

“I really just leaned on my community for support”: Barriers, Challenges, and Coping Mechanisms Used by Survivors of Technology-Facilitated Abuse to Seek Social Support

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Abstract

Technology-facilitated abuse (TFA) from an intimate partner is a growing concern for survivors’ safety and security. Prior research introduced tailored interventions to support the survivors of TFA. However, most survivors do not have access to these interventions or are unaware of the appropriate support networks and resources in their community. We conducted nine semi-structured interviews to examine survivors’ support-seeking dynamics from their social networks and the effectiveness of social networks in addressing survivors’ needs. Through survivors’ lived experiences, we systematize socio-technical barriers that impede the participant from seeking support and challenges in seeking support. Further, we identify coping mechanisms used by the survivors despite those barriers and challenges. Through a participatory lens, we echo survivors’ call for action to improve support networks and propose recommendations for technology design to promote safer support-seeking practices and resources, consciousness-raising awareness campaigns, and collaborations with the community. Finally, we call for a restorative-justice-oriented framework that recognizes TFA.

1 Introduction

The ubiquitous nature of digital technology has introduced new risks and threats to the personal safety of survivors of intimate partner violence (IPV). Abusers spy, stalk, monitor, and harass using technology to intimidate, control, and coerce their victims [28, 49, 72, 86, 92, 103, 112, 122]. Such technology-facilitated abuse (TFA) in IPV is a growing concern for survivors’ safety and security [47–49, 91, 105, 106]. Recent reports suggest that 63–80% of IPV cases involve the use of technology [54, 73] and most advocates who support survivors report that their clients have experienced TFA [93].

To cope with TFA, survivors rely on different formal and informal *support networks* [23, 48, 50, 54]. Formal support networks consist of professional support providers who may be in a position of power and authority [108], such as therapists, IPV survivor advocacy organizations,

customer support executives, Title IX and resident advisors in universities, and stakeholders of the criminal justice system. Informal support networks include survivors’ friends, family members, and community members. Support networks are essential for survivors to cope with TFA, break free from it, and thrive in a society with power and agency.

Prior research investigated survivors’ interaction with formal networks [47, 49, 55, 56, 58, 102, 105, 113, 114], noting that advocates and law enforcement officials struggle to provide adequate support to the survivors of TFA due to the invisible nature of TFA and a lack of familiarity with technology. Moreover, Gupta et al. [54] found that 93% of college students who experienced TFA and sought any support use informal networks. Despite the importance of informal support networks for TFA survivors, no prior work has examined the survivors’ support-seeking interactions with their friends, family members, and community members.

In this work, we aim to bridge this gap by systematizing the support-seeking behavior of survivors of TFA and what role support networks play in coping with TFA. Specifically, we investigate the following research questions:

- RQ1. What do the survivors need when seeking support from their social networks?*
- RQ2. How effective are support networks in addressing their needs?*
- RQ3. What socio-technical barriers and challenges do the survivors face in seeking support? How do survivors cope with barriers and challenges to build resilience and safety?*

To answer these questions, we conducted an interview study with nine survivors who experienced TFA. We inquire about the context of abuse and their interactions with the support networks to cope with the TFA and build resilience and agency. Our interview questions aim to understand the process survivors take to seek support, their needs from the support networks, and the effectiveness of support networks in addressing their needs. Despite our focus on informal networks, survivors revealed the obstacles they encountered with

formal networks and their strategies for overcoming them.

Using grounded theory [51], we uncover seven *barriers* that prevent survivors from seeking support, seven *challenges* that make seeking support difficult, and five *coping mechanism* adopted by survivors to overcome these challenges. We find that survivors struggle to identify TFA (B1), lack technical knowledge (B2) and awareness of support networks (B4), and feel stigma (B5) in reaching out to support networks. While seeking support, survivors encountered disbelief (C1), disenfranchisement (C5), and ineffective advice (C2) from support networks. Also, our participants noted that support networks sometimes use unsafe communication channels (C4), risking the safety of the survivor. Survivors are required to collect evidence of TFA (C3), but they face difficulty in doing so (C6). Abusers control the support networks (B3) and can retaliate (C7), which makes seeking support extremely challenging for survivors. Despite these barriers and challenges, support networks collaborate with survivors to do safety planning (M1) and refer them to formal networks (M2). Survivors join support groups online (M2) and use technology for coping as well (M5). Survivors also support other survivors (M3), extending the informal networks of care.

Finally, addressing the power differential between survivors and support networks could help develop suitable interventions that address survivors' barriers and challenges in seeking support. Through a participatory lens [117] with survivors' perspectives, we co-construct recommendations for safer technological design, awareness of support networks, and a call for legislation overhaul.

Contributions. The key contributions of this work are:

- (1) We conducted the first study to examine social support sought by survivors of technology-facilitated abuse and its effectiveness in addressing their needs.
- (2) Through the lived experiences of survivors, we systematize 7 socio-technical barriers that impede the participant from seeking support (§ 5.1) and 7 challenges in seeking support (§ 5.2). Further, we identify 5 coping mechanisms used by the survivors despite those barriers and challenges (§ 5.3).

2 Related Work

Survivors of IPV rely on support networks to cope with abuse. In this section, we provide background on Technology-Facilitated Abuse (TFA) and outline the prior research on social support networks for survivors.

2.1 Technology-Facilitated Abuse

TFA is a growing concern for survivors and support networks. TFA includes spying, stalking, online abuse, hate speech, doxxing, and other forms of harassment using technology [28, 49, 54, 89, 90, 113]. Most abusers exploit UI-bound survivors' smartphones to stalk them [48]. Abusers install

readily available spyware [67, 90] or dual-use applications [6, 28], misconfigure apps and social media accounts, and abuse smart-home technology like smart speakers or door locks [65, 98, 103, 105, 106] to coerce and control survivors [112]. The prevalence of TFA has worsened, especially during the COVID-19 pandemic, showing a dire need for intervention and mitigation [13, 69, 93, 98, 99, 113]. The physical and emotional threat of abuse can exacerbate the feeling of paranoia and privacy concerns [22, 49, 78, 86].

Most survivors are not adequately equipped to cope and mitigate TFA [49, 72]. The complexity and inaccessibility of the user interfaces of modern technology and the "invisible" nature of TFA make it difficult to identify and mitigate the abuse [23, 49, 50, 106]. Survivors may not be technology-savvy or have access to technology experts [48, 66, 72]. Moreover, survivors face severe economic, health, and housing insecurity [68]. The abuse increases survivor's dependence on their partners for necessities of life and limits access to medical health services. Further, survivors may face utility disconnections, housing instability, food scarcity, and difficulty accessing medical care. Therefore, as we will see in the next section, survivors often rely on social networks to seek support to cope with abuse.

2.2 Social support

Survivors may seek social support from their formal and informal support networks in their community [30, 31, 39, 42, 52, 75, 97, 108]. Cohen et al. [30] define social support "as a social network's provision of psychological and material resources intended to benefit an individual's capacity to cope with stress". Sippel et al. [97] categorized the social support into five forms: (a) structural support relates to the interactions of survivor with their social network, (b) emotional support relates to the feeling of comfort, love, respect, care and emotional safety, (c) instrumental support relates to the material support provided to the survivor, (d) functional support measures how effectively the support network addresses the emotional and instrumental needs of the survivor and (e) informational support covers relevant information or guidance so that the survivor can cope with the abuse.

Prior works [11, 15, 43, 52, 54, 108] categorized the social support networks for survivors into two groups: Formal support networks consist of professional support providers who may be in a position of power and authority [108], such as therapists, IPV survivor advocacy organizations, customer support executives, Title IX and resident advisors in universities, and stakeholders of the criminal justice system. Informal support networks include survivors' friends, family members, and community members. Survivors are more likely to seek informal than formal networks, especially in the initial stages of abuse [54, 74, 127]. The availability of social support reduces the possibility of adverse consequences and helps them leave an abusive relationship [107, 108, 124]. Rodditi et al. [85] highlight the resilience capacity of

survivors and attempt to understand the parts of support networks that are more supportive than others. However, no study has examined how TFA impacts survivors and adds barriers and challenges to seeking support.

To combat TFA, survivors may seek help from a variety of resources. Survivors may use technology to seek support [8, 62, 81, 108, 121]. Prior works outlined the role of formal networks and technology experts in helping survivors [47, 102, 114]. Researchers deployed Tech clinics where technology experts consult with survivors to address their TFA concerns [29, 56, 102, 113, 114]. Tech clinic balances emotional support with technical security advice applying the principles of trauma-informed care [2, 102, 114]. However, Tech clinics serve a limited number of survivors at the time of writing. Survivors may rely on traditional support networks. Prior work found that survivors of online sexual abuse turn to Reddit communities to seek social support [8, 10]. Researchers have explored the UX challenges faced by lay users in mitigating TFA scenarios [23, 50]. Therefore, an in-depth study is needed to understand the TFA survivors' support-seeking process.

In this work, we examine how survivors seek support, their needs from the support networks, and the effectiveness of support networks in addressing their needs. In the next sections, we explain the methodology (§ 3) used to study survivor's context of abuse. We share our findings on survivors' context of abuse and their needs from support networks (§ 4). Further, we present survivors' barriers, challenges, and coping mechanisms in seeking social support (§ 5). Next, we echo the participants' calls to action and offer recommendations to various stakeholders, such as technology companies, researchers, and policymakers, to enhance safer support networks for survivors (§ 6).

3 Methodology

3.1 Positionality

We embrace a reflexive approach to conducting the study, which involves positioning the authors' identities at the center of knowledge construction and meaning-making [57]. Three authors are academics trained in violence advocacy who support survivors in their research and volunteer work by applying trauma-informed care principles. Two authors identify as men and are trained consultants for the Madison Tech Clinic [109]. The first author took all the interviews. Two authors identify as women. One author is a licensed mental health clinician on-call for any distressing situation, with an option to provide screening and referrals for participants. The author also has expertise in sexual violence advocacy and research. Furthermore, some authors have personal experience with IPV and sought support from their support networks, and their experiences informed the study design and analysis.

All authors' passion for radical expression for social change is reflected throughout the article. We want the readers to recognize the emotional labor and research

contributions. Listening to and writing about the traumatic stories of survivors was emotionally demanding, and we are conscious of the burnout and vicarious trauma such an immersion can cause [17]. The authors took enough time off from the research and had strong mental health support. Finally, through a participatory approach [101, 111, 117], we co-construct the recommendations and discussion with the backing from the survivors to inform the design of future interventions. When it was safe, we shared a draft of this paper with the participants for feedback before the publication.

3.2 Ethical Considerations

Survivors may face psychological stress due to re-traumatization. We tried our best to ensure the participants' emotional and psychological safety [18]. The university's ethics review board approved the study, and all participants provided informed consent. We did not send the complete consent form in advance or provide it to the participants after the interview unless they specifically requested it. Instead, we gave all participants an informational sheet that contained the authors' contact information. We avoided terms like IPV, DV, and TFA in the payment and the consent document. Additionally, participants may share personal, sensitive, or identifiable information during the study. We anonymized any identifiable information in the transcripts and stored it in a secure folder accessible only to approved study personnel. The participants' emails were stored separately for payment purposes.

3.3 Theoretical Perspective

We employ Grounded Theory to understand the socio-technical barriers faced by TFA survivors to cope with abuse and seek social support [51]. To frame the research study, we rely on theoretical lenses and frameworks from violence prevention advocacy in public health and critical theory to emphasize survivors' coping capacity over vulnerability. (1) Through the upstream parable [32], we focus on survivors' efforts in "mid-stream" and propose effective interventions "up the stream" (§ 6). The parable provides an analogy of survivors trapped in a river flowing downstream as they go through the abuse. The analogy alludes to building interventions (a) (tertiary) down-stream to support survivors' immediate needs after the abuse has occurred, (b) (secondary) mid-stream to support survivors' coping strategies while still going through abuse, and (c) (primary) up-stream to fix the root cause of the abuse to prevent survivors from falling in the river in the first place. (2) We utilize a desire-based and complex personhood design rather than damage-centered research [115] while working with vulnerable populations such as survivors. (3) Finally, we use feminist ethics of care [14, 84] and a trauma-informed lens [2, 29]. We validate participants' traumatic experiences by centering trust, peer support and collaboration, enablement, and intersectionality through active listening and empathy by creating a welcoming space [120].

3.4 Protocol

Recruitment. We recruited participants from DV support services, social media, and community spaces in Madison, WI, from June to November 2023. The participants were over 18 years old and residing in the United States. We distributed flyers through approved bulletin boards, social media networks, local community spaces, DV shelters, and survivor services. Furthermore, we advertised the study through the state-level DV programs based in the US, which had their contact email or contact form listed on their website. The participants filled out a screening recruitment form and were reached out through email to participate in the study. Since we received many bot responses, we turned on the fraud detection on Qualtrics [80]. We modified the interview questionnaire to add IP address location checks. We compensated each participant with a \$20 gift card. We assumed that the abusers may monitor participant’s email accounts. Therefore, for the participants’ safety, we ensured that none of our communication over email mentioned anything about abuse, IPV, or TFA. Instead, we used a generic email template titled “Social support for technology use”.

We explored the lived experiences of 9 participants. Seven identified as women, and two identified as men. The participants’ ages ranged from 18 to 25 (four), 26 to 35 (two), and 36 to 45 (three). All participants spoke English at home. Regarding racial background, four identified as White/Caucasian, two as Black/African-American, and three as Asian. Six participants were single, while three were divorced. Regarding education level, four participants had a graduate degree, three had a bachelor’s degree, one had an associate degree, and one was in college. Eight participants were employed, whereas 1 was a college student.

Semi-structured Interviews. The first author conducted nine 60-minute semi-structured interviews via Zoom.¹ Some interviews exceeded the 60-minute mark, as participants especially wanted to share their intimate stories of resilience. Upon selection, we contacted the participants through the email they provided and asked them to book an appointment through Calendly. The participants set up a 60-minute interview time with us at their convenience. The interviewer reviews the consent form describing the purpose of the study, the types of questions that were asked, the risks involved in participating, and the participant’s right to skip questions or stop at any point. The interviewer answers any participant questions and obtains verbal consent for recording. We were flexible with our interview protocol. We sought feedback from the participants. We revised the interview protocol several times to revise the language and added questions on supporting other survivors after seeing that most participants also provided help to others. Further, we add whether they had supported someone else in a similar situation. In addition,

we asked the participants how their experience dealing with abuse was beneficial in their knowledge and in providing emotional support and confidence to someone else. Three authors belong to the Global South and recognize the need to understand support networks in non-western contexts (§ 6.2).

Analysis. We follow an inductive coding approach [38] using structural coding [3] to design codes based on our research questions. Two authors reviewed the recordings to design their codes, where the first author aggregated the codes. We used Collaborative Qualitative Analysis (CQA) to solidify our codebook [83].² Using CQA does not require computing inter-rater reliability (IRR). Instead, validity is ensured by having multiple researchers meet iteratively to discuss codes and themes, resolve any disagreements as necessary, and revise the codebook [83]. We generated themes about survivors’ barriers and challenges and the effectiveness of social support networks in resisting TFA. We discussed the themes with the research team and tried to understand survivors’ pain points through a trauma-informed lens. With support from the survivors, we co-constructed the recommendations and discussion to inform the design of future interventions.

Limitations. We note the sensitivity of recruiting survivors with safety and care while following an extensive recruitment strategy (§ 3.4). We wanted to limit the impact of the re-traumatization faced by survivors and vicarious trauma faced by the researchers. Although we value the participants’ insights, our findings do not represent all survivors, contexts of TFA, or support-seeking experiences. However, our analysis reached saturation, and the data quality was sufficient to find themes and patterns. Nine interviews were adequate in “developing the range of relevant conceptual categories, saturating (filling, supporting, and providing repeated evidence for) those categories and fully explaining the data [27].” [41]. Further, we conceptualized disclosure of abuse [8, 42, 61, 108] within the umbrella of seeking support from social networks. Lastly, the presence and availability of support networks are highly contextual. They may depend on individual preference and the social and cultural context in which the survivor is situated (§ 6.2).

4 Findings

We analyze the context of abuse (§ 4.1) and participants’ support-seeking dynamics with their support networks. (§ 4.2) discusses participants’ needs, the support received to address them, and its effectiveness in mitigating the abuse. In Fig. 1, we show participants’ path from abuse to safety. We discuss socio-technical barriers (§ 5.1) that impede the participant from seeking support-seeking and challenges (§ 5.2) they faced in seeking support, and coping mechanisms used by the participants to overcome them in seeking support (§ 5.3). As we have a small participant pool and to protect

¹Interview protocol is available on [Zenodo](#).

²The codebook is available on [Zenodo](#).

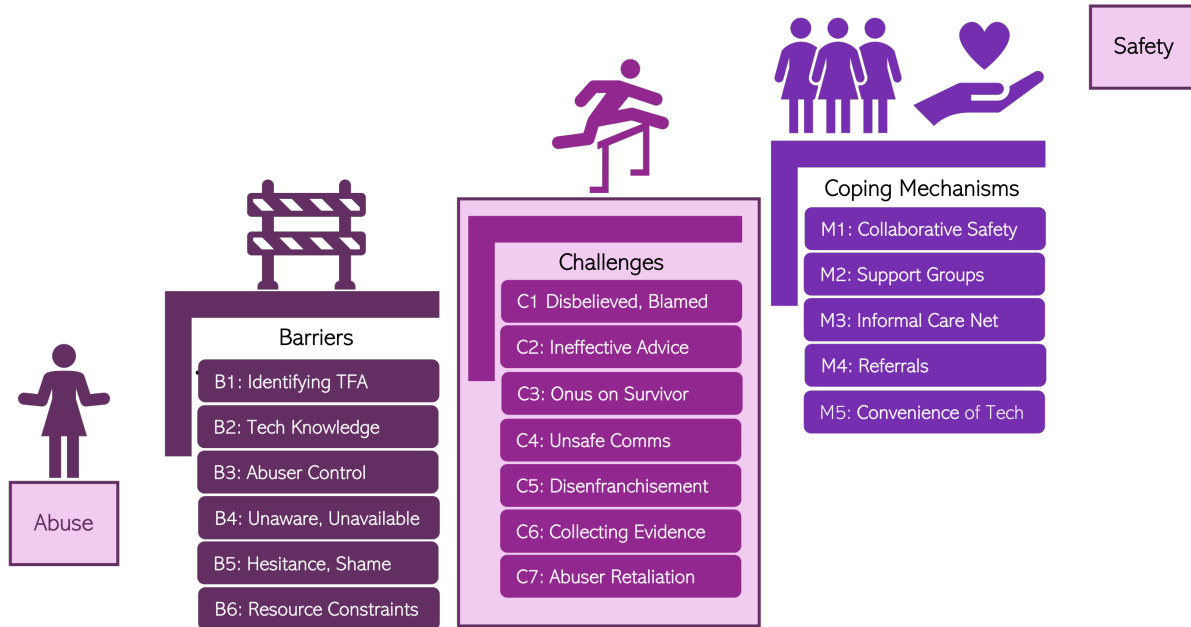


Figure 1: The figure shows a survivor’s path from abuse to safety. Survivors face barriers that impede them from seeking support, challenges during seeking social support, and use various coping strategies to overcome these barriers and challenges.

their safety, we report the observed themes by using the terms “a few” ($n \leq 2$), “some” ($n \geq 3$), and “most” ($n \geq 6$).

4.1 Contexts of Technology-Facilitated Abuse

The context of abuse for each participant varied in terms of severity of violence, ranging from toxic relationship disagreements and physical, sexual, financial, and emotional abuse to the multiple abusers collaborating to endanger the physical safety of the survivors in diverse living situations and relationship contexts. The participants faced abuse where the abuser damaged survivors’ technological devices, forced them to share location through calls and location-sharing apps, stalked through fake social media accounts, and manipulated IoT devices such as smart speakers, bulbs, and TVs during the night. Additionally, the abusers caused severe financial and housing concerns for survivors by canceling credit cards, taking over their identity, threatening to force them out of the house, and disconnecting utilities.

Further, a few participants identified as people of color with diverse immigrant statuses and had shared custody of children with the abuser. They had more difficulty in leaving the abuse or seeking support in their community. Due to systemic racism and white supremacy rooted in US history, people of color are significantly more likely to face IPV [33, 34, 64, 73, 76, 88]. Although we had a proportionate representation in our participant pool (§ 3.4), the lived experience of survivors of underrepresented and marginalized communities is required to understand their risks and unique challenges through a critical lens [34, 54] (§ 6.2).

4.2 Survivors’ Needs from Support Networks

We use the categorization of the social support networks from prior works [11, 15, 43, 52, 54, 94, 108]. As shown in Fig. 2, the participants reached out to social support networks such as (a) *Informal support networks* including friends and family, (b) *Formal support networks* including professional support providers such as therapists, DV organizations, and stakeholders of the Criminal Justice system. The informal networks consist of community members, while the formal networks comprise people who counsel and support professionally and may be in a position of power and authority. Prior work found that survivors are likelier to seek informal than formal networks [74, 127]. In our sample, we found that more participants tended to seek support from informal networks than formal ones.

While some participants took technical and non-technical evasive coping mechanisms (§ 5.3), others sought help from their support networks to make sense of the strange behavior happening to their devices. The participants faced severe emotional, physical, and sexual abuse. They had concerns about the abuser finding out where they lived. A few participants avoided returning to the abuser’s home and, instead, wanted a safe space from the support network. Most participants felt that they had been betrayed emotionally by their abusive partner. Therefore, the participants reached out to the people they could trust, who were more available and accessible to approach, and with whom they had a close relationship. Therefore, connectedness within the community was essential to them while reclaiming control and agency and building

Participant	Informal	Formal	Barriers Faced	Challenges Faced	Coping Mechanisms
P1	FF, SG	None	B1 B4 B5	C7	M1 M2 M5
P2	FF	None	B1 B3 B4	C1	M1 M4
P3	FF, SG, CH	TH, CJ, US	B1 B2 B3 B4 B5 B7	C1 C2 C3 C4 C5 C6 C7	M1 M2 M3 M4 M5
P4	None	TH, US	B1 B2 B3 B4 B5	C1 C2 C7	M3
P5	FF, CH	TH, DV, CJ	B1 B2 B3 B5 B6	C1 C2 C3 C5 C6 C7	M4 M5
P6	FF	US, CJ	B1 B2 B3 B4 B5	C1 C2 C3 C5 C6 C7	M1 M2 M3
P7	FF, SG, CH	TH, DV, CJ	B1 B2 B3 B4 B5 B6	C1 C2 C3 C5 C7	M2 M3 M4
P8	FF, SG	TH, DV, CS, CJ	B1 B2 B3 B4 B5 B7	C1 C2 C3 C4 C5 C6 C7	M1 M2 M3 M4
P9	FF	CJ	B1 B2 B3 B4 B5	C2 C5 C7	M1 M3 M4

Figure 2: The figure shows the barriers, challenges, and coping mechanisms used by the participants in seeking support. Informal support networks such as friends & family (FF), support groups (SG), and coworkers and housemates (CH) or formal support networks such as therapists, counselors, or psychologists (TH), DV organizations (DV), university support services as Title IX, resident advisors (US), customer support executives (CS) and criminal justice system including law enforcement and legal attorneys (CJ).

confidence and resilience. The participants wanted to know a sure-shot way to manage abuse emotionally, remain physically safe, and seek objective information and technical assistance to alleviate the abuse, particularly while revealing intimate and sensitive details of their experience. The support-seeking process was not a one-size-fits-all strategy, and participants took help from several support networks (Fig. 2). Nonetheless, some participants preferred formal help over informal help due to the severity of the abuse, confidentiality, and objective ways of escaping or ending the abuse. However, it isn't easy to generalize this finding, as the choices made by the participants may be highly individualistic based on their preferences. One participant highlights the importance of emotional support:

"I really just leaned on my community for support; I needed a lot of emotional support because the thing that hurt the most was the betrayal. The [technical] tips from the friends were not as important as the emotional support. ... I knew what I needed to do for the technical help. ... I'm not the only one who's struggling with stalking issues. I knew there were plenty of resources online; just Google them."

5 Dynamics of Social Support

Although most support networks were unaware of the nuances of technology, they were essential to help the participants plan for digital, emotional, and physical safety to cope with abuse. The support network provided the participants with technical and non-technical advice when they shared the context of their abuse. The participants received financial assistance, emotional validation, spiritual support from friends and family, and legal support when they filed for a no-contact restraining order, divorce, or criminal charges to leave the abuser. However, the participants faced socio-technical barriers (denoted as B#) that deterred them from seeking support and challenges (C#) in seeking support. Despite the barriers and challenges, the participants adopted coping mechanisms to seek safety through support networks (M#).

5.1 Barriers to Seeking Support

B1 Identifying TFA is hard. Prior works show that survivors struggled with identifying TFA and termed TFA as "invisible" [23, 24, 49, 105, 123]. The invisible nature of TFA made it challenging to identify abuse in the first place, let alone seek support. As noted in § 4.1, the participants faced diverse TFA experiences with diverse intensity. The experiences shared by the participants were not linear; often, they started with the experience and recollected their thoughts they did not remember earlier. Therefore, establishing a timeline of abuse and support-seeking behavior was complicated. Some participants learned about the abuse through friends who reached out via group chats and shared screenshots of their interactions with the abuser and collectively decided to block the abuser. Prior works note that the complexity and inaccessibility of the UX design of technological devices is a significant barrier to cope with and mitigate abuse [23, 37, 50].

B2 Lack of Technical Knowledge. The technology literacy of the participant and the support person was vital. Some participants and people in the support network, especially elders in the family, had preconceived notions and mistrust about technology. The support networks had reservations about participants' use of digital technology and actively dissuaded them from using it, even before the abuse incident. One participant believed WhatsApp was safe as it was advertised as a secure messaging service. However, the abuser monitored their messages by pairing a device with WhatsApp Web³). However, the support providers may not be able to effectively support the survivors (C2).

"The support or safety regarding technology abuse requires a very high level of technological literacy that includes something as simple as FindMy phone ... the surveillance state, or collecting registration plates of cars. For example, TikTok, the privacy laws are very [vague and add to] the privacy barrier. Enforcing

³WhatsApp Web can be used to view messages on a linked computer

particularly is very slow as there's so many ways to use data that no one but the users already knows about. I don't think many people think about it [or] have the capacity, whether it's time, curiosity, resources to simply think or search for . . . how it could be used as a form of abuse. I think [TFA] . . . is one of the hardest things to resolve because of [the] many unknowns. . . within it."

B3 Abuser Controlled the Access to Social Networks.

The abusers made it challenging for participants to seek help as they actively isolated them, sabotaged access to support services, and monitored through offline and online networks such as study groups, family, and friends to learn about the participant's location. In some cases, the abusers broke their technological devices, deleted contacts, threatened their close friends, and tarnished the participant's image. In one case, the abuser took over the participant's phone number by calling the customer support executive of the phone company. They hurled abuses and degraded the participant and dissuaded their support networks from cutting them off. The participant felt a fear of retaliation from the abuser (C7). Some participants had to leave the support groups, while some lost family photos and friendship connections they had built over the years. On the one hand, the participants used it as an opportunity to filter out the people who did not support them, and on the other hand, they formed more robust relationships with those who did not. Interestingly, one participant "*did a lot of reaching out to the people who had been isolated from me, the people I've been told I couldn't talk to [by the abuser] Just as a way of reconnecting and being able to decide for myself if these were good friendships.*"

B4 Unaware and Unavailable Support Networks. None of the participants knew about the appropriate support networks or their availability to help with their technology concerns. The participants faced barriers in seeking support as they did not have support networks such as friends available when they wanted to. Moreover, some participants faced physical isolation and contacted their friends over WhatsApp, Facebook Messenger, SMS, and Facebook Groups to seek support. Although technology provides remote communication options to seek connections from friends and family far away, in some cases, it could lead to further social isolation. The participants faced physical restrictions when they traveled out of the country, moved to a new place, or were in an unfamiliar physical location. A foreign location meant that participants did not have familiar social networks or knew about local organizations that provide technical help, leading to further social isolation and no actionable support. In one case, limited social media websites and messaging apps were available in foreign countries outside the US, discouraging them from seeking support from their close friends and family. Moreover, therapists were not available during the night when the participants experienced abuse; however, the local domestic violence hotline was available 24x7, which provided them with validation when none of the informal networks were available (M4).

"It was just really hard to [seek support] because there's no Messenger or Facebook in China because it's blocked by the firewalls. WeChat was my only way to contact people. I didn't really have that many friends on WeChat because it's not my platform of choice. That platform itself has a lot of privacy and security concerns as it is."

B5 Hesitance, Shame and Stigma. The participants were apprehensive about seeking support due to hesitance and reluctance to seek help. The participants did not want to escalate or complicate their relationship, were worried about the abuser, or felt a fear of retaliation from the abuser. A few participants were apprehensive about seeking a restraining order as it may jeopardize the immigration status of both their abusers, who were on temporary visas. In addition, the participants wanted to avoid retraumatization and felt shame, stigma, and embarrassment when asking for support. Furthermore, a few participants mentioned that they could search for things on the Internet instead of burdening someone with their trauma. The participant had reservations about mandatory reporting when seeking help from the Title IX office at their University. They feared being judged by the support networks for asking for help, especially for technological concerns, as they felt that technology was trivial for everyone else. A male participant states "*It's hard for someone, a young person like me, to meet a counselor or psychologist. . . I think it's easier said to a friend.*" Another male participant stated that seeking support meant that "*they were not strong enough to deal with it*". Male survivors face more stigma than women in seeking support (§ 6.2).

B6 Resource Constraints. A few participants had resource constraints, such as financial and time concerns. The participants prioritized avoiding the abuser and took evasive actions in place of a legal recourse. Of those who sought divorce court or restraining order hearings against the abuser, participants were concerned about the high cost of legal fees to hire a lawyer to represent them. Some participants benefited from free services, such as community counselors from the University and DV organizations. Some ways to seek financial support may backfire (C7). As we note in §3.4, based on the educational and financial background and dependence on the abuser, survivors may face difficulty in seeking financial support from their community in time.

"Throughout the divorce process, I had to hire attorneys, and it became too expensive for me to afford the fees. Attorneys charge \$100 for 15 minutes of their time for every email, [or] phone call. I needed some help from my friends to pay for those fees. A friend set up a GoFundMe account. I don't know how, but my ex's family found the account. They took that link, and it got shared in their group texts within the family; everyone made fun of it."

B7 TFA is Low Priority. The participants did not prioritize seeking help until the severity and intensity of the abuse were too much to bear at different phases during the abuse. As one participant states

“When you’re in that situation, [you are] not really thinking about the theoretical meta, or what realm of abuse this is; it’s just, you’re experiencing it. You’re in fight or flight mode. I feel those things about reflecting on it and noticing the patterns and stuff come after, or, in those mini periods where things have calmed down.”

While a few participants found it easier to seek support for TFA than other non-technology forms of abuse, most did not report a difference in seeking support, as they did not conceive the forms of abuse to be separate. The participants talked about having resource restrictions (B6) or felt that cyberharassment and digital stalking had a lower priority than, say, physical or sexual assault when their bodily autonomy was questioned. A few participants felt that support providers had different notions while providing support. We offer recommendations for highlighting technical violations and guidance for conversation around consent in using technology (§ 6.1).

“The technology abuse I was more comfortable sharing with friends than any other forms. I think it’s because it’s very clear cut [that] people’s views of what is and isn’t acceptable when it comes to personal technological devices, but it’s less [so]...for what is okay and not, from an emotional abuse standpoint. When it comes to physical or sexual abuse, people have very defined and almost universal feelings. What’s happening today to personal electronic devices, is they are private; they are yours, and no one should look at them... I could say [to everyone] that he did this, and everyone would agree that it was wrong and weird and creepy and should be stopped.

5.2 Challenges with Support

The participants struggled with the support provided to them by the support networks. We describe the challenges faced by the participants below.

C1 Disbelieved and Blamed by Informal Networks. Some participants tried reaching out to their own and the abuser’s social network to help them convince the abuser to stop the abuse. However, they were dismissed, left unheard, and, in some cases, the social networks sided with the abuser. In some cases, when participants reached out for support from their parents, grandparents, and friends of the abuser, they dismissed and invalidated their concerns and sided with the abuser instead. They looked down upon and blamed the participants, and they didn’t help the participants when asked for support due to misguided notions and distrust about technology.

C2 Ineffective Advice. Some participants who sought help from trauma-informed advocates, such as DV advocates and therapists, provided practical advice that reduced paranoia and boosted their confidence and resilience. The therapists played an essential role in demystifying the defamatory Facebook posts made by the abuser and the consequences they feared. However, for most participants, the technical advice was not practical. One participant noticed that flashing lights on their smart TV, smart bulb, and Alexa could be a potential

privacy threat and, with the advice of a friend, moved away to ensure that their conversation remained private. We discuss such coping mechanisms adopted by the participants in § 5.3. The participants reached out to customer support executives with little or no help and decided to call the local Domestic Violence (DV) hotline. The DV organization helped them install more IoT devices such as cameras, motion detectors, and ring doorbells as a means to garner safety from an abuser who had violated restraining orders and bail conditions in the past. However, these devices were not effective and added more anxiety to the participants. Gupta et al. show that even though 93% of survivors felt that their support networks made them feel better, 31% thought that the support did not fix the technical issues concerning TFA [54]. As one participant notes—

“Most [support networks advised me to] completely block and deal with the repercussions. Some were understanding that I was scared, more scared when he was blocked than at any other time. But I think that struggle for me is that most people don’t really understand that the neurotransmitters in a [survivor’s] brain are completely altered by this abuse cycle. So, when we go full cold turkey block, there is so much fear and anxiety that it’s debilitating; it’s really hard to go on with your normal life.”

While some participants decided to cut off and reduce their use of technology and block the abuser on all platforms. We observed that blocking is not always enough to cope with abuse, as the abuser might retaliate with more potent and dangerous physical or emotional abuse. The NNEDV hotline service provided a trauma-informed way of the phased blocking strategy to avoid completely disconnecting the abuser and ensure the participant’s safety. One participant contacted the hotline and local DV shelter, *“Do I go completely blocked? Do I go with gray rock or yellow rock? These are methods of limited contact, so that [abusers] don’t feel completely disconnected [or]...escalate violence.”* We discuss blocking methods and techniques rooted in behavioral psychology (§ 6.1).

C3 Onus on Survivor. While being trauma-informed, the information provided by the NNEDV and the local DV hotline consisted of generic solutions that may or may not apply to the participant. However, some participants noted that they needed precise guidelines instead of generic how-to guides to cope with the abuse. A participant termed this phenomenon as *“cognitive dissonance”* where the onus is always on the survivors to make the best decision at the moment to fix their overwhelming situation. Moreover, upon searching for online resources, participants found they were always outdated or inaccurate with their mobile device’s current operating system version.

C4 Unsafe Communication. Unfortunately, for a few participants, law enforcement and Title IX used emails as the primary mode of communication, which the participant felt uncomfortable with and invasive. The participants were concerned about their emails being monitored by the abuser (B3), resulting in the abuser’s retaliation (C7).

“The police officer in charge was a ‘white older man.’ I felt very uncomfortable with how they handled something. Because there was blackmail and explicit images involved, the officer emailed me, ‘Can you send me a photo of this?’ and I [felt. . .] so weird. . . that’s my body. It was so invasive [as] it was through my . . . email; there was no form. He offered very paltry comfort and affirmation. This random man that I’ve never met that I know, I trust, [and] I’m sure is gonna help me, I am not gonna do anything worse than what I’m already experiencing. It’s the lesser of two evils type of thing. I don’t remember if I was allowed to censor the photos, either. It was just a very uncomfortable experience.”

We emphasize the need for designing systems to ensure the safety of the survivors and their support network, especially communication mediums used in seeking support (§ 6.1).

C5 Disenfranchisement. Some participants sought out formal networks when the abuse got severe in terms of physical and sexual violence. Most participants faced institutional betrayal and disenfranchisement from law enforcement, lawyers, and customer support executives. They highlighted their inability to understand the nuances of technology. The participants were disbelieved, dismissed, ridiculed, treated with misogyny, and turned away without adequate advice, labeling the abuse as mere relationship quarrels and bedroom disagreements without any physical evidence.

“I reach[ed] out to the chief of police . . . about some mismanagement I had received [from] his officers. The officers spoke with my husband first and then spoke with me. . . telling me that it was inappropriate to call [the police] in bail condition violations if I didn’t want to have sex with my [ex], if I didn’t like the way he put away the dishes, [or] if I was just in a bad mood. It was inappropriate for me to call the police while he was breaking the law just because I was upset with him. They reviewed body cam footage and agreed that they needed to do some training. They did that initial training, and my experience [still has] been the same. This police department is new people again, but a very misogynistic viewpoint [when] it comes to domestic abuse. I’m basically just “annoying” them.”

In one case, the abuser subpoenaed the healthcare services that the participant frequently used for mental health support.

“I see a therapist regularly. . . and [ex] used the court system to subpoena the records. He now has access to years worth of therapy notes, doctor’s notes, and pharmacy records. This type of stalking created more stress because I was stressed about co-parenting and finances. Now, he’s stalking me when I’m going through the healthcare system to try to seek support and relief. I’ve been protected by my friends [who] are very loyal, and they respect my privacy and confidentiality. I can ask them for help, and it stays with them. But when I asked the therapists and the doctors for help, it doesn’t stay with them because then they receive a court order that demands [that] they need to turn over my records, and I no longer have privacy.”

Frequent betrayals resulted in participants losing trust in the system when legal and healthcare services violated their privacy. We echo Woodlock et al.’s [123] call to build institutional trust in (§ 6.2) and (§ 6.3).

C6 Difficulty in Collecting Digital Evidence. Survivors may collect evidence of TFA for various legal purposes, such as restraining orders, criminal charges, or while filing for divorce. However, collecting and presenting evidence of tech abuse is challenging, along with the legality of TFA [40, 60, 105]. For example, one participant sought help from their housemate to collect evidence of abuse. They stored evidence of harassing messages in a Google Drive folder for backup as they were concerned “if [abuser] were to get a hold of my accounts. [I needed] Google Drive that [had] a backup copy somewhere of. . . screenshots of all these messages.” In other cases, law enforcement, attorneys, or judges might discredit digital abuse evidence, sometimes due to a lack of technical knowledge. A participant said “text messages were investigated very closely. But [attorneys] seem[ed] to be not very well versed in Snapchat, which, I get it, they were older attorneys, but also. . . the bias introduced in. . . the proceeding if they didn’t have a grasp of how it actually is used. . . [or] could be used negatively.” Participants felt the risk of the abuser finding out if the survivor is trying to record their abusive behavior (B3), resulting in the abuser’s retaliation (C7).

“The bulk of my evidence was text messages and emails, and judges don’t want to look at it. That’s all I have, man. I can’t audio-record him. I did [try with] my first abuser after a while, but they catch on, and they know you’re doing it, and then you’re in more trouble. You’re screenshot-ing their messages and printing off their emails because that’s all you have. And judges are like, ‘I don’t really want to look at that.’ It’s weird. And then it becomes he said, she said, and if I don’t have any marks. I mean, that was what was frustrating too; strangulation doesn’t always leave marks, guys, so you’re not going to charge anything, even though children witnessed it.”

Further, attending court can be intimidating. For safety, the participants preferred someone they trusted to accompany them while visiting the courthouse. A few participants had to see and hear the abuser present technical counter-evidence, which was re-traumatizing for them. While highlighting critical practices adopted by DV organizations, we propose recommendations to support survivors’ legal needs (§ 6.3).

C7 Abuser Retaliation. In some cases, the abusers broke their technological devices, deleted contacts, threatened their close friends, and tarnished the survivors’ image. The survivors lost family photos and friendship connections in an instant that they had built over the years. Moreover, a few participants discovered support groups through social media recommendations, which indicated that some of their friends had previously joined them. At the same time, the participants’ social media activity proved harmful and a safety concern since it revealed their intimate details. The participants were identifiable by their names on social media. The participants faced severe retaliation (C7) after the abuser learned about their support-seeking exchanges. The participants adopted self-censoring and conscious security practices (C1). A participant shares—

“I discovered that my [ex’s family] joined the same support group. Whenever I commented on anything, [they would] screenshot it and send it to my husband [and] blast it in a group chat with the entire family; everybody would read what I shared on a Facebook support group and mocked it. . . . Because it’s a public group with thousands of people all across the world. There’s no way to protect myself except just to remove myself from the support group. . . . there is no technical support for that kind of stalking. I’m just really careful about my language now [and] I know how to share my story and the right amount of details that I get to vent, but I don’t jeopardize my safety.”

As a result, the participants felt a lack of trust within their families, preventing them from seeking support. Therefore, attention should be paid to anonymizing the activity of social media users, especially when the activity involves seeking support or sensitive material that could jeopardize safety. Our findings differ from Andalibi et al.’s as they primarily examine support-seeking over anonymous social media, which adds a layer of protection for the survivor [8–10].

5.3 Coping Mechanisms Adopted by Survivors Despite Barriers and Challenges

Survivors used mechanisms despite barriers and challenges.

M1 Collaborative Safety Planning. The support providers and the participant collaboratively participated in forming a safety plan. The support provided technical advice, from taking actions on their behalf to assisting the participant in taking conscious security and privacy actions on their devices and accounts. For some participants, their friends, family, and housemates acted on their behalf, confronting the abuser to stop the abuse, threatening to call law enforcement, and offering them physical safety and comfort. Regarding technical advice, the participants were advised to block the abuser, create alternative accounts and new mobile plans, enable two-factor authentication, restrict location sharing on their phone, change the account password, switch off the social media comment section, and make their profile private. One support provider helped the participant collect evidence of abuse *“my housemates had the idea of taking a picture of my phone with the chat open on the screen, so that we have a copy of it, and [abuser] doesn’t know that I took a screenshot.”*. Despite not being technology-savvy, the support networks were collaborative in their efforts to learn about the nuances of technology alongside the participants to support them. Some friends alerted participants about a password breach and worked with them to debug their technical issues. In one case, a participant’s friends showed them the corresponding privacy settings on WhatsApp so that they could identify and disconnect the abuser’s device and the IP address. Although technical actions taken by the support networks were practical, in some cases, the abuser persistently created new accounts and phone numbers to bypass their actions. Therefore, campaigns are needed to raise consciousness about the IPV threat models (§ 6).

M2 Support Groups. Due to the lack of availability and stigma, some participants joined support groups such as relationship advice groups on Facebook to learn from other’s stories of abusive experiences and their coping mechanisms. The participants believed that support groups provided extra protection that allowed them to learn safer privacy and security practices that worked for others in defying coercion and control of the abuser. Although participants faced challenges of identification and abuser’s retaliation, participants championed the use of support groups—

“I’m not the only one that’s gone through this; it feels so unfair when I think I’m the only one. I joined Facebook support groups for people [who] are in this situation, and I read other people’s stories. I shared my story, and I got a lot of support. It was just really helpful to realize that many ex-partners and co-parents do this. It made me feel a lot less alone in my struggles. . . . so many other people have gone through this before, and they still managed to come out successful and achieve their dreams, raise their families, succeed in their careers, and achieve financial independence; . . . accomplish all the things that I’m trying to do. It was an emotional boost for me to realize that this is just another one of the hurdles in my way . . . making it difficult for me to get what I want, but still doable.”

M3 Informal Networks of Care. Most importantly, almost all participants supported TFA survivors. They felt that prior experiences of helping others facing abuse were instrumental in seeking support and realizing the importance of a robust community that can provide support. Since informal networks are more accessible than formal networks, we press on the need for a community-oriented informal network of care, following the calls for action in prior work on formal networks of care [102, 114]. In a similar vein, Goodman et al. [52] call for a social network-oriented approach to services, thus making IPV a problem of the community rather than a problem between two individuals.

Even though an abuser controls the social networks (B3) and may retaliate (C7), the informal network of care may provide robust support to the survivor. We hope the existing formal networks such as law enforcement, Tech Clinic, DV organizations, and institutions can develop and foster these networks through awareness, education, and community engagement to create awareness among the survivors. The survivors may access these services from their next-door neighbors instead of long, burdensome walks to seek support from formal networks. A survivor turned DV advocate shared their story of abuse and providing support to others—

“I have an opportunity to share my story and create positive change, even support research efforts. It feels rewarding to be able to help benefit other people from my experiences. On my Facebook page, I share quite a lot about my stalking and harassment situation. I’m pretty public about it. I want people to know that this is what I’m experiencing because it makes it easier for me to seek help when I need it. . . . and so I ended up becoming a magnet attract other survivors. People think they’re experiencing domestic abuse, but they’re not sure, and they don’t want to ask

for help because it's so embarrassing [and] stigmatizing. They talk to me because I won't judge them ... as a champion for fighting domestic abuse, both personally and professionally."

M4 Referrals to Formal Networks. The participants were referred to formal networks such as law enforcement officers and legal attorneys in the Criminal Justice System, mental health professionals, and DV organizations. The support networks provided several resources that helped the participants seek formal support, e.g., a police information sheet upon the abuser's arrest, online resources found on the Internet, and referrals by their friends and local DV organizations. Some participants faced abuse as college students. Therefore, they had access to the formal network of the University's Title IX, campus police, and Resident Advisors, who all served as mandatory reporters. Friends and the resident advisor referred participants to the Title IX office at their University. This referral meant they had access to law enforcement, legal advocates with specialized court hearings for students, academic accommodations, and a mandatory counselor to help with their mental health. The participants described the interactions with the Title IX office as largely positive; it provided a 'one-stop-shop' solution to all their various needs [75].

In one case, the abuser obtained the survivor's cellphone number by calling the customer support executives of their mobile service provider to portray themselves as the victim and survivor as mentally unstable or declaring them dead. Moreover, they were sometimes effective when the participant contacted the IoT device's customer support executives. They received *"essentially step-by-step instructions that were readily available on Google that I had already found previously."* Talking to an executive validated their suspicions and paranoia, which was the survivor's way of understanding the threat model and covering all bases to prevent attacks from the abuser. Zou et al. [128] examined the effectiveness of the support provided by the customer support executive and provided recommendations to improve them and provide trauma-informed support.

"I wanted to just make sure that I had fully removed and that there wasn't any opportunity for them to come in. . . I thought. . . I remove[d] them both [the abusers], [as] I couldn't see them there anymore. But the paranoia in me was not sure if I had done it fully, completely, accurately. And so I wanted just validation that I had done it and that they were gone [for good]."

M5 Convenience of Technology. Some participants contacted their friends over WhatsApp, Facebook Messenger, SMS, and Facebook Groups to seek help from friends and their social networks, especially those facing severe physical isolation. The abuse changed participants' relationships not only with their friends, family, and the people in the support networks but also with technology. On the one hand, the participants used it as an opportunity to filter out the people who did not support them and, on the other hand, form stronger relationships with those who did. Interestingly, a participant used technological means for *"reaching out to the people who had been isolated from me, the people*

I've been told I couldn't talk to [by the abuser]. Just as a way of reconnecting and being able to decide for myself if these were good friendships." Prior work highlights this dichotomy as technology may both act as a weapon of abuse and a shield for protection [59, 70]. A participant talked about the convenience of technology and remote communication when seeking help rather than, say, visiting a therapist

"If [you] want to disclose [the abuse] to a counselor, I think it's better said online, through. . . technology, because there's [a] fear factor about being scared, canceled, or blamed. . . You're [going to] leave out some details. I think when typing, you have all the time to ask yourself about not leaving out details."

The participants talked about technology's inevitability, ubiquity, and convenience in their daily lives for communicating with their contacts and professional work. Although a few participants took a cautious approach to technology adoption, others used TFA as a learning experience to develop technical skills for their personal fulfillment and professional careers for financial independence. As one participant says *"my career aspirations in the tech field have benefited me in a way that I didn't even anticipate to begin with at the start"*. However, the non-physical and ubiquitous features of TFA contributed to illegibility to outsiders who deny social recognition and validation, which makes survivors question their experiences [47, 123]. A participant described TFA as *"the ultimate form of power and control and termed it as insidious, insane, and isolator."* Therefore, we echo participants' call for action to make TFA more "visible" to the survivor and their support networks.

6 Discussion

Survivors utilize effective coping mechanisms (§ 5.3) despite facing barriers (§ 5.1) and challenges (§ 5.2) in seeking social support. The survivors believed that there was not enough support available to resolve TFA. They provided recommendations for other survivors in a similar situation while emphasizing that it takes a *"village to make social change"*. Therefore, we offer recommendations for technology design (§ 6.1), community engagement (§ 6.2), and advocate for legislative and policy actions tailored to the US context (§ 6.3). We use the upstream parable (§ 3.3) to situate recommendations as **tertiary (down-stream, T), secondary (mid-stream, S), and primary (up-stream, P) interventions**. Finally, careful consideration is required to generalize and attune these interventions to reflect the socio-cultural norms of the survivors' community.

6.1 Improvements in Technology Design

Safer design cues. (S, T) The participants stressed the importance of technology design that supports the identification of TFA (B1) and heightens priority (B7). It is crucial to be precise to flag realistic ways an abuser can misuse the technology and avoid raising hypothetical dangers. Survivors

are under stress and may have high levels of paranoia while engaging with their technological devices. The last thing they need is another false positive sign that makes them question their decisions. Chen et al. [29] recommends providing “clear information for software updates that warns users ahead of time on any upcoming & settings changes, with options for whether and when to update”. Similarly, “for security warnings, reflect on the impacts of established ‘best practices’ (e.g., using harsh colors and forcing attention)” on survivors [29]. Mobile and smart devices should promote digital safety practices such as safe account sharing [29, 77, 79] and account security interfaces [37]. Explicit permission usage and privacy disclaimers in dual-use applications on the mobile operating system can support survivors against non-consensual location tracking [46].

Onus on Tech Companies. (S, P) The participants critiqued Meta’s content moderation and report abuse policy in the face of defamatory posts from an abuser. The participants generally struggled with the privacy preferences and report abuse functionality, as the abuser frequently kept deleting the posts. They did not receive adequate support from Meta’s customer support. The participants stressed that the onus is on platforms to provide safety and privacy and reduce the onus on the survivor (C3). Prior works indicate the need to empower survivors with control and agency [29, 46] through online safety features to recognize and deal with risks of online harassment [4, 5, 19, 63, 87]. Survivors look for accountability (C3, C5) and evidence-based mechanisms (C6) from social media platforms to ensure safety [4, 110].

Safe communication for seeking support. (S, T) Survivors need intelligent guidance for safer responses, with nudges for seeking support (B2, B4) [4, 46, 62, 71, 81]. End-to-end messaging apps are often marketed as “secure” solutions but are primarily designed to protect against traditional network-based adversaries. However, this approach creates a disconnect in threat models when users assume “secure” means protection from TFA. Slupska et al. [103] notes that the presence of an abuser in the home complicates the safety of survivors. Chen et al. [29] recommends working with survivors to surface adversarial goals and adding “causing psychological distress” as a primary goal. The designers should aim to provide survivors with a secure means to seek support even in compromised device scenarios without opening further channels of abuse.

Informal safety planning. (S, T) Survivors seek support from their informal networks as one of their initial coping mechanisms (M1). The participants highlighted the need for their support networks to be more trauma-informed and tech-knowledgeable. As Zapor et al. [127] suggests, informal networks are a critical avenue to explore the usability and safety challenges. Community-engaged solutions require preventive instead of reactive design interventions to support potential abusers and make digital spaces safer (B3, C7) [4, 5, 16, 112].

In addition, the participants discussed how the support networks could learn more about the support guides and resources on TFA to help them effectively. The participants talked about how search engines can provide personalized advice by tuning their algorithms to be more trauma-informed.

“When you look up DV, technology, or whatever on Google, I understand Google has a particular way they want to show results, but it’s always overwhelmingly hotline, resources for survivors, etc. And it’s never resources for service providers; it is very hard; you have to dig through resources online to search for something geared towards service provision. That’s very harmful for anyone who wants to try to be supportive sometimes, which is just an algorithmic thing.”

Majed et al. [7] found that resources for abusers are significantly more understandable and actionable than survivor support resources. The ever-evolving design of technical systems requires community support. Discoverability of community-generated tutorials and guidelines for search engines is essential to inform the support providers.

Effective formal support networks. (S, T) Survivors noted DV hotlines and social media platforms to be quite effective, as noted in prior studies [53]. There is a greater need for anonymity and content moderation to ensure participants feel safe in these support groups. Although self-organized support groups are understanding and compassionate, social media companies can reinforce trauma-informed principles to remind members to support survivors who share intimate stories of abuse [96]. Furthermore, we observed that the abusers retaliated when the survivor “cold-turkey” blocked them on digital platforms. Prior works in behavioral psychology proposed the Grey Rock and Yellow Rock techniques to protect against an emotionally abusive person by slowly becoming unresponsive and disinterested [25]. Platforms can adopt similar practices to limit interactions with the abuser. Gregory et al. [53] explore the dynamics of support sought on behalf of the survivor from DV hotlines. We believe that hotlines could provide adequate tech support.

6.2 Community Engagement

Some barriers (B2, B4, B5) and challenges (C1, C2, C5) are societal in nature.

“I feel transparency ... and knowing technology is a tool just like anything else for abuse. You have to address some underlying roots of violence. People fall into these situations because of things like low self-esteem, not having the self-confidence to say no, not being in the physical world, [and] being financially dependent. So many things that happen outside of technology are really hard.”

Collaboration with community. (S, T, P) Community-driven social change is needed to raise consciousness in the community to promote safer coping mechanisms (M1, M3, M2, M4). The participants emphasized the importance of education and raising awareness through lexicon common in DV circles, such as gaslighting, surveillance, and coercive control,

to make it easier for providers to understand the signs of abuse (B1). Taking inputs from fraud and cyberharassment campaigns [126], educational content and awareness campaigns should center themes about consent around technology, informational support resources, and digital safety. Formal support services could work with local tech-support groups to distribute these trainings. In college campuses, prior works show the effectiveness of interventions in communities such as violence awareness campaigns, bystander interventions, supportive residential committees, and survivor-support services [20]. Moreover, faculty, staff, and the Title IX office can foster informal groups to support students [21]. Munro et al. suggest that support service models should use a “one-stop-shop” strategy to provide support for health, financial, and housing services that a survivor requires to cope with abuse [75].

Marginalization experienced by the survivors. (P) Socioeconomic factors amplify the risks to digital safety and privacy [33, 54, 64, 73, 95, 104]. The participants stressed that technology creates more significant disparity among marginalized communities—

“Disproportionately, [TFA] happen[s] to women and marginalized communities. Most technology is [used by] upper-middle class and highly educated people. It makes those tools even easier to create a bigger disparity and what people know and can’t know. [I was] sitting next to a lady at the airport, who was pointing out a USB port ‘Is this where you connect to the Wi-Fi?’ when Wi-Fi is literally wireless.”

Gupta et al. [54] suggest that an intersectional analysis is needed to untangle the complex web of marginalization. Black women are 35% more likely to experience IPV than White women [76]. Further, 84.3% of Indigenous women face IPV, significantly from a non-indigenous partner (97%) , due to colonial and generational trauma [68, 88]. Further, men may face a lot more stigma in disclosing abuse and seeking support [36, 119]. Gupta et al. found that college students who face TFA, 68% of men do not seek support as compared to 47% of women [54] Ybarra et al. found that fewer men (21%) sought support from friends and family than women (43%) and LGBTQ+ (48%) [125]. Moreover, 81% of women who face physical or sexual IPV disclose to at least one informal network, but only 57% of men disclose abuse [11]. Prior works highlight the importance of socio-cultural norms and family dynamics in the online abuse contexts [94]. Therefore, future research is needed to understand the barriers, challenges, and coping mechanisms used by survivors in non-western contexts.

Participatory perspectives. (P) Most participants were interested in contributing to the research. Therefore, we follow a participatory approach to incorporate participants’ calls to action. Bellini et al. suggest that research in IPV spaces should be treated as interventions [17, 18, 118]. Even though semi-structured interviews have proven to be insightful, they naturally establish a power dynamic relationship between the

research and the participant [12, 82, 101]. Slupska et al. have championed a participatory-focused framework for threat modeling with at-risk stakeholders in S&P [100, 101]. More at-risk populations should be brought into the knowledge construction system to reduce the power imbalance. Moreover, we use Glaserian Grounded Theory [51] instead of Constructionist Grounded Theory (CGT) [26]. In CGT, neither data nor theories are “discovered” but are constructed by the researcher due to their interactions with the participants. The data is collected before building a hypothesis, hence the participatory nature of the research. Therefore, the S&P community needs active involvement from the survivors and stakeholders of support providers in designing research studies [116].

6.3 Legal and Policy Interventions

Informed formal support. (S, T, P) The participants emphasized the need for support providers in positions of power, such as Title IX, law enforcement officials, advocates, and judges, to provide practical and informed assistance that fits their needs. Further, in the face of receiving dismissive and misogynistic comments from formal networks, the participants highlighted that providers need to check their biases and misogyny when providing support. The survivors faced frequent institutional betrayal and disenfranchisement (C5) in presenting digital evidence (C6) and sharing intimate details about the abuse. To build trust, Woodlock et al. [123] suggest that instead of deprivation, survivor grief should be met with understanding, acceptance, and acknowledgment of the potential of transformative healing. Policymakers must plug legal loopholes used by the abusers to subpoena confidential documents and support interactions of the participants. Moreover, while visiting the courts, a trusted companion can provide emotional safety and reassurance and help explain technical and legal nuances. At the time of writing (June 2024), many US states have started Court Watch programs where community members are trained in civic engagement to raise awareness [1]. Therefore, a future study is needed to understand the effectiveness of the technological evidence of TFA and CourtWatch programs. Moreover, a survivor turned DV advocate underscored the lack of monetary resources and awareness among the DV advocates. Given the prevalence of TFA (63-80% of IPV cases [54, 73]), DV organizations should equip advocates to deal with TFA through training.

“I work a lot with nonprofit DV agencies, and they have no idea what’s going on in technology. ..They’re not trained in technology, and it’s a lot to ask of them. I really wish that there were more technologists and IT support staff for DV. Or have it embedded into the design of systems, to make it easier for people to find stuff.”

Policymakers must recognize TFA. (P) The participants who sought help from the US criminal justice system highlighted that the US state and federal courts are way behind in acknowledging TFA. They found that the legal stakeholders are dismissive and frustrating, and the laws around technology

“favored the abuser quite nicely”. Stephenson et al. [105] propose that the requirements for prosecuting TFA can be more explicit. Most US states follow one-party consent for video and call recording, which means that an abuser does not need consent to film the survivor. Therefore, a participant called for a “*restorative justice-oriented framework*” to place the survivors’ lived experiences and the disenfranchisement and fear at the core of policies around TFA to inspire trust in the criminal justice system. A participant highlighted the challenge of technology as a form of communication:

“My restraining orders and bail conditions say no direct or indirect communication with me. How is it then that you can call me out by title and history and sometimes by name [on social media posts], and that is not considered a violation? How is it that you can publicly defame me continuously, and there are no repercussions? And no one can even tell you to stop? How is it that they can literally post ‘breaking the law’ and no one cares? because the Internet is not a person, is what I was told.”

The prosecutors may face difficulty in proving the abuser’s intent of harmful communication that causes emotional and psychological distress. As abusers often manipulate their devices, the prosecution based on exceeding authorization through current computer fraud laws becomes meaningless [35]. Therefore, significant legislative changes are needed to discourage TFA and incentivize tech companies. At the time of writing, the policymakers in the US have proposed legislative changes. Federal Communications Commission (FCC) successfully adopted laws that provide different forms of support to survivors, such as no-cost separation of mobile phone lines shared with an abuser [44]. In addition, they released a call for comments to aid the survivors with affordable connectivity access [45].

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