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The Cognitive Costs of Virtual Communication

Analysis by Dr. Joseph Mercola ✓ Fact Checked

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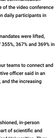
STORY AT-A-GLANCE

- Communicating through screens may not yield the same results as old-fashioned, in-person communication
- Pairs communicating virtually generated significantly fewer total ideas compared to in-person pairs, possibly due to a narrowed visual focus
- Virtual meeting fatigue has been called a "detriment to worker well-being and productivity"
- Significant predictors of virtual meeting fatigue included a sense of being physically trapped, mirror anxiety, interval between videoconferences and duration of videoconferences
- For every hour that you spend communicating virtually, make sure you can offset it with meaningful in-person communication and plenty of physical activity and daily movement, preferably in an outdoor, natural setting



The COVID-19 pandemic accelerated an already shifting trend toward digital communication technology. With millions of employees mandated to work from home, use of the video conference company Zoom increased 30-fold in April 2020, with more than 300 million daily participants in virtual meetings at its peak.[1]

Virtual workspaces have continued to remain popular even as pandemic mandates were lifted, however. From 2020 to 2021, Zoom saw year-over-year revenue growth of 355%, 367% and 369% in the second, third and fourth quarters, respectively.[2]

"Work is no longer a place. It's a space where Zoom serves to empower your teams to connect and bring their best ideas to life," Eric S. Yuan, Zoom's founder and chief executive officer said in an earnings release. But the best ideas, it turns out, may not happen virtually, and the increasing reliance on virtual communication may come with a cognitive cost.[3]

With Virtual Communication, Creative Ideas Suffer

Communicating through screens may not yield the same results as old-fashioned, in-person communication. The ability to generate ideas in collaboration is "at the heart of scientific and commercial progress," according to researchers from Columbia and Stanford University. They explained:[4]

> *"From the Greek symposium to Lennon and McCartney, collaborations have provided some of the most important ideas in human history.*
>
> *Until recently, these collaborations have largely required the same physical space because the existing communication technologies (such as letters, email and phone calls) limited the extent of information that is available to communicators and reduced the synchronicity of information exchange (media richness theory, social presence theory, media synchronicity theory)."*

There's something about sharing a physical space that adds to the generation of creative ideas, however, and that "something" is lost when collaborating through a screen, the team found. In a study involving 602 people,[5] participants were randomly paired to generate creative uses for a product over a five-minute period. Pairs select their most creative idea for one minute more. Pairs worked together in person or virtually, the latter using a video display of their partner.

Significant differences were noted, including that virtual pairs generated significantly fewer total ideas compared to in-person pairs. In the second part of the experiment, 511 pairs generated creative uses for a product either in person or virtually, but this time the setting was a room with 10 props, some ordinary, like folders, and some unusual, such as a skeleton poster.

This phase of the study involved asking the participants to recall the props in the room, while the researchers also recorded participants' eye gaze. The idea was to test their hypothesis that "that virtual communication hampers idea generation because the bounded virtual space shared by pairs narrows visual scope, which in turn narrows cognitive scope."

Focusing on a Screen Hampers Idea Generation

The results supported their hypothesis, showing that virtual pairs spent significantly more time focused on the screen looking directly at their partners and significantly less time looking around the room.

As such, they were able to recall significantly fewer unusual props in their room compared to in-person pairs. Further, both unusual prop recall and gaze around the room were significantly associated with an increase in the number of creative ideas.[6]

"This combination of analyses converges on the view that virtual communication narrows visual focus, which subsequently hampers idea generation," according to the study.[7] They then took it a step further to determine whether the results would hold true in a typical workplace, as opposed to a laboratory setting.

For the field experiment, 1,490 engineers worked in pairs either face-to-face or via videoconference to generate product ideas for one hour, then select one of them to submit as a product innovation for the company.

Similar to the laboratory study, the engineers working virtually generated fewer total ideas and fewer creative ideas than those working together in-person. There was, however, some indication that when it comes to selecting an idea, virtual communication may be equivalent to, or perhaps even more effective, than in-person collaboration.

Is a Hybrid Setup Best?

While in-person communication may have some advantages to creative idea generation, there are other factors that must be taken into account when determining whether or not to use virtual communication. Some have suggested, for instance, that virtual communication is better for the environment,[8] while 75% of U.S. employees surveyed in 2021 said they preferred to work remotely at least one day a week.[9]

"[M]any additional factors necessarily enter the calculus, such as the cost of commute and real estate, the potential to expand the talent pool, the value of serendipitous encounters, and the difficulties in managing time zone and regional cultural differences," the team noted,[10] adding "there are concrete and immediate economic advantages to virtual interaction."

Using a combination of in-person and virtual communication may therefore offer the best of both worlds, particularly if, perhaps, creative idea generation is made a priority during in-person meetings. As it stands, it's estimated that U.S. employees worked from home about 20% of the time in 2021.[11]

Virtual Fatigue Is Real

It should be recognized that communicating virtually may take a toll on human health not only via cognitive costs but also via the increased amount of time humans are attached to screens, leading to concerns over excessive sedentary behavior and EMF and blue light exposure, as well as feelings of fatigue.

Virtual meeting fatigue, sometimes referred to as "Zoom fatigue," became widely talked about during the pandemic, including for schoolchildren who found themselves suddenly in virtual meetings for hours a day. Virtual meeting fatigue is described as "a feeling of being drained and lacking energy following a day of virtual meetings," according to a study published in The Journal of Applied Psychology.[12] The researchers explained:[13]

> *"Drawing from theory related to self-presentation, we propose and test a model where study condition (camera on versus off) was linked to daily feelings of fatigue; daily fatigue, in turn, was presumed to relate negatively to voice and engagement during virtual meetings.*
>
> *We further predict that gender and organizational tenure will moderate this relationship such that using a camera during virtual meetings will be more fatiguing for women and newer members of the organization."*

During a four-week study, the team analyzed 1,408 daily observations from 103 employees, finding that their theory was correct and, further, virtual meeting fatigue affects performance at meetings that day as well as the next day.[14]

The effects of virtual meetings on children are also unknown, but it's suggested that they, along with other COVID-19 pandemic measures like mask wearing and social distancing, may negatively affect communication and language skills in youth.[15] It's difficult to ignore the possibility that engaging in face-to-face meetings in-person may promote group cohesion and better outcomes.

Speaking with The Washington Post, corporate trainer Paul Axtell explained, "In person meetings provide a sense of intimacy, connection and empathy that is difficult to replicate via video. It's much easier to ask for attentive listening and presence, which creates the psychological safety that people need to sense in order to engage and participate fully."[16]

On the other hand, virtual meeting fatigue has been called a "detriment to worker well-being and productivity," which may result from several factors unique to the virtual setting, including:[17]

Increased cognitive load due to prolonged gaze from others
Apparent closeness of others
Reduced mobility
Unmet expectations regarding synchrony and nonverbal cues
Loss of a sense of place
Lessened scaffolding and supervision
Reduced dynamic and nonconscious distribution of work among teammates

Viewing self-video during virtual meetings is another factor that may lead to "mirror anxiety" and negative self-focused attention, which is not only psychologically stressful but may affect meeting performance and add to virtual meeting fatigue.[18]

In another survey of 322 higher education faculty members, a moderate level of fatigue was reported during virtual meetings.[19] Significant predictors of virtual meeting fatigue included a sense of being physically trapped, mirror anxiety, interval between videoconferences and duration of videoconferences.

Virtual Communication May Mess With Your Mind

Another theory for why virtual meetings can feel so psychologically taxing was proposed by Robby Nadler, director of UC Santa Barbara's Academic, Professional and Technical Graduate Writing Development Program. He describes virtual meeting fatigue as part of a larger computer-mediated communication (CMC) exhaustion, which emerges due to prolonged used of CMC platforms.[20]

Part of the problem relates to the way your brain processes spatial cues, as virtual communications distort our typical sense of space.

"Because many people use platforms such as Zoom trying to replicate physical spatial interactions," Nadler said in a University of California news release, "they ultimately exhaust themselves because, try as we might to create physical interactions, virtual space plays by different rules."[21] He refers specifically to virtual communications leading to the creation of "third skins":[22]

> *"[Third skins are proposed to account for how nuanced differences in space between SOCs [synchronous online consultations] and face-to-face exchanges mean participants are not engaged as human actors but 'flattened' into a totality of third skin comprising person, background, and technology*
>
> *The resulting transformation and our bodies exerting substantial cognitive efforts to interact with this transformation are theorized to produce CMC exhaustion."*

Nadler used the example of chatting in a coffee shop, in which a coffee grinder makes noise in the background. All parties in your in-person meeting associate the coffee grinder with typical background noise in the shop. In a virtual setting, however, the coffee grinder in the background would be a disruption associated with you.[23]

"So even though we like to think when we're in a Zoom meeting that we're engaging another person and all the rules of physical interactions hold," Nadler explained, "what we're actually doing is engaging a particular representation that has all these yearly spatial differences — and that's where CMC exhaustion can come in because our minds want to do something that really won't permit."[24]

Ultimately, it's likely that virtual meetings are here to stay, offering both benefits and drawbacks to the way humans interact and communication on a daily basis, at work, school and in their personal lives.

On an individual level, balance is key. For every hour that you spend communicating virtually, make sure you can offset it with meaningful in-person communication and plenty of physical activity and daily movement, preferably in an outdoor, natural setting.

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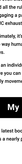

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Almond
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I recall a medical appointment with a beloved doctor. She said, "Let's go outside and sit by the lake. We can do a medical appointment anywhere." Really, you can. Testing is often done elsewhere. The consultation and listening are often the most important part of the appt. A very wise country doctor would make home visits and have each child sit on his lap and talk to him. He would ask if any thing was wrong. This doctor said any pain old enough to speak could tell him what was wrong--but, that, it was his job as a doctor to listen and understand. One major difference was that this was not assembly line medicine.

Doctors actually took time with each patient, got to know them and know what was normal for them. How can an MD be efficient or accurate nowadays when he/she does not have the basic information given to a veterinarian? Diet, living conditions, environment, observed activity, water, etc.? Little Johnny gets sick, sees a doctor, is given a prescription and returned to the same environment and lifestyle that caused the problem in the first place. No wonder so many people are lack vigor and vitality. Underlying problems do not get resolved.

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juststove
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It's all a form of captive audiences. Messaging gets narrow and comes at you mostly one way. With limited exceptions and usually controlled TV & Radio, newspapers, magazines, you are herded in one direction what they want, no to little give and take. Creatively killer psuedo justice. Look at Bad Bill Bill Gates. Little to nothing ever original came from him. His efforts were to buy out others creative products, or outright steal them. People forget, & the younger very likely have no idea how he sat in Congress for monopoly predator behavior and only know his Marketing Science Campaign image as a great benevolent genius. When we build parallel structures Locally we step out of our Modern Tower of Babel culcoles & the separated factions to compare notes, creativity kicks into high gear. Stop being Alone - Together, and get Together the Protoland I obviously hate this.

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Randyfast
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"Maintain a distance of 2 metres, to 'protect yourself and others - for your health and safety' ? Any questions?

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juststove
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Eventually all stuck in a solitary confinement pod, much like what is shown in the movie, the Matrix. Isolated, hooked up to be fed only what is allowed from top on down. Is this the end game for Tricky Dom Theory?

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Warwickian
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I have seen this to be true from the beginning of these Zoom meeting replacements. So much less productivity in the committees that I am on, but after a couple of years people have gotten very lazy. However I have been the primary spokesperson in getting some committees to revert back to in-person meetings. In one case there is a couple of members that don't feel "safe" yet in meetings and we have set up Zoom in the room just for them. I would seriously advise against this. The attractions of screens is such that everyone is looking at the screen and not each other, thus sapping a lot of energy from interpersonal communication. Perhaps others joining by phone would be better.

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Smiller23

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I thought it was just me... good to hear other perspectives on the zoom energy zap, emaciated creativity and general feelings of being disconnected.

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liharlu

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https://p2a.co/q5rFk7D https://p2a.co/y4dthMq

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MMaster

Joined On 8/14/2021 1:37:23 AM

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The studies sound highly artificial. I am not sure you can draw any valid conclusions from them, about real life. I find virtual exchanges very relaxing because I can lounge around, walk around, don't have to get dressed up, etc. I talk with my doctor by Messenger much more than in person, and we accomplish a lot more. I can report to her daily, whereas, if I am to meet with her, it requires a hour's driving, often when it is too hot or cold or when it is otherwise unpleasant for some reason. I resent the waste of time. I meet with her personally to get treatments. Because of time constraints, I have to meet with her during my normal nap time, while if I meet with her virtually, it is at the convenience of both of us. My husband ran a company and found a weekly meeting of staff very beneficial. It had to do with morale as much as creativity. In those days, virtual meetings were not thought of.

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