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Experimenting During the Shift to Virtual Team Work: Learnings from How Teams Adapted
their Activities During the COVID-19 Pandemic

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Abstract:

Past research has focused on understanding the characteristics of work that are fully virtual or fully collocated. The present study seeks to expand our understanding of team work by studying knowledge workers' experiences as they were suddenly forced to transition to a fully virtual environment. During the height of the US lockdown from April to June 2020, we interviewed 51 knowledge workers employed on teams at the same professional services firm. Drawing from in situ reflections about teams' lived experiences, this paper explores how the *shift* to virtual work brought on by the COVID-19 pandemic illuminated the fundamental activities that team work requires, facilitated and undermined the performance of team activities, and prompted employees to adapt and reflect on their use of digital technology to perform these activities. Using the shift to virtual work as a unique learning opportunity, our findings demonstrate that team work entails several core activities (task, process, and relationship interactions) that require additional adjustments to successfully enact in the virtual (vs. collocated) environment.

Keywords: *Team work; Activities; Virtual Work; Digital Technologies*

At the height of the initial response to the Coronavirus disease (COVID-19) pandemic in March 2020, about 50% of US employees were working from home as compared to 15% before the pandemic (Brynjolfsson et al., 2020). Prior investigations have primarily focused on understanding the characteristics of team work that is either fully virtual or fully collocated (Hinds & Mortensen, 2005; Salas, Reyes, & McDaniel, 2018), largely because few have had the opportunity to examine the transition from collocated to virtual work. This transition brought on by the COVID-19 pandemic provided a unique opportunity to observe teams in a period of change, where teams were prompted to think about their core team activities and how to enact them in the virtual environment.

Organizations are often operating within periods of equilibrium where their basic activities and structures are highly stable; large changes typically occur during periods where an internal or environmental shift dismantles this stability (Gersick, 1991). As a result, teams most often do not actively reflect on the enactment of their activities. However, the shift to virtual work brought on by the COVID-19 pandemic allowed us to witness teams' reflections and adjustments in a period of sudden change and enabled us to develop novel insights about the enactment of team work. By integrating the existing team interactions literature with what our interviewees reflected on as core team activities during this transition, we were able to more deeply elaborate on the types of activities that make up task, process, and relationship interactions. We also discovered how virtual enactment facilitated and undermined the performance of these activities, and how employees adapted their use of digital technology to perform these critical interactions.

During the first phase of the US lockdown from April to June 2020, we interviewed 51 knowledge workers from across all levels of the hierarchy at the same professional services firm.

All informants were members of teams that had been suddenly forced to work fully virtual. We asked interviewees to reflect on their new reality of virtual team work, to compare their current experiences to their former reality of working on a physically collocated team, and to share changes they were discovering to be necessary. As the weeks of having to work virtually passed, our interviewees experimented with which team activities to perform and how to perform them, enabling us to learn what activities were working better and worse in a fully virtual environment.

Team Interaction Activities: Task, Process, and Relationship

Drawing from the literature on team interactions and the lived experiences of knowledge workers, we explore how the shift from collocated to virtual work shed new light on the types of activities that teams need to perform work effectively. We outline a typology of team interaction activities that builds from prior literature, which has described three primary activities that team interactions consist of: task interactions (“the what”), process interactions (“the how”), and relationship interactions (“the who”) (Bales, 1958; Marks, Mathieu, & Zaccaro, 2001; Massey, Montoya-Weiss, & Hung, 2003). Task interactions are the activities that team members complete together that directly contribute to their teams’ output (Bales, 1958). Process interactions are interactions that include discussions of who will complete which tasks and how much responsibility different people should have over the various components of task completion (Jehn & Mannix, 2001). These interactions are “used to direct, align, and monitor taskwork” (Marks, Mathieu, & Zaccaro, 2001). Relationship interactions include “interpersonal behaviors in support of team functions and underlying activities” (Massey, Montoya-Weiss, & Hung, 2003) and can provide “task-related, career-related, and social support functions” (Ibarra, 1995).

In Table 1, we summarize our interview findings and draw novel connections to the existing team activities literature. We further contribute to the literature on team work by

delineating how teams came to perform each type of activity in their suddenly virtual environment. We also describe how each type of activity—task, process, and relationship interactions—was initially conducted in the transition to the virtual environment, and how teams reflected on and adjusted each activity to work more effectively.

Insert Table 1 About Here

Beyond the team interaction activities that we focus on, teams also engage in a set of additional activities: 1) individual work activities (where team members work independently on task and process work), 2) external and outward facing activities (where team members interact with non-team members), and 3) training and development activities (where team members engage in formal programs aimed at learning more about the client or customer, the work, or the organization). In this paper, however, we focus specifically on *internal team interactions*—activities that involve interactions among team members within a working group.

In the sections that follow, we discuss how the shift to virtual work facilitated an understanding of more and less successful ways to perform these team activities in the virtual world. We present team members' categorization of the positive and negative experiences of the initial performance of each team interaction activity when suddenly virtual, the subsequent adjustments that teams made as they strived to improve how they performed these activities, and how teams adapted their use of digital technology to facilitate these team activities (Tables 2-7).

Insert Tables 2-7 About Here

Task Interactions

For our interviewees, the concept of “task interactions” was defined as interacting with team members to complete core output. Our interviewees described the need for two types of task interactions for completing team output: “content interactions” and “bounce interactions”.

Content interactions. In the collocated environment, interviewees described content interactions as activities that involved sitting side-by-side sharing feedback and answering questions on the core tasks that they were each executing (e.g., building slides). When working from the same physical location, these activities occurred spontaneously. The shift to virtual prompted teams to realize that they had to start setting aside time for synchronous content communication and depend on digital technology (i.e., electronically mediated collaboration tools) to ensure that they engaged in this feedback sharing.

However, the scheduled nature of content time in the virtual world came with challenges. Teams felt that they were missing out on spontaneous conversations about content. As one informant explained, “you can’t just grab two people and talk through something, you have to schedule a time” and “this makes it much harder to have spontaneous collaborative conversations.” To facilitate informality during content interactions, teams adjusted their initial enactment of this activity by adding more asynchronous technology use—such as Slack—to allow for immediate questions. There was evidence that this digital innovation improved communication and team work in a way that could generalize to collocated environments. One of the managers that we interviewed reflected on the fact that virtual content conversations resulted in higher quality output due to team members having more individual time to think through ideas, “Because we are not all located in the same place... our conversations are more effective

and the quality of the work is better virtually than when we are in person. . . because there is less talking on the fly and more individual work.”

Bounce interactions. In the collocated environment, interviewees characterized bounce interactions as grabbing a marker and sketching ideas together on a white-board. Whereas content interactions were centered on task execution, bounce time centered around the generation of new ideas. When teams first shifted to the virtual environment, they carried out their idea generation activities asynchronously—team members thought about ideas on their own and sent them back and forth to their team. One interviewee explained “Virtual collaboration can sound like, ‘I haven’t thought about this enough. I am going to go away and think about this more. You do the same.’ ... There is a lot more parallel processing as opposed to active, real-time collaboration... Sitting side-by-side to solve a problem can’t happen anymore. Now, I am drawing my thoughts and sending them to my team.” One benefit that teams found in using asynchronous digital technology, such as email and text, was that it facilitated more equitable conversations because “everyone’s perspective has to be articulated as opposed to a free-flowing conversation.”

However, our informants soon realized that the absence of real-time bounce interactions in the virtual environment made it more challenging to align with their team members and achieve integrated solutions. As one interviewee explained, “In the case of virtual work, it feels like you are a ping-pong ball getting hit against all four walls, because every time you finally connect with someone [on the work] you are pushed in a different direction.” Another reflected, “Insight generation is critical... In the absence of sitting in front of a whiteboard together, what is being done to innovate? For our work to survive in a virtual world, we are going to have to understand how to push intellectual boundaries in a digital environment.” These reflections are

consistent with research showing that collaborative interactions are more challenging in technology-mediated environments given their lack of richness (Moser & Axtell, 2013)—which refers to the ability of a communication channel to relay the different types of information sent through it (Daft & Lengel, 1986; Rockmann & Northcraft, 2008). Richer mediums include technology like video communication, which is synchronous and provides many of the same cues as in-person interactions (Rockmann & Northcraft, 2008); email is a less-rich communication medium.

Our interviews revealed the lack of bounce interactions in the virtual environment, providing our informants with novel insight into the importance of using technology in a way that would facilitate bounce interactions to effectively build new ideas. To solve for the lack of richness and spontaneity of conversations in the digital environment, some teams adjusted to facilitate bounce interactions in WebEx to allow for informal discussion and debate. One interviewee described the adjustment her team made as follows, “In the first project, we didn’t have a virtual team room, and didn’t have a rhythm for working together and organizing our work.” She continued, “In the second project, we had a smoother teaming process because we tried to relax the norms around communication, do more virtual brainstorming, and allow for more personal autonomy over the work.”

Process Interactions

Interviewees referred to process interactions as time that their teams spent defining and structuring their work. While it is known that virtual settings require more process and coordination time (Montoya-Weiss, Massey, & Song, 2001), what surfaced from our interviews was the importance of balancing the quantity and quality of process interactions.

Quantity. In the collocated environment, interviewees viewed process interactions as necessary activities that occurred with a regular cadence. In the virtual environment, interviewees sensed that process interactions took an abundance of time. When teams could no longer “drop into each other’s offices” or “easily ask questions” in the team room, teams felt compelled to have more process interactions to ensure a shared understanding of the work. As one respondent described, “To accommodate virtual work, I have had to add many more structural daily check-ins and hour-long case team meetings.” Another interviewee noted, “Before I would send process notes only once a week and it was tedious, but I did it because the team found it useful.” After discovering this identical system was not as effective in the virtual environment, this interviewee sent process emails “every morning” to keep the team on track.

Another informant explained her shift in understanding about the optimal amount of process time needed in the remote environment, “At first, scheduling additional check-ins was really helpful—especially in the first two weeks where there was so much uncertainty... Right now, I feel like we are overcompensating as a result of not being at the client site by having 10 million touch bases a day. I worry about how to maintain interaction with the team and with clients without getting burned out.” After noticing that more process time was required in the virtual environment but that it could be exhausting, teams began to adjust the quantity of their process time, moving away from more demanding synchronous communication (e.g., video calls) toward less demanding asynchronous communication tools (e.g., Slack). This shift allowed teams to focus more on content-related work. As one informant explained, “There is a desire to have a lot of check-ins in the virtual environment... I don’t like formal check-ins because I don’t like talking about the process. It is much more useful to talk about content and professional

development.” As a result, the informant said he “organize[s] [their] process work over Slack” and “leave[s] blocks of time open to have Zoom calls ... between 8:30 and 6:30 pm.”

Quality. Interviewees described increased clarity about what it meant to use process time effectively in the virtual environment that could help to shed light on the efficient use of these interactions in the collocated environment. Interviewees noted that process interactions were best accomplished in the context of constrained exchanges that happened separately from other activities like content interactions. As one interviewee described, “what I am learning is that bad process is when content bleeds into time preserved for process. This makes 30-minute check-ins drag on for 45 minutes and disrupts the flow of the day.” This interviewee added, “Bad process is empty process—when managers push through process meetings as if none of our stress was happening or oblivious to our work hours.”

Prior research highlights that process interactions are especially important in the virtual environment (Chudoba et al., 2005). However, our interviewees emphasized the importance of actively managing process interactions to ensure that they occurred but did not take over too much of the workday. Adjustment involved using faster, less disruptive digital tools like Slack to communicate about process interactions, such that they only occurred when necessary, leaving time for other important team activities and preventing “bad process” from occurring.

Relationship Interactions

Our interviewees highlighted the importance of setting aside time for building and sustaining relationships. Informants described relationship interactions as involving three critical components: social interactions, huddle interactions, and development interactions. “Social interactions” were devoted to building bonds with team members, “huddle interactions” were devoted to informal interactions where team members learned from each other through

discussions and sensemaking about prior meetings, and “development interactions” were devoted to mentorship and developmental feedback outside of team work time.

It is well-known that social and developmental activities are necessary to facilitate productive and cohesive team interactions (Klein et al., 2009). Building on this research, our interviews shed new light on the importance of scheduling time for informational exchange or “huddle interactions”. Because these interactions often happened during breaks when collocated, the importance of this activity only became recognized when it went missing in the virtual world.

Social interactions. In some ways, respondents felt that they were able to get to know their colleagues more deeply in the virtual environment. They described more visibility into each other’s lives outside of work. As one interviewee noted, “I have learned more about my clients in the past 6 weeks than in the 5 months before that—in terms of their children, their ‘hubbies’, their housemates.” This respondent continued, “As the leader of the Women’s Group at my organization, I have weekly and monthly meetings. Usually these were calls—no one ever bothered to put on video—now we are doing these calls as videos.”

People were also trying to show more compassion, as one interviewee explained, “There is a lot more transparency and openness about where everyone is at. I got a lot of support from all levels including the partners when I was having a bad day, and this almost made me cry. I hope that [our organization] can hold onto this level of support, visibility, and transparency and turn it into a more generalized phenomenon and not just something that happens in acute moments like the current pandemic.”

Interviewees expressed a felt awareness of the difficulty of cultivating and sustaining relationships online, which prompted experiments in new forms of virtual social interactions. As part of the move to virtual work, teams recognized the need to schedule informal activities, like

team dinners, virtual drinks and trivia gatherings. As one respondent emphasized, “Teams are doing virtual bootcamps and virtual yoga. The office is trying to do new things that bring people together.” One interviewee noted: “We now have new routines we didn’t have before like “Thankful Thursdays”—where we share what we like about each other. . . We also have virtual team dinners instead of dinners at client sites, which allows for people who aren’t in the same city to join.” Technology enabled people who would not have otherwise interacted in a traditional environment to socialize more easily.

Social time was not without its challenges. In-person work teams used to regularly travel to a client site together, forced to interact separately away from the distractions of everyday life. In the virtual environment, teammates were home with their families, pets, and hobbies. When provided with the opportunity, some team members were unable or unwilling to take time away from their private lives to socialize with the team. One interviewee explained, “Now, people who have any free time spend it with family or children, which is great. But inherently because you are not trapped at the client site with your team, it’s probably a little bit harder to get that team bonding going.” Interviewees emphasized the well-documented importance of and challenges for maintaining social interactions in the virtual environment (Gajendran & Harrison, 2007). While technologies such as WebEx and Zoom facilitated social interactions, and managers attempted to schedule fun and novel events to increase engagement, not everyone was able to or interested in attending, and interviewees reported that the quality of social interactions was lower in the virtual environment. Despite active attempts to adjust social interactions, many interviewees saw these activities as inherently less effective online than in-person, likely due to the reduced richness and increased distraction of virtual vs. in-person interactions (Anderson et al., 1997).

Huddle interactions. When teams went remote, leaders worked hard to schedule social time. However, the more invisible informational exchanges that frequently occurred in the team room, hallway, or over coffee, went missing in the virtual environment. As one respondent explained, “The value of informal interactions is very high – it is very important. If you were in a team-room, you would have been chatting away. We debated about whether to put 30 minutes into our calendar to chat. We think this would encourage informal conversations to happen, but in the virtual environment scheduled social interactions can feel artificial. These conversations instead might happen more naturally if there was buffer time left between meetings for these check-ins to occur naturally (like in the team-room). Leaving ‘slack time’ in between meetings as opposed to structured time might make these conversations less formal.”

Without informal interactions, informants find that their team interactions were less efficient. Markedly, remote work stripped managers of the ability to address their teams informally. As one interviewee noted, “The biggest change in my daily work is the lack of ad-hoc interaction. In person, if someone has a quick question, they will raise it in the team-room, in front of everyone. I will answer it, everyone will hear the answer, they will move on... I have to repeat myself more often, and it is harder to develop a shared understanding about the project.”

The challenge of replicating ‘hallway’ conversations via digital communication led interviewees to realize that these conversations were more than ‘downtime’—it became apparent that these conversations helped the team qualify their thinking and ask process-related questions. One interviewee added, “Although more of my team is attending client meetings, fewer individuals understand what is going on in the meeting because they do not informally connect with one another about the meeting in the virtual as compared to the collocated environment. They are in the meeting but do not fully understand the context to the same extent.” In the virtual

environment, managers often were the primary point of information, and communication in the virtual environment was experienced as “hub and spoke.”

For the few teams that acknowledged the distinct need for huddle interactions and started to schedule them, the results were striking. Teams that provided additional scheduled times for formal check-ins to “make up” for the lack of hallway conversations felt more aligned. One respondent noted, “One of my managers started sending invitations to debrief after client meetings. These debriefs helped to preserve the richness of the prior conversation and increased my understanding—the conversation was just as if we were in the team room together.”

Development interactions. Lastly, interviewees emphasized the importance of time spent with colleagues receiving mentorship and developmental feedback outside of content interactions. In the virtual environment, these developmental interactions often went missing—similar to social and huddle interactions— if time was not intentionally set aside to ensure that it happened. As one interviewee noted, “I want to put more time on the calendar for what I call ‘side-ways feedback’ [where everyone on the team regardless of their position gives feedback to each other] since we are not having informal one-on-ones anymore.” As another reflected, “It is more difficult to give and receive informal feedback. We always had weekly feedback sessions, which are continuing online. But now we have lost the more ad-hoc feedback mechanisms that naturally occurred (e.g., as we left meetings).” While other research has illustrated the importance of development interactions for team cohesion (Orlikowski & Yates, 2002), our interviews illustrate the importance of both informal and formal feedback interactions as a central team activity. Likely due to the increased work demands placed on our interviewees, none of the employees that we spoke with attempted to use digital technologies to innovate or improve on the quantity or quality of their team’s development activities.

Discussion

Drawing from the team work literature, we focused on three core activities that teams engage in: task interactions, process interactions, and relationship interactions (Ibarra, 1995; Marks, Mathieu, & Zaccaro, 2001). We used our interviews to better understand the fundamental activities that team work requires, how teams adjusted their activities for the virtual environment, and how teams adapted their use of technology to perform these activities when the COVID-19 pandemic suddenly required all team interactions to be mediated by digital technologies.

In doing so, our interviews provide two main contributions to the team interactions literature. First, we were able to build on the existing team work literature to outline a typology that consists of three core team interaction activities (task, process, and relationship interactions) and also delineate the interaction subtypes of which each of these core activities is composed. Second, we were able to observe interviewees' direct comparisons between the collocated and virtual environment. Observing this shift allowed us to examine how teams reflected on and adjusted their work to successfully enact their core activities, in part by changing how they used digital technology to perform each activity. Teams' reflections about the interactions that they engaged in successfully and unsuccessfully, and about those that they felt had gone missing, also facilitated novel insights about which team activities were fundamental.

Some changes in how teams worked together made virtual work more effective than collocated work—namely the ability to be “heads down” and focus on individual activities. However, informants often viewed the initial performance of team interactions in the virtual environment as ineffective, leading to efforts to adjust them. Our findings therefore suggest how team activities may be more and less effectively performed in a technologically mediated world.

While our interviewees described the initial performance and adjustment of team activities in the virtual environment, future research could explore the long-term adjustments needed to maintain the effective performance of team activities. For example, one informant worried about how to maintain process interactions without becoming burned out. This observation highlights the importance of studying the long-term adjustments needed to ensure that team interactions are not only effective in the short run, but sustainable in the long-term.

Although we initially built on the literature and focused on task, process, and relationship activities (and their subcomponents) as distinct entities, we also observed the fact that these activities did co-occur and started to unpack their overlap. For example, to improve alignment and task planning, huddle interactions sometimes co-occurred with process interactions. Relationship interactions co-occurred with content interactions when managers and peers spontaneously interacted when completing work together. Teams often reported frustration when process and content interactions occurred simultaneously. Future research should further explore how these activities overlap and how to optimize the virtual co-occurrence of team activities.

Beyond identifying the types of team interactive activities and how they are performed in more and less effective ways in the virtual world, our research makes a critical distinction between the types of interactive activities that are needed and the time that is blocked for these interactive activities. Teams not only adapted how they used technology to perform their activities, they also started to rethink the way that they carried out their fundamental team activities more broadly. This is a critical distinction because we observed—especially in the virtual world mediated by digital technologies—that certain types of interactive activities “go missing” if there is not specific time set aside to complete them (e.g., bounce interactions, huddle interactions, development interactions) and that other types of activities expand to fill the time

set aside for team interaction (e.g., process interactions). Although more research is needed to understand ideal cadence and scheduling, our framework provides a useful starting point for describing the activities that teams of knowledge workers need to schedule to be effective.

In addition to uncovering how much time should be allocated for each team activity, future research should explore which activities need to be proactively scheduled versus allowed to occur on an ad hoc basis and how much time individual team members should have for their own personal work. Understanding how teams account for breaks, transitions, and personal time in virtual settings could also provide critical insight into how teams change the way they work in a technologically mediated remote work environment. Research should also further investigate the role of factors such as a team's core function, number of team members, and hierarchical differentiation in shaping how teams should allocate time toward team (and individual) activities.

This paper also provides practical insights. Broadly, the development of our typology should help teams and managers track their core activities and ensure that each activity is enacted and receives sufficient attention—especially in the virtual environment where some of the activities “go missing.” Work teams may want to label what primary *type* of interaction each meeting will involve and debrief the quality of the interaction afterward, encouraging continued experimentation in service of more efficient and effective fully virtual team interactions.

We examined how team work activities shifted as the same teams of knowledge workers went from working in a co-located environment to an environment where all team interactions were suddenly forced to be mediated by digital technology. Being able to capture team work interactions and reflections on these interactions during this unique period of transition allowed us to create a more comprehensive understanding of the types of team activities that are required, how these activities were best adapted for use in a fully virtual environment, and how digital

technology played a role in facilitating these team activities. We hope that researchers and practitioners build on this foundational typology of team interactive activities to deepen our understanding of how to facilitate effective individual and team-level work, regardless of whether these activities occur in collocated or virtual work environments.

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Table 1: Team Interactions Elaborated

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Type of Interaction	Definition that emerged from interviews	Examples from interviews	Definition from literature
<i>Task Interactions</i>	Interaction during which team members work together on their core output		“acts that directly contribute to goal accomplishment” (Marks, Mathieu, & Zaccaro, 2001)
<u>Content Interactions</u>	Sitting side-by-side working on, answering questions about, and providing feedback on core team output	Working on slides together; mapping out a problem space together; practicing presentation of slide decks together	“performance of the task” together as a group (Massey, Montoya-Weiss, & Hung, 2003)
<u>Bounce Interactions</u>	Interaction among team members building on ideas in real time	Whiteboarding; brainstorming sessions; framing conversations; problem solving, Mini-CTMs	“independently contribut[ing] ideas, and each original idea increases group productivity” McGrath, 1984; Strauss, 1999)
<i>Process Interactions</i>	Interaction spent defining and structuring the work	Check-ins in the morning to help teams prioritize on urgent work; Check-outs in the afternoon to help teams prioritize on urgent work and make sure everything gets done by end of day; Project Planning and Module Allocation	Acts that “direct, align, and monitor taskwork” (Marks, Mathieu, & Zaccaro, 2001) Interactions aimed at the “establishment of operating procedures and how the team will proceed” (Massey, Montoya-Weiss, & Hung, 2003)
<i>Relationship Interactions</i>	Interaction to build and sustain relationships and to learn from each other		Acts that support “task-related, career-related, and social support functions” (Ibarra, 1995)

<u>Social Interactions</u>	Interaction to build bonds with team members	Virtual happy hour: discussing weekend plans before meeting starts; formal team dinners and interactions where “we do not talk about work”	Relationship activities that “involve expressions of interpersonal affect” (Umphress, Labianca, Brass, Kass, & Scholten, 2003) “interactions not germane to the focal performance task, such as joking, personal or interpersonal discussions” (Massey, Montoya-Weiss, & Hung, 2003)
<u>Huddle Interactions</u>	Informal interactions where team members make sense of prior meetings and interactions, and debrief members who were not present	Asking someone about team norms over lunch; checking in about norms on the team before or at the end of the day with the leader; making sense of a meeting together	Relationship activities that “involve a person gathering information, advice, and resources necessary to accomplish a task” (Umphress, Labianca, Brass, Kass & Scholten, 2003)
<u>Development Interactions</u>	Formal feedback and development programs	Scheduled feedback sessions between managers and subordinates	Development activities consist of activities that facilitate performance increases and personal growth and are designed to “coordinate social interactions and maintain social order and work-relevant social norms” (Orlikowski & Yates, 2002).

Tables 2-7. Initial Enactment and Adjustment of Team Interaction Activities

Table 2: Task Interactions - Content			
	Description	What Worked	What Didn't Work
Initial Performance	<p>Content interactions were scheduled and occurred over video: “My team is relying to a greater extent on digital tools. I liked seeing the adoption of these tools across levels, including senior members on the team. The easier transition for people has been to move all of their case meetings to WebEx instead of phone calls so that they can see each other.”</p>	<p>Relief of pressure to be “always on” in the team room: “In the team-room the personal is contracted, it is not possible to occupy personal space and individual space at the same time. It is difficult to ask for more time in the team room to answer questions, even if I need it. . . Sometimes it was physically difficult to have space for personal thoughts because the team room can be small and there are 9 people talking over each other. The benefit of the team-room is immediacy; however, it is draining to always be ‘on’ together.”</p> <p>Higher team engagement during video meetings: “The team collaboration is better now because people are more engaged and on when meetings happen over video. They are not doing as much multitasking, so the meetings are more efficient. For example, before working from home, I would usually dial into [team meetings] while I was traveling, in a cab, and it was harder to be engaged on these calls if I wasn’t on video, which was the norm before. We would be on video when we weren’t in the same place, and the engagement from the</p>	<p>Informal conversations about content didn’t happen spontaneously: “You can’t just grab two people and talk through something, you have to schedule a time” and “this makes it much harder to have spontaneous collaborative conversations.”</p> <p>Newer employees felt less comfortable speaking up: “[In the virtual environment], I feel less sure about how the work is going. I have a couple of new consultants who are soft-spoken, and it is hard to get a feel for them. It is easy to feel whether the content is going well, it is much harder to understand if these consultants are getting what they want.”</p>

		senior management and middle managers is better now because of this requirement of being on video while working from home.”	
Adjustment	<i>Adoption of asynchronous technologies (e.g., Slack) for immediate questions and issues:</i> “Now, in the virtual environment, there are virtual walls so to communicate you have to call or ping each other on Slack.”	<i>Higher quality of meeting output due to having more individual time to think through ideas:</i> “The thinking on my team has gotten better in the virtual environment. Even if my team needs to talk their ideas out loud with me, we now have to agree to chat. So, they are bringing more fully baked ideas into our conversations than they used to. They have given the issue more time before we talk because they now have to schedule a time to pick up the phone and chat about an issue. This has led to higher quality output from my team (so long as my team doesn’t spend too long on their own struggling first) . . . Because we are not all located in the same place and talking on the fly, our conversations are more effective and the quality of the work is better virtually than when we are in person. This is because there is less talking on the fly and more individual work.”	

Table 3: Task Interactions - Bounce

	Description	What Worked	What Didn't Work
Initial Performance	<p><i>Collaborative work was done asynchronously:</i> “Virtual collaboration can sound like, ‘I haven’t thought about this enough. I am going to go away and think about this more. You do the same.’ Then, my Associate and I will come together and talk about the issues. There is a lot more parallel processing as opposed to active, real-time collaboration. As a result of this parallel processing, I have become more direct. Sitting side-by-side to solve a problem can’t happen anymore. Now, I am drawing my thoughts and sending them to my team.”</p>	<p><i>Hearing more perspectives because conversation isn’t dominated by team leaders:</i> “The virtual environment means that everyone is more siloed in their thinking, which prevents me from worrying about taking over the conversation. Part of this is also that the mechanism of communication—email and text—mean that everyone’s perspective has to be articulated as opposed to a free-flowing conversation, where there is more avenue for senior leadership to give an unsolicited opinion. On WebEx it is also more noticeable when I am dominating the conversation (which I tend to do in the team room). I now feel more of an obligation to go around the room and ask each consultant what their thoughts are. There is no whiteboard to draw connections between what people are thinking, which means that the conversation isn’t dictated by the person holding the whiteboard pen to the same extent.”</p>	<p><i>Less integrative solutions:</i> “You don’t add to what other people are doing as frequently. One person presents their thoughts, then the other. As a result, the solution is not as integrative.”</p> <p>“In the case of virtual work, it feels like you are a ping-pong ball getting hit against all four walls, because every time you finally connect with someone [on the work] you are pushed in a different direction. The root cause of this feeling is not sitting together in the team room, and not getting as much feedback from the senior partner who would normally be there with you. In the virtual environment, all of the work you are getting is ‘fragmented mindshare’. [In a virtual environment], it is more difficult to get everyone to align on the same thing because of competing schedules.”</p> <p><i>Takes longer to realize when team members not aligned:</i> “When collaboration isn’t working people are not seeing eye to eye. You think you are</p>

			<p>saying the same thing, but you are actually saying different things, and in the virtual environment it takes longer to recognize that you aren't seeing things in the same way."</p> <p><i>Less development opportunity through building solutions together:</i> "In one recent example, I did this [drawing thoughts and sending them to team], and my team came back with another model that reflected their ideas, and she said, 'This fits into my model, more or less, and is similar to what I was thinking about'. This is not optimal because it is a less positive experience for her Associate. I said, 'Your idea fits into my model' which limits his development and ownership over the work product."</p>
Adjustment	<p><i>Using technology in a way that supports spontaneous communication (e.g., unscheduled phone calls, video calls that are designated for spontaneous discussions):</i> "To get our work done, we have had to leave more time for spontaneous discussion, where we might talk through something for 15 minutes. In the virtual environment, we have to break down the barriers to communication</p>	<p><i>Relaxing the norms around communication allowed for more organic conversation:</i> "In the first project, we didn't have a virtual team room, and didn't have a rhythm for working together and organizing our work. In the second project, we had a smoother teaming process because we tried to relax the norms around communication, do more virtual brainstorming, and allow for more personal autonomy over the work."</p>	<p><i>Still not comparable to sitting in front of white board together:</i> "It is harder to bounce ideas off of each other when you are not in front of a whiteboard." "Insight generation is critical. It is about our ability to challenge each other and bounce ideas off of each other. In the absence of sitting in front</p>

	<p>even more than usual. My manager has made it clear that anytime between 9-5pm, I can call her spontaneously.”</p>		<p>of a whiteboard together, what is being done to innovate and to push the intellectual boundaries? For our work to survive in a virtual world, we are going to have to understand how to push intellectual boundaries in a digital environment. This issue is going to be critical to our firm’s long-term success. . . I want to know whether or not this virtual environment is harming collaboration and creativity in part because people are not able to think through or debate ideas with the same level of depth as they were doing before.”</p>
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Table 4: Process Interactions

	Description	What Worked	What Didn't Work
Initial Performance	<p>High frequency of process interactions that occurred over video meetings and email: “To accommodate virtual work, I have had to add many more structural daily check-ins and hour-long case team meetings to force team interaction.”</p>	<p>Higher frequency of process interactions at a scheduled time: “Before [in co-located context] I would send process notes only once a week and it was tedious, but I did it because the team found it useful. Now I am doing this every morning. I usually love to dive into content right away but now the first email I send includes a detailed list of all the meetings they have that day and all the things the team needs to do and what I need from them.”</p> <p>Modified morning ‘stand-ups’ that occur over WebEx to see each other and stay on the same page: “Before, I used to do standup check-ins on a project at start and end of the day as a team.” “The team standups still happen, on Zoom now which is similar and feels good to stay on the same page.”... “We also added daily touch base meetings with our client, with mixed results. Sometimes the client meetings are deprioritized or cancelled. We also started a touch base with the broader team and senior people for this client for about 10-minutes a day.”</p>	<p>Time on process taken away from working on content: “Because I am spending more time on communication and iterating back and forth on the same content, I am spending less time with my team working on content, and on long-term strategy.”</p> <p>Teams felt burnt out by having so many process interactions: “At first, [having a touch base with the broader team] was really helpful—especially in the first two weeks where there was so much uncertainty.” ... “However, now I am worried that these check-ins are causing burn-out. I don’t want to ‘over correct.’ Right now, I feel like we are overcompensating as a result of not being at the client site by having 10 million touch bases a day. I worry about how to maintain interaction with the team and with clients without getting burned out.”</p> <p>Teams felt they were not having high quality process interactions: “What I am learning is that bad process is when content bleeds into time preserved for process. This makes 30-</p>

			minute check-ins drag on for 45 minutes and disrupts the flow of the day. Bad process is empty process—when managers push through process meetings as if none of our stress was happening or oblivious to our work hours.”
Adjustment	<i>Conducting process using asynchronous technology (e.g., via Slack) rather than synchronous technology (e.g., via video call):</i> “There is a desire to have a lot of check-ins in the virtual environment.”	<i>Adjustment to allow for asynchronous enactment of process time over Slack leaves more time for content:</i> “I do a brainstorming session at the beginning of the day as opposed to a formal check-in. I don’t like formal check-ins because I don’t like talking about the process. It is much more useful to talk about content and professional development. Talking about process is like being in a marriage where all you talk about is your kids’ soccer practice schedule. . . As a result, I don’t have check-ins and check-outs that are process oriented. The process work happens asynchronously. We organize our process work over Slack, and then I leave blocks of time open to have Zoom calls. I am ‘on’ and available between 8:30 and 6:30 pm.”	<i>Asynchronous nature of communication cuts into other activities:</i> “The downside [of manager responding quickly on Slack] is that my manager seems to respond even in a meeting, potentially compromising its quality.”

Table 5: Relationship Interactions - Social

	Description	What Worked	What Didn't Work
Initial Performance	<i>Holding previously in-person social events over video call (e.g., virtual dinners)</i>	<p><i>Increased openness about personal lives, resulting in increased sense of connection:</i> “COVID has connected us together in a more personal level. I have learned more about my clients in the past 5 weeks than in the 5 months before that—in terms of their children, their ‘hobbies,’ their housemates. We now have new routines we didn’t have before like ‘Thankful Thursdays’—where we share what we like about each other. . . We also have virtual team dinners instead of dinners at client sites, which allows for people who aren’t in the same city to join. . . I have also gotten to know a lot of my colleagues face-to-face. As the leader of the Women’s Group at my organization, I have weekly and monthly meetings. Usually these were calls—no one ever bothered to put on video—now we are doing these calls as videos.”</p> <p>“There is a lot more transparency and openness about where everyone is at. I got a lot of support from all levels including the partners when I was having a bad day, and this almost made me cry. I hope that [our organization] can hold onto this level of support, visibility, and transparency and</p>	<p><i>Virtual social events aren’t enough to replace in-person social time:</i> “The level of empathy and care has a certain ceiling when all you have are faces on the screen versus people you are spending real and formal time.”</p> <p>“In a way the current situation makes it feel more like a job in the sense that there is definitely less of a personal connection with people. Now, people who have any free time spend it with family or children, which is great. But inherently because you are not trapped at the client site with your team, it’s probably a little bit harder to get that team bonding going and of course being remote now is even harder.”</p> <p><i>Difficult to read how relationships are going:</i> “When you are working remotely it is easy to feel anxiety about how well the relationships are going—sometimes this even carries over into anxiety about the content of the work. If you don’t have familiarity with each other’s styles, you can start to second guess in ways that make it harder to</p>

		<p>turn this into a more generalized phenomenon and not just something that happens in acute moments like the current pandemic.”</p> <p><i>Increased efficiency, potentially at the expense of cohesion:</i> “What the team feels most is the lack of social interaction around the case, and not being able to have dinners with the team or not going for a walk in between meetings. From a work perspective, this is more efficient, because we are more focused on work. We are not losing time walking from one meeting to another, and we are not losing time flying to the client site. However, these social relationship times have also been lost.”</p>	<p>get work done.”</p>
<p>Adjustment</p>	<p><i>Using video technology to try new and novel ways of socializing, like game rooms and yoga</i></p>		<p><i>Despite teams’ best attempt, socializing is harder in a virtual environment because video technology doesn’t have the same richness as face-to-face interactions:</i> “A lot of this job is about the team, there is an aspect of missing out on the team social time when you are working remotely. We are not getting to a deeper level [with clients and teams] because we aren’t there in person. The client-side is solved with doing video calls, but the team room is hard to replicate in the virtual environment, and this has been a negative... The teams are doing virtual</p>

			<p>bootcamps and virtual yoga. The office is trying to do new things that bring people together. However, I don't see these social activities as a replacement for in-person Friday drinks. These perks are just not as effective online as they are in-person."</p>
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Table 6: Relationship Interactions - Huddle

	Description	What Worked	What Didn't Work
Initial Performance	<p><i>Informal conversations were not happening:</i> “The biggest change in my daily work is the lack of ad-hoc interaction. In person, if someone has a quick question, they will raise it in the team-room, in front of everyone. I will answer it, everyone will hear the answer, they will move on.”</p>		<p><i>Informal social interactions feel artificial:</i> “The value of informal interactions is very high-it is very important. If you were in a team-room, you would have been chatting away. We debated about whether to put 30 minutes into our calendar to chat. We think this would encourage informal conversations to happen, but in the virtual environment scheduled social interactions can feel artificial. These conversations instead might happen more naturally if there was buffer time left between meetings for these check-ins to occur naturally (like in the team-room). Leaving ‘slack time’ in between meetings as opposed to structured time might make these conversations less formal.”</p> <p><i>Team work is less efficient:</i> “I have to spend a lot more time pulling out information from my team about where they are less comfortable and gaps in knowledge, and this is causing inefficiencies in communication because I have to be much more proactive when my team is</p>

		<p>not understanding something because they have stopped asking me questions they would have asked in person, if we had informal conversations after meetings.”</p> <p>“The lack of ad-hoc informal interaction is also negatively impacting client work. I cannot see when the client is free, and briefly discuss something with them. I now have to call them with questions, and this has proven more difficult because I don’t want to bother the client in case they are doing something else.”</p> <p>“I am missing out on informal interactions the most and I think it is making my interactions on my team less efficient. I have to repeat myself more often, and it is harder to develop a shared understanding about the project and the client as a result.”</p> <p><i>Lack of shared knowledge:</i> “Although more of my team is attending client meetings, fewer individuals understand what is going on in the meeting because they do not informally connect with one another about the meeting in the virtual as compared to the collocated environment. They are in the meeting but do not fully</p>
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			understand the context to the same extent.”
Adjustment	<p><i>Began scheduling time for video calls to make up for lack of informal conversations:</i></p> <p>“We added additional structure for formal check-ins (1pm, 3pm, 5pm) to make up for the lack of hallway conversations. Moving to a virtual environment obliged me to have more structure and clearer deadlines. This isn’t necessarily different than what happens at the office. At the office, I might ask someone to stop by my office at 2 pm and show me initial interim results. This is the same idea, except these check-ins are scheduled in advance because we cannot run into each other in person.”</p>	<p><i>Scheduling short times to talk can help increase conversations:</i></p> <p>“We now try not to schedule meetings back-to-back. If we were all in the same room, we would be able to have a 2-minute chat and make sure we are all on the same page. Now, we have calls back-to-back, and we are no longer running into the team room in between meetings. Anything that isn’t said in a meeting, won’t be able to be conveyed until 3 hours from now—during their next break. This is why scheduling in short times to talk about content is so important.”</p> <p><i>Increased understanding of what happened during meetings:</i> “One of my managers started sending invitations to debrief after client meetings. These debriefs helped to preserve the richness of the prior conversation and increased my understanding—the conversation was just as if we were in the team room together.”</p>	

Table 7: Relationship Interactions - Development

	Description	What Worked	What Didn't Work
Initial Performance	<p><i>Weekly feedback sessions occurred over video call:</i> “It is more difficult to give and receive informal feedback. We always had weekly feedback sessions, which are continuing online. But now we have lost the more ad-hoc feedback mechanisms that naturally occurred (e.g., as we left meetings).”</p>		<p><i>Weekly feedback is not frequent enough:</i> “On my new team, I am planning to schedule one-on-one meetings that include conversations about work and about ‘How are you?’ I want to facilitate honest conversations about working style, time and communication norms and get to know each other better.”</p> <p>“I want to put more time on the calendar for what I call ‘side-ways feedback’ since we are not having informal one-on-ones anymore and I want to be ahead of any issues or improve.”</p> <p><i>Lower-level employees not being included in conversations:</i> “Previously, the client could drop by the team room at any moment but now the senior members of the BCG team are the ones doing more active management of the client, including many phone calls and meetings that I do not attend. This means the managers are more tied up in meetings, and I am not getting as much visibility on the project.</p>
Adjustment	No adjustments made		

Author Statement

Ashley Whillans: Conceptualization, Formal analysis, Investigation, Data Curation, Writing – Original draft preparation, Writing – Review and Editing. **Leslie Perlow:** Conceptualization, Formal analysis, Investigation, Data Curation, Writing – Original draft preparation, Writing – Review and Editing, Supervision, Project Administration. **Aurora Turek:** Investigation, Data Curation, Writing – Review and Editing.

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Highlights

- The shift to virtual work created an unprecedented opportunity to study teams.
- During the early months of the COVID-19 pandemic, we conducted 51 interviews.
- Informants were knowledge workers within the same professional service firm.
- Learning from the shift to virtual work illuminated essential team work activities
- Informants reflected on and adapted their technology use for team work activities

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