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ORIGINAL RESEARCH ARTICLE

Navigating Multiple Virtual Teams: How Variety in Communication Rules Affects Knowledge Sharing

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Abstract

In contemporary workplaces, individuals are often members of more than one virtual team at a time, that is, they experience multiple virtual team membership (MVTM), and they are subjected to context variety due to different rules across their teams. The aim of this paper is to understand the relationship between context variety related to communication rules and knowledge sharing in situations of MVTM. We propose that context variety and switching between teams negatively affect the individual capability to acquire and provide knowledge resources in a team, due in part to an increased perception of role overload. Through an experimental study, we confirm that context variety directly and negatively affected individuals' ability to acquire resources and, through role overload, negatively influenced the ability to provide resources. Contrary to our hypotheses, switching frequently between teams reduced role overload, which, in turn, increased the ability to provide resources. Our results have theoretical implications for understanding the changing nature of work in increasingly virtual and complex team contexts.

Keywords: *Multiple team membership*; *Virtual teams*; *Context variety*; *Collaborative technology*; *Communication rules*; *Knowledge sharing*

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The nature of teamwork has become increasingly flexible, with individuals frequently participating in multiple teams simultaneously – often temporary in nature – a phenomenon known as multiple team membership (MTM) (Mortensen & Haas, 2018; O'Leary et al., 2011). Concurrently, the proliferation of communication technologies has enabled the rise of virtual teams, that is, groups of individuals working remotely and relying on digital communication tools to coordinate their tasks (Gilson et al., 2015). Research indicates that almost 95% of knowledge workers experience MTMs (Chen et al., 2019), and participation in global virtual teams has grown from 64% in 2010 to 89% in 2018 (CultureWizard, 2018).

A critical process in virtual teams is knowledge sharing – the process of providing and acquiring relevant information, skills, or expertise necessary to achieve team goals (Eisenberg & Mattarelli, 2017; Gupta et al., 2009). As virtual teams depend heavily on digital communication, knowledge sharing is influenced by how effectively individuals adapt to the rules and norms of each team's communication, which could differ widely across the various teams. However, there is limited understanding of how context variety in multiple virtual team memberships (MVTM) – the diversity in communication rules and practices across teams – affects knowledge sharing. This study deepens this understanding by investigating how individuals manage knowledge sharing when participating in multiple virtual teams characterized by differing communication standards.

Previous research has largely examined MTM or virtual teams independently (for literature reviews on the topics, see Gilson et al., 2015; Rishani et al., 2024), leaving a still limited understanding of the effects of MTM in virtual contexts.

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Studies on MTM have focused primarily on the number of teams individuals participate in and how this impacts team and individual performance (e.g., Berger et al., 2022; Bertolotti et al., 2015). A few have explored task-related variety, such as knowledge diversity (Mo & Wellman, 2016), project stages (Rapp & Mathieu, 2019), task types (Zika-Viktorsson et al., 2006), and roles (Berger & Bruch, 2021; van de Brake & Berger, 2023). These studies suggest that moving between tasks of varying complexity affects cognitive load, influencing performance. However, the interplay between MTM and virtual team dynamics, particularly regarding how team members communicate with one another, remains underexplored.

In virtual teams, team members often establish technology-mediated communication rules to synchronize their behaviors and expectations (Henderson et al., 2016; Hinds & Kiesler, 2002; Nemiro, 2004; Walther & Bunz, 2005). Examples of communication rules include defining expectations around response times in email and instant messaging (IM) communication and acronyms upon first use to ensure everyone understands their meaning (Nemiro, 2004; Smith, 2016). We argue that context variety related to differences in communication rules can significantly impact knowledge sharing. Individuals who participate in multiple virtual teams may uneasily adapt to different communication standards, experiencing cognitive switching costs and information overload (O'Leary et al., 2011). This study focuses on how such variety across virtual teams affects individual knowledge sharing, both in terms of acquiring and providing knowledge to others.

Building on attention-based and knowledge acquisition theories (Wickens, 1991, 2008), we propose that the need to recalibrate behaviors in response to differing communication rules can reduce an individual's ability to manage knowledge effectively. Switching between teams with varying communication practices may slow down knowledge exchange, as individuals need to adjust to each team's expectations. These adjustments could lead to role overload, further impairing their knowledge sharing performance.

The switching frequency is another critical factor. Switching frequently between virtual teams with distinct communication rules may exacerbate attention residues (Leroy, 2009) and increase exhaustion (van de Brake et al., 2024). As individuals transition between teams, they may struggle to fully focus on a specific team's needs, hindering their ability to contribute effectively. We also propose that increased switching can amplify feelings of role overload, further compromising knowledge sharing performance.

To test our hypotheses, we conducted an experimental study simulating an MVTM context. Our research contributes to the literature on virtual teams and MTM by assessing how context variety – rather than simply the number of team memberships – impacts individual knowledge sharing outcomes. Also, our findings offer novel insights into the role of switching frequency. While previous literature suggested that frequent switching has negative consequences (Czerwinski et al., 2004; Finstad et al., 2006; van de Brake et al., 2024), our unexpected results show that, under certain conditions, switching may actually improve individuals' ability to manage their tasks and share knowledge effectively.

Our study offers new perspectives on the challenges of contemporary teamwork and concludes by suggesting strategies for improving knowledge management in virtual team contexts.

Theoretical background

Knowledge sharing and MVTM

Knowledge sharing is a critical process by which individuals exchange information, skills, or expertise necessary to achieve organizational goals (Hansen et al., 2005; Perrin & Rolland, 2007). In virtual teams, where communication is often mediated by digital tools rather than by face-to-face interactions, effective knowledge sharing can be difficult, but it is essential for fostering innovation, creativity, problem-solving, and team performance (Hinds & Weisband, 2003; Lee & Choi, 2003; O'Leary et al., 2011; Rishani et al., 2024; Van Knippenberg et al., 2004). Thus, studies commonly treat knowledge sharing in virtual teams as both a critical success factor and a main challenge (e.g., Cummings, 2004; Griffith et al., 2003; Hinds & Weisband, 2003). On the one hand, for virtual teams to function efficiently and effectively, knowledge must flow smoothly across team boundaries. On the other hand, virtual teams face obstacles such as geographic dispersion, asynchronous communication, lack of shared communication norms, and informal exchanges, all of which complicate the establishment of shared norms and mutual understanding within knowledge-sharing processes (e.g., Cramton, 2001; Leonardi et al., 2024).

At the core of knowledge sharing, there are two distinct but interdependent processes: knowledge giving (KG), where individuals provide information to others, and knowledge receiving (KR), where individuals acquire and apply information (Natu & Aparicio, 2022; van den Hooff & de Leeuw van Weenen, 2004). Both processes are essential for team success, particularly in complex and geographically dispersed environments.

In virtual teams, KG is more than just providing information – it requires clarity, intentional effort, and trust (Ardichvili et al., 2003; Staples & Webster, 2008; Wasko & Faraj, 2005). By sharing their knowledge, members contribute to increasing heterogeneity at the team level, and therefore, they may risk losing control and understanding of the exchanged knowledge. KR in virtual teams is equally complex, requiring team members to not only absorb shared knowledge but also interpret and apply it in ways that advance team goals. In digital environments, KR is often hindered by information overload, miscommunication, and the lack of immediate feedback (Ellwart et al., 2015; Straus & Olivera, 2000; Swart et al., 2022). It is widely acknowledged that computer-mediated communication amplifies the challenges of knowledge sharing, both in terms of KG and receiving. The absence of non-verbal cues and real-time feedback makes it harder for team members to ensure that the knowledge they receive from or provide to others is fully understood and applied appropriately (Cramton, 2001; Griffith et al., 2003; Tomprou et al., 2021).

These challenges are even greater in MVTM settings, where individuals face the cognitive load of switching between different teams, each with its own communication norms and goals (Berger & Bruch, 2021; O'Leary et al., 2011). Research suggests that teams working on more complex tasks, or those dealing with dispersed communication and pressing deadlines, face even greater challenges in knowledge sharing (Bertolotti et al., 2015; Cummings & Haas, 2012). As team members must navigate large amounts of information shared asynchronously across different platforms, the risk of misunderstanding or misapplying knowledge increases. When acting as bridging members, multiteamers can facilitate knowledge transfer (Eisenberg & Mattarelli, 2017). However, as the number of teams they work on increases, they are less likely to seek or give advice, diminishing knowledge sharing (Brennecke & Rank, 2016). Additionally, the higher the number of teams an individual is a member of, the higher the risk of diminishing knowledge sharing due to network ties' redundancy and the increasing complexity of managing multiple communication streams (van de Brake et al., 2020).

In sum, while working in multiple virtual teams offers significant opportunities for knowledge exchange, successfully managing its coordination and communication challenges is key to ensuring effective KG and receiving because the cognitive load of switching between teams and managing varying communication rules can disrupt knowledge sharing coherence (Griffith et al., 2003; O'Leary et al., 2011). This paper examines how such complexities associated with context variety, especially in relation to communication rule diversity and the frequency of switching between teams, impact knowledge sharing performance in MVTM environments.

MTM and context variety

In an MTM scenario, individuals experience challenges because of the *number* of teams in which they concurrently operate and the *variety* of their team memberships (O'Leary et al., 2011). So far, the 'number of teams' variable has received most of scholarly attention (for literature reviews on the topic, see Margolis, 2020; Rishani et al., 2024). For instance, thanks to social capital advantages, the number of team memberships potentially shapes employees' performance over time (van de Brake et al., 2018). However, research also suggests that high levels of MTM can reduce individual learning (O'Leary et al., 2011), increase strain (Pluut et al., 2014), and generate challenges in creating a coherent identity (Mistry et al., 2023).

This paper focuses on the second, and less explored, dimension of MTM, that is, context variety. Recent empirical research on MTM context variety has focused on differences related to knowledge, task characteristics, organizational affiliations, project stage, and roles, highlighting both positive and negative effects. On the positive side, Mo and Wellman (2016) find that knowledge variety across teams has a positive impact on the development of individual social networks. Belonging to teams from multiple organizations (i.e., belonging to both intra- and inter-organizational teams) can increase individual learning (Chen et al., 2021). Rapp and Mathieu (2019) find that being on teams at different project stages facilitates individuals' identification with each team because teams are seen as more 'distinct' identification targets. On the negative side, task diversity across teams hinders the application of the knowledge generated by one team to another team, thus reducing work efficiency (Zika-Viktorsson et al., 2006). Moreover, individuals playing different roles across teams experience more role ambiguity and role stress within a focal team (Berger & Bruch, 2021). Finally, MTM variety in terms of differences in leader, domain, or client characteristics shows a positive correlation with emotional exhaustion (van de Brake et al., 2024).

These studies reinforce the importance of investigating how different forms of context variety impact both individual and team outcomes. In our study, we focus on the experiences of individuals in multiple virtual teams, where team members make intensive use of communication technology. Although virtual teams and technology use are pervasive in contemporary organizations, our understanding of how workers navigate the use of communication technologies across their multiple teams is limited. Thus, in this paper, we examine a specific type of variety across teams, namely, variety in communication rule structures that govern how members of multiple virtual teams communicate with each other using technology. We argue that variety in technology-related communication rules differs from other forms of task-related variety previously investigated. For instance, the assumption that role and task variety lead to a greater amount of information and ideas (from which to draw immediately applicable insights) might not hold for variety in technology-use rules. The latter could in fact represent demands that disrupt one's own routines in a detrimental way, without providing individuals with additional resources to bring to their work.

MVTM and variety of technology-related communication rules

As the work and type of projects that firms conduct are increasingly large-scale and complex (Mortensen & Gardner, 2017), firms ask their knowledge professionals not only to work on multiple teams concurrently but also to cross geographical and organizational boundaries to reach distributed talent pools (e.g., Espinosa et al., 2007). This strategy enables organizations to increase the effective use of human resources while availing themselves of multiple and distributed sources of knowledge (Chen et al., 2019; Mortensen & Gardner, 2017; Ofstad & Bartel-Radic, 2024; O'Leary et al., 2011). In these virtual teams, people with specialized expertise are brought in to provide their expert contribution and knowledge and are later transitioned out when such contributions are no longer needed (Mortensen & Gardner, 2017). Therefore, within the context of virtuality and MTM, individuals' ability to share knowledge with teammates is paramount, as it is especially through knowledge sharing that a virtual team is expected to reach its full potential (e.g., Gibson et al., 2021).

However, one of the most frequently reported difficulties of knowledge sharing in computer-mediated-communication environments, like the ones characterizing MVTM scenarios, is the paucity of opportunities to create an informal exchange support environment, which may foster knowledge exchange via a shared background for mutual understanding (Cornelius & Boos, 2003; Cramton, 2001). To this regard, communication rules have been shown to facilitate the work of single virtual teams, particularly as they rely on communication technologies. Communication rules are particularly powerful in virtual teams because 'the identification of communication rules and norms provides understanding of how groups and relationships work and how they might be affected by deviations from normative or preferred behaviours' (Walther & Bunz, 2005, p. 833). Communication rules provide a structuring procedure for virtual teams that 'outlines the order and manner in which communication occurs during group meetings' (Sunwolf & Seibold, 1999, p. 396). This structure is particularly important in virtual teams, which lack the richer communicative context available in face-to-face interactions.

Broadly speaking, team communication rules can be categorized as configurational (formal) or coactivational (informal) (Dow, 1988; Hartman & Johnson, 1990). Configurational rule structures prescribe explicit communication practices that team members follow and emphasize the authoritative coordination of work in the service of stated organizational objectives (Hartman & Johnson, 1990). In contrast, the coactivational perspective is less prescriptive and allows communication rules to emerge organically from recurrent patterns of interaction among team members (Hartman & Johnson, 1990). Both configurational and coactivational communication structures can be useful in certain team scenarios. For example, in their field experiment, Walther and Bunz (2005) empirically demonstrate that following prescriptive communication rules is positively related to virtual team outcomes such as trust and liking. However, their analysis did not consider the scenario where individuals are part of *multiple teams* at the same time.

MTM introduces additional complexity into the effects of communication rules because different teams can adopt different types of communication rules (or no rules at all), thus presenting the possibility that team members experience context variety between teams in the form of different communication rule structures. Moreover, although there is evidence that configurational rules can positively influence team dynamics such as trust and liking (Walther & Bunz, 2005), less is understood about how these types of rule structures (and the possible need to switch between them in an MTM environment) affect individual outcomes, such as individuals' knowledge sharing performance.

Hypotheses development

We argue that the need to transition between multiple team contexts characterized by different communication rules and the frequency of switching between teams may have an impact on individual work-related outcomes – in particular, knowledge sharing performance. Individuals in a team must focus both on carrying out their individual tasks and collaborating with others, for example by sharing resources (e.g., information and knowledge) with team members (Hackman, 1990). Building on our literature review, our hypotheses consider both KG and KR as fundamental components of knowledge sharing. Following van den Hooff and de Ridder (2004), we define KG as the active communication of one's knowledge to others and KR as the active consultation with others to learn from their expertise and obtain knowledge.

Variety of technology-related communication rules and knowledge sharing

Studies on (virtual) teams showed that the lack of a shared context (i.e., a common set of tools and practices) and mutual knowledge (i.e., the knowledge that co-workers have in common) can have negative implications for both individual and team performance (Chudoba et al., 2005; Cramton, 2001; Hinds & Mortensen, 2005). As attentional resources are limited (Wickens, 1991), the development of such shared context can be hampered by differences in communication rules across teams. In this case, individuals need more time and cognitive effort to adjust their mental models to the diversity of communication rules. It has been shown, for instance, that cognitive overload increases in teams without a common understanding, such that team members are more likely to duplicate knowledge efforts and increase the likelihood of rework (Hinds & Weisband, 2003; Sole & Edmondson, 2002).

In addition, even if the variety of some inputs in MTM can be associated with some positive consequences (e.g., Chen et al., 2021; O'Leary et al., 2011; Rapp & Mathieu, 2019), the same may not be true for variety in technology-related communication rules. The latter, in fact, might run counter to the very premise for creating communication rules: making behaviors predictable and acceptable (Nemiro, 2004). In the context of MVTM, increased cognitive load (Sweller, 1988) caused by the need to keep in mind the details and rules characterizing the different work environments of distinct teams may make the execution of individual tasks more complicated (e.g., van de Brake et al., 2020). Thus, individuals experiencing different work environments may fail to identify promptly where to look for specific knowledge. On top of this, since multi-teaming has already been associated with lower engagement in support-providing behaviors (Brennecke & Rank, 2016), individuals may struggle more to secure the resources they need for their own tasks. Also, providing the resources required by teammates may be harder for those experiencing context variety. Indeed, individuals who experience differences in communication rules may need time to respond promptly to their colleagues' requests, as they have to encode the communication in a way that is acceptable in the specific environment. Thus, we hypothesize:

> **H1:** *Individuals who experience a variety of technology-related communication rules between multiple teams experience negative effects on (H1a) knowledge receiving and (H1b) knowledge giving in their multiple virtual teams.*

Variety of technology-related communication rules and role overload

The competing demands placed on individuals by the need to navigate different virtual team contexts threaten people's resources such as time and attention so that work can be evaluated as more overloading (e.g., Leroy et al., 2020). Therefore, we propose that the negative implications of transitioning between different contexts occur through the perception of increased role overload, a situation that occurs when individuals 'feel that there are too many responsibilities or activities expected of them in light of the time available, their abilities, and other constraints' (Rizzo et al., 1970).

Chen et al. (2021) found that when multiteamers experience conflicts in expectations across teams (for example, they do things that are apt to be accepted by one team and not accepted by another team), they then have lower individual performance because of depletion of their cognitive resources. In a similar vein, individuals who experience differences among the communication rules to which they are exposed need to devote an increased amount of cognitive effort to work across teams, likely leading to an increased processing time. Therefore, they may find it harder to do all they are expected to in light of the limited resources they possess (e.g., mental resources; Wickens, 2008). In addition, increased perceptions of role overload are likely to hamper individuals' ability to communicate properly with their teammates. For instance, individuals may encounter difficulties in communicating what they need to accomplish their tasks, and, at the same time, they may lack enough time to devote to communication.

Moreover, drawing on social network analysis, Chang (2008) argues that knowledge sharing in virtual teams is a form of social exchange where voluntary actions of team members are motivated by the anticipation of future returns from others. Thus, when individuals experience role overload due to context variety, they may feel constrained both in their ability to donate and receive knowledge effectively. In fact, the pressure generated by the necessity of navigating different communication rule systems may further exacerbate the tendency of individuals to withdraw from social support activities (Brennecke & Rank, 2016).

Following this reasoning, we hypothesize that:

> **H2:** *Increased variety of technology-related communication rules exerts negative indirect effects on (H2a) knowledge receiving and (H2b) knowledge giving via increased role overload.*

Virtual team switching and knowledge sharing

Beyond the challenge of working in multiple virtual teams that have different communication rules, being in more than one team inherently implies that individuals must switch their attention between teams (van de Brake et al., 2024). These switches can vary in frequency during a specified work period (e.g., just one switch from Team A tasks to Team B tasks in a day vs. continuously going back and forth between Team A and Team B tasks). Switching between teams requires individuals to shift gears and reload the constellation of information that is present in their mind (Liefooghe et al., 2008). Moreover, when the switching frequency is higher, they may need to remind themselves of what task they are tackling for each specific team and with whom they are currently working. This process may expose individuals to attention residues (Leroy, 2009) and switching costs, leading to a reduced capability to complete one's individual task and to collaborate with other team members on receiving and giving knowledge. Therefore, we propose:

> **H3:** *Individuals who switch more frequently between multiple teams experience negative effects on (H3a) knowledge receiving and (H3b) knowledge giving in their multiple virtual teams.*

Team switching and role overload

As with context variety, we contend that the relationship between switching frequency and knowledge sharing can also be mediated by the perception of role overload. In other words, increased switching reduces KR and KG because it increases perceptions of role overload. Frequent switching between virtual teams can lead individuals to feel pressure as they try to give a sufficient amount of attention to interleaved or concurrent requests, interactions, or performance metrics (González & Mark, 2005). To this regard, Pluut et al. (2014) found that increased fragmentation across teams increased perceptions of team process workload, in other words, how demanding the work in a team is perceived by a member. In addition, the recent contribution of van de Brake et al. (2024) highlights that an increase in the number of switches (NS) between various project teams is associated with an increase in people's emotional exhaustion.

Moreover, when individuals switch from one virtual team to another, they may still be thinking about the former and experience attention residues (Leroy, 2009). An incomplete process of 'information unloading' might thus lead individuals to keep in mind, on average, a higher amount of information than required. In turn, this may lead people to feel that there are too many responsibilities or activities expected of them in light of the time available, their abilities, and other constraints. Stated formally, we hypothesize that:

> **H4:** *Increased team switching exerts negative indirect effects on (H4a) knowledge receiving and (H4b) knowledge giving via increased role overload.*

Methods

To test our hypotheses, we conducted a series of experiments. Experiments are appropriate for our study as they enable the exploration of causal relationships in a controlled environment (Webster & Sell, 2007). Given the complexity of multi-virtual team membership environments and the multitude of variables that can influence outcomes, conducting experiments in a controlled setting allows us to capture the proposed relationships in a more precise way.

Experimental design

We designed a lab experiment to simulate an MVTM environment and isolate the effects of transitioning between different team contexts on individuals' KG and receiving. Participants were students enrolled in a management engineering program at an Italian university, and teams were composed of three students. Each student was randomly assigned as a member of two teams, given an article from the *Harvard Business Review* to read, and presented with eight unique multiple-choice questions that could only be answered from articles assigned to other teammates on both teams. The task therefore entailed reciprocal interdependence in that each participant needed the knowledge of teammates to answer their own questions (KR) and, simultaneously, had to help others answer their own questions to increase team performance (KG). To set a collective goal, the team answering the largest number of questions correctly received a team prize. Selected *HBR* articles were of similar length (mean length: 7.33 pages; s.d.: 1.41 pages) and focused on broad business topics such as managing teamwork, business culture, and data analytics.

Teams operated in a virtual context where interactions occurred through an IM system. The choice of IM was guided by its quasi-synchronous nature that makes it suitable in a dynamic MVTM environment. Specifically, the possibility of conducting multiple conversations in parallel allows individuals to keep in touch simultaneously with co-workers from different teams. Moreover, the use of IM allowed us to keep track of the communication threads between members of each team, thereby supporting a deeper understanding of the quick information exchanges and dynamics at play.

To represent context variety, some teams were given defined communication rules, whereas other teams were not. The presence or absence of communication rules in a team represents our experimental condition. Specifically, individuals in teams with rules received written guidelines about how to use IM technology. Rules included response delay (e.g., 'messages should be responded to within 3 minutes'), language (e.g., 'use proper written Italian in all communication'), acknowledgement (e.g., 'if you are not able to provide the required information within the time limit, send a message to acknowledge that you have received the message and are working on it'), etc. The associations of individuals to teams and of teams to conditions – defined versus not defined communication rules – were structured to balance the presence of individuals who operated in teams with different conditions versus individuals who did not. Therefore, some participants had to adhere to predefined communication rules in one of their two teams, but not in the other. Such rule diversity across the two teams made individuals experience context variety. Conversely, other participants belonged to two teams with the same set of communication rules, either defined or not defined, and did not experience context variety. An approximately even distribution of individuals across conditions was achieved by changing the individuals-to-teams association matrix and by manipulating the distribution of the experimental conditions.

We include in an appendix the experimental setup and the full experiment's protocol.

Data collection and measurement

Our experimental data collection included 93 students (66 senior undergraduate students and 27 master students). Participants were randomly assigned to two teams, according to the above-described configurations (different vs. consistent communication rules across teams). Team members then had 1 h to (1) read their *HBR* article, (2) answer their eight multiple-choice questions (four questions for each of their two teams) by asking their teammates for help, and (3) respond to teammates' requests for answers.

Although participants were colocated in a computer lab, they did not know who else was on their teams and were only allowed to communicate through IM. Researchers were always present to ensure adherence to the experimental protocol. After 1 h, researchers terminated the experiment, collected participants' question sheets, and invited participants to complete a brief survey that assessed perceptions of the experimental task and various control variables (discussed later). Transcripts of the IM chats were retained for further analysis.

Model variables were measured using relevant metrics of experimental performance as well as survey scales validated in previous literature.

Dependent variables

KR was measured as the total number of questions assigned to the individual, which required teammates' participation to answer and were answered correctly. KG was tabulated as the total number of teammates' questions, which required the individual's participation to answer and were answered correctly.

Independent variables

Variety of communication rules (VCRs) were a binary variable indicating whether the individual was assigned to two teams with the same (0) or different (1) communication rules systems. NS was tabulated from the IM transcripts as the total number of times an individual's communications switched between one team and the other. Role overload (RO) was assessed through a three-item survey scale used in prior research (Bolino & Turnley, 2005).

Control variables

Our model includes two control variables: polychronicity and previous use of the IM system. Individual polychronicity (IP), a construct measuring people's preference to work on multiple tasks at a time, was included because of its relationship with behaviors in knowledge networks (e.g., Bertolotti et al., 2019) and measured using a 10-item, seven-point Likert scale adapted from Bluedorn et al. (1999). Previous IM use was measured with a seven-point Likert scale item assessing the level of participants' familiarity with the technology.

Additional variables for post-hoc analyses

In the final survey, we asked our participants to estimate (1) how much of their article they could read during the experiment and (2) article clarity. We used a scale ranging between 1 (nothing/not [clear] at all) and 7 (everything/a lot [clear]).

Data analysis

We employed partial least squares (PLS) structural equation modeling (SEM) using SmartPLS 3.0 (Ringle et al., 2015) to test our research model. PLS is an SEM technique that emphasizes explained variance of dependent variables and allows for simultaneous assessment of the measurement (outer) model and the structural (inner) model. PLS is a widely used and well-reputed technique (e.g., Chan & Ma, 2017; Hovav et al., 2023; Lee & Larsen, 2009; Mikalef et al., 2021). However, because its application has sometimes been overextended, scholars have advocated careful consideration of the merits of PLS versus other covariance-based approaches to SEM based on the nature and characteristics of the research context (Lowry & Gaskin, 2014). PLS was selected as the most appropriate SEM approach for our study due to its focus on theoretical prediction of the dependent variables, its ability to handle different construct specifications (including reflective and single-item constructs) and its robustness to distributional variations in the data (Hair et al., 2019). Moreover, PLS exhibits higher statistical power than covariance-based SEM approaches for detecting multiple causal relationships between sets of dependent and independent variables (Hair et al., 2021; Mikalef et al., 2021), which is particularly useful when exploring new prospective theoretical relationships (Lowry & Gaskin, 2014). Our sample size of 93 provided sufficient statistical power (0.80, $\alpha = 0.05$) to detect small-to-medium effects in a PLS model of the complexity specified (Hair et al., 2021).

Following Hair et al. (2019), we began by assessing measurement model statistics for the reflective constructs of RO and IP (Tables 1–3). First, we examined the loadings of factors on the respective constructs. PLS guidelines recommend a minimum threshold of 0.70 for reflective item loadings, indicating that the construct explains more than 50% of the

Table 1. Item loadings for model constructs, reliability, and convergent validity of constructs

			Initial loading	Final loading	Cronbach's alpha	Rho A	Average variance extracted (AVE)
Individual Polychronicity (IP)	1	I like to juggle several activities at the same time	0.79	0.82	0.89	0.92	0.64
	2	I would rather complete an entire project every day than complete parts of several projects (R)	0.81	0.80			
	3	I believe people should try to do many things at once	0.66				
	4	I prefer to do one thing at a time (R)	0.86	0.87			
	5	I believe people do their best work when they have many tasks to complete	0.50				
	6	I believe it is best to complete one task before starting another (R)	0.80	0.80			
	7	I would rather complete parts of several projects every day than complete an entire project	0.74	0.74			
	8	It is hard for me to start something new, if there are other things I have not finished (R)	0.69				
	9	When I have several things to do, I prefer to spend a little bit of time on each – moving back and forth from one thing to the other	0.55				
	10	I find it difficult to switch gears from one task to another (R)	0.73	0.77			
Role overload (RO)	1	The amount of workload I was assigned was excessive	0.83	0.83	0.81	0.84	0.72
	2	I felt I did not have enough time to complete the task	0.90	0.91			
	3	It seemed like I had too much work for one person to do	0.80	0.80			

Source: Own elaboration.
Note: (R) indicates reverse items.

Table 2. Heterotrait-monotrait ratio (HTMT)

		Heterotrait-monotrait ratio (HTMT)					
		1	2	3	4	5	6
1	Previous slack use						
2	Individual polychronicity (IP)	0.05					
3	Variety of communication rules (VCR)	0.04	0.10				
4	Number of switches (NS)	0.04	0.11	0.21			
5	Role overload (RO)	0.05	0.29	0.31	0.38		
6	Knowledge receiving (KR)	0.13	0.10	0.28	0.13	0.27	
7	Knowledge giving (KG)	0.03	0.13	0.17	0.10	0.40	0.28

Source: Own elaboration.

indicator's variance (Hair et al., 2019). Items reflecting RO (Bolino & Turnley, 2005) all showed a satisfactory loading (minimum loading 0.80), whereas 4 out of 10 items in the IP scale (Bluedorn et al., 1999) showed insufficient loading. After discarding these items from the analysis, the minimum loading for items in the IP scale was 0.74. Next, we assessed the internal consistency reliability of the two scales. Both Cronbach's Alpha and Rho A showed satisfactory values for RO (Cronbach's Alpha: 0.81; Rho A: 0.84) and IP (Cronbach's Alpha: 0.89; Rho A: 0.92). We then checked the convergent validity of the two scales through inspection of the average variance extracted (AVE). Both scales showed satisfactory values, well above the threshold of 0.5 (respectively 0.64 and 0.72).

Finally, we verified the discriminant validity of all constructs shown in Figure 1 through inspection of the

Table 3. Descriptive statistics, correlations, and square root (SQRT) of AVE

	Descriptive statistics and correlations												
		N	Min	Max	Mean	Std. dev	1	2	3	4	5	6	7
1	Previous slack use	93	1.00	6.00	1.20	0.80	*1.00*						
2	Individual polychronicity (IP)	93	1.60	6.30	4.10	1.10	−0.02	*0.80*					
3	Variety of communication rules (VCR)	93	0.00	1.00	0.44	0.50	−0.04	0.01	*1.00*				
4	Number of switches (NS)	93	4.00	33.00	14.18	5.80	−0.16	0.06	−0.21*	*1.00*			
5	Role overload (RO)	93	1.00	6.33	3.91	1.40	−0.02	−0.25*	0.28**	−0.34***	*0.85*		
6	Knowledge receiving (KR)	93	1.00	8.00	5.06	1.71	0.13	0.04	−0.28**	0.13	−0.25*	*1.00*	
7	Knowledge giving (KG)	93	2.00	7.00	5.04	1.40	0.03	0.13	−0.17	0.10	−0.36***	0.28**	*1.00*

Source: Own elaboration.
Note: *Correlation is significant at the 0.05 level, ** correlation is significant at the 0.01 level, *** correlation is significant at the 0.001 level; SQRT of the average variance extracted (AVE) on the diagonal, in italics.

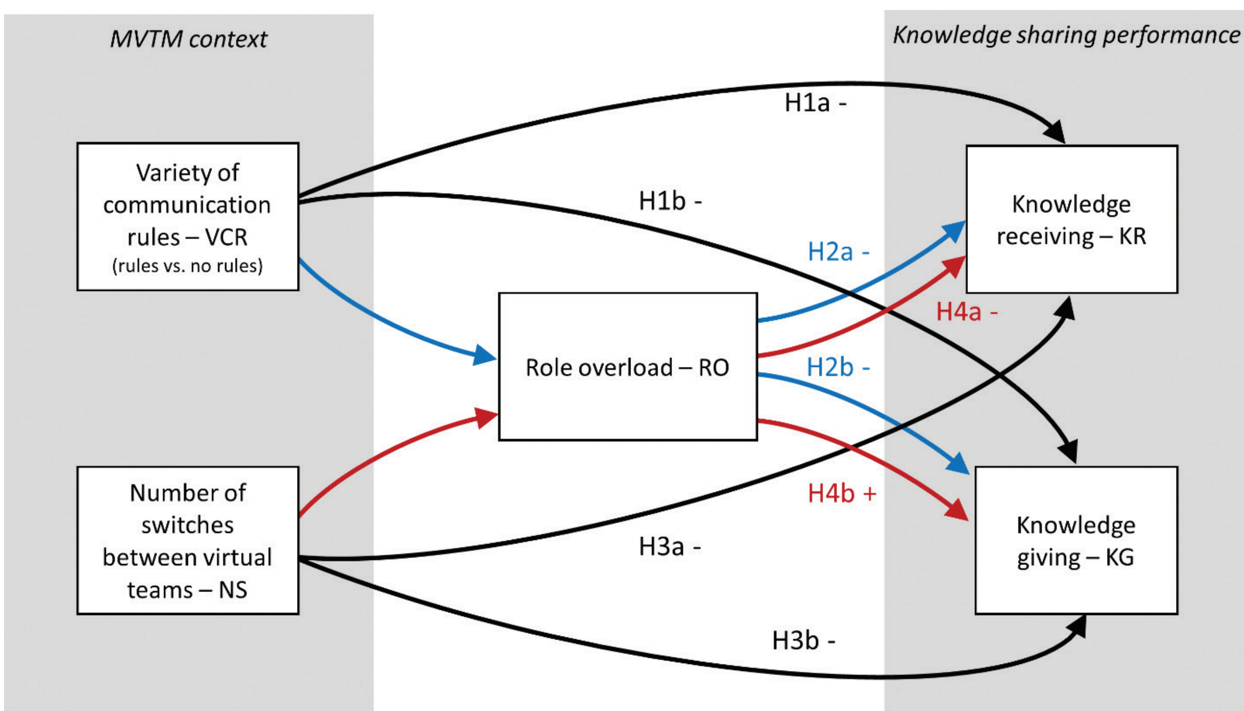


Figure 1. Graphical representation of our research model.
Source: Own elaboration.

heterotrait-monotrait ratio (HTMT, see Table 2). All values were smaller than the suggested threshold of 0.85, with a maximum value of 0.40. Additionally, the square root of the AVE for each construct was greater than any of the inter-construct correlations (see Table 3). Collinearity in the model was also not an issue, with a maximum variance inflation factor (VIF) of 1.30, well below the conservative threshold of 3. Overall, our models explain 8.2% of variance in the KR, 9.1% of variance in KG, and 19.5% of variance in RO. Table 3 reports descriptive statistics and correlations between constructs in the model.

Results

All individuals in our sample showed limited previous use of the IM system, with an average response of 1.2 (out of 7) and a standard deviation of 0.80. Moreover, familiarity with the tool did not significantly correlate with the other variables in the model. Individuals reported a more than average level of polychronicity (4.1 out of 7) with a standard deviation of 1.10. IP correlated significantly and negatively with RO, such that individuals who reported high levels of IP also reported lower levels of RO.

In our experiments, 44% of participants experienced context variety in the form of different communication rules (VCR). VCR correlated significantly and negatively with the NS and with KR, whereas it correlated significantly and positively with RO. Consistent with our hypotheses, individuals who experienced VCR felt more overloaded and struggled more to acquire resources. The correlation between VCR and the KG failed to reach a significant level. Contrary to our arguments, NS significantly and negatively correlated with RO, suggesting that individuals who engaged more in switching between teams reported lower levels of overload. RO correlated significantly and negatively with both KR and KG outcome variables, such that those individuals who reported higher levels of RO struggled the most to acquire and provide the resources that they and their colleagues needed. Finally, KR and KG significantly and positively correlated with each other.

The structural model presented in Figure 1 was assessed using a bootstrapping resampling technique with 5,000 subsamples.

Table 4 reports the path coefficients in the model for both direct and indirect (mediated) effects, along with associated *p*-values and 95% confidence intervals. Statistically significant findings in the table are highlighted in bold.

Results show that context variety directly and negatively affected individuals' ability to acquire the resources they need from their teammates, that is, KR ($b = -0.22$, $p < 0.05$), supporting H1a. Context variety, however, did not significantly affect the ability to provide resources, that is, KG ($b = -0.08$, ns). Thus, H1b was not supported. Via role overload, variety of technology-related communication rules did not significantly affect KR ($b = -0.03$, ns), not supporting H2a. Communication variety did negatively influence KG via role overload ($b = -0.07$, $p < 0.05$), providing support for H2b. The number of times a person switched between teams did not directly relate to receiving ($b = 0.05$, ns) or giving knowledge ($b = -0.04$, ns). Thus, H3a and H3b were not supported. The number of times a person switched between teams did not influence KR via role overload ($b = 0.04$, n.s.), not supporting H4a. However, switching was significantly related to KG via role overload

Table 4. Evaluated model

	Path	*b*	*p*	Sig.	95% CI
	Previous slack use → Role overload (RO)	–0.06	0.183		[–0.193; 0.036]
	Previous slack use → Knowledge receiving (KR)	**0.13**	**0.026**	*****	**[0.026; 0.244]**
	Previous slack use → Knowledge giving (KG)	0.02	0.452		[–0.205; 0.219]
	Previous slack use → Role overload (RO) → Knowledge receiving (KR)	0.01	0.253		[–0.002; 0.052]
	Previous slack use → Role overload (RO) → Knowledge giving (KG)	0.02	0.207		[–0.008; 0.078]
	Individual polychronicity (IP) → Role overload (RO)	**–0.26**	**0.004**	******	**[–0.386; –0.072]**
	Individual polychronicity (IP) → Knowledge receiving (KR)	0.08	0.259		[–0.142; 0.254]
	Individual polychronicity (IP) → Knowledge giving (KG)	0.04	0.353		[–0.181; 0.197]
	Individual polychronicity (IP) → Role overload (RO) → Knowledge receiving (KR)	0.04	0.139		[–0.005; 0.112]
	Individual polychronicity (IP) → Role overload (RO) → Knowledge giving (KG)	**0.09**	**0.018**	*****	**[0.030; 0.163]**
	Role overload (RO) → Knowledge receiving (KR)	–0.15	0.088	†	[–0.335 0.032]
	Role overload (RO) → Knowledge giving (KG)	**–0.342**	**0.001**	*******	**[–0.509 –0.155]**
	Variety of communication rules (VCR) → Role overload (RO)	**0.21**	**0.010**	******	**[0.062; 0.358]**
H1a	**Variety of communication rules (VCR) → Knowledge receiving (KR)**	**–0.22**	**0.021**	*****	**[–0.397; –0.043]**
H1b	Variety of communication rules (VCR) → Knowledge giving (KG)	–0.08	0.233		[–0.271; 0.098]
H2a	Variety of communication rules (VCR) → Role overload (RO) → Knowledge receiving (KR)	–0.03	0.167		[–0.107; 0.002]
H2b	**Variety of communication rules (VCR) → Role overload (RO) → Knowledge giving (KG)**	**–0.07**	**0.033**	*****	**[–0.156; –0.021]**
	Number of switches (NS) → Role overload (RO)	**–0.28**	**0.003**	******	**[–0.450; –0.112]**
H3a	Number of switches (NS) → Knowledge receiving (KR)	0.05	0.322		[–0.136; 0.216]
H3b	Number of switches (NS) → Knowledge giving (KG)	–0.04	0.346		[–0.195; 0.120]
H4a	Number of switches (NS) → Role overload (RO) → Knowledge receiving (KR)	0.04	0.126		[–0.001; 0.124]
H4b	**Number of switches (NS) → Role overload (RO) → Knowledge giving (KG)**	**0.10**	**0.014**	*****	**[0.039; 0.188]**

Source: Own elaboration.

Notes: †$p < 0.10$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; statistically significant findings are highlighted in bold; '*b*' represents the regression path coefficient, '*p*' represents the *p*-value, 'sig.' represents the coefficient significance based on standard significance classification, and '95% CI' represents the 95% confidence value range.

(b = 0.10, p < 0.05), but the effect was positive rather than negative as hypothesized. Thus, H4b was not supported. Polychronicity was negatively related to role overload (b = −0.26, p < 0.01), and previous IM use was positively related to the KR (b = 0.13, p < 0.05). Figure 2 provides a graphical representation of our research model with supported hypotheses (bold arrows).

As a post-hoc analysis, we examined whether our results may have been influenced by differences in participants' prior knowledge of the articles used for the experimental tasks. Most participants were able to read the whole article (m: 6.47, s.d.: 0.94). Also, they rated the clarity of the article, on average, 5.72 (s.d.: 1.01). Based on these results, we can conclude that, indeed, students had full access to the whole extent of information present in the document, and that they were able to understand it, thereby providing answers to their teammates.

Discussion

Enhanced knowledge sharing is one of the promises of MTM, yet it may be difficult to fully realize when individuals face context variety across their teams. Our examination of differences in technology-related communication rules suggests that the time and effort needed to adjust to such variety can partially impair individual outcomes in terms of knowledge sharing, highlighting interesting potential implications for future theory development as well as managerial implications.

Theoretical contributions

Our investigation primarily contributes to the growing literature on MTM (Margolis, 2020; Rishani et al., 2024). Variety across teams has been related, in a few studies, to both positive and negative outcomes such as increased learning (e.g., Chen et al., 2021), decreased individual productivity (e.g., Zika-Viktorsson et al., 2006), and role ambiguity (van de Brake & Berger, 2023). Our study focuses on an underexplored, yet fundamental individual outcome for knowledge workers in distributed settings – team members' ability to simultaneously provide knowledge to co-workers and effectively gather knowledge to complete their own tasks. In addition, our study aims to unpack the broad concept of multiple team variety, operationalizing it in terms of differences between technology-related communication rules across teams. In doing so, this study highlights that various types of variety might have different effects on outcomes and, therefore, should be investigated individually.

In support of our hypotheses 1a and 1b, we found that experiencing context variety related to different communication rules in MVTM has a direct negative effect on individuals' ability to acquire the resources they need to perform their

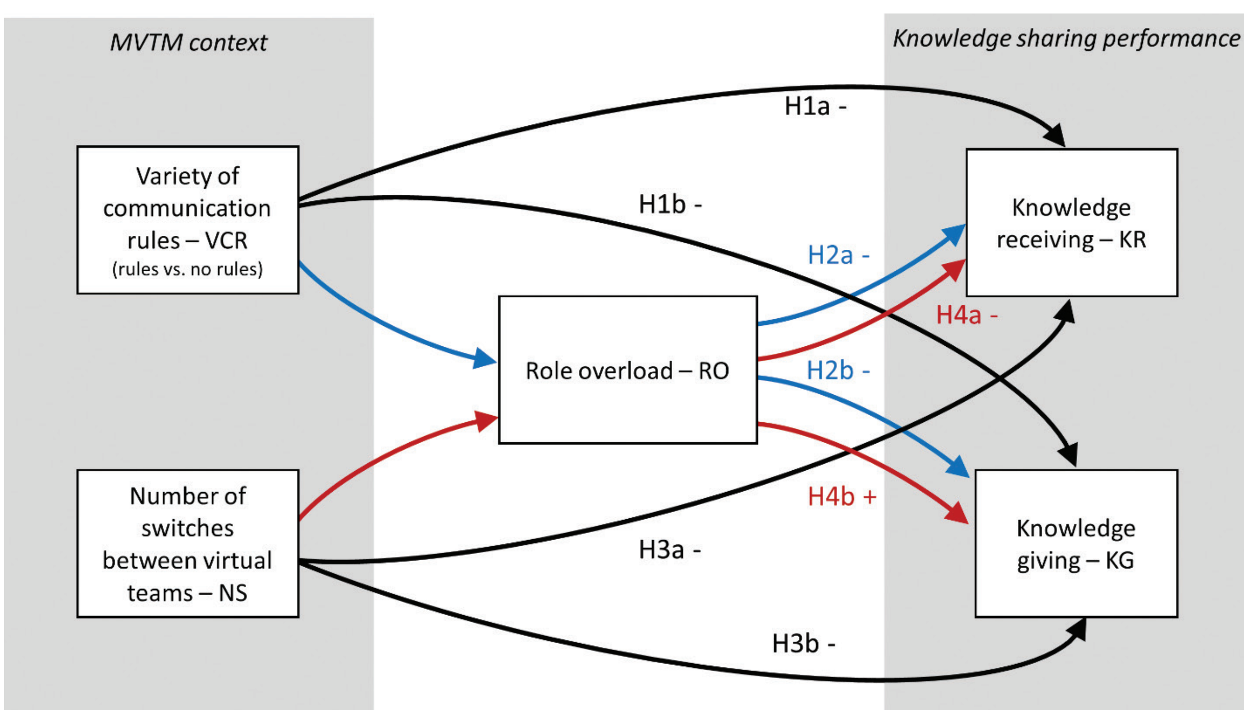


Figure 2. Research model and supported hypotheses (in bold).
Source: Own elaboration.

tasks, that is, KR (H1a), and an indirect negative effect (via increased role overload) on the ability to provide resources to teammates, that is, KG (H2b). Interestingly, we found no support either for a direct effect of VCRs on KG (H1b) or for the mediation of role overload on the relationship between communication rules variety and KR (H2a). These results highlight that different mechanisms may be at play when individuals focus on their own personal accomplishments (receiving knowledge) and the team task accomplishment (giving knowledge). This suggests that individuals experiencing context variety in terms of communication rules tend to focus less on the knowledge resources they need for their own tasks due to the demands (role overload) they experience in responding to requests from their various team contexts.

Our analyses do not support the negative view on switching that we hypothesized. Specifically, we do not find that the NS a person experiences across their virtual teams negatively affects KR (Hypothesis 3a) or KG (Hypothesis 3b). Additionally, we do not find evidence for the mediation effect of role overload on the negative relationship between switching and knowledge sharing (Hypotheses 4a and 4b). Our results show instead that switching frequently between virtual teams *reduces* individual role overload, therefore increasing the individual ability to provide resources to teammates. At first, this result may look counter-intuitive, given that studies in cognitive and experimental psychology highlighted that task switching requires more working memory, as individuals need to perform more frequent operations between long-term and short-term memory to prepare for a new task (e.g., Monsell, 2003; Wylie & Allport, 2000). Van de Brake et al. (2024) further found that, when holding the number of multiple teams constant, increasing the switches between multiple teams is associated with higher levels of emotional exhaustion. As a possible explanation for our unexpected result, we argue that, when individuals must work on multiple teams concurrently, they may feel more in control of their work and tasks when they frequently check for updates, requests, or new information from each team. Put differently, switching frequently could make individuals more attuned to co-workers' needs and perceive that they are able to keep up with the workload. This explanation is consistent with studies showing that higher switching frequency may increase available foreknowledge about when and how to execute a task, which may, in turn, make switches less costly (Liefooghe et al., 2008; Sohn & Carlson, 2000). Interestingly, van de Brake et al. (2024) also found that when multiteamers showed more scheduling autonomy, in other words, when they were given more control over the timing of the work activities, they engaged in more MTM switching. Technology-mediated communication may also play a role in explaining the reduced perception of role overload in MVTM task transition, via the emotional intensity that connects members (Sunwolf & Seibold, 1999; Walther & Bunz, 2005). Accordingly, in comparison to face-to-face exchanges, many virtual contexts lower the emotional intensity associated with knowledge sharing by reducing the cognitive load generated by perceived obligation of contribution. Future studies could explore this possible explanation further.

Our work also extends the literature on the use of communication technologies in virtual team settings. A growing body of work in the information systems literature has shown that the use of communication technologies can amplify or mitigate a diverse set of team processes and outcomes, such as cohesiveness (Carlson et al., 2017; Ehsan et al., 2008), knowledge sharing (van den Hooff & de Ridder, 2004), and interactivity (Lowry et al., 2009), among others. Although they offer valuable insights, most of these studies examine single-team settings and therefore shed little light on how findings might extend to an MVTM context. Our results show that the complexities associated with using communication technologies across teams requiring different communication rules might dampen team members' ability to acquire and provide knowledge resources in their teams, possibly exacerbating knowledge sharing challenges characterizing technology-mediated environments (e.g., Andres, 2021). At the same time, our findings suggest that the relative ease of task switching afforded by technology-mediated communication compared to face-to-face communication might allow participants in multiple teams to move more effectively between teams and thereby better satisfy knowledge requests from teammates. This suggests a possible duality in the effects of communication technologies in an MVTM context that can be further theorized in ongoing work.

From a broad perspective, literature has established that virtual teams developing rules operate more effectively through technology (Henderson et al., 2016; Hinds & Kiesler, 2002; Nemiro, 2004), yet this same technology may hamper individuals' performance when they are concurrently working on multiple teams with different rules. This result provides an initial answer to the call by Wageman et al. (2012) and Tannenbaum et al. (2012) to investigate how new and different aspects of the changing nature of work interact. In this picture, the role of technology – as enabler and main medium of communication – will be central. Therefore, we call for an in-depth investigation of the role of technology in helping individuals navigate the challenges that we start to uncover with this study. In fact, specific rules related to the use of technology and features of technology itself may provide an invaluable resource to individuals who are called to navigate different contexts.

Our study contributes to the understanding of the changing nature of leadership in contemporary virtual teams. Research on leadership in virtual teams has emphasized the effectiveness of shared leadership, particularly for teams engaged in knowledge-intensive work (e.g., Hoegl & Muethel, 2016; Nordbäck & Espinosa, 2019). Shared leadership depends on a deep exchange of knowledge and information among team members (Hill, 2005). However, this research has focused on the experiences of members within a single virtual team at one time, overlooking the complexity of working in multiple virtual teams simultaneously. Our findings suggest that knowledge sharing in an MVTM scenario faces unique challenges, making shared leadership unattainable or unfeasible. As an alternative, team leaders focusing on mitigating the negative effects of MVTM and promoting practices to reduce individual role overload may be better suited for these environments. In line with the work of Kenda et al. (2024), who underscore the importance of questioning the effectiveness of traditional team practices in MVTM contexts, we suggest that new types of leaders – attuned to how individuals manage their commitments across multiple teams – may be necessary.

Managerial contributions

Our research also has important implications for practice. Work in an MTM environment often means different work practices that can have negative impacts on both individual outcomes and team performance (Chudoba et al., 2005). Organizations can address this issue by training employees in MVTM conditions on the potential negative impacts on knowledge sharing and supporting them in managing tensions between receiving and giving knowledge at work. Awareness by itself may also help individual team members develop coping strategies and alternative work practices to mitigate the potentially negative effects.

Our results also further highlight the importance of developing consistent work practices and, specifically, clear communication rules across teams to mitigate the complexities of transitioning between different team contexts. Encouraging structured and aligned team-switching practices can also mitigate the effects of role overload, increasing individual knowledge sharing efficiency. Additionally, team leaders should monitor workload levels and provide resources to help team members navigate the complexities of MVTMs, ensuring that knowledge exchange remains high despite the added demands of MTMs.

Limitations and future research directions

Our research is one of the few attempts to study the effects of context variety on individual outcomes when people are members of more than one virtual team simultaneously. However, as with any study, it has limitations.

First, we only considered the effect of context variety on individual KG and receiving. Other individual outcomes, such as productivity or creativity, can be explored in future studies. In addition, because context variety can tax attention and time, we chose to focus on role overload as a mediating variable. Other variables or mechanisms, like the level of conflict or of engagement in a team, could also possibly mediate the relationship between context variety and knowledge sharing. For instance, variety could increase the level of conflict experienced in single teams, thereby impairing team members' ability to effectively give and receive knowledge.

Second, we focused just on IM systems because that have become dominant communication technologies for numerous knowledge-intensive and IT teams (e.g., Silva et al., 2022). However, perceived features of different technologies, such as social presence and synchronicity, may affect the individuals' perceptions of being in control of their work in an MVTM environment. Future studies could expand our results by designing experiments using different communication technologies.

We also asked participants to work on only two teams at a time and for a period of only 1 h. Several studies emphasize that contemporary teams are often fluid and temporary (e.g., Valentine et al., 2017), to the extent that Valentine et al. (2017) talk about 'flash teams'. Here, experts are brought inside teams for a very short time to provide specific contributions and then are transitioned out. As such, these teams experience extremely rapidly changing contexts that a short-time experiment may actually reflect quite well. Nonetheless, we invite future researchers to explore different research designs, such as mathematical simulations and field studies, and to conduct longitudinal data collections to represent more complex MTM configurations and capture learning processes over time.

Another future direction involves examining the interplay between task uncertainty and communication rules in multiple virtual team settings. Task uncertainty in knowledge-intensive teams may be related to uncertain goals, uncertain methods, or unclear link between work outcomes and methods (Leuteritz et al., 2017). It may also derive from lack of team member expertise. Keith et al. (2017) note that task uncertainty requires more adaptive coordination, which may be challenging to achieve when multiple virtual teams have established differing rules. Understanding how variety in communication rules interacts with task uncertainty presents a promising avenue for future research.

Conclusion

We investigated how variety in communication rules across teams affects knowledge sharing when individuals experience MVTM. Through our experimental study, we found that when individuals work in virtual teams with different communication rules, they face more difficulties in acquiring knowledge from their teammates. Additionally, due to increased individual role overload, they reduce the amount of knowledge provided to their team members. However, frequent switching between teams can decrease role overload, which, in turn, enhances their ability to provide knowledge to teammates. Taken together, these findings suggest that working in multiple virtual teams presents challenges, especially when there is context variety across teams, but that certain individual practices, such as switching to manage workload across teams, can support knowledge sharing. We encourage future research to further disentangle the complexities of working in multiple virtual teams.

References

Andres, H. P. (2021). Technology-mediated collaboration, shared mental model and task performance. *Journal of Organizational and End User Computing, 24*(1), 64–81. doi: 10.4018/joeuc.2012010104

Ardichvili, A., Page, V. & Wentling, T. (2003). Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of Knowledge Management, 7*(1), 64–77. doi: 10.1108/13673270310463626

Berger, S. & Bruch, H. (2021). Role strain and role accumulation across multiple teams: The moderating role of employees' polychronic orientation. *Journal of Organizational Behavior, 42*(7), 835–850. doi: 10.1002/job.2521

Berger, S., van de Brake, H. J. & Bruch, H. (2022). Resource leverage, resource depletion: A multilevel perspective on multiple team membership. *Journal of Applied Psychology, 107*(2), 298–309. doi: 10.1037/apl0000889

Bertolotti, F., Mattarelli, E. & Dukerich, J. (2019). The relationship between polychronicity and social networks: A mixed-methods study of research and development professionals. *Human Relations, 72*(10), 1595–1622. doi: 10.1177/0018726718810097

Bertolotti, F., Mattarelli, E., Vignoli, M. & Macrì, D. M. (2015). Exploring the relationship between multiple team membership and team performance: The role of social networks and collaborative technology. *Research Policy, 44*(4), 911–924. doi: 10.1016/j.respol.2015.01.019

Bluedorn, A. C., Kalliath, T. J., Strube, M. J. & Martin, G. D. (1999). Polychronicity and the Inventory of Polychronic Values (IPV): The development of an instrument to measure a fundamental dimension of organizational culture. *Journal of Managerial Psychology, 14*(3–4), 205–231. doi: 10.1108/02683949910263747

Bolino, M. C. & Turnley, W. H. (2005). The personal costs of citizenship behavior: The relationship between individual initiative and role overload, job stress, and work-family conflict. *Journal of Applied Psychology, 90*(4), 740–748. doi: 10.1037/0021-9010.90.4.740

Brennecke, J. & Rank, O. N. (2016). The interplay between formal project memberships and informal advice seeking in knowledge-intensive firms: A multilevel network approach. *Social Networks, 44*, 307–318. doi: 10.1016/j.socnet.2015.02.004

Carlson, J. R., Carlson, D. S., Hunter, E. M., Vaughn, R. L. et al. (2017). Virtual team effectiveness: Investigating the moderating role of experience with computer-mediated communication on the impact of team cohesion and openness. In Information Resources Management Association (Ed.), *Remote work and collaboration: Breakthroughs in research and practice* (pp. 687–706). IGI Global. doi: 10.4018/978-1-5225-1918-8.ch036

Chan, R. Y. K. & Ma, K. H. Y. (2017). Impact of executive compensation on the execution of IT-based environmental strategies under competition. *European Journal of Information Systems, 26*(5), 489–508. doi: 10.1057/s41303-017-0052-3

Chang, K. T.-T. (2008). Psychological contracts and knowledge exchange in virtual teams. In *International Conference on Information Systems (ICIS) 2008 Proceedings* (146). Retrieved from https://aisel.aisnet.org/icis2008/146/

Chen, G., Smith, T. A., Kirkman, B. L., Zhang, P. et al. (2019). Multiple team membership and empowerment spillover effects: Can empowerment processes cross team boundaries? *Journal of Applied Psychology, 104*(3), 321–340. doi: 10.1037/apl0000336

Chen, H., Jiao, J., Yang, N. & Wang, X.-H. (Frank). (2021). How identity conflict and identity synergy influence innovative performance of employees with multiple team membership. *Psychological Reports, 124*(2), 792–808. doi: 10.1177/0033294120916863

Chudoba, K. M., Wynn, E., Lu, M. & Watson-Manheim, M. B. (2005). How virtual are we? Measuring virtuality and understanding its impact in a global organization. *Information Systems Journal, 15*(4), 279–306. doi: 10.1111/j.1365-2575.2005.00200.x

Cornelius, C. & Boos, M. (2003). Enhancing mutual understanding in synchronous computer-mediated communication by training: Trade-offs in judgmental tasks. *Communication Research, 30*(2), 147–177. doi: 10.1177/0093650202250874

Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science, 12*(3), 346–371. doi: 10.1287/orsc.12.3.346.10098

CultureWizard. (2018). *Virtual teams survey: 2018 Executive brief*. Retrieved from https://cdn2.hubspot.net/hubfs/466336/Virtual%20Teams%20Survey-Executive%20Summary--Final%20(2018).pdf

Cummings, J. N. (2004). Work groups, structural diversity, and knowledge sharing in a global organization. *Management Science, 50*(3), 352–364. doi: 10.1287/mnsc.1030.0134

Cummings, J. N. & Haas, M. R. (2012). So many teams, so little time: Time allocation matters in geographically dispersed teams. *Journal of Organizational Behavior, 33*(3), 316–341. doi: 10.1002/job.777

Czerwinski, M., Czerwinski, M., Horvitz, E. & Wilhite, S. (2004). A diary study of task switching and interruptions. In E. Dykstra-Erickson & M. Tscheligi (Eds.), *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, 24–29 April 2004* (pp. 175–182). Vienna: Association for Computing Machinery. doi: 10.1145/985692.985715

Dow, G. K. (1988). Configurational and coactivational views of organizational structure. *Academy of Management Review, 13*(1), 53–64. doi: 10.5465/amr.1988.4306781

Ehsan, N., Mirza, E. & Ahmad, M. (2008). Impact of computer-mediated communication on virtual teams' performance: An empirical study. In H. B. Zaman, T. M. T. Sembok, K. van Rijsbergen, L. Zadeh, et al. (Eds.), *2008 International Symposium on Information Technology, 26–29 August 2008* (Vol. 3, pp. 1–8). Kuala Lumpur: Institute of Institute of Electrical and Electronics Engineers. doi: 10.1109/ITSIM.2008.4632068

Eisenberg, J. & Mattarelli, E. (2017). Building bridges in global virtual teams: The role of multicultural brokers in overcoming the negative effects of identity threats on knowledge sharing across subgroups. *Journal of International Management, 23*(4), 399–411. doi: 10.1016/j.intman.2016.11.007

Ellwart, T., Happ, C., Gurtner, A. & Rack, O. (2015). Managing information overload in virtual teams: Effects of a structured online team adaptation on cognition and performance. *European Journal of Work and Organizational Psychology, 24*(5), 812–826. doi: 10.1080/1359432X.2014.1000873

Espinosa, J. A., Slaughter, S. A., Kraut, R. E. & Herbsleb, J. D. (2007). Team knowledge and coordination in geographically distributed software development. *Journal of Management Information Systems, 24*(1), 135–169. doi: 10.2753/MIS0742-1222240104

Finstad, K., Bink, M., McDaniel, M. & Einstein, G. O. (2006). Breaks and task switches in prospective memory. *Applied Cognitive Psychology, 20*(5), 705–712. doi: 10.1002/acp.1223

Gibson, C. B., Dunlop, P. D., Majchrzak, A. & Chia, T. (2021). Sustaining effectiveness in global teams: The coevolution of knowledge management activities and technology affordances. *Organization Science, 33*(3), 1018–1048. doi: 10.1287/orsc.2021.1478

Gilson, L. L., Maynard, M. T., Jones Young, N. C., Vartiainen, M. et al. (2015). Virtual teams research: 10 Years, 10 themes, and 10 opportunities. *Journal of Management, 41*(5), 1313–1337. doi: 10.1177/0149206314559946

González, V. M. & Mark, G. (2005). Managing currents of work: Multi-tasking among multiple collaborations. In H. Gellersen, K. Schmidt, M. Beaudouin-Lafon & W. Mackay (Eds.), *ECSCW 2005: Proceedings of the Ninth European Conference on Computer-Supported Cooperative Work, 18–22 September 2005, Paris, France* (pp. 143–162). Springer Netherlands. doi: 10.1007/1-4020-4023-7_8

Griffith, T. L., Sawyer, J. E. & Neale, M. A. (2003). Virtualness and knowledge in teams: Managing the love triangle of organizations, individuals, and information technology. *MIS Quarterly,* 7(2), 265–287. doi: 10.2307/30036531

Gupta, A., Mattarelli, E., Seshasai, S. & Broschak, J. (2009). Use of collaborative technologies and knowledge sharing in co-located and distributed teams: Towards the 24-h knowledge factory. *Journal of Strategic Information Systems, 18*(3), 147–161. doi: 10.1016/j.jsis.2009.07.001

Hackman, J. R. (Ed.). (1990). *Groups that work and those that don't: Creating conditions for effective teamwork*. Jossey-Bass.

Hair, J. F., Hult, G. T. M., Ringle, C. M. & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage.

Hair, J. F., Risher, J. J., Sarstedt, M. & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2–24. doi: 10.1108/EBR-11-2018-0203

Hansen, M. T., Mors, M. L. & Løvås, B. (2005). Knowledge sharing in organizations: Multiple networks, multiple phases. *Academy of Management Journal, 48*(5), 776–793. doi: 10.5465/amj.2005.18803922

Hartman, R. L. & Johnson, J. D. (1990). Formal and informal group communication structures: An examination of their relationship to role ambiguity. *Social Networks, 12*(2), 127–151. doi: 10.1016/0378-8733(90)90002-Q

Henderson, L. S., Stackman, R. W. & Lindekilde, R. (2016). The centrality of communication norm alignment, role clarity, and trust in global project teams. *International Journal of Project Management, 34*(8), 1717–1730. doi: 10.1016/j.ijproman.2016.09.012

Hill, N. S. (2005). Leading together, working together: The role of team shared leadership in building collaborative capital in virtual teams. In M. M. Beyerlein, S. T. Beyerlein & F. A. Kennedy (Eds.), *Collaborative capital: Creating intangible value* (Vol. 11, pp. 183–209). Emerald. doi: 10.1016/S1572-0977(05)11007-3

Hinds, P. J. & Kiesler, S. (Eds.). (2002). *Distributed work*. MIT Press. doi: 10.7551/mitpress/2464.001.0001

Hinds, P. J. & Mortensen, M. (2005). Understanding conflict in geographically distributed teams: The moderating effects of shared identity, shared context, and spontaneous communication. *Organization Science, 16*(3), 290–307. doi: 10.1287/orsc.1050.0122

Hinds, P. J. & Weisband, S. P. (2003). Knowledge sharing and shared understanding in virtual teams. In C. B. Gibson & S. G. Cohen (Eds.), *Virtual teams that work: Creating conditions for virtual team effectiveness* (pp. 21–36). Jossey-Bass.

Hoegl, M. & Muethel, M. (2016). Enabling shared leadership in virtual project teams: A practitioners' guide. *Project Management Journal, 47*(1), 7–12. doi: 10.1002/pmj.21564

Hovav, A., Gnizy, I. & Han, J. (2023). The effects of cyber regulations and security policies on organizational outcomes: A knowledge management perspective. *European Journal of Information Systems, 32*(2), 154–172. doi: 10.1080/0960085X.2021.1908184

Keith, M., Demirkan, H. & Goul, M. (2017). The role of task uncertainty in IT project team advice networks. *Decision Sciences, 48*(2), 207–247. doi: 10.1111/deci.12226

Kenda, R., Meslec, N. & Oerlemans, L. (2024). Single versus multiple project teams and individual performance: Do they ask for different leadership behaviors? *International Journal of Project Management, 42*(2), 102563. doi: 10.1016/j.ijproman.2024.102563

Lee, H. & Choi, B. (2003). Knowledge management enablers, processes, and organizational performance: An integrative view and empirical examination. *Journal of Management Information Systems, 20*(1), 179–228. doi: 10.1080/07421222.2003.11045756

Lee, Y. & Larsen, K. R. (2009). Threat or coping appraisal: Determinants of SMB executives' decision to adopt anti-malware software. *European Journal of Information Systems, 18*(2), 177–187. doi: 10.1057/ejis.2009.11

Leonardi, P. M., Parker, S. H. & Shen, R. (2024). How remote work changes the world of work. *Annual Review of Organizational Psychology and Organizational Behavior, 11*(1), 193–219. doi: 10.1146/annurev-orgpsych-091922-015852

Leroy, S. (2009). Why is it so hard to do my work? The challenge of attention residue when switching between work tasks. *Organizational Behavior and Human Decision Processes, 109*(2), 168–181. doi: 10.1016/j.obhdp.2009.04.002

Leroy, S., Schmidt, A. M. & Madjar, N. (2020). Interruptions and task transitions: Understanding their characteristics, processes, and consequences. *Academy of Management Annals, 14*(2), 661–694. doi: 10.5465/annals.2017.0146

Leuteritz, J. P., Navarro, J. & Berger, R. (2017). How knowledge worker teams deal effectively with task uncertainty: The impact of transformational leadership and group development. *Frontiers in Psychology, 8*, 1339. doi: 10.3389/fpsyg.2017.01339

Liefooghe, B., Barrouillet, P., Vandierendonck, A. & Camos, V. (2008). Working memory costs of task switching. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 34*(3), 478–494. doi: 10.1037/0278-7393.34.3.478

Lowry, P. B. & Gaskin, J. (2014). Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it. *IEEE Transactions on Professional Communication, 57*(2), 123–146. doi: 10.1109/TPC.2014.2312452

Lowry, P. B., Romano, N. C., Jenkins, J. L. & Guthrie, R. W. (2009). The CMC interactivity model: How interactivity enhances communication quality and process satisfaction in lean-media groups. *Journal of Management Information Systems, 26*(1), 155–196. doi: 10.2753/MIS0742-1222260107

Margolis, J. (2020). Multiple team membership: An integrative review. *Small Group Research, 51*(1), 48–86. doi: 10.1177/1046496419883702

Mikalef, P., Pateli, A. & van de Wetering, R. (2021). IT architecture flexibility and IT governance decentralisation as drivers of IT-enabled dynamic capabilities and competitive performance: The moderating effect of the external environment. *European Journal of Information Systems, 30*(5), 512–540. doi: 10.1080/0960085X.2020.1808541

Mistry, S., Kirkman, B. L., Moore, O. A., Hanna, A. A. et al. (2023). Too many teams? Examining the impact of multiple team memberships and

permanent team identification on employees' identity strain, cognitive depletion, and turnover. *Personnel Psychology, 76*(3), 885–912. doi: 10.1111/peps.12515
Mo, G. Y., & Wellman, B. (2016). The effects of multiple team membership on networking online and offline: Using multilevel multiple membership modeling. *Information, Communication & Society, 19*(9), 1250–1266. doi: 10.1080/1369118X.2016.1187194
Monsell, S. (2003). Task switching. *Trends in Cognitive Sciences, 7*(3), 134–140. doi: 10.1016/S1364-6613(03)00028-7
Mortensen, M. & Gardner, H. K. (2017, September–October). The overcommitted organization. *Harvard Business Review*. Retrieved from https://hbr.org/2017/09/the-overcommitted-organization
Mortensen, M. & Haas, M. R. (2018). Perspective – Rethinking teams: From bounded membership to dynamic participation. *Organization Science, 29*(2), 341–355. doi: 10.1287/orsc.2017.1198
Natu, S. & Aparicio, M. (2022). Analyzing knowledge sharing behaviors in virtual teams: Practical evidence from digitalized workplaces. *Journal of Innovation & Knowledge, 7*(4), 100248. doi: 10.1016/j.jik.2022.100248
Nemiro, J. (2004). *Creativity in virtual teams: Key components for success*. John Wiley & Sons.
Nordbäck, E. S. & Espinosa, J. A. (2019). Effective coordination of shared leadership in global virtual teams. *Journal of Management Information Systems, 36*(1), 321–350. doi: 10.1080/07421222.2018.1558943
Ofstad, B. & Bartel-Radic, A. (2024). Cooperative learning through boundary spanning: How a corporate learning department ensures that trainers and content stay current. *M@n@gement, 27*(4), 114–129. doi: 10.37725/mgmt.2024.9611
O'Leary, M. B., Mortensen, M. & Woolley, A. W. (2011). Multiple team membership: A theoretical model of its effects on productivity and learning for individuals and teams. *Academy of Management Review, 36*(3), 461–478. doi: 10.5465/amr.2009.0275
Perrin, A. & Rolland, N. (2007). Mechanisms of intra-organisational knowledge transfer: The case of a global technology firm. *M@n@gement, 10*(2), 25–47. doi: 10.3917/mana.102.0025
Pluut, H., Flestea, A. M. & Curşeu, P. L. (2014). Multiple team membership: A demand or resource for employees? *Group Dynamics: Theory, Research, and Practice, 18*(4), 333–348. doi: 10.1037/gdn0000016
Rapp, T. L. & Mathieu, J. E. (2019). Team and individual influences on members' identification and performance per membership in multiple team membership arrangements. *Journal of Applied Psychology, 104*(3), 303–320. doi: 10.1037/apl0000344
Ringle, C. M., Wende, S. & Becker, J.-M. (2015). *SmartPLS* [version 3]. SmartPLS. Retrieved from https://www.smartpls.com
Rishani, M., Schouten, M. E. & Hoever, I. J. (2024). Navigating multiple team membership: A review and redirection of its influence on effectiveness outcomes. *Social and Personality Psychology Compass, 18*(1), e12899. doi: 10.1111/spc3.12899
Rizzo, J. R., House, R. J. & Lirtzman, S. I. (1970). Role conflict and ambiguity in complex organizations. *Administrative Science Quarterly, 15*(2), 150–163. doi: 10.2307/2391486
Silva, C. C., Galster, M. & Gilson, F. (2022). A qualitative analysis of themes in instant messaging communication of software developers. *Journal of Systems and Software, 192*, 111397. doi: 10.1016/j.jss.2022.111397
Smith, J. (2016, February 2). 15 Email etiquette rules every professional should follow: Despite the fact that we're glued to our reply buttons, plenty of managers still don't know how to use email etiquette appropriately. *Business Insider*. Retrieved from https://www.inc.com/business-insider/email-etiquette-rules.html
Sohn, M.-H. & Carlson, R. A. (2000). Effects of repetition and foreknowledge in task-set reconfiguration. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 26*(6), 1445–1460. doi: 10.1037/0278-7393.26.6.1445
Sole, D. & Edmondson, A. (2002). Situated knowledge and learning in dispersed teams. *British Journal of Management, 13*(S2), 17–34. doi: 10.1111/1467-8551.13.s2.3
Staples, D. S. & Webster, J. (2008). Exploring the effects of trust, task interdependence and virtualness on knowledge sharing in teams. *Information Systems Journal, 18*(6), 617–640. doi: 10.1111/j.1365-2575.2007.00244.x
Straus, S. G. & Olivera, F. (2000). Knowledge acquisition in virtual teams. In M. A. Neale & E. A. Mannix (Eds.), *Research on managing groups and teams* (pp. 257–282). Emerald. doi: 10.1016/S1534-0856(00)03013-9
Sunwolf & Seibold, D. R. (1999). The impact of formal procedures on group processes, members, and task outcomes. In L. R. Frey, D. Gouran & M. S. Poole (Eds.), *The handbook of group communication theory and research* (pp. 395–431). Sage.
Swart, K., Bond-Barnard, T. & Chugh, R. (2022). Challenges and critical success factors of digital communication, collaboration and knowledge sharing in project management virtual teams: A review. *International Journal of Information Systems and Project Management, 10*(4), 59–75. doi: 10.12821/ijispm100404
Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science, 12*(2), 257–285. doi: 10.1016/0364-0213(88)90023-7
Tannenbaum, S. I., Mathieu, J. E., Salas, E. & Cohen, D. (2012). Teams are changing: Are research and practice evolving fast enough? *Industrial and Organizational Psychology, 5*(1), 2–24. doi: 10.1111/j.1754-9434.2011.01396.x
Tomprou, M., Kim, Y. J., Chikersal, P., Woolley, A. W. et al. (2021). Speaking out of turn: How video conferencing reduces vocal synchrony and collective intelligence. *PLoS One, 16*(3), e0247655. doi: 10.1371/journal.pone.0287800
Valentine, M. A., Retelny, D., To, A., Rahmati, N. et al. (2017). Flash organizations: Crowdsourcing complex work by structuring crowds as organizations. In G. Mark & S. Fussell (Eds.), *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, 6–11 May 2017* (pp. 3523–3537). Association for Computing Machinery. doi: 10.1145/3025453.3025811
van de Brake, H. J. & Berger, S. (2023). Can I leave my hat on? A cross-level study of multiple team membership role separation. *Personnel Psychology, 76*(1), 221–248. doi: 10.1111/peps.12495
van de Brake, H. J., van der Vegt, G. S. & Essens, P. J. (2024). More than just a number: Different conceptualizations of multiple team membership and their relationships with emotional exhaustion and turnover. *Journal of Applied Psychology, 109*(5), 714–729. doi: 10.1037/apl0001168
van de Brake, H. J., Walter, F., Rink, F. A., Essens, P. J. et al. (2018). The dynamic relationship between multiple team membership and individual job performance in knowledge-intensive work. *Journal of Organizational Behavior, 39*(9), 1219–1231. doi: 10.1002/job.2260
van de Brake, H. J., Walter, F., Rink, F. A., Essens, P. J. et al. (2020). Benefits and disadvantages of individuals' multiple team membership: The moderating role of organizational tenure. *Journal of Management Studies, 57*(8), 1502–1530. doi: 10.1111/joms.12539
van den Hooff, B. & de Leeuw van Weenen, F. (2004). Committed to share: Commitment and CMC use as antecedents of knowledge sharing. *Knowledge and Process Management, 11*(1), 13–24. doi: 10.1002/kpm.187

van den Hooff, B. & de Ridder, J. A. (2004). Knowledge sharing in context: The influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management, 8*(6), 117–130. doi: 10.1108/13673270410567675

van Knippenberg, D., De Dreu, C. K. & Homan, A. C. (2004). Work group diversity and group performance: An integrative model and research agenda. *Journal of Applied Psychology, 89*(6), 1008–1022. doi: 10.1037/0021-9010.89.6.1008

Wageman, R., Gardner, H. & Mortensen, M. (2012). The changing ecology of teams: New directions for teams research. *Journal of Organizational Behavior, 33*(3), 301–315. doi: 10.1002/job.1775

Walther, J. B. & Bunz, U. (2005). The rules of virtual groups: Trust, liking, and performance in computer-mediated communication. *Journal of Communication, 55*(4), 828–846. doi: 10.1111/j.1460-2466.2005.tb03025.x

Wasko, M. M. & Faraj, S. (2005). Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. *MIS Quarterly, 29*(1), 35–57. doi: 10.2307/25148667

Webster, M. & Sell, J. (2007). Theory and experimentation in the social sciences. In W. Outhwaite & S. P. Turner (Eds.), *The SAGE handbook of social science methodology* (pp. 192–211). Sage. doi: 10.4135/9781848607958.n10

Wickens, C. D. (1991). Processing resources and attention. In D. Damos (Ed.), *Multiple task performance* (pp. 3–34). CRC Press.

Wickens, C. D. (2008). Multiple resources and mental workload. *Human Factors, 50*(3), 449–455. doi: 10.1518/001872008X288394

Wylie, G. & Allport, A. (2000). Task switching and the measurement of 'switch costs'. *Psychological Research, 63*(3), 212–233. doi: 10.1007/s004269900003

Zika-Viktorsson, A., Sundström, P. & Engwall, M. (2006). Project overload: An exploratory study of work and management in multi-project settings. *International Journal of Project Management, 24*(5), 385–394. doi: 10.1016/j.ijproman.2006.02.010

Appendices

Appendix A. Protocol of the experiment

Appendix A1. Experiment setup

The following example illustrates the experimental setup.

Participant A belongs to Team 1 with Participants B and C. They are, respectively, given Articles A, B, and C, and questions (B1, B2, C1, and C2), (A1, A2, C3, and C4), and (A3, A4, B3, and B4). Team 1 requires adherence to specific communication rules. Given the MTM scenario, however, Participant A is also part of Team 2 with Participants D and E; thus, she must also obtain answers to questions (D1, D2, E1, and E2) from Articles D and E. Differently from Team 1, members of Team 2 are not required to follow specific communication rules. Since Team 1 and Team 2 differ in terms of rule adherence requirements, Participant A will need to transition between different contexts. The same happens to Participants C and D. Participants B and E, instead, belong, respectively, to two teams requiring adherence to predefined communication rules – i.e., Teams 1 and 3 – and two teams without specific requirements in terms of rule adherence – i.e., Teams 2 and 4. As a result, they won't experience any transitions between teams with different communication rules. This experimental configuration allowed us to have four individuals transitioning between contexts and two who do not.

Appendix A2. MTM experiment – participant instructions

INTRODUCTION

Thank you for your participation in this experiment!

We are studying how people work in **virtual teams**. As a participant, you will work as a member of **two** virtual teams **simultaneously** to answer a set of multiple-choice questions about the content of recent trade press articles. Each team member will have access to different articles and to eight different questions, so collaboration among team members is required to successfully answer all the questions. You will have access to one article and eight questions that DO not regard your article, but the articles of the other team members. The goal of each team is to correctly answer **all** questions given to **all** team members within 90 min/1 h and a half.

During the experiment, you will assume a **fictitious <u>participant identity in each of the two teams to which</u>** you have been assigned. Each team consists of **three members**. The teams are virtual because all communication takes place via information technology rather than face-to-face. To communicate with your team members in the experiment, you will use the **instant messaging** feature of an online collaborative software application called Slack. This application will allow you to have simultaneous virtual conversations with members of both of your virtual teams.

The materials you have been given include:

A *participant information sheet*, providing information about your alternate participant identity and your personal login information.

Two *team information packets*, providing communication rules for each team (see Appendix A2) and the set of questions to be answered; each packet includes four questions, thus you will have eight questions to answer.

A recent *Harvard Business Review* article.

Please, check to own all materials and call for a researcher in case you are missing some of them.

Following this page is a set of instructions that provide step-by-step guidance on how to participate in the experiment. Please **follow the instructions carefully** and notify the researcher(s) administering the experiment if you have any questions.

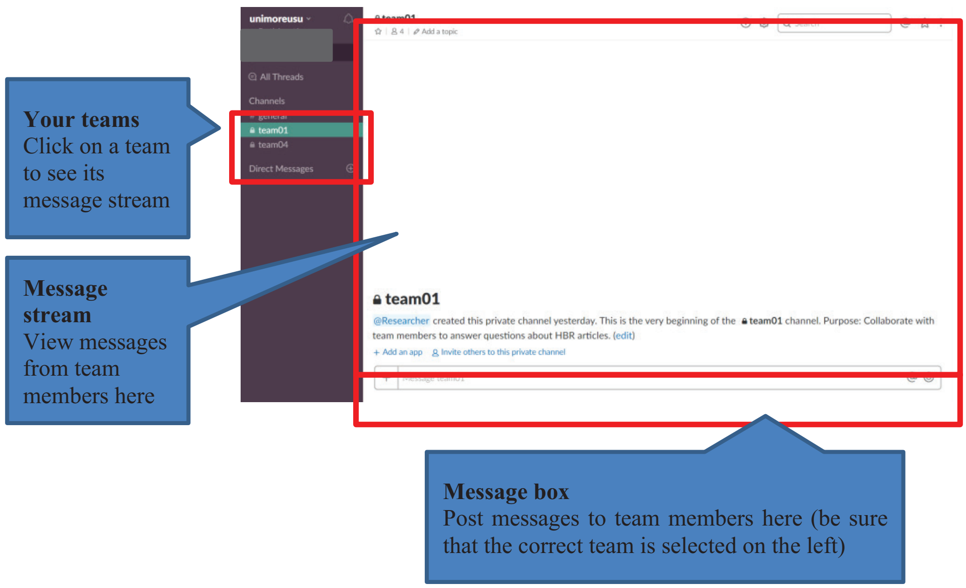
PARTICIPATION INSTRUCTIONS

BEFORE STARTING

STEP 1: Review the participant information sheet and login to Slack

You have been given a **participant information sheet** that identifies your participant number, your participant name (the identity you will assume during the experiment), your assigned teams (for instance, team 1 and team 4), and the URL and login credentials you will use to access Slack. Begin by reviewing this information and logging in to Slack.

STEP 2: Familiarize yourself with the Slack interface



Important – please:

DO NOT search for information elsewhere, for instance on the web. Use only the instant message function on Slack.

Use ONLY the chat function in the instant messaging. DO NOT share files, DO NOT use audio and video.

DO NOT attempt to send direct messages to your team members or others. Instead, use only the team message box shown above.

DO NOT attempt to post messages in the *#general* channel. This channel has been disabled for purposes of the experiment.

DO NOT attempt to change the team channel settings or add/remove team members.

Each message stream includes 3 team members and a researcher. The researcher has the role of collecting the data at the end of the experiment but will not be online during the experiment so DO NOT attempt to interact with researchers.

STEP 3: Review the information packet for each of your teams

You have been given a **team information packet** for each of your two assigned teams (see appendix A2). Please read them very carefully!

DURING THE EXPERIMENT

STEP 4: Briefly review the *Harvard Business Review* article that you received

You have been given a recent article published in the *Harvard Business Review*. You are the only member of your team with access to this article.

Answers to some of your team members' questions can be found in this article.

Similarly, your team members have their own articles that may contain answers to your questions. Briefly peruse the contents of your article for now; you will refer back to it in greater detail in the next step.

For each team, follow the communication norms reported in the team information sheet [*only if present*].

STEP 5: Record the answers to your questions

After communicating with your team members, when you believe you know the answer to one of your questions, mark it clearly by **circling the preferred answer** on your question sheet. You should make your best effort to determine the correct answer by requesting the help of your team members. DO NOT GUESS! Your performance will be assessed both individually and as a team. Remember that the best performing team(s) will receive a 90-euro voucher prize.

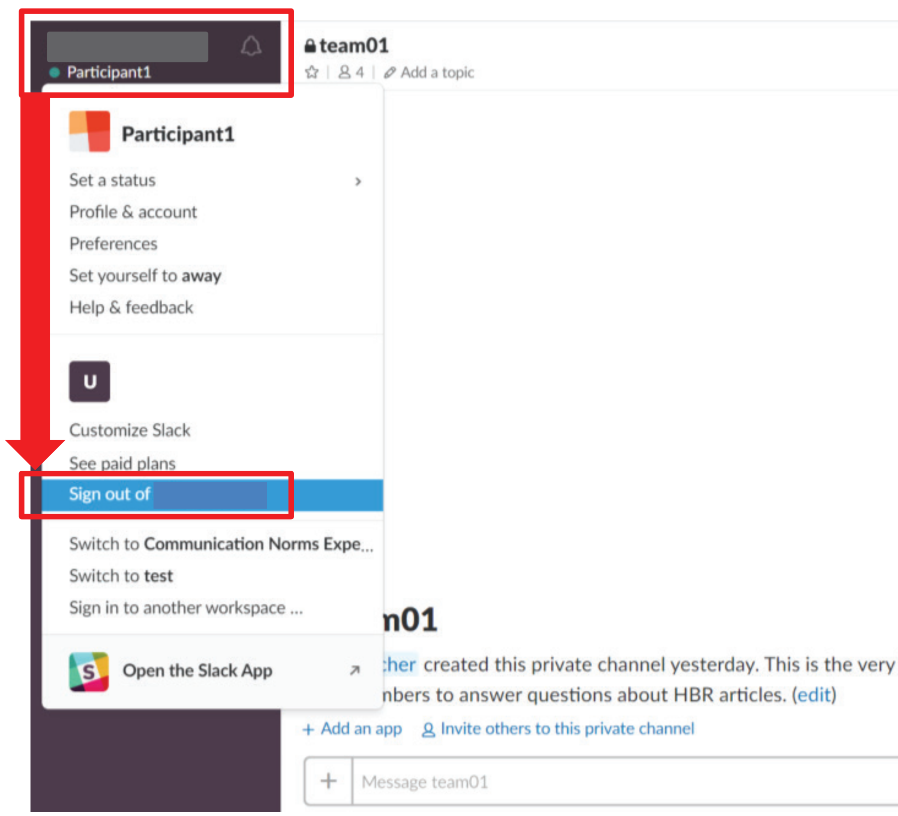
AFTER THE EXPERIMENT

STEP 6: Complete the post-task survey

Once you finished the task, you will be asked to fill in a survey. While you are taking the survey, you will NOT use Slack to further chat with team members, nor will you bring any changes to the two chats. However, you MAY scroll the chats in order to retrieve more easily the information required by the survey.

STEP 7: Conclude your team task

Your team's task is complete when either all members on both of your teams have recorded answers to all their questions, or when time elapsed. After having filled in the survey, sign out of Slack as shown below:



STEP 9: Turn in materials

Please submit all experimental materials, including team information sheets, answers to questions, the HBR article, and this instruction sheet to the researcher(s) administering the experiment.

Appendix A3. Team information packet

Team information

Team number: *[#Num]*

Team member names (one of these is you): *[names of the team members]*

Communication rules:

[when present]

When sending messages to members of this team, please observe the following rules:

Begin the chat session by introducing yourself: tell your name and describe the topic you have been assigned.

Although all team members can see all messages, each message should always be addressed to a single individual for clarity. Always begin each message by addressing the person by his/her name.

Use proper written English in all communications. Do not use slang, acronyms (e.g., FYI, IMO), emojis, or other informal communication.

Messages should be focused on completing the task; 'small talk' or other personal messages should be avoided.

Responses to messages should be sent within 3 min. If you are not able to respond with the requested answer in that time frame, send an acknowledgement that you have received a message.

If you don't receive a response to your message in 3 min, you can kindly solicit an answer.

Every time you provide an answer, please explain also why you believe the answer is correct.

[when not present]

No rules

See attached pages for your assigned questions that you will answer by collaborating with your team members (note from authors: questions are not included, but are available upon request)