EDITORIAL

WILEY

Unprecedented pandemic, unprecedented shift, and unprecedented opportunity

1 | UNPRECEDENTED PANDEMIC

The COVID-19 pandemic is currently spreading across the world in an unprecedented way. As of March 24, 20,203, among 169 countries in the world, the total accumulative confirmed cases are 387,382, and the total number of death is 16,767 (Johns Hopkins University, 2020). This pandemic has been compared to the Second World War or the Great Depression in terms of its wide scope and broad impact.

One unique impact stands out among its various types of impacts on public heath, economic, political, education, and many others sectors of the modern society. That is, the COVID-19 pandemic forces humans to *social isolations* in order to control the extremely infectious coronavirus. Currently, different countries have been using different methods of social isolations. These methods include: voluntary self-isolation, mandatory quarantine, travel restrictions, stay-at-home order, shutdowns of restaurants, theaters, churches, sports venues, museums, and other social organizations, closures of schools and universities, working at home, limits or closures of transportations such as airplanes, trains, buses, and ships, closures of country borders, declaration of state of emergency, and lockdowns of entire cities, entire regions, and entire countries. Nowadays, *social distancing* has become the latest buzzword in the headlines of media covering the COVID-19 pandemic. One recent example is that the world-renowned opera singer Plácido Domingo has tested positive for the coronavirus on March 22, 2020, and he is in self-isolation at home (Chen & Lee, 2020). Another heartbreaking example is that a holocaust survivor Arie Even passed away on March 21, 2020 as the first coronavirus death case in Israel, but his family was unable to be with him during his final days to avoid getting the virus (Estrin, 2020).

While it appears to be as novel as it is now, social distancing actually is traditional public health measures used for decades during major influenza virus outbreaks (Wilder-Smith & Freedman, 2020). These public health measures typically include isolating ill persons, contact tracing, quarantining exposed persons, school closures, workplace closures, and avoiding crowding. Technically, the basic idea of social distancing is to reduce risks of person-to-person transmission by "delaying the epidemic peak, reducing the size of the epidemic peak, and spreading cases over a longer time to relieve pressure on the healthcare system" (Fong et al., 2020, p. 1).

2 | UNPRECEDENTED SHIFT

The widely implemented social distancing measures to control the COVID-19 pandemic have generated one unprecedented shift. That is, various types of human social interactions (e.g., shopping, banking, learning, meeting, and entertaining) are shifted from dominantly offline to dominantly online. In other words, the enforced social isolations in the physical world significantly increase humans' social interactions in the cyber world. This becomes a "new normal" in our daily life.

For example, in the *education* sector, thousands of universities, including Stanford, Harvard, Princeton, Yale, and MIT, have moved regular face-to-face teaching to online teaching. This worldwide movement might be the largest online education practice in the human history. The article published by Dr. Wei Bao in this issue documents such a case. In the *business* sector, online shopping has almost become the mainstream shopping behavior for people to buy foods, groceries, medicines, and many other products from online stores such as Amazon.com or online services of regular stores such as Walmart. In the *entertainment* sector, many theaters (e.g., Metropolitan Opera) and museums (e.g., various national museums in China) have been offering a series of live stream online performances or virtual exhibitions. In the *public health* sector, specific mobile apps have been developed successfully for testing, tracing, analyzing, and social distancing in China, Singapore, Korea, UK, and other countries in the world. This week, Dr. Ashley Mason at UCSF is running an experimental study with over 2,000 San Francisco emergency medical workers, by asking them to wear the Oura Rings, a wearable device to monitors body temperature, breathing, heart rate, and other physical indicators, in order to track their body temperature in the real time and identify the early onset of COVID-19 (Gafni, 2020).

With the unprecedented shift to the cyber world, we are observing an accelerated diffusion of emerging digital technologies among ordinary people. Diffusion is the key concept of American sociologist Everett Rogers' well-known theory of diffusion of innovations (Rogers, 2010). Roger defined diffusion as a process by which an innovation is communicated through certain channels over time among the members of certain social systems. Based on this theory, different innovations may have different S-shaped diffusion curves; different community members can be categorized into five types, innovators, early adopter, early majority, later majority, and laggards.

In the battle against the COVID-19 pandemic, various emerging digital technologies may show much steeper diffusion S-shaped curves and much more ordinary people might become early adopters and early majority rather than later majority and laggards (e.g., more and more teachers are able to teach online via Zoom effectively). In contrary, we are also observing various cases that reduce or limit diffusion of emerging digital technologies. For example, cybersecurity and privacy concerns have been increasing more than ever, while countries began tracking those possibly exposed to the coronavirus. Individuals and organizations are suffering more from misinformation that has been spreading widely and quickly through online videos, social media, or personal emails.

3 | UNPRECEDENTED OPPORTUNITY

The COVID-19 pandemic also provides an unprecedented opportunity for our research community of studying technology-related behavior to join the worldwide efforts to fight against and eventually win the current pandemic. Our research community can (a) explore and exercise how emerging technologies can be best used to help human beings directly fight against the current pandemic at this moment; (b) observe, study, and understand various kinds of protective and risky human behavior under the current pandemic; and (c) describe, explain, and predict human behavior with emerging technologies in the context of an extreme event like the current pandemic for future prevention and intervention.

The currently published research has been predominately focusing on medical and public health issues regarding diagnosis, management, and treatment of COVID-19. While researchers started to publish studies on using emerging technologies to tackle the pandemic (e.g., Pandey, Gautam, Bhagat, & Sethi, 2020; Wang, Ng, & Brook, 2020), much more timely efforts should be made to conduct behavioral studies on how technologies can be used to guide people's behavior. One excellent example of behavioral research is a recent research report titled *Using behavioural science to help fight the coronavirus* (Lunn et al., 2020). In this report released on March 12, 2020, Pete Lunn and his collaborators in Ireland spent 1 week and reviewed the existing behavioral science literature on seven topics: hand washing, face touching, entering and coping with isolation, encouraging collective action, avoiding undesirable behavior, crisis communication, and risk perception. Their review clearly indicates that, while a wide variety of medical and public health strategies (e.g., developing new vaccines or tracing contacts and movements) can be used to fight against COVID-19, behavioral sciences and behavioral interventions can be used to change humans' knowledge, judgment, decision-making, and actual behavior (e.g., improving handwashing and knowing how to self-isolate).

To seize this opportunity, in 2021–2020, our journal will enthusiastically welcome behavior studies of using emerging technologies to deal with COVID-19 and various extreme events. The possible manuscripts could concern case studies (e.g., Bao, this issue), literature review (e.g., Gaspar, Yan, & Domingos, 2019), empirical studies (e.g., Pandey et al., 2020), theoretical (see *Human Behavior and Emerging Technologies's* [HBET] call for papers on a special issue on theoretical studies), and methodological (see HBET's call for papers on a special issue on methodological studies). We need to study what kinds of people (e.g., elder and young patients) have used emerging technologies to fight against the pandemic, what specific emerging technologies (e.g., social video games and Zoom) have been used, how new human-technology interactions (e.g., binge screen viewing and large-scale distance learning) have been taking place, and why various positive and negative behavioral impacts (e.g., the Cabin Fever effect and the digital vision syndrome) has been generated. These efforts will help us understand human behavior with technologies in both extreme events and ordinary events, and take us one step closer to answer the basic question of how humans behave with emerging technologies.

Zheng Yan [ID]

Department of Educational and Counseling Psychology, University at Albany, Albany, New York

Correspondence
Zheng Yan, Department of Educational and Counseling Psychology, University at Albany, Albany, NY.
Email: zyan@albany.edu

ORCID
Zheng Yan [ID] https://orcid.org/0000-0002-1252-2928

REFERENCES

Chen, N, & Lee, A. (2020, March 22). World-renowned opera singer Plácido Domingo says he has coronavirus. *CNN*. Retrieved from https://www.cnn.com/2020/03/22/entertainment/placido-domingo-coronavirus-positive-opera-trnd/index.html

Estrin, D. (2020, March 21). Holocaust survivor is first coronavirus death in Israel. *NPR*. Retrieved from https://www.npr.org/sections/coronavirus-live-updates/2020/03/21/819541569/holocaust-survivor-is-first-coronavirus-death-in-israel

Fong, M. W., Gao, H., Wong, J. Y., Xiao, J., Shiu, E. Y., Ryu, S., & Cowling, B. J. (2020). Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings-social distancing measures. *Emerging Infectious Diseases, 26*(5). https://doi.org/10.3201/eid2605.190995

Gafni, M. (2020, March 23). Predicting coronavirus? SF emergency workers wear state-of-the-art rings in new study. *San Francisco Chronicle*. Retrieved from https://www.sfchronicle.com/bayarea/article/Predicting-coronavirus-SF-emergency-workers-wear-15149729.php#photo-19199416

Gaspar, R., Yan, Z., & Domingos, S. (2019). Extreme natural and man-made events and human adaptive responses mediated by information and communication technologies' use: A systematic literature review. *Technological Forecasting and Social Change*, *145*, 125–135.

Johns Hopkins University. (2020). *Novel Coronavirus COVID-19 (2019-nCoV) data repository*. Retrieved from https://github.com/CSSEGISandData/COVID-19

Lunn, P., Belton, C., Lavin, C., McGowan, F., Timmons, S., & Robertson, D. (2020). *Using behavioural science to help fight the coronavirus* (no. WP656). Retrieved from https://www.esri.ie/pubs/WP656.pdf

Pandey, R., Gautam, V., Bhagat, K., & Sethi, T. (2020). A machine learning application for raising WASH awareness in the times of Covid-19 pandemic. *arXiv preprint arXiv:2003.07074*.

Rogers, E. M. (2010). *Diffusion of innovations*. New York, NY: Simon and Schuster.

Wang, C. J., Ng, C. Y., & Brook, R. H. (2020). Response to COVID-19 in Taiwan: Big data analytics, new technology, and proactive testing. *Journal of the American Medical Association*. https://doi.org/10.1001/jama.2020.3151

Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*, *27*(2), 1–4. https://doi.org/10.1093/jtm/taaa020

AUTHOR BIOGRAPHY

Zheng Yan is Associate Professor of developmental psychology at University at Albany, State University of New York. His research mainly concerns dynamic and complex relations between emerging technologies and human behavior with the aim to address a basic question in the modern society, that is, How do humans behave with technologies? He has been studying four technology-based human behaviors: (a) computer behavior (e.g., how students learn to use computer software), (b) cyber behavior (e.g., how children understand the technical and social complexity of Internet), (c) mobile phone behavior (e.g., how mobile phone multitasking produces academic distraction), and (d) IoT behavior (e.g., where is the weakest link of cyber security judgment in the IoT system). His recent books *include Publishing Journal Articles: A Scientific Guide for New Authors Worldwide* (in press), *Mobile Phone Behavior* (2017), *Encyclopedia of Mobile Phone Behavior* (Volumes 1–3) (2015), and *Encyclopedia of Cyber Behavior* (Volumes 1–3) (2012).