

Coping With Disruption: What This New World Says About Digital Divide Theory

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In this study, we examine reliance on technology during the beginning of the pandemic, and how both digital access and skills impact people's ability to cope with this unique situation. We situate our findings in research on technology reliance during large-scale disasters using the *theory of amplification* and the *technology maintenance* construct. We conducted 32 semi-structured in-depth interviews with participants from a range of socioeconomic statuses about their experience navigating technology in the early months of the pandemic. Consistent with the theory of amplification, participants who lacked needed digital technologies and necessary digital skills had a harder time adapting to the pandemic than better-resourced participants. Participants who lacked digital resources also often minimized struggles, suggesting that acquiescence as a means of surviving scarcity may be a key moderator that determines technology maintenance outcomes.

Keywords: digital divide, COVID-19, technology maintenance, digital literacy, Internet access, stress, coping

For many people across the globe, 2020 was a time spent acclimating to a new approach to working, socializing, and accomplishing daily tasks. Because one of the primary means of staying safe has been to limit in-person contact (Centers for Disease Control and Prevention [CDC], 2020), the pandemic has led to greater-than-normal reliance on digital technology, particularly at the start. Despite this transition to an almost entirely digital world, not all people possess equal levels of physical access to technology, such as in-home broadband or ownership of a large-screen computer, or adequate digital skills, such as the skills to successfully operate a device and navigate the Web. As a result, this sudden reliance on technology has

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inevitably led to different experiences depending on one's age, experience, income, and education among other things.

To examine the implications of these differences, we present findings from 32 in-depth, semi-structured interviews with people across different ages and socioeconomic statuses regarding their experiences with, and attitudes toward, technology during the early weeks of the pandemic in the United States. We first contextualize our findings within the literature on technology and natural disasters and discuss the ways in which a global pandemic both aligns with and diverges from previous work on the intersection of digital technology and emergencies. Findings also support and elaborate the *theory of amplification*, the idea that technology amplifies existing institutional forces (Toyama, 2011), in a novel context where the need for technology was sudden and nearly universal. Finally, we apply the *technology maintenance* framework, a construct that states that although all digital technology is fragile and requires constant upkeep, that burden is disproportionately borne by those with fewer resources (Gonzales, 2014, 2016). The findings suggest that acquiescence is an important mechanism for coping with disrupted access to technology. In a context in which nearly all people were inadequately technologically prepared, a *just-deal-with-it* attitude became a common means of coping for under-resourced participants in our sample. These findings elaborate previous technology maintenance research on coping mechanisms and suggest that coping may play a critical role in moderating the effects of digital disruption on well-being.

Technology During Disasters

Technology fills a very practical role in times of natural disasters, giving affected populations access to critical information and social resources (Tu-Keefner, Liu, Hartnett, & Hastings, 2017). Natural disasters are a specific type of crisis, which is defined as "unexpected, and non-routine event or series of events that create high levels of uncertainty and threaten or are perceived to threaten high priority goals" (Seeger, Sellnow, & Ulmer, 1998, p. 233). The COVID-19 pandemic fits this definition in that it is a natural series of events (outbreaks, quarantines, stay-at-home orders, travel restrictions, etc.) that resulted in great uncertainty about the future and threatened high-priority goals (financial, emotional, and mental security and well-being).

During disasters, a lack of technological infrastructure can lead to greater vulnerability (Berawi, 2018; Masozera, Bailey, & Kerchner, 2006), as illustrated by research on floods, tornados, and wildfires over the last two decades (Berawi, 2018; Cooper, Yeager, Burkle, & Subbarao, 2015; Sutton, Palen, & Shklovski, 2008; Tu-Keefner et al., 2017). A systematic review of the literature suggests a typology of three key functions of technology in disasters: It provides early warnings; it builds community through shared experiences (via social media and Facebook); and it allows for information distribution.

First, studies on earlier disasters have observed community portals and other local websites offering early warnings and safe direction (Masozera et al., 2006; Murthy, 2011; Shklovski, Burke, Kiesler, & Kraut, 2010). Updated through posts and public comments, this information serves those most in need during, and immediately following, the event. Second, the psychosocial impact of disasters can be devastating, but these traumas can be shared online (Lichterman, 2000; Murthy, 2011; Sutton et al., 2008). Through action-response coordination and "peer-to-peer" consultation (Sutton et al., 2008), users may create special interest groups to organize relief efforts (Al-Saggaf & Simmons, 2015). Finally, technology is

one of the easiest ways to share and seek information. Social networks, blogs, and Web forums double as social spaces and suppliers of “critical and accurate” information (Sutton et al., 2008).

These benefits of digital technology have also been observed during the coronavirus pandemic. As cases of COVID-19 increased in spring 2020, people experienced unfamiliar conditions that required broad access to new information on a rapidly changing basis, just as in previous disasters (e.g., Ross & DiSalvo, 2020; Shklovski et al., 2010). However, unlike in previous natural disasters, technology was one of the *only* ways in which people were communicating with loved ones during the coronavirus pandemic. What was once a complement to the activities of daily life became the primary means of conducting businesses, schools, and family interactions for many around the globe (Angelucci, Angrisani, Bennett, Kapteyn, & Schaner, 2020).

Given technology’s unique status in the recent history of natural disasters, our first research question is a simple starting point for understanding its use in emergency situations:

RQ1: How did the use of technology in the early months of COVID-19 compare with the use of technology following other large-scale disasters?

Digital Access as an Amplifier of Stress in Disaster

Despite the wealth of research demonstrating the important role of technology in disasters, millions of people in the United States did not have stable access to the Internet or own the devices necessary to log on at the start of the pandemic (Anderson & Kumar, 2020). People low in Internet skills were more likely to reduce their use of social technology amidst social-distancing requirements (Nguyen et al., 2020), and those already living at the margins were further cut off from important life resources (e.g., Blomberg, Altschwager, Seo, Booton, & Nwachukwu, 2021; Robinson et al., 2020). We know from decades of research that in-home Internet access and device ownership are key to employment, education, health care, and many other aspects of life (Bach, Shaffer, & Wolfson, 2013; van Dijk, 2020). This has been illustrated during the pandemic by the fact that low-income families, and Black and Latino families in particular, struggled to keep their kids connected to school (Katz & Rideout, 2021; McClain, Vogels, Perrin, Sechopoulos, & Rainie, 2021).

We explore these disparities in digital access during the early stages of the pandemic through the theory of amplification (Toyama, 2011) and the construct of technology maintenance (Gonzales, 2014, 2016; Gonzales, Ems, & Suri, 2016). The theory of amplification argues that technology amplifies human forces in a multiplicative manner and that different levels of access, capacity, and motivation determine whether technology improves or worsens conditions. The theory is consistent with the “rich-get-richer” and stratification effects (Norris, 2001; van Dijk, 2005), which point out that financial and social capital are needed to optimize digital technology use. Furthermore, frequent disruptions in access due to prohibitive monthly bills, and devices that are broken, outdated, or shared, is referred to as a process of *technology maintenance*, and is one that often results in cycles of *dependable instability*, or regular periods of connection and disconnection for low-income households (Gonzales, 2014, 2016). Maintenance work is already difficult for many, leading to chronic “underconnectedness” (Katz & Rideout, 2016). With these data we explore how a sudden and near-total dependence on computers may have spotlighted, and at times exacerbated, existing inequalities, and how people coped in response.

Acclimating to Personal Challenges

As we investigate how individuals coped with insufficient access to devices and the Internet during this unusual moment in history, we turn to other research on coping in the face of scarcity to guide us. The idea of a “just-deal-with-it” attitude in reaction to personal struggle is not a new one, and it is a particularly present reaction in those of lower socioeconomic status (SES; Calarco, 2011, 2014; Jack & Smith, 2015; Keller & McDade, 2000; Olson & Schober, 1993). In academic settings, for example, children of low SES often do not admit they need help or ask for it from teachers, especially as compared with their high-SES counterparts, who are taught to make their needs known (Calarco, 2011). This trend extends through college, with disadvantaged college students being less likely to engage with professors, and through parenthood, with lower SES parents being less likely to ask for parenting help from others (Jack & Smith, 2015; Keller & McDade, 2000).

One perspective is that this coping approach—quietly accepting difficult circumstances—is a rational reaction for those dealing with chronic scarcity. Scholars have found that living with prolonged deprivation is positively associated with passive acceptance of negative events or stimuli (Mal, Jain, & Yadav, 1990). For example, participants who had experienced prolonged poverty exhibited greater learned helplessness overall compared with those who had not (Mal et al., 1990). This psychological reaction to chronic scarcity has been referred to as a “satisfaction paradox” (Olson & Schober, 1993), the idea that individuals who deal with objectively challenging circumstances maintain a positive perception of their quality of life out of necessity (Olson & Schober, 1993). In this way, a lack of efficacy and opportunity prompts people to eventually reevaluate circumstances using more modest standards.

This unique period in history poses an unexpected test of how people face a sudden, almost complete reliance on digital technology depending on their current levels of digital access. The pandemic has thus created a novel context in which to examine the theory of amplification and technology maintenance construct. We also use the framework of the “satisfaction paradox” (Olson & Schober, 1993) to understand reactions to technological scarcity during the pandemic, and consider how this reaction might change the effects of having to engage in technology maintenance work:

RQ2: How did differences in physical access to devices and broadband shape people’s early experience of the pandemic?

Navigating New Digital Terrains

Finally, we also explore the role that digital skills played in the early days of the pandemic. Insufficient digital skills, referred to as a *second-level digital divide* (Hargittai, 2002), can come in different forms, including poor technical or operational skills (e.g., turning on the device or troubleshooting a printing error) or a lack of skills navigating different types of Internet content (Mossberger, Tolbert, & Stansbury, 2003). Differences in these digital skills have been associated with various quality-of-life outcomes (DiMaggio & Garip, 2012), such as access to health care and health information (Lee, 2009; Taha, Sharit, & Czaja, 2014), or government services (van Deurson & van Dijk, 2009). And while the vast majority of Americans say that the Internet has been “essential” during the pandemic, a quarter of Americans also

reported regularly needing help with new online activities, and 30% were low in “tech readiness” (McClain et al., 2021). In short, as the amount and complexity of daily computing continue to grow, inequalities may be exacerbated if many are ill-equipped to navigate a new digital terrain (Norris, 2001; van Dijk, 2006).

Previous research has shown that various demographic characteristics are associated with differences in digital skills (Wang, Myers, & Sundaram, 2012). Young people tend to have an easier time navigating the Internet compared with their older counterparts (Hargittai, 2002), as education level and experience with digital technology are positively correlated with digital literacy (Bulger, Mayer, & Metzger, 2014; Lepore et al., 2019; Wang et al., 2012). Similarly, individuals with less access to technology (typically those in households of lower SESs) tend to have lower digital literacy (Goode, 2010; Wang et al., 2012), and digitally disadvantaged students have more difficulties following online lessons than wealthier students (Naidoo & Raju, 2012). Over the long term, the uneven distribution of digital skills among students results in workers of color being disproportionately affected by digital skills gaps compared with their White counterparts (Bergson-Shilcock, 2020). The fact that existing demographic inequalities can be amplified based on differing “capacity” for technology use further supports the theory of amplification and raises concerns about the long-term effects of technology dependence (Toyama, 2011).

Again, the COVID-19 pandemic resulted in the sudden transition to a largely digital world for millions of people across different socioeconomic strata, including those with different levels of digital skills and literacy. Our third research question thus asks how differences in digital skills influenced people’s ability to cope with the pandemic.

RQ3: How did differences in digital skills shape early experiences of the pandemic?

Methods

As the country awaited answers regarding the longtime severity of this disease, the CDC (2020) urged that emergency room visits be reserved for only the most severe health cases to meet health-care demands and encouraged increasing social-distancing practices to mitigate spread. In this context, researchers collected a convenience sample of participants by contacting people from their direct networks, via face-to-face communication, phone calls, text messaging, social media messaging, and e-mail. Traditional phenomenological research describes qualitative studies where participants are interviewed by their peers, hoping to cultivate a more familiar, trusting, and comfortable relationship with the participants (Quinney, Dwyer, & Chapman, 2016). The current study adapts this method to recruiting participants for in-depth semi-structured interviews.

Sample

Five undergraduate researchers conducted interviews with five to seven people each from their personal social circles between May 24, 2020, and July 11, 2020. Semi-structured interviews that were 30 to 45 minutes long were conducted with a total of 32 individuals during this period. Participants were paid \$20 each in the form of an Amazon gift card for their time participating in the interview. Efforts were made to seek members of the researchers’ networks from different socioeconomic backgrounds, just as the members of the

research team also reflect a range of socioeconomic experiences. In particular, interviewers sought to ensure that approximately half of the interviews they conducted were with people who sometimes experienced financial hardships. As a result, 12 participants (37.6%) reported a household income less than \$40,000, while an equal number of participants (37.6%) reported a household income more than \$100,000. The remaining eight participants (25%) reported income between \$40,000 and \$100,000. Twenty-one (65.6%) participants were female, and participants' year of birth ranged from 1941 to 2000, with the average participant being born in 1983. Of the 32 participants, participants self-selected one or more racial or ethnic categories: 12 (37.5%) self-identified as Hispanic or Latinx, 11 (34.4%) as White, nine (28.1%) as Asian, one (3.1%) as Black, and three (9.4%) as mixed or multiracial. Twenty participants (62.5%) spoke a language other than English, and two used a translator during the interview. At the time the interviews were conducted, 19 (59.4%) participants were employed, while 10 (31.3%) were unemployed and the remaining three (9.4%) were retired. Household size ranged from one to eight people, with an average household of four people; 11 participants reported at least one school-aged child in their household (with only 25 of 32 participants providing that information). Of those that reported education, 12 (37.5%) participants had at least a four-year college degree, two (6.3%) participants had an associate degree, 11 (34.4%) completed some college, and 3 (9.4%) did not finish high school. Fourteen (45.2%) of the participants were married, and two (6.5%) declined to answer questions on their relationship status. Finally, while all participants had cellphones and home Internet access, five (15.6%) did not have access to a personal computer.

Procedure

Interested individuals completed consent forms that detailed the purpose of the study and compensation for their participation. Interviews were conducted using videoconferencing platforms and were transcribed using Tactiq or Amazon's auto-transcription service. The names of participants were replaced throughout this article, with pseudonyms to maintain participants' anonymity. The first reference to each participant's pseudonym has been put in quotations, (e.g., "Trina").

The semi-structured interviews began with researchers reminding participants of the purpose of the study. After answering any questions participants had about the process, interviewers asked a series of predetermined questions, separated into three distinct categories: Digital Use (e.g., "*In what ways do you primarily use technology on an average day under these stay-at-home orders?*"; "*What devices do you use?*"; "*What kind of things are you doing on those devices?*"), Digital Skills and Access (e.g., "*Prior to the pandemic, how comfortable would you say you were figuring out how to use technology?*"; "*How could your access to technology be improved in any way, if at all?*"), and Personal Reactions to the Pandemic (e.g., "*Do you feel as if the coronavirus pandemic has impeded on your mental health in any way?*"; "*How do you feel about social distancing or other preventative behaviors required because of the COVID-19 pandemic?*"). The interviewers asked follow-up questions as appropriate while conversing with participants.

Collected recordings were critically analyzed and coded by the entire research team by organizing excerpts of conversation into themes across all interviews (Strauss & Corbin, 1997). Initial analysis of themes was based on review of the three literatures discussed above: technology and natural disasters (RQ1), physical access (RQ2), and digital skills (RQ3), with the goal of understanding how each manifested in the context of the COVID-19 pandemic. Iterative review of the interviews yielded evidence of the "just-

deal-with-it" theme discussed below. Procedures put in place to prevent researcher bias in evaluation included obscuring of participants' names, occupations, and income levels. Additionally, researchers were not assigned their own interviews for coding, but took the opportunity to review new interviews.

Results

Responding to Disaster

The socially isolating nature of the pandemic combined with intense levels of uncertainty about effective safety practices in early months increased the need to transition many activities online. As a result, analysis of RQ1 revealed that news and health information consumption in particular increased along with online shopping, when finances allowed for it, but that the total dependence on technology was often dissatisfying over time.

Staying Informed

As with previous natural disasters, the COVID-19 pandemic increased reliance on technology as a source of news and health information. Most participants reported an increased use of technology for the purpose of finding information on COVID-19. "Trina" (a 28-year-old woman, Hispanic/Latinx, <\$5k, in a household with three school-aged children) was among the majority of participants who increased their news intake, stating:

I read it more. Yeah, I read it more due to what's going on in the world. Like I said, I mean, it's always nice to kind of stay updated. I mean we were already blind to what we had coming, and now it's here. It's, like, just a lot going on.

Similarly, "Sophia" (a 20-year-old woman, Asian, <\$5k, with no school-aged children) also reported an increase in news intake, stating that before the pandemic she "never took the time to like look at the news, read the news, or like watch the news" and that because of the pandemic, she spent time consuming the news and believed this to be "really beneficial."

However, participants did not limit their information seeking to only health-related news. Participants also used technology to find information on the effects of COVID-19 on the economy and employment. "Michael" (a 20-year-old man, Asian, <\$5k, in a household with no school-aged children), who did not use technology to keep up with health-related information, still used technology to find information on the stock market:

I guess the only thing I really keep up with pretty rigorously is like economic stuff, because once quarantine started, I mean with, like, the whole dip that happened in the market. That's when I started, um, investing. . . . And, um because my money is on the line now, I'm actually interested in what's going on in the economy.

"Elliot" (a 52-year-old woman, White/Hispanic, \$75-\$100k, in a household with one school-aged child), who consumed news for information on the COVID-19 virus as well, also used technology to find

information on employment: "When the pandemic started, I was watching the news a lot more for the first 2 weeks because it directly affected my job, so—and it directly affected [husband]. Uh, [husband]'s not working." She also specifically followed her union's Facebook account to receive more information on the pandemic.

It's Not the Same

Although in previous natural disasters, technology has often been viewed as a way to build communities and offer support, additional analysis of RQ1 revealed that some participants also pointed to the negative effects of constantly staying connected. The detrimental effect of news consumption was explicitly noted by "Akemi" (a 23-year-old woman, White, \$10–\$15k, number of children unknown). Initially, Akemi's news consumption had increased due to the pandemic, however, over time reading the news increased her feelings of anxiety and paranoia:

The more I read the news, the more like anxiety I would get. And I just, I was, like, super paranoid about all of it at first. Um, but then I stopped reading the news, and I realized that, like, I am informed enough to know what's going on and like what I need to do to be safe. But I don't personally, I don't find it necessary for me to be reading the news and learning all the nitty gritty details because it's just gonna' to make me feel bad and worried. So I'd rather just not read it.

Other participants also reported similar feelings of stress and avoidance toward COVID-19 related news. This finding that news consumption can increase anxiety is not new (Stainback, Hearne, & Trieu, 2020), and it speaks to the protracted nature of the pandemic, which created an intense and prolonged period of uncertainty for many.

Finally, along with information gathering, participants also reported an increase in online socialization with family and friends to stay safe and adhere to COVID-19 safety guidelines. Stay-at-home orders forced many participants to turn to social media and technology as their only form of socialization outside of their households. Although participants reported appreciation for the ability to connect with people over the Internet, most expressed that it was an inadequate substitute for in-person socialization. The phrase, "it's not the same" was used multiple times by participants when comparing in-person and online social interactions. For example, "Porter" (a 45-year-old man, Asian, \$150k+, in a household with two school-aged children) demonstrates this sentiment when discussing the effects of the stay-at-home orders:

The most challenging, you know—it's the inability to interact with others in person—whether it's recreation or professionally—to not have those routine gatherings that we're used to, I think it's been much harder because there's a lot of things you can accomplish in person . . . obviously the beauty of it is there's a substitution for it, but *it's not the same*.

Overall, these findings support previous research on the informative and social roles technology takes during natural disasters. Despite this confirmation, our results also highlight the negative impacts that

technology can have during times of crisis across socioeconomic groups. Some participants reported anxiety, paranoia, and stress at frequent exposure to COVID-19–related information. Others reported feeling insufficient emotional connections as a function of digital socializations.

Pandemic as Amplifier

Access to information and support described above, as well as the mandatory transition to online school and work for many was inevitably influenced by participants' physical access to electronic devices (such as laptops, cellphones, and printers) and access to broadband Internet. Indeed, analysis of RQ2 through the lens of the theory of amplification and technology maintenance revealed that, regardless of income, most participants reported problems with their technology in some form or another. However, consistent with these theoretical constructs, it was the ability to address this problem—to purchase or upgrade their technology when inevitable problems arose—that varied by income. Although all participants in this sample had access to the Internet, sociodemographic differences in technology maintenance were evidenced in differences in access to peripherals (e.g., webcams, printers), the need to share devices, or simply being able to purchase new devices as needed, which we illustrate below.

A common annoyance expressed by participants was that, as a function of being out of school and the workplace, many did not have access to a printer. "Anabel" (a 31-year-old woman, White, \$40k–\$50k, number of children unknown) stated that it was challenging to not have access to a printer, noting that it "made [her] classes a lot harder" and that "it probably took twice as long as it could have because I had to make the worksheet" instead of printing it. Another woman, "Holly" (a 30-year-old woman, Hispanic/Latinx, \$20k–\$25k, number of children unknown) described how things had changed since classes were moved online:

I would just go in and print for 10 cents at the library or even the office here at the apartment complex. They have a business center. But since it closed down, and that's—I mean they offered that for free. . . . So I've actually been wanting to print something to return. I need the label, and I'm like, crap. I haven't done that.

As another example, "Mitchell" (a 20-year-old man, Hispanic/Latinx, <\$5k, in a household with no school-aged children) reported not owning a personal computer, and therefore had to complete schoolwork through a computer shared by his household. He stated that this situation was challenging for him because he isn't "the only one who needs it" and that he and other members of his household "just have to work around one another." He also stated that although he wanted to purchase his own laptop, he lacked the financial resources:

Getting my hand on the laptop is really hard, because if I were to buy a laptop with my own money, I'd straight up go broke like, you know? I have to try to balance this fine line between, like, being financially independent—I mean, as much as I can right now—and also, like, having the technology that allows me to do the things that I want.

Like Mitchell, "Kellen" (a 20-year-old woman, Hispanic/Latinx, \$5k–\$10k, in a household with two school-aged children) also reported having to share necessary technology among household members:

I think that my laptop can be shared sometimes with, like, my mom, needing it to, you know, do some things for work, and I would need it for school. So, just stuff like that is kind of difficult when we have to, you know, break up time for everybody to get the best needs out of the laptop or the printer.

These experiences of low-income respondents contrast markedly with those of higher-income participants such as Porter, who upgraded his Internet bandwidth just before COVID-19, and was able to purchase a new laptop to accommodate for the increased need for laptop access in his household:

We had, before COVID hit, I had a laptop, Auntie Jen had a laptop. She also had an old laptop that we thought could have been useful as a backup when the kids need to use it. We started having to use it, but that laptop actually is not really functional. . . . So, we did actually purchase a new laptop in April so the kids have access to it.

Porter also discussed the possibility of buying an additional laptop:

So, we right now have three laptops for the four of us [two adults and their two children]. And so, we're in consideration of getting one more laptop in the near future. The school did provide a laptop for [his son] . . . but it was, it's way too slow. It takes about 12 minutes to boot up.

Consistent with the theory of amplification and previous technology maintenance propositions, this ability to simply purchase better Internet and additional laptops, even when not completely necessary, is unavailable to lower-income people, such as Mitchel, who instead shares a computer among his household members and cannot afford to buy his own. Consistent with other literature using these digital divide constructs, those differences are likely to have both acute costs on stress and information gathering and long-term repercussions for building social capital and institutional support via digital services. That is, although participants likely experienced the effects of this inequity before the pandemic, the increased and mandated reliance on digital technology amplified these inequities.

Just Deal With It

Some previous work on technology maintenance has examined logistic work-arounds when low-income individuals lose access to phones or computers (e.g., Gonzales, 2014; Gonzales, Calarco, & Lynch, 2020) but has not examined psychological coping. However, we observed that when discussing this lack of access, participants often exhibited a "just-deal-with-it" attitude. Individuals who could afford to spend the money bought new technology to help them adapt, while individuals who could not afford to make those purchases were left to make do with what they had. For example, "Elodia" (a 23-year-old woman, Hispanic/Latinx, <\$5k, number of children unknown) discussed her struggle with her old laptop with very limited digital storage: "It's [the computer] from 2015 . . . even though I've deleted almost everything . . . I haven't been able to download all the right things off of my laptop." Elodia, like Michael, compensated for this by using a shared device:

Luckily, we have a family iPad that we share. So I've been able to use that device. But I would say that's the main struggle. It's like "Oh, sorry, like I need to use the iPad right now because my computer is not working," so just like finding balance with that.

Elodia's attitude toward the lack of a functional laptop focuses on simply dealing with the situation in the only way that she can even though the solution is less than optimal.

Mitchell, like Elodia, reported having to use a shared device, using the family desktop for schoolwork since he could not afford his own personal laptop. Although he noted the challenge of sharing the desktop computer with his family, he ended by saying that the situation was "nothing, like, bad. It's nothing debilitating or anything. I still get by." Mitchell more directly ignores the issues with his lack of technology, actively downplaying the effects of going without a personal computer in his life, illustrating evidence of this "satisfaction paradox." While participants like Porter acknowledge that their technology was less than optimal and simply purchased new technology, lower-income participants such as Mitchell and Elodia could not do that and thus may be motivated to be more accepting of these shortcomings. The theoretical implications of this approach for the technology maintenance construct are discussed further below.

Navigating Second-level Divides

Finally, the analysis of RQ3 showed that varying digital skills also influenced participants' ability to cope with the pandemic. In contrast to disparities that were primarily based on income, the participants who reported lower levels of digital skills were often decades older than participants who reported high levels of skills. Moreover, also in keeping with the theory of amplification, we found that preexisting levels of digital skills amplified individuals' ability to effectively adapt. As an example of this, while discussing her digital skills, "Jessica" (a 36-year-old woman, Hispanic/Latinx, \$25–30k, in a household with five school-aged children reported being "pretty comfortable" with technology before the pandemic. When asked about changes in her digital skills since the onset of the pandemic, she reported that she had become "even more comfortable" and attributed this to her prior familiarity and experience with technology. Although she noted some confusion with new websites and programs, she stated, "Once I used it and used it once and I understand it, then it is pretty easy to use after that."

Similarly, Sophia (a 20-year-old woman) also reported high digital skills before the pandemic. She stated that she maintained this level of comfort with technology throughout the start of the pandemic and transition to online schooling; she also reported a marginal improvement in digital skills, specifically regarding platforms such as Zoom that she has to use for her online education. Other students expressed similar experiences such that a solid digital foundation at the start of the pandemic enabled many to learn about new aspects of the Internet that only further increased skills.

In contrast, participants with poor digital skills sometimes found it difficult to effectively acclimate to the new technological demands of the COVID-19 pandemic. "Rubin" (a 52-year-old man, Hispanic/Latinx, \$60–\$75k, in a household with five school-aged children), for example, reported difficulty adapting to a more virtual world. When asked about any challenges he faced during the pandemic, he stated that he

struggled with “learning how to work the computer” and “learning how to do different things, different tasks” online. Another participant, “Phoebe” (a 76-year-old woman, Asian, \$5k–\$10k, in a household with no school-aged children) reported that, before the pandemic, she “did not use iPad, laptop, et cetera before because [she] did not know how to do it a lot.”

However, even without good initial digital skills, the pandemic forced an improvement:

Now for pandemic, I just use it more now. Since I have to use it, so I have to learn and ask people, like my grandchildren. . . . I would say it is most valuable and rewarding. If not for the pandemic, I would probably never learn how to use these things in my lifetime.

In short, although the pandemic nudged many participants into further developing the digital skills they already possessed, other participants were forced into a digital world they knew very little about. These participants entered the pandemic with little digital skills and had to develop their skills at a rapid pace. Although the sudden transition to a more digital world was often more challenging for those with lower initial levels of digital skills, it did appear to have a positive impact on most participants’ digital literacy and skills, with many participants reporting an improvement and gain of digital knowledge. Of course, as the theory of amplification and other “rich-get-richer” perspectives note, those with more advanced skills were able to engage in a much wider range of uses while navigating this intensely digital moment.

Discussion

During natural disasters, technology is a vital tool for communicating safety information, connecting affected individuals, and giving people access to necessary resources (Berawi, 2018; Sutton et al., 2008). As with previous disasters, the COVID-19 pandemic increased reliance on technology (e.g., Ross & DiSalvo, 2020). And although nearly everyone struggled with navigating new platforms, these struggles were not experienced equally. Given this, our findings support and elaborate previous scholarship in three specific ways.

First, our findings elaborate previous work on technology use during disasters by exploring digital access during a more protracted disaster. As in previous studies, our findings underscore the importance of digital tools for connecting people to information and support, but they also point to the ways that technology is sometimes insufficient in meeting those psychological needs. In the next section we describe how this may give pause to theoretical assumptions within computer-mediated communication scholarship about the capacity of communicating online to fulfill psychosocial needs.

Second, the findings posed an interesting test of the theory of amplification, which argues that preexisting capacity, motivation, and access will shape digital outcomes (Toyama, 2011). To our knowledge, this theory had not been investigated in the context of a unique emergency setting, such as the COVID-19 lockdown. Because all people in the sample were suddenly faced with an increased reliance on technology, this context highlighted how the ability to adapt is indeed a function of pre-existing physical and socio-emotional resources. Findings thus provide a novel context for re-examining amplification claims.

Finally, as a third theoretical contribution, we argue that the findings highlight a possible moderator of the technology maintenance construct by pointing to an interesting and unexplored coping mechanism of

those who are on the short end of the digital divide. That is, similar to the acquiescence literature by Olson and Schober (1993) on individuals living in poverty, our study showed that participants who lacked digital access or knowledge were often somewhat resigned to their subpar circumstances. We elaborate on each of these contributions next.

Necessary but Not Sufficient

Our first research question (RQ1) asked if the use of technology during the COVID-19 pandemic differed from the use of technology during other natural disasters. Based on our analysis, previous research on digital technology and natural disasters can be categorized into three areas: technology as warning, technology as community builder, and technology as information resource. As with victims of other natural disasters, participants reported using technology to find information and seek social support (Berawi, 2018; Sakurai & Murayama, 2019; Shklovski, Palen, & Sutton, 2008). However, because of the prolonged dependence on technology, and the lack of face-to-face contact in the early months of the pandemic, participants also reported increased anxiety, paranoia, and stress as a result of constant exposure to the negative consequences of the pandemic. Moreover, as with previous literature on natural disasters, our findings show that social media helped people connect and seek support (Imran, Castillo, Diaz, & Vieweg, 2015; Nagar, Seth, & Joshi, 2012; Shklovski et al., 2010), however, participants also reported a feeling of inauthenticity and insufficient connection. This was quite different from findings from previous scholarship on technology and natural disasters.

These novel, negative effects are likely a result of the unique and long-term nature of the pandemic; however, they also illustrate some limitations of technology during a disaster. We turn to early literature on computer-mediated communication (CMC) to understand these discrepancies. Although much of CMC scholarship suggests that digital technology and social media allow for meaningful and intimate social connections (Gonzales, 2014; Valkenburg & Peter, 2009; Walther, 1996), these findings also point to classic CMC scholarship, such as social presence theory, which argues that technology cannot sufficiently convey the richness of human connection (Short, Williams, & Christie, 1976). From a theoretical perspective, these findings suggest a lingering tension between this and alternative approaches to technology as adequate to meet the needs of 21st-century human connection, and perhaps new opportunities to elaborate these theories, particularly in the context of social reconfigurations—pandemics or otherwise—that require prolonged dependence on technology.

Acquiescing to Digital Inequality

The remaining two research questions asked how differences in physical access and digital skills impacted participants' experiences of the early days of the pandemic. Both of these research questions reflect assumptions made by the theory of amplification, which argues that technology amplifies human forces in a multiplicative manner (Toyama, 2011). That is, those individuals with reduced physical access or digital skills will experience more limited benefits of technology. To our knowledge, this theory had not been investigated in the context of a unique emergency setting, such as the COVID-19 lockdown, which posed sudden and unique pressures on the need for digital communication.

As predicted by the theory of amplification, analysis of RQ2 revealed that participants who could afford to purchase new technology or improve their Internet were able to adapt to these new needs more

comfortably, whereas participants who lacked resources struggled to navigate digital school and work, and often had to navigate time online or share device use with other members of their household, causing extra burdens and limiting the benefits of technology. These findings are also consistent with previous work on technology maintenance (Gonzales, 2014, 2016), which predicts that low-income households have a difficult time staying connected to devices and often exist in states of persistent “under connectedness” (Katz & Rideout, 2021; Rideout & Katz, 2016), which can have deleterious effects on education, health, and social support (Bach et al., 2013; Gonzales, 2014; Gonzales et al., 2016; van Dijk, 2020). Additionally, the analysis of RQ3 revealed that participants who had the digital skills to effectively navigate and understand new technology were also better able to acclimate to the predominantly digital world they were forced into. However, similar to those who lacked physical access, participants who lacked digital skills also reported having a more challenging time learning how to use technology in these new ways. This is concerning given previous work that finds that poor digital skills compromise a host of quality-of-life outcomes (e.g., health, government services, etc.; DiMaggio & Garip, 2012; Lee, 2009; Taha et al., 2014; van Deurson & van Dijk, 2009), and, similar to the findings about varied physical access above, support an amplification effect; Toyama, 2011). Though perhaps not surprising, the findings from both RQ2 and RQ3 reflect the digital inequities brought to the fore by the pandemic. As new norms of remote work and health care persist in coming years, these inequities should remain a consideration for employers and health-care workers that have come to expect stable digital access.

Coping With Disruption

Interestingly, participants who reported struggling to afford new technologies (RQ2) often minimized these struggles, preferring to adopt a more nonchalant, “just-deal-with-it” attitude. This acquiescence to disadvantaged circumstances echoes previous findings that people in poor economic situations will minimize their struggles (Olson & Schober, 1993). In this case, participants who lacked the ability to change their circumstances by purchasing new technology often seemed to dismiss the problem.

As technology and digital access become more necessary to daily life, even outside the context of the COVID-19 pandemic, this research is important in identifying a previously unexplored method of coping with disparities in digital access and in fact suggests that acquiescence may be a key moderator of technology maintenance effects. These findings suggest the need for a model of technology maintenance that updates previous work (Gonzales, 2014, 2016) and incorporates moderating psychological factors, such as cognitive dissonance. In particular, future quantitative work is necessary to probe when and how acquiescence might reduce the short-term psychological costs of digital inequalities but could also compromise long-term motivation to change those circumstances.

Limitations

The primary limitation of this study is the use of a nonrandom sample. As discussed previously, it would be beneficial for future research to further examine our findings surrounding acquiescence and the digital divide using random-sampling techniques. Additionally, although researchers aimed to use phenomenological methods to cultivate more open and honest conversations with participants, in some cases, the relationship between interviewer and interviewee may have resulted in participants restricting

their disclosures. Another limitation of our study is that these interviews were conducted in the spring of 2020; it is likely that the experiences of those affected have changed as the pandemic has progressed.

Conclusions

As with previous disasters, many in this study benefited from access to critical information and social resources that were quickly and reliably available in the early days of the pandemic via digital tools. But unlike previous disasters, during the coronavirus pandemic, technology became the primary means of communication for an extended period. The constant use of technology in this case was sometimes frustrating and insufficient, even as people were grateful for the ability to communicate with loved ones at all. This suggests a reconsideration of the longstanding theory on the benefits of technology for enabling meaningful social connections.

Even more central to the study were the findings that although the sudden and almost complete reliance on digital technology greatly impacted people from all socioeconomic strata, some people had a more difficult time adjusting based on their level of digital access and digital skills. The findings supported the theory of amplification and expanded previous research on technology maintenance, suggesting opportunities for a new model of technology maintenance that includes cognitive moderators. These findings expand our understanding of the "satisfaction paradox" as it applies to digital inequities and technology maintenance, and suggest that continued work is needed to empirically test the moderating effects that acquiescence might have in the face of digital inequities. From a policy or practitioner perspective, this also suggests that a complement to improved physical access to devices and skills training may be tools for navigating psychological barriers that may reduce users' efficacy. This is not to say that a "just-deal-with-it" attitude is inherently problematic—it is likely an adaptive response in the face of scarcity. However, it highlights the fact that digital rights advocates and policy makers must balance their commitment to providing high-quality digital access and training with an appreciation for the perspectives and agency of those in need.

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