

Technology in Rural Appalachia: Cultural Strategies of Resistance and Navigation

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Existing research on technology in rural, low-income communities has focused primarily on financial obstacles and lack of infrastructure. We use a sociocultural framework for understanding technology in rural Appalachia, using a mixed-methods study of focus groups and interviews. Eight focus groups were held with a total of 65 people (58% female) from low-socioeconomic-status communities in rural Appalachia (ages 12 to 75). Then, in-depth interviews were conducted with 24 participants (62.5% female) on issues generated from focus groups. Participants reported ways of both resisting and navigating technology, many of which were deeply grounded in core Appalachian values, such as respect for privacy. Many participants were skeptical of the value of technology weighed against the loss of privacy, expressed regrets about the loss of self-reliance due to technology, and used self-deprecating humor as resistance. Participants reported numerous strategies for navigating technology risks and generally took an agentic approach to protecting themselves online. Many prominent themes in these transcripts show the ways that people from this community have reasserted their agency in their relationships with technology.

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Digital technology, including the Internet and cell phones, has become well integrated into the daily lives of U.S. youth and adults, with 87% of the adult population using the Internet as of 2014 (Pew Research Center, 2015a) and 90% using a cell phone (Pew Research Center, 2015b). Privacy and other technology concerns are also widespread, such as tracking of personal information, identity theft, and other forms of fraud and crime (Reyns, 2013; C. Smith & Agarwal, 2010). However, most information about the public's online privacy concerns comes from general public surveys, often examining broad socioeconomic status (SES) categories. Few studies have focused explicitly on rural or lower income communities' experiences of digital privacy. This study expands current knowledge about digital privacy issues by focusing on the experiences of individuals from rural Appalachia, a community with one of the most distinct cultures in the United States (Towers, 2005). There is a surprising lack of information on the ways that technology use and concerns might vary for rural and low-income populations, even though research has identified that they have distinctive technology usage patterns, including greater reliance on free public and cell-phone Internet access (A. Smith, 2013). This is one of the first studies of the intersection of Appalachian culture with digital technology. We adopted a mixed-methods qualitative approach, using focus groups and semistructured interviews to explore how people from Appalachia approach and navigate the challenges and opportunities presented by technology.

Existing Research on Internet Privacy Concerns and Protective Behaviors

Online privacy concerns include worries about third-party monitoring when shopping or using social media sites, and concerns about access to private information over social networks and other digital interactions. Privacy, defined as the control of personal information, is among the top concerns of Internet users (Metzger & Docter, 2003). Victimizations such as e-scams, identity theft, online blackmail, and bullying occur when someone's privacy has been breached and the information is used to harm them. However, research indicates that Internet users have differing rates of concern about Internet privacy and vary in how they weigh the benefits of Internet use with privacy concerns. Sheehan (2002) found that most Internet users were pragmatic, with concerns varying according to online context. Users' information sharing also varies across online contexts (Taddicken, 2014). Such variation makes it difficult to effectively target policies and education. Although "transparency and choice" (Nissenbaum, 2011) has been the general policy approach for helping users control online access to personal information, the technical details can be difficult to understand and apply. Research has found that people often ignore basic online safety recommendations, such as not opening unexpected or strange e-mails (Rainie, Kiesler, Kang, & Madden, 2013).

Researchers have sought to understand whether individual characteristics predict users' perspectives on privacy or safety. Much of this work has proceeded with a more epidemiological than theoretical framework. For example, one study found that older individuals report being more mistrustful of government and corporations than do younger people (King, 2014); however, other research indicates that age cohorts are similar in terms of how many online privacy strategies they use (Hoofnagle, King, Li, & Turow, 2010). Past research indicates that older adults and those with less education are more vulnerable to online scams (Fischer, Lea, & Evans, 2013; Modic & Lea, 2012). Some psychological states, such as feeling lonely and isolated, can also lead to increased vulnerability (Shadel, Pak, & Sauer, 2014). Past research has also found that those with a strong belief in privacy rights and those who value privacy

in general are most concerned about online privacy (Yao, Rice, & Wallis, 2007). Sociocultural examinations of these factors have been less studied.

Technology, Rural Communities, and Appalachia

Access to digital technology can be challenging for rural low-SES individuals because of scarcity of Wi-Fi hotspots and cell-phone towers (Anderson, 2017; Benton, 2015; Perrin, 2017; Perrin & Duggan, 2015; Pew Research Center, 2017; Rainie, Reddy, & Bell, 2004). Lower income individuals tend to have less experience with technology (A. Smith, 2013). Some work suggests that lower SES impacts adolescents' and young adults' online behavior beyond simple questions of access, but this line of research is still relatively unexplored (Hargittai & Hinnant, 2008). Most research on rural and low-income communities has adopted a deficits-based lens, focusing primarily on financial obstacles and lack of infrastructure. We present a sociocultural framework for understanding technology in Appalachia.

A social ecological lens (Bronfenbrenner, 1977) reveals that most existing research on technology has an individual focus, without considering the broader context of the individual in society and the ways that cultural norms and values influence individual behavior. This is unfortunate, given the widespread recognition that technology is changing systems and not just individual behavior. The few existing sociocultural analyses have focused on issues such as "context collapse" (boyd, 2014; Marwick & boyd, 2011), which is one way that technology has affected social relationships, especially immediate social networks (e.g., peers, family).

"Appalachian" is primarily a place-based identity (Terman, 2016), and understanding regional influences is important to a sociocultural analysis. The Appalachian region refers to all communities that include the Appalachian mountain range, and extends from Alabama to New York (total population more than 25 million), but the term and the culture are most closely associated with the mountainous regions of Tennessee, Kentucky, West Virginia, North Carolina, and Virginia, with communities in higher elevations most likely to identify as Appalachian (Cooper, Knotts, & Elders, 2011). Forty-two percent of the region's population is rural (about twice the national average). The economy includes agriculture, mining, and industry, but has a poverty rate of 17.1% (Pollard & Jacobsen, 2017). On average, Appalachian communities are somewhat poorer and less ethnically heterogeneous than other communities in these states (Cooper et al., 2011). Appalachia is considered by some to be one of the hardest regions in the country to live in, with widespread financial strain and poor access to resources (e.g., Flippin, 2014).

Although Appalachian culture is heterogeneous, there are shared values and norms that are common throughout the region. Unfortunately, the culture is often portrayed in remarkably negative terms, and Appalachian people are often depicted as ignorant, lazy, heavy drinkers (and moonshiners), and other negative stereotypes, perhaps best captured in the single word "backwards" (Cooke-Jackson & Hanson, 2008; Towers, 2005). It is perhaps surprising the extent to which negative slurs about Appalachian people are tolerated in popular culture. However, although these negative stereotypes are inappropriate and damaging, it is true that Appalachian communities have cultural values that are important to many residents, or what McLean and Syed (2015) would say compose the "master narrative" for this region. Privacy is a core value (Woodard, 2011). There are other core values, such as self-reliance

and humility, that influence perceptions of most social and impersonal forces (Gessert et al., 2015; Lohri-Posey, 2006), and coping often includes the use of self-deprecating humor (Jones & Wheeler, 1995). Extended kin networks are important in many rural communities and have been central to coping with change (Lohri-Posey, 2006; Rosenberg & Reppucci, 1983). The region has underappreciated strengths, including a strong sense of community (Banyard, Hamby, & Grych, 2017). Within these general patterns, however, is also heterogeneity, and past research has shown that Appalachians often navigate multiple identities (sometimes based on alternative narratives; McLean & Syed, 2015) and wrestle with balancing societal changes with traditional values (Terman, 2016).

Past research on technology use in rural Appalachia—or any rural area—is limited and typically focused on issues such as school access to technology (e.g., Howley, Wood, & Hough, 2011). One exception is a study by Gray (2009) that, like Terman (2016), addresses the issues of multiple identities, especially the intersection of queer and Appalachian communities. Gray's study shows that technology can be an important resource for Appalachian residents with identities that can be stigmatized or do not conform to the mainstream narrative. Other aspects of the ways in which people from rural Appalachia engage with or resist technology remain understudied.

Sociocultural norms or traditions will inevitably intersect with the widespread social changes wrought by technology, and this has seldom been explored in Appalachia, or for that matter in most other cultural contexts. For example, aside from Gray's (2009) exploration of the queer community in Appalachia, it is not clear how the privacy compromises that are an inevitable part of technology use are perceived and negotiated by rural Appalachian people. Understanding the experiences from individuals in low-SES rural communities is critical for assessing privacy violations and constructing meaningful security strategies that are effective in rural and low-income communities.

The Current Study

Exploration of community members' online perceptions and experiences in their own words, and through the lens of their own cultures, is an essential step in understanding privacy and safety issues. This approach ensures that privacy concepts used by researchers, technology and human services professionals, and policy makers map onto real-world experiences. Given the lack of information on these issues in Appalachia or other rural, low-income communities, this study adopts a qualitative approach to exploring these issues. This study reports data from two qualitative approaches: focus groups and in-depth semistructured interviews. The use of multiple methods strengthens the confidence in interpreting the themes and issues that emerged. We examine the experiences of low-income residents of rural Appalachia with technology, digital privacy violations, and digital security measures.

Method

Participants

Focus Groups.—Sixty-five participants (58% female) from rural, low-income counties in the Appalachian region of Tennessee participated in nine focus groups (average seven people per group).

There were three focus groups with adolescents ages 12 to 16 years, one group with undergraduate college students, and five groups with adults, including one group of elder adults (ages 55 and older). Most participants identified as White/European American (non-Latino) (92%), followed by Hispanic/Latino(a) (3%), reports of being more than one race (3%), and African American/Black (non-Latino) (2%). This is consistent with racial and ethnic demographics for the larger community.

In-Depth Semistructured Interviews.—Twenty-four participants (62.5% female) completed in-depth semistructured interviews that involved reviewing and commenting on issues generated from the focus groups, presented as draft questionnaire items. Participants represented a broad age spectrum, from adolescence to late adulthood: 25% were ages 12 to 17, 16.7% were ages 18 to 24, 8.3% were ages 25 to 29, 16.7% were ages 30 to 39, 12.5% were ages 40 to 59, 12.5% were ages 60 to 69, and 8.3% were 70 years of age or older. Most participants (87.5%) were White/European American (non-Latino), 8.3% were Hispanic/Latino(a), and 4.2% of the sample were African American/Black (non-Latino).

Procedure

Focus Groups.—Participants for focus groups were recruited via several methods in 2015, including four groups (two adult and two adolescent) who were recruited in person at a back-to-school event providing free school supplies to families in one of the lowest income communities in the state. The group of older adults was recruited in person through a local community organization. Other groups were recruited through advertising on a local “classifieds” community e-mail list and by (off-line) word-of-mouth. All counties where recruitment took place are designated Appalachian by the Appalachian Regional Commission. Participants answered questions about technology use, problems faced when using technology, and safety practices that protect their privacy (see Appendix A for questions). Each focus-group participant received a \$20 gift card for participation. Groups ranged from 29 to 51 minutes with an average of 36.22 minutes (not including the time for informed consent, which took approximately 10 additional minutes and was not recorded). Informed consent was obtained for adults, and parental consent and youth assent were obtained for adolescents. The groups were audiotaped and transcribed. All procedures received institutional review board approval.

In-Depth Semistructured Interviews.—Procedures for interviews were similar, with the exception that participants received a \$50 gift card for participation. The interviews were approximately an hour in length on average, ranging from 21 to 86 minutes (not including time for informed consent). Recruitment occurred through e-mail-based classifieds and in-person word-of-mouth in 2016. Interview participants were shown a list of items on digital privacy concerns and safety practices, which were developed from the focus groups by the research team and reviewed by six external researchers. This resulted in 185 items divided into six categories: (1) technology use, (2) victimization and other adverse experiences, (3) judgment challenges, (4) risk factors, (5) protective factors/safety practices, and (6) pros and cons of devices. They also completed a short demographic questionnaire about gender, age, race and ethnicity, and other personal characteristics.

Data Analysis

We used grounded theory analysis (Corbin & Strauss, 1990; Walker & Myrick, 2006) to derive codes, categories, subcategories, and, ultimately, themes from participants' own words. This was done in three phases in accordance with more recent guidelines (Walker & Myrick, 2006). In the "open" phase, the first author reviewed the focus-group transcripts to develop a list of privacy concerns and safety practices. In the second "axial" phase, these initial codes and representative quotations were discussed with the remaining four authors. We also solicited input from six outside researchers to further draw connections and condense them into core categories. This effort also produced the draft of items provided to participants in the interviews. Focus-group transcripts were rereviewed in light of these codes by two undergraduate research assistants and the first three authors. The codes were subsequently applied to the interview transcripts and further refined, including identifying counter or "negative" examples. In the third or "selective" phase, the authors discussed and reached consensus, integrating and combining codes into core themes.

Reflexivity Statement

This research is based in the Appalachian Center for Resilience Research (ACRR), which seeks to improve the study of this unique region of the country. Not only is Appalachia understudied, but much of its portrayal is still governed by stereotypes. The ACRR mission is to present a more evidence-based portrayal of the region. The first three authors were residents of the community when the study was conducted. S.H. has multigenerational roots in Appalachia. She has spent most of her adult life in rural communities and has lived on the Cumberland Plateau, in the southernmost region of Appalachia, for nine years. E.T. and A.S. are newer residents of the area, who came for work and school (respectively). E.T. had lived in the area for two years and A.S. for four years at the time of the study. Both were raised in the southern United States. K.M. and L.J. are experts in online behavior and are from New England. This is their first study based in Appalachia.

Results and Discussion

The themes identified from the grounded theory analysis are defined below, with representative quotes from each and, where applicable, also counter examples to help illustrate the boundaries of each construct.

Resistance, Appalachian Style

Participants reported using a wide range of current devices, including smartphones and tablets. As is commonly found in research in similar populations, many participants reported relying primarily on cell phones for Internet access as well as phone use (A. Smith, 2013). However, many participants had not adopted recent technology. Not only that, it was clear that this was not simply a matter of income or access, but that many are reluctant adopters. Although stereotypes of Appalachia might suggest that low income or perhaps low computer literacy might be the primary reasons for late adoption, the most prominent theme that was expressed on this topic was resistance to the creep of technology.

Threads that are apparent in their comments are deeply resonant with Appalachian culture, specifically the values of humor, humility, and self-reliance (e.g., Gessert et al., 2015; Lohri-Posey, 2006; Rosenberg & Reppucci, 1983). Perhaps most prominently, when they speak about being reluctant adopters, they almost always do so with a sense of humor—most often a self-deprecating sense of humor. Skill at self-deprecating humor is highly esteemed in Appalachia (and much of the rest of the rural South), where “putting on airs” is one of the worst social offenses that one can commit (Jones & Wheeler, 1995). Through humor, participants expressed their deep skepticism that modern technology actually improves lives.

For example, one woman told the following story in a focus group:

I lost mine [cell phone], and I went in to get a new one, and they said, “Do you want a smartphone?” and I said, “No, I don’t want anything smarter than I am.” I’m not a computer person anyway.

The rest of the group very much appreciated the humor.

Many people have reflected on the ways that technology has affected interactions even in close physical proximity, but few have captured this idea as pithily or amusingly as the woman who stated, “I’ll say, ‘Don’t text me, I’m right outside, just holler!’” As is common in Appalachian humor (Jones & Wheeler, 1995), her resistance included what was probably the intentional use of regional slang (“holler”) to underscore her point.

Another participant, a teenage girl, also expressed skepticism about whether technology improves life, again with a specific reference to the pervasive cultural value that it is not good to get “too big for your britches” (too full of oneself). She said,

I don’t want people messaging me every five minutes. Like, “Oh, look at my new selfie!” You sent me a selfie 10 seconds ago. I don’t need another selfie of you. I see you enough at school. Yeah, I think it’s pretty normal to not be on the Internet that much.

Another female teen expressed a similar idea:

There’s nothing wrong with sharing a nice picture of something, but no one really wants to see every five seconds of you taking a picture of yourself, hashtagging it, and sending it all over, but the younger people are so used to it that I just think it’s going to keep getting gradually worse.

These are also examples of commonly noted Appalachian values—humility and modesty (Gessert et al., 2015)—and how technology is seen to threaten cultural norms.

Others expressed skepticism about the benefits—and rejection of the burdens—of technology directly, but with less humor, such as the man who asserted, “I use my landline phone because I don’t

want that thing [cell phone] ringing everywhere I go. I don't want one." Another woman also focused on the burden of technology: "My daughter gave me a smartphone and I gave it back to her because I didn't want to learn how to use it."

Participants also worried that technology was making people less self-reliant, one of the most important of all Appalachian values (e.g., Lohri-Posey, 2006). For example, somewhat to our surprise, there were mixed feelings about even using cell phones to call for help:

First woman: It's really turned into a security blanket for a lot of people, a cell phone has. Because they know if something happens, I can just pick my phone up and call 911, or call my husband or whoever.

Second woman: I guess you walked a lot if you broke down.

First woman: But it's turned into a security blanket for a lot of people.

Interviewer: So, you all think that's a good thing about them?

First woman: I don't know, I don't like that we're not dependable on ourselves.

Second woman: The main thing is having a way for people to contact me when I'm at work, or if I'm away from the house if they need me for [child's name]. You know?

Interviewer: But you think that maybe some people are less self-reliant than they used to be because of phones? Is that what you were just saying?

First woman: Yeah, like if you're stuck on the side of the highway, you know, before we had cell phones, you changed your own tire. Now you can call AAA and all this stuff, and they come right there, so it's kind of weird you know.

Even those who were high technology users expressed respect for technology resistance:

Now, there are a lot of people that are my age that have not gone into the digital age . . . and I respect that, because they don't want their privacy issues dealt with like that. But I live, I think my phone and my computer or my iPad and everything make life so much easier for me than it did back in the 70s. (Adult male)

Perceptions of the Rural Community

The research team was interested in whether people thought that living in a rural area affected their relationship to technology. In retrospect, our questions were probably too concrete and focused too much on the physical environment, such as the driving distance to many "brick and mortar" stores. (It is 50 or more miles and down the mountain to any indoor shopping mall or most "big box" stores, such as

Target or Kohl's. The nearest supermarkets and Walmarts are also down the mountain, but can be reached in about a 30-minute drive.) In hindsight, it may be fair to say that our original thoughts represented our upper middle class SES status, and the way that we and many others associated with the university rely heavily on Amazon and other online shopping sites. For the most part, none of these issues seemed to resonate with participants.

However, there were several comments related to the perceived sense of safety. Fear of crime is low in many rural communities—at least for stranger-perpetrated crime (Lee & Thomas, 2010)—and this region is no exception. Several people thought that an idealized view of community safety might affect people's level of online vigilance. However, in comparison to their comments on technology resistance, participants did not often identify personally with the idea that the rural environment affected them. Rather, they hypothesized that it might impact their neighbors. For example, one teenage male said,

You may think, 'Oh, it's a rural area, it's safe.' One thing we think about living here is . . . it's safe. And you couldn't pull that in any big city. So, I guess that sense of security sort of extends to the online world only because you think people are trustworthy here.

See other examples in Appendix B.

Privacy: A Primary Value in Appalachia

Privacy is important to many Appalachian residents (Lohri-Posey, 2006; Towers, 2005), and another way that culture intersected with technology was expressed as dismay about the privacy invasions that have become such a central part of modern technology. One adult woman expressed it in a quintessentially Appalachian manner when she simply stated, "Private business should be private business."

Somewhat unexpectedly, several people expressed dismay about privacy invasions that are legal business practices, even though our questions were oriented more toward identity theft and other illegal behaviors. For example, one woman was dismayed about advertisements that came from businesses who had access to her credit records:

Lately we've been getting these advertisements from these loan companies, and they know more about our account than we do. . . . They'll send us an offer every few months and they'll tell us what our payment is now and how much we still owe and how much we can save if we will go to them, and I'm offended by it. I don't understand how they know that much.

Some were upset about the increasingly common experience of having one's search history used as a basis for advertisements, even on seemingly unrelated websites:

Like that thing when you're shopping for a cutting board on Amazon . . . and then when I sign on Facebook, every single ad on the sidebar is for a cutting board. . . . That freaks me out a lot more than other things. (Adult female)

The lack of privacy and the risk of victimization led some people to describe a general level of suspiciousness. For example, one man stated,

I think everybody has fallen victim to so much stuff, that anything that comes across through the Internet to me at some point in time, I question it, always, 'cause I just don't take anything for granted on that. I believe everything's a lie, a cheat, and a scam [laughter].

However, some participants seemed to accept this as part of doing business on the Internet. One man, again using humor (in this case humor that was more sarcastic than self-deprecating), when we asked him about this issue after hearing it from others, replied, "It's something called advertisements. No [it doesn't bother me] . . . if it does bother you then you just delete your cookies." See additional examples in Appendix B.

Navigating Risks

Another form of managing technology comes from trying to stay safe while using technology. Despite stories of resistance and expressed desires for high levels of privacy, technology is still widely used in this region and important to many people.

During the focus groups, participants were asked, "Are there ways that you think it could be easier to keep information safe and private?" This resulted in many safety strategies, some of which are common everywhere technology is found. These are described below. Probably the most distinctively Appalachian safety strategy we encountered were examples of what might be described as self-deputizing, or, more negatively, as vigilantism. These were cases where people took it upon themselves to punish those who sought to defraud them. For example, one man offered, "I answer calls now because I want to hang up on them [laughs]." Outwitting would-be perpetrators was also attempted by posting false information about oneself (see Appendix C for examples).

The most extreme example came from another man in one of our focus groups, who said that he posed as an FBI agent to get con artists to leave him alone:

Man: Sometimes on LSN [a shopping site], they'll try to text you on your phone wanting you to buy a car or something, wanting you to use PayPal . . . for the shipping and all of that stuff.

Interviewer: And what do you do about that? Do you respond to them?

Man: I just play along with them for a few minutes. Let them think I'm somebody crazy and they leave me alone. I cuss them out and act like I know where they live and I'm looking for them, and they'll leave me alone and they'll stop texting me. They won't text you back then.

The same man later described another unwanted solicitation:

Man: I always look at the number on Google, and it will use the tower and stuff and I'll tell them what their address is and stuff. I'll tell them where they live and they won't ever text me back again.

Second man: I tried that out too, yeah.

Woman: Really, so you just go on Google?

Man: I told him [an unwanted solicitor] I was FBI, and I knew where he lived, and it was California and I'll be over there shortly, so to be ready. And he never did text me back. I texted him, "You still there?" and he never did text me back!

As noted in the transcript, a second man reported having done something similar (although he does not describe specifics), and a woman seemed interested in learning more about how to get this sort of information about perpetrators. In general, the entire group seemed impressed with his story. No one mentioned that it is illegal to pose as an FBI agent.

Although we do not endorse posing as an FBI agent or even "messing with" con artists, we note that such stories convey a self-reliance that exemplifies Appalachian values (Jones & Brunner, 1994; Lohri-Posey, 2006; Woodard, 2011). This was not a risky or even particularly personal story for this individual to share, because it was safe to assume that the response of the group was more likely to be of approval of sticking up for himself and getting the better of the "bad guys" versus, for example, some concern about safety or propriety. Because this is not a typically recommended strategy from technology professionals or media articles about online safety, it provides a window into the cultural aspects of navigating the risks of technology in an environment where encounters with would-be perpetrators has become commonplace.

On the other hand, many reported safety strategies were relatively mundane, at least in the sense that they are common strategies that one might see recommended in any mainstream media outlet. A very wide range was reported—more than 50 different types were noted, which we grouped into several broad categories: (1) restricting information sharing, (2) refusing contacts, (3) restricting use of certain devices or programs, (4) posting false information to deter scammers, (5) using skilled security measures, and (6) overall vigilance. Appendix C presents exemplary quotes from each theme.

Regarding navigating technology (rather than resisting it), the most notable conclusion is that people are, generally, active agents in trying to maintain their safety. This is consistent with Appalachian

values of self-reliance (Jones & Brunner, 1994; Lohri-Posey, 2006; Woodard, 2011), although most of these strategies are widely used, and there is not an Appalachian-specific way to delete cookies (for example).

Unexpectedly, although these strategies were all offered in the context of ways to be safer online, a few people, especially in interviews, prioritized other goals. For example, one man offered that he kept his phone with him not for the sake of privacy, but because he thought he was addicted to technology:

My phone is with me 24 hours a day. I sleep with my phone on my nightstand or sometimes in my bed with me when I fall asleep with it. It's not because I'm trying to keep my parents or siblings or a pesky girlfriend out, it's only because that I honestly believe I'm addicted to my cell phone. It's not because I'm afraid someone's going to look through my text messages or whatnot.

Another man offered that some of the best practices were to maximize performance, not safety: "I think just for memory. [Deleting your cookies] cleans up your computer and speeds it up. That's actually the reason why I do it." In both cases, it seems possible that their primary motivation for these comments is to reject the premise that they are motivated by caution, which may have more to do with American conceptions of masculinity than Appalachian culture.

General Conclusions

This is one of the first studies to explore digital privacy concerns and safety practices in rural Appalachia. Focus groups and in-depth semistructured interviews revealed several ways in which the cultural setting of Appalachia influenced participants' approach to technology. On the one hand, there were several expressions of resistance to technology that not only represented core Appalachian values but also were performed in ways that reflect Appalachian culture (e.g., Gray, 2009; Terman, 2016). Using humor and self-deprecation, many participants expressed a fundamental skepticism about whether modern technology has really improved life and whether it has adverse effects on important cultural values, such as humility and modesty. Other concerns about technology also focused on areas that map onto major cultural values in this region, such as whether technology was making people less self-reliant and whether the costs in losses of privacy were too high.

Although privacy concerns are common in many segments of the U.S. population (Hoofnagle et al., 2010; C. Smith & Agarwal, 2010), it was a particularly resonant theme in this community, and we found a wider range of privacy concerns than have been noted in prior research (Sheehan, 2002). Our study expands the work of Gray (2009), who specifically examined the ways that technology can be a resource for creating agency, navigating culture, and engaging in resistance for queer youth in Appalachia. Our work suggests that these goals resonate with many members of the Appalachian community. Although the queer youth in Gray's study were resisting the mainstream heteronormative culture of their rural communities, in our study many participants were resisting the larger forces of mainstream U.S. society, specifically, forces of materialism or pressure to view "more" as always better, including more information, more access, and more technology.

Participants also reported strategies for navigating as well as resisting technology, primarily through numerous strategies to maintain their privacy and safety while online or on cell phones. Although several safety strategies reported in these sessions mapped onto conventional strategies also identified by past research (e.g., Davis & James, 2012), there was evidence for more active resistance to online threats, including the relatively extreme examples of posting false information and attempting to punish or intimidate would-be perpetrators.

Limitations

The limitations of the study should be considered when interpreting the results. The sample is large compared with other qualitative research, but is fairly homogenous in terms of race and SES status. These demographics are consistent with the geographic region under consideration, but caution should be taken when generalizing these findings to other populations. Rural, low-income families are subject to many forms of surveillance, especially related to demonstrating eligibility for public benefits (Gilliom, 2001), that were not addressed here. Future research could explore the intersection between digital privacy and other forms of societal surveillance. This qualitative study is not designed to establish rates or correlates, but rather to identify nuances or understudied factors that might be explored in future research. We exclusively relied on single-informant self-report, although the two different methodologies (focus groups and in-depth interviews) add confidence to the findings. Future studies might use other sources of data. There are other limitations that accompany all qualitative research, such as the potential for subjective interpretation and researcher bias. However, by grounding the themes in participants' own words, we avoided the latter limitation as much as possible.

Research, Policy, and Educational Implications

High-visibility offenses, such as identity theft and cyberbullying, are the focus of much research and policy about digital privacy, but a wider range of concerns were voiced by participants in these focus groups and interviews, including concerns about profound cultural shifts versus specific types of crime. Future research should do more to examine the ways that culture and technology interact and the choices that people must make when deciding how to resist or navigate technology. Many prominent themes in these transcripts show the ways that people from this Appalachian community have reasserted their agency in their relationships with technology. Future research might collect more detailed information on when and in what ways individuals make choices about protecting privacy. Most existing research has focused on vulnerabilities of certain groups of consumers, such as age, gender, or SES. Future research should do more to determine which content features most likely signal fraudulent intent (e.g., scams attempting to obtain money from individuals) and use that information to educate consumers. As more communication and commerce move online, it is essential that we better understand the intersection between culture and technology and incorporate that into our larger understanding of privacy, victimization, and safety.

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Appendix A: Focus Group Prompts

1. What sorts of technology do you and your family use? Cell phones, laptops, desktops, iPads, other?
2. If you could add one other piece of technology to your home, which would you choose? Why?
3. What kinds of social media do you use? What personal information do you share on each? Your name, birthday, other information?
4. What types of experiences do you think are common in this community? Are you aware of “phishing” (sending fake e-mails to steal private information), other spam (solicitations to purchase dubious products or send money to fake individuals)?
5. What about on your cell phone? Do you get unwanted salespeople or other calls on your cell phone?
6. Do you think that some technologies are safer than others?
7. What do you and people you know do to keep your information private when you use technology?
8. Are there ways that you think it could be easier to keep information safe and private?

9. We live in a very rural area. How do you think living in a rural area affects your use of technology?
10. Are there ways technology gives you more privacy? Ways technology is less private?
11. What are your top three privacy concerns?
12. Compared with five or 10 years ago, what are the biggest changes that you have noticed about technology use and online privacy in your community?
13. Has any person ever helped you with making your information more secure? If so, who?
14. Have you had any other kind of help you found useful in deciding how much privacy you want or how to get it online?

Appendix B: Themes and Exemplary Quotes for Resisting and Navigating Technology in Rural Appalachia

1. Self-Deprecating Humor as Resistance to Technology

- a. "I lost mine [cell phone], and I went in to get a new one, and they said, 'Do you want a smartphone?' and I said, 'No, I don't want anything smarter than I am.' I'm not a computer person anyway" (Adult female).
- b. "I'll say, 'Don't text me, I'm right outside, just holler!'" (Adult female).

2. Skepticism About Technology Improving Life

- a. "I don't want people messaging me every five minutes. Like, 'Oh, look at my new selfie!' You sent me a selfie 10 seconds ago. I don't need another selfie of you. I see you enough at school. Yeah, I think it's pretty normal to not be on the Internet that much" (Adolescent female).
- b. "There's nothing wrong with sharing a nice picture of something, but no one really wants to see every five seconds of you taking a picture of yourself, hashtagging it, and sending it all over, but the younger people are so used to it that I just think it's going to keep getting gradually worse" (Adolescent female).
- c. "I use my landline phone because I don't want that thing [cell phone] ringing everywhere I go. I don't want one" (Adult male).
- d. "My daughter gave me a smartphone and I gave it back to her because I didn't want to learn how to use it" (Adult female).
- e. "Now, there are a lot of people that are my age that have not gone into the digital age . . . and I respect that, because they don't want their privacy issues dealt with like that. But I live, I think my phone and my computer or my iPad and everything make life so much easier for me than it did back in the 70s" (Adult male).

3. Impact of Technology and Living in a Rural Area

- a. "You may think, 'Oh, it's a rural area, it's safe.' One thing we think about living here is . . . it's safe. And you couldn't pull that in any big city. So, I guess that sense of security sort of extends to the online world only because you think people are trustworthy here" (Adolescent male).
- b. "I think again you get this false sense of security because you live in a rural area, but I think, again, people shouldn't believe that" (Adult male).

- c. "I think that because people [who live in rural areas] are generally more trusting, because the physical culture allows them to lower their awareness of risk" (Adult female).
- d. "I think we're more vulnerable. . . . Because most people here . . . don't know about security, so they leave their Wi-Fi wide open. You can drive around here and pop onto anybody's" (Adult male).

4. **Privacy as a Primary Value in Appalachia**

- a. "Lately we've been getting these advertisements from these loan companies, and they know more about our account than we do. . . . They'll send us an offer every few months, and they'll tell us what our payment is now and how much we still owe and how much we can save if we will go to them, and I'm offended by it. I don't understand how they know that much." (Adult female)
- b. "Like that thing when you're shopping for a cutting board on Amazon . . . and then when I sign on Facebook, every single ad on the sidebar is for a cutting board. . . . That freaks me out a lot more than other things." (Adult female)
- c. "I think everybody has fallen victim to so much stuff, that anything that comes across through the Internet to me at some point in time, I question it, always, 'cause I just don't take anything for granted on that. I believe everything's a lie, a cheat, and a scam [laughter]" (Adult male).
- d. "It's something called advertisements. No [it doesn't bother me] . . . if it does bother you then you just delete your cookies" (Adult male).
- e. "Obviously, I think, with most social media now, Facebook, Instagram, for instance—once you offer up that information, you sort of lose ownership of that. Definitely had to waive and sign those consent forms" (Adult male).
- f. "[An air conditioning contractor] came over to my house to do an estimate, and . . . he wanted to get on the Internet and work up the quote, and I said, 'Well, I'll have to go get my password so that you can use my wireless,' and he said, 'Well, I don't know who Molly is, but I've been attached to the Internet.' . . . The thing that upset me about it was . . . that he didn't ask permission before hacking into my system. That just really irritated me" (Adult female).

Appendix C: Navigating Threats to Privacy and Safety on Technology

1. Posting False Information To Deter Scammers

- a. "I don't use my real name on Tumblr, for example; it's actually not because I'm necessarily afraid that people are going to like, like someone I don't know is going to do something, but actually I don't want the people that I do know to know that" (Adolescent female).
- b. "Why would you use a fake name?" (Interviewer). "Because I like keeping my name secret" (Adolescent male).
- c. "[I] just [use] a lot of fake names and if it says, 'Oh, you have to tell us where you live,' I just put in a random state like, 'I live in New York'" (Adolescent male).

2. Restricting Information Sharing

- a. "I never put what state I'm in unless I feel comfortable telling the person. I never tell my age" (Adolescent female).

- b. "I don't share as much personal information on Tumblr, like no birthday, or I don't even know if my full name is on there" (College female).
- c. "Mine is set up so where anytime anyone wants to post a picture of me and tags me in it, it doesn't actually show up in my timeline. You can search for it and it will come up, but it won't be on my page. I have to approve it first" (College male).
- d. "So I've learned how to always [set the] security settings just for family and friends on Facebook" (Adult female).
- e. "Every time she goes home for vacation she will post that I'm going to leave and I say don't do it, I say post your pictures when you come back. Because all the robbers and crooks will know you're not at home" (Adult female).
- f. "I do [online banking] on my Wi-Fi. I don't like to use the school's [Wi-Fi] for that. Definitely not a public one for when I'm messing around on my bank account" (Adolescent male).

3. Restricting Use of Certain Devices or Programs

- a. "We've all been there, and we've been like, 'I'm going to search something' and then be like 'No, not on this Wi-Fi. I'm going to switch to a more secure connection or maybe like a personal connection'" (College male).
- b. "Like if I have laptop and it has a camera, I'll put, like, a Band-Aid over the camera. Yeah, and they can see the inside of your home and stuff like that so they can get a layout of your home, and so I put tape over it" (Adult female).
- c. "I won't purchase anything over online" (Adult female).
- d. "I deleted my account [after being hacked]. I got rid of that account, I got a new one" (Adult female).
- e. "That happens all the time . . . where it wants you to sign in with Facebook. I try to avoid that because I don't know why the hell it wants my Facebook information" (Adolescent male).

4. Refusing Contacts

- a. "The rule in our house is let it go to voice mail if you do not recognize it. My parents are like, 'If we are not home, do not answer the phone unless it's us or some relatives, and then you just say, 'Hey, they're not home'" (Adolescent female).
- b. "I would just accept people that I've actually had a conversation with or met them. So that's why I only accept people that I talk to" (College female).
- c. "But it's, you know, those recorded things, and so I just hang up and then I go block this caller" (Adult female).
- d. "If I don't know them, I don't add them. I have to know them personally" (Adult female).

5. Using Skilled Security Behaviors

- a. "You can also get a steel mesh wallet. [There is a scanner] you can hold it up to someone's back pocket through their wallet and read their credit card information and so they make these little steel mesh wallets. It's sort of like a bar code scanner, but for your credit card" (College male).

- b. "Here lately I've been getting a lot of calls on my cell phone, and I'm like, 'How did this happen?' Because I'm on donotcall.gov and that's the first thing I say, 'Do you know that I'm on donotcall.gov?' and it goes 'click' and they hang up" (Adult male).
- c. "There's a do-not-call registry online, and it's been there for years. And you can register your home phone number, all numbers you want to; now and then some come through, but I ignore them" (Adult male).
- d. "I don't keep cookies, and I don't keep history on my computer" (Adult female).
- e. "One thing I do is that there are plug-ins for browsers like Google which will let you log in and keep good cookies, but it disables all the advertising tracking cookies" (Adult male).
- f. "I think just for memory. [Deleting your cookies] cleans up your computer and speeds it up. That's actually the reason why I do it" (Adult male).

6. Overall Vigilance

- a. "And that's why I leave mine in my pocket, because I go to the gym and I exercise with a bunch of guys that are practical jokers and there's no telling what they'd put on there" (Adult male).
- b. "When I heard about it [GPS tracking], I went right to it and it showed exactly where I was for the last six months. Every address, every time, everything and I just went, 'Well, we'll just turn that little thing off'" (Adult male).
- c. "I don't do online banking on my cell phone because I'm just paranoid" (Adult female).
- d. "I mean I just dropped the contact with [the scammer] and I unfriended them and I went in and changed my password" (Adult female).