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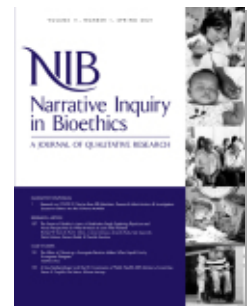
Reflections on Conducting Research From Home During COVID-19

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Editor's Note. This story complements Brian Moore's story, which is included among the IRB professionals' stories in this symposium.



Reflections on Conducting Research From Home During COVID-19

Laleh E. Coté

Acknowledgments. Special thanks to the many students, faculty, and professionals who have shared their personal experiences or offered to assist with recruitment for this work. I extend my deepest condolences for the many lives lost as a result of COVID-19, and for the hardships that many are faced with during this difficult time. In the last year, this line of work has greatly benefitted from the contributions and strong support from Anne Baranger, Colette Flood, Julio Jaramillo, Jenna Nicolas, Gia Jones, Seth Van Doren, Sinéad Griffin, Katelyn Cooper, Carrie Des Roches, Dianna Bolt, Megan Hochstrasser, Hope Henderson, Yulia Golubovskaya, Clarice de Azevedo Souza, Melanie Leavitt Cantarutti, Kristy Nordahl, Jennifer Doudna, and Brad Ringeisen. Thanks to Erin Dolan (UGA) and Jennifer Collins (USF) for sharing insights from your work on similar projects.

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The very first email I received that mentioned the novel coronavirus disease 2019 was on February 14, 2020. Valentine's Day. In a newsletter summarizing science highlights, a few

short sentences announced the name of this new virus that had infected thousands of people as "COVID-19," and the fact that experts had yet to find a good method for its diagnosis. The second email about COVID-19 that I received was from work on February 25; it explained that the spread of the virus was likely to impact international travel. It provided information from the Centers for Disease Control and recommendations to wash hands and use hand sanitizer to prevent its spread. There was no mention of wearing masks yet. In the subsequent weeks, I heard from more organizations and groups I'm affiliated with about the emergence of this disease and speculation from each group about the seriousness of the situation. For many people at that point, it was something too strange or too worrying to think about. But for me, this disease led to an entirely new line of research.

Back in 2007, the first real laboratory I stepped foot in as a community college intern focused on using microbiological methods to answer questions about ecosystems. It was with that group that I learned to hold a pipette, stitched my iPod Classic into my very own lab coat, and foolishly printed a typo-filled research poster without letting my mentor (a postdoctoral fellow) review it first. Now, 14 years later, it feels important to have been introduced to the world of science and research through microbiology. Reading articles about how PCR is used to detect the presence of COVID-19 after a nasal swab brings back powerful memories of working in the lab, concentrating on moving tiny amounts of liquid from one well to another, sometimes for hours on end. I have since transitioned from working in biology laboratories to working with undergraduates and graduate students, conducting research in the social sciences about the scientific community, and—as of this past year—about the scientific community's response to COVID-19.

One of the surprising things about conducting research related to COVID-19 is the speed at which everything happened. Like many people in my professional community, I had begun to work entirely from home in the spring, and had been notified that my summer research plans to collect field data would need to be altered. I had to purchase a cooling

pad to rest my laptop on because it quickly became overheated from back-to-back virtual meetings during the day. I was filled with dread every time I read the news or opened my email inbox. I sent an email to my research advisor on March 26 about my first ideas for a national survey to poll students majoring in the sciences to find out how COVID-19 may have impacted their short-term academic or career plans. I pored over as many articles as I could on the subject, reading about school closures, challenges with distance learning, people juggling childcare and work at home, and loss of access to research laboratories and field sites. We quickly realized that it would be beneficial to expand the scope of this research to include students, faculty, and professionals who were all feeling the impacts of this crisis. By April 9 at 1:55 pm, we had our Human Subjects approval in hand, and received our first survey response by 3:46 pm the same day. With a bit of preliminary data analysis from the survey to inspire an expansion, I submitted several grant proposals for a second project by the end of April. This project was designed to study the impact of COVID-19 on science research experiences, which can be gateways to graduate school and scientific careers for many students (Krim et al., 2019). By May 12, I had received news that one of these proposals was successful, which enabled me to organize some research assistants, update the IRB protocol, and proceed with recruiting subjects for the study.

In reflecting upon what I've learned since March, when I began redesigning my research to accommodate questions related to COVID-19, the first thing that comes to mind is the emotional burden. It was difficult for me to begin working from home, especially when people in my "bubble" maintained jobs outside the home. I worried about the illness and death already caused by the virus, as well as the safety of my own friends and family. My child was in kindergarten at the time, and his school year effectively ended early when distance learning was clearly not working as planned. There were so many ways my life had been affected—far too many to name here—and many of them created huge amounts of anxiety and stress. So, in designing research to explore the effects of COVID-19 on a group of people, I was informed by my own

experiences, perspectives from the people in my professional community, and a strong desire to contribute as part of a collective effort to better our society during this crisis. But, it hasn't been easy. I can't choose when my family has a rough week, when news will arrive of another person who has died, when one event creates a logistical bottleneck, or when we have to schedule nasal swab tests due to a run-of-the-mill cold or possible exposure. Being mostly confined to the home isn't conducive to writing or inspiration, and so it takes me a lot longer to produce something (anything!) than it normally would. And finally, because I am studying the impacts of COVID-19 while dealing with them myself, data analysis can be disheartening because it often reveals a truth that I expected to uncover: people are struggling. One survey response in particular has been burned into my mind, though it was only the first of many to give me pause. A university faculty member, to whom I am forever grateful for completing the survey, revealed that they are more afraid of dying than they have ever been before. If infected, the severity of the illness seemed unpredictable, and they were worried. I read this on my phone, and then just stopped and sobbed in the middle of my kitchen. In that moment, it was all just too much to handle. As more data came in, there have been a few similar moments since that time.

After COVID-19 began to spread around the world, scientists and researchers from many disciplines were interested in exploring ways to slow its spread, treat its symptoms, prevent deaths, or help with the healing process. I have come across at least 20 different surveys designed to investigate the effects of this pandemic on different aspects of respondents' lives, and I completed as many of them as I could. One in particular stands out in my mind, because I was so pleasantly surprised by the theme: how the owner-pet relationship has been impacted by COVID-19. My own dog has brought me a lot of peace since I began working from home, and it felt like a tribute to her to share this perspective. It felt good, almost cathartic, to answer the questions, and I took my time.

Unfortunately, I have had a difficult time responding to some other surveys, as they seem to have been written merely to obtain information,

without even a comment to acknowledge the pain a person might be feeling as they reflect on their life. These have felt too transactional, too cold. To be clear, I understand that not everyone has had the same lived experiences during this crisis. Many of the respondents to my own survey explained that they were privileged to have had only minor disruptions to their personal lives. However, even very preliminary information-gathering prior to designing a survey this year should have yielded some understanding that many people are in great distress. The emerging crisis was both a) highlighting great inequities in our society, and b) exacerbating those inequities for many people. This year, so many people have felt the cruel impacts of this crisis, with very little time to prepare for or process the situation. Even when asking for information, a gentle and flexible approach feels right regarding language, scheduling, and other logistical details that are so critical to conducting social sciences-based research.

Although the process between designing the survey and obtaining responses was quick, I spent many hours reading essays and news articles, as there was almost no social sciences-based research published at the time. Social media gave me a glimpse into the real-time perspectives of undergraduates and graduate students in the sciences. I made lists about the topics they most often raised, comparing these to comments made by faculty and scientists. I also shared my draft surveys with researchers in my network, and piloted the early drafts with undergraduates and peers, to make sure the language was easy to read, and would generate thoughtful responses. Finally, I read through all of the communication COVID-19 crisis I could get my hands on, and compared this with language posted on college, university, and company websites to think about what messaging the people in my study may have been exposed to previously. All of this was done to acquaint myself with my target audience, in terms of the situations they may have found themselves in, and to make a decision about what type of data resulting from this work would be most useful to the larger scientific community. This work required me to kiss my child goodnight and then stay up for a few more hours

to focus while our home was finally silent. I don't recommend this way of working, but at the time, my sleep was often disturbed from stress, and I was finding a way to reconcile my desire to contribute with the understanding that my planned research projects were impossible and no longer relevant. I shuddered at the idea of simply moving forward with an interview in which we didn't address the elephant in the room; how could I interview a student in Summer 2020 to ask them about their career plans without first checking in on them to find out how COVID-19 may have affected their life? How could I claim to understand my study population without incorporating the larger context in which their experiences sit?

Beyond these initial ideas, I have found myself navigating many other circumstances related to this work. While recruiting, many people were supportive of these studies, but explained that there were already plans to survey their own community about their experiences. Others explained that they had too much else to deal with, or simply did not respond (not unusual for this type of research). With all of this, I have come to the conclusion that there is no single "right" way to conduct research during a global pandemic. Still, I try to find a respectful balance. On the one hand, this work—to find out what people are experiencing in order to share insights with decision makers and those within the communities represented—is valuable. *What are they going through? What are they thinking about? How could I best serve them by telling their stories?* On the other hand, I don't want to intrude on people during a difficult time; this research is intended to create a positive impact, after all. After the murder of George Floyd at the end of May, I stopped actively recruiting responses for the survey, because it seemed frivolous in comparison to the important discussions the nation was engaged in at that time. I am interested in the data, yes, but only because I am invested in the well-being and success of my target population. The delicate dance between pushing forward and holding back is one that I assume I will become only more familiar with as time passes. The work will change as society does.

Yes, this year has challenged me. Yes, this work has challenged me. And yes, I would embark on

this work again, because it is a way for me to make sense of the world around me, and to give a voice back to the people in my community.

Related Works

Krim, J. S., Coté, L. E., Schwartz, R. S., Stone, E. M., Cleaves, J. J., Barry, K. J., . . . Rebar, B. M. (2019). (2019). Models and impacts of science research experiences: A review of the literature of CUREs, UREs, and TREs. *CBE—Life Sciences Education*, 18(4), ar65.



Assessing Risk When Everyone's Afraid: The Challenge of Seeing Health Care Workers as People When Our Need for Them Is So Great

Rebecca C. Hendrickson

I was a second year resident when I witnessed, from across a hallway, a failed resuscitation of a child hit by a car. Her image on that table—looking so much like my own young daughter—and her mother's screams haunted me for many weeks. I couldn't understand why: "She wasn't even my patient!" I told my mother in disgust. I was just there. It seems strange to me now, but in the moment, my mother's response came as a shock: "You may be a doctor now, but you are still a human being who witnessed a child die." I was still early in my training, but already it had become a fixed, unquestioned belief: a physician is absolutely invested in the care they provide, but ordinary human emotions should no longer affect them.

The idea that traumas you experience as part of your job do not "count" is widespread. I think it is likely at the core of a number of the challenges I experienced as a researcher attempting to address the traumatic stressors experienced by health care workers and first responders working during the COVID-19 pandemic. I am a VA psychiatrist working in a PTSD specialty clinic, and I run a research program focused on understanding how particular

combinations of chronic and acute traumatic stressors can lead to the long-term changes we associate with PTSD. I also study how to treat, and, hopefully, prevent these changes.

When the pandemic first hit New York City, I began to hear my friends and colleagues in medicine describe not just long, harrowing work shifts, but also insomnia, nightmares, intrusive memories of the horrors they were seeing, and a sense of always being on edge. Although these symptoms can't count as symptoms of "PTSD" until they have been present for more than one month, what we know so far of the pathophysiology of both acute stress symptoms and PTSD suggests the underlying mechanisms are fundamentally the same. If treatment is indicated earlier than one month after trauma, in practice, most of the medication options are the same as well. The biggest difference is that it's so hard to study acute stress disorder. Here, we are always using these treatments "off label," relying on what we know of PTSD treatment, pragmatic experience, and rare case series, rather than large, organized clinical trials.

This gap in evidence base is most frustrating in the area of long term outcomes. Our theoretical and preclinical models would suggest that treating acute stress symptoms with medications that block the noradrenaline response to stress, such as the common PTSD medication prazosin, will also decrease the likelihood of these symptoms becoming the chronic symptoms seen in PTSD. However, there is no good clinical evidence for or against this hypothesis.

When I began to hear all the symptoms of acute stress that were emerging from frontline clinicians working during the COVID-19 pandemic, the right research move seemed obvious and urgent: if we could treat frontline clinicians experiencing such symptoms with prazosin, we would be providing the best treatment option I know of to a population that needed immediate intervention. We would be generating the first structured clinical trial data to address the efficacy of this intervention for, in particular, the acute sleep-related symptoms of acute stress disorder. We would also provide the first direct test of whether treatment with bedtime