

General Conclusion

The present thesis provides insights into the emerging themes of wellbeing in teams, verbal and nonverbal interactions behavior in elderly care teams, and team interactions in virtual contexts. In conclusion, team interactions have been shown to affect employee wellbeing in face-to-face and virtual contexts. To increase team interactions that are perceived as positive and foster employee wellbeing, employees need to be aware that they do not exist in a social vacuum but are embedded into social contexts with the work team being a very central context. So what is said and done in team settings, such as meetings, does most likely have an impact on others and can even impair their wellbeing. Especially in times when physical distance will continue to increase, organizations need to come up with strategies to improve team interactions, both in face-to-face and in virtual settings. Potential

future research avenues in this regard include examinations of the role of leadership in team interaction behavior, team interactions in virtual and hybrid contexts, and the role of virtual reality in employee wellbeing in teams. Future methodological possibilities comprise technological advances to assess team interactions and to reduce the effort of fine-grained behavioral studies.

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Please note: References marked with an asterisk indicate that the article was included in the systematic literature review of Study 1 of this thesis.

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