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# The Science of Staying Connected

With millions confined by the pandemic, social neuroscience shows how we can achieve real communication using virtual tools.



ILLUSTRATION: ROBERT NEUBECKER

*By Susan Pinker*

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A writer posted a brief video of her husband blasting crème brûlée with a welding torch and called it Fattening the Curve. A cellist uploaded his tender rendition of J.S. Bach's Allemande in G Major to calm down his Facebook friends. During the Covid-19 pandemic, such social media projects are attempted workarounds to social distancing, along with more traditional methods like calling old friends and

chatting with neighbors from opposite sides of the street. The question is, what works? How do we get our basic social needs met during a pandemic?

Answers are starting to surface from the field of social neuroscience, which uses brain imaging and biological measures like the hormones circulating in our bloodstreams to track how physical states like isolation affect our brains, and vice versa—how our moods and social situations affect our physical resilience.

Evidence shows that social interaction is a biological requirement, much like eating, drinking and sleeping. Our ability to learn to talk, play, acquire new skills, fall in love, conduct business, and age in good health all hinge on our motivation to connect with other people, social neuroscientists have found. So while social distancing reduces transmission of the coronavirus, which is good for us, it also increases anxiety, frustration and loneliness, which is bad for us.

**Even before Covid-19 forced us to self-isolate, a quarter of Americans were chronically lonely.**

Even before Covid-19 forced us to self-isolate, a quarter of Americans were chronically lonely—a psychological state that is invisible, contagious and physically damaging, much like the virus itself. Animals that have been forcibly isolated show enduring changes in their

brains and behavior, including ramped-up aggression in males, anxiety, depression, decreased immunity to infection, and a heightened desire for alcohol, food and morphine.

It's as if the craving for others' company is suddenly replaced by a biological drive for more immediate and risky rewards, a trade-off also seen in humans. [A new survey of 24 studies](#) on the psychological impact of previous quarantines, recently published in the journal *The Lancet*, shows that human adults who were quarantined due to SARS, H1N1 and Ebola show many of the same reactions: more fear, more alcohol and substance abuse, and more post-quarantine resistance to in-person contact—a “back off” feeling more common among health care workers.

But why? As social animals, humans depend on physical gestures to make us feel that we can trust other people. Close proximity, back pats, hugs, handshakes, high-fives, even just locking eyes with someone for a moment—these are

primitive signs that we're accepted and belong somewhere. Yet these gestures are exactly what we're supposed to avoid right now. The togetherness we feel at religious services when we sing, sway or clap at the same time, the reassurance we derive from family and holiday gatherings—these activities seem like second nature to us, yet they now present infection risks. This inconsistency creates an unsettled, watchful feeling, an urge to reconcile the contradiction that psychologists call cognitive dissonance.

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Until we can ease up on our vigilance, social neuroscience can help. Making genuine psychological contact depends on infinitesimal cues that the human brain picks up when someone is talking directly to us, says Patricia Kuhl, a co-director of the University of Washington's Institute of Learning and Brain Sciences. If you're not actually in the same room as the person you're talking to, making those cues explicit is a first step.

In 2003 Prof. Kuhl [published a study](#) showing that nine-month-old babies who heard a live person speaking to them in a second language, Mandarin or Spanish, focused intently on the person talking and then recognized those speech sounds later. Babies who heard the same speech sounds on audio or video recordings couldn't do the same. "There was phenomenal learning in the live group and no learning at all via a disembodied source," said Prof. Kuhl.

To replicate the power of actually being there, "contingency is what we need," she explained, referring to the small nods, interjections and changes in gaze that ping back and forth during a meaningful conversation. "It's all exquisitely tuned. Seconds are an eternity; milliseconds are what matter." Responding contingently signals to the listener that you're paying attention. "Think about being on the phone. If someone doesn't respond, we say 'are you there?' When there's no response, we notice," Prof. Kuhl told me from her home office in Seattle.

To approximate that immediacy in online conversations, Prof. Kuhl prefers videoconferencing apps like Zoom, which are less apt to freeze or inject unnatural delays into the conversation. She suggests propping up your screen so you can look in a straight horizontal line at the speaker, making it easier for them to see your micro-expressions. Lighting your face from the front and using clear facial expressions helps, as does allowing pets and children to wander into the frame. “I’m getting to know my people,” she said of her video calls with her lab staff, whom she now sees bouncing babies on their laps or “zooming” from their children’s bedrooms. “It’s not face-to-face, but we’ll come back with a new understanding of each other.”

**Two key requirements of our social brains can be preserved during video chats: paying attention to the same thing at the same time and being able to react instantaneously.**

The social neuroscientist Elizabeth Redcay, at the University of Maryland, wrote in an email that many of the aspects of in-person contact that we crave—like touching, following the direction of each other’s gaze and mirroring each other’s gestures—are missing from most online exchanges. But two key requirements of our social brains can be preserved during video chats: paying attention to the same thing at the same time and being able to react instantaneously. In a 2010 study, Prof.

Redcay showed that when a test subject lying in a scanner interacted with a researcher via live videoconferencing, regions of their brain related to mind-reading and social reward showed far greater activation than when they watched a prerecorded video of the researcher talking about the same topic. Interacting in real time was key.

Even marmosets communicate through reciprocal interactions, the MIT social neuroscientist Rebecca Saxe told me via Zoom. “When they can’t see each other, mother and baby marmosets communicate with contingent gaps between their calls.” Those exquisitely timed call-and-responses in the wild are a sign that we primates need that social to-and-fro as much as we need to eat. In fact, a new study by Prof. Saxe and her postdoctoral student, Livia Tomova, shows exactly

that: fMRI images of adults' brains scanned before and after a day of social isolation revealed patterns of neural activity almost indistinguishable from those of people who had fasted all day. People who are forced to be isolated crave social interaction the way a hungry person craves food, they write.

Clearly, interacting with other people satisfies basic human needs, but it has broader social benefits, too. It can help temper our primitive response to contagious disease, which is to feel disgust. Disgust evolved in humans to protect us from real dangers, such as eating rotten food, but when applied to other people it can lead to feelings of moral superiority and social avoidance.

A new paper on the Covid-19 crisis by a group of 36 psychologists and neuroscientists, soon to be published in the journal *Nature Human Behavior*, warns that “feelings of disgust can bleed into how we form impressions of other people. With worries about physical health more salient, people may become more judgmental of others' behavior and make less charitable interpretations.” Without a constant flow of verifiable, transparent information, the group warns, these reflexive feelings of disgust can turn into anger and hostility against out-groups, with potentially dangerous, even lethal consequences.

As individuals and as a society, the lesson is the same. “We need to connect, we need to interact,” said Prof. Kuhl. “When this is all over, those first hugs and gazes will send oxytocin through us that will last a long time.”

*—Dr. Pinker is a psychologist and a Mind & Matter columnist for Review. Her most recent book, “The Village Effect,” explores the science that underlies our daily interactions.*

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