Amplifying Community-led Violence Prevention as a Counter to Structural Oppression

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Street outreach is a violence prevention model in which organizations hire residents with strong relationships and local expertise to mediate violent conflicts in their communities. We present the results of a two-year co-design engagement between a street outreach organization and academic researchers in which we collaboratively designed, built, and deployed a mobile application (the *Street Peace* app) to support street outreach workers (SOWs). Three different street outreach organizations in Chicago adopted the app for two months. Results suggest that the app supported SOWs' transformative justice practices to build a counter-structure to traditional policing, which is historically oppressive to Black communities. The SOWs used the app to mediate potentially violent conflicts without police involvement, build community through in-person events, and extend their communities of care through positive stories and narratives that countered harmful stereotypes about Black criminality. By affording SOWs more agency over their communication with each other, the app enabled SOWs to connect their strengths and scale their existing practices that combat structural oppression and prefigure liberatory futures.

CCS Concepts: • **Human-centered computing** → Empirical studies in HCI;

Additional Key Words and Phrases: Counter-structure, transformative justice, racism, care, storytelling, street outreach, co-design

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1 INTRODUCTION

Chicago, a large Midwestern U.S. city, has struggled with high rates of community violence for decades, which is an effect of racist policies that have created high levels of segregation and concentrate opportunity, wealth, and resources in white neighborhoods, and poverty and incarceration

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in Black, Latinx[1], Indigenous, and some Asian communities [13, 46, 60, 80, 82, 126]. In the first six months of 2018 (when this study took place), 1,433 people were shot and at least 246 killed in Chicago [30]. One community-based method for lowering rates of interpersonal violence is the preventative and non-punitive practice of street outreach, which is a fundamentally different model than traditional policing. Street outreach organizations hire and train residents who were previously involved in cliques or street gangs to mediate conflicts that could otherwise lead to violence. These street outreach workers (SOWs) address the immediate threats of interpersonal violence by leveraging their relationships and credibility in their communities to learn about conflicts and peacefully intervene. Some SOWs are similar to social workers in that they have a caseload of "participants" with whom they work to address underlying factors (e.g., lack of employment, mental health challenges, trauma) that can contribute to violent behavior [31, 33, 71].

The street outreach violence prevention model [47, 114] is practiced by nonprofit organizations locally and globally [3, 7, 8]. Some U.S. city governments, including Chicago, are beginning to integrate street outreach into their public safety approaches [10, 29, 90]. Independent evaluations have found that the street outreach model is effective in lowering violence rates [85, 108, 113]. For instance, a 2014 study determined that a street outreach program reduced homicides by 31.4% in the targeted communities, compared to a 24.1% drop city-wide in 2012 [6]. Some have criticized the approach, stating that it is difficult to determine its effectiveness due to confounding factors. Despite this concern, there is agreement that street outreach is a promising and cost-effective technique for preventing violence [33]. Furthermore, street outreach is an important violence prevention model because it takes an assets-based approach [49, 81, 127] to stopping violence, in which SOWs leverage their social resources (e.g., respect, trust, credibility) to mediate conflicts and build supportive communities that counteract structural oppression.

In prior work, we identified an opportunity for a street outreach mobile application (app) to support SOWs' training, mediations, community building, and communication during emergencies. In the present study, we designed, developed, and deployed the *Street Peace (SP)* mobile app for three months with 56 SOWs and staff from three different organizations and six different sites[2] across the South and West sides of Chicago. Focusing on the social feature of the app, we asked: *How will connecting teams of street outreach workers through a mobile application impact their social interactions and ability to mediate conflicts? What types of resources, if any, will be shared through the application?* Our findings suggest that the SP app created an infrastructure for SOWs from different organizations to share information and support, which amplified SOWs' violence prevention and care practices that counter State-inflicted harm.

This paper offers two main contributions to the design justice HCI literature [15, 45, 74, 125], which centers and supports communities who are building systems that counter the matrix of domination (i.e., interlocking systems of white supremacy, heteropatriarchy, capitalism, and colonialism) [40]. First, we provide an understanding of how disconnected groups with a shared lived experience, history, and goal can use technology to bridge their assets and amplify their work to resist structural oppression and create a liberatory counter structure [15, 45], extending literature in HCI that explores participation in grass-roots counter-structures [17, 102, 118]. Through a two-year collaborative research engagement, we demonstrate how formally organized, but disconnected, groups of people who are targeted by State violence (e.g., community disinvestment, over-policing, mass incarceration [13, 60, 82]) can extend their practices of building communities of care [22] by

[1]We use the gender-neutral term Latinx in this paper to be inclusive of gender non-binary and nonconforming folks and communities but acknowledge that it is not a term that all Latino/a people use.

[2]A 'site' refers both to the community area where a team of SOWs targets their outreach and violence prevention efforts, and the physical office where SOWs gather daily to discuss any conflicts that they are mediating, do data entry and paper work, and share any community news.

using a mobile technology to connect their strengths and share emancipatory resources. Second, we contribute to the literature in violence prevention in HCI [14, 53, 54] by providing an example of an implementation of a technology designed to support street outreach workers and offer implications for designing technologies to support formally organized counter-structures.

2 TECHNOLOGY AND VIOLENCE PREVENTION

The role of technology in street outreach has recently emerged as an area of focus in sociology [99], while related work in HCI addresses other forms of community violence prevention, such as facilitating collective action and grassroots online information sharing [14, 53, 54]. Another vein of work in HCI explores storytelling as a tactic to stop violence. For instance, the National Youth Art Movement Against Gun Violence designed public augmented reality displays that share youth's experiences with gun violence to personalize narratives about people impacted by gun violence, with the goal of increasing support for violence prevention [110]. The digital platform and organization *Hollaback* uses storytelling and sharing personal accounts to end street harassment [50]. Our work builds on [110] and [50] by identifying how SOWs create counter-narratives about their communities and themselves, resisting dominant deficit-narratives that perpetuate oppression [37, 123].

In addition to shifting narratives about people who engage in actions that have been defined as "crimes," it is important to understand how residents in communities with high crime rates view the role of technology in crime prevention, as shared by Israni, Erete, and Smith [76]. People who live in higher-crime, lower income, and predominantly Black communities are more likely to be wary of using social media to share information about crimes due to concerns about privacy and the potential for retaliation [76]. Israni et al. suggest that social media can play a role in communities' efforts to combat crime *if* it is used to supplement existing relationships and information sharing within communities [76]. We build on [76] by creating an infrastructure through which community relationships can be strengthened and information can be shared privately between SOWs. In contrast to [76] and [110], we focus on the interactions between members of organizations, rather than residents, so we turn to HCI literature that analyzes technology in the context of violence prevention organizations.

Stoll, Edwards, and Foot [119] examined anti-child sex trafficking organizations' technology usage to connect with other organizations. They found that social media could reinforce existing connections between organizations, but did not adequately meet the needs of groups seeking to network with other groups [119]. Our study extends [119] by implementing a technology designed to connect teams from different organizations. In the context of an intimate partner violence ecosystem (i.e., survivors, their social networks, and support professionals), Freed and Palmer [58] found that survivors' use of technology to access support posed risks to their privacy and safety. The authors therefore stress the importance of survivors' involvement in designing privacy features [58]. SOWs similarly face risks when communicating about conflicts through technologies such as the SP app, which we sought to mitigate by using a co-design process [111]. SOWs advocated to include a social feature in the app so that they could communicate with other sites, as long as the app was secure and its users followed protocol by only sharing unidentifiable information about conflicts.

SOWs' use of technology has received attention in fields outside of HCI, mainly sociology, social work, and public health. Patton, Eschmann, Elsaesser, and Bocanegra [98] found that SOWs leverage their relationships with their participants to monitor high-risk social media accounts and identify content that could indicate the risk of violence [98]. In related work, researchers collaborated with SOWs to decode language and symbols used in "internet-banging" (i.e., posting content that signals one's involvement in a clique or gang) [97] to train an algorithm to flag potentially dangerous posts

for SOWs to review [59], and recently developed web-based tools for analyzing gang-involvement through social media activity [96]. Their goal was not for artificial intelligence to replace SOWs in monitoring social media, but to scale the SOWs' work so that they can intercept conflicts more quickly [24, 59]. Similarly, we sought to amplify SOWs' mediation and community building practices by providing an infrastructure for them to develop relationships across sites and organizations and connect their resources.

3 BACKGROUND

To analyze the role of mobile technologies in U.S. street outreach programs, it is imperative to understand the structural context of violence in the United States. We examine the racial ideologies and policies that create the oppressive conditions that catalyze high rates of violence, and describe the transformative justice framework to counteract oppression and heal communities. These discussions address the persistence of white supremacist and anti-Black racist ideologies, which explicitly and implicitly value whiteness and use socially constructed racial categories as a divisive tool to concentrate power and justify the subjugation of people racialized[3] as non-white (often referred to as "people of color," a term which we use sparingly as it can imply that differently-raced folks are a monolith and share a universal experience with racism, which is not the case) [28, 39, 80, 83]. White supremacy is enacted through the values, laws, technologies, and institutions that we are socialized to believe are normal, which obfuscates the fact that racial inequities are produced by racist policies and systems that concentrate advantage and resources in affluent white communities and harm communities of color [20, 27, 48, 80, 82, 83]. Developing an understanding of how white supremacy manifests in ideologies, institutions, and technologies is crucial for the HCI community's ability to identify and respond to issues of race, power, and structural violence [94, 122].

3.1 The Criminal Justice System as Structural Violence

There has been an important movement in HCI to situate research in the context of race and histories of oppression [15, 45, 68, 94], which we contribute to by providing a brief discussion on how structural violence creates racial disparities. We refer to State, institutional, or structural violence as the policies and systems that concentrate opportunity and social resources in white communities and harm racialized communities [46, 60, 82, 88].

Historic and current racist policies that cause residential segregation and displacement [60, 77, 86], public and private community disinvestment [82, 126], and mass incarceration [13, 84] create the conditions that foster high levels of interpersonal violence [31, 71]. Racial disparities are designed through institutional structures such as the criminal justice system [124], which acts "not as an independent system but rather as a gateway into a much larger system of racial stigmatization and permanent marginalization [..] to ensure the subordinate status of a group defined largely by race" [13, p.15-16]. The criminal justice system and prison industrial complex act to enforce white supremacy [63, 124, 126], while having a limited impact on crime [4, 36], enabling widespread physical and sexual violence against imprisoned people [46], and perpetuating the oppression and conditions that increase rates of interpersonal violence [31, 71, 84].

The manifestation of State violence that we focus on is the mass incarceration of Black and Latinx urban communities in the United States, which is the context of this study. Beginning in the 1980s, the "get tough on crime" era and the "war on drugs" fueled mass incarceration through punitive and stringent laws and sentencing guidelines that are disproportionately enforced on

[3]Racialization is the process of creating and applying the concept of "race," such as to a person, community, or narrative [39, 48, 80]

Black, Latinx, Native Americans, and some Asian populations [13, 46, 80, 124], while women are the fastest growing demographic category in prisons [22, 36]. One in three Black men born in 2001 will be incarcerated at some point in their lifetime, as compared to one in 17 white men [4]. In Chicago, the difference in incarceration rates between the most-incarcerated Black community and the most-incarcerated white community was 42% [109], which reflects the distribution of opportunity in the city [84]. With 2.2 million people in prisons and jails [4], the scale of the United State's prison-industrial complex "approaches that of Stalin's infamous network of prison work camps" [52, p.45].

Incarceration violently removes people from their familial and community relationships, which undermines a community's capacity to provide mutual support and prevent interpersonal violence [13, 18, 22]. Mass incarceration devastates communities' physical and mental health [36, 69, 93] and suppresses their political power by disenfranchising people with felonies (13% of U.S. Black males have been stripped of their right to vote [36]) [13, 104, 126]. By tearing the relational fabric of communities, mass incarceration drains communities of the human and social resources needed to build supportive and protective networks [22, 63, 84], while raising structural barriers to employment and participation in civic life [13, 36, 124].

Even though incarceration is an all–too–common experience for residents in Black and Latinx communities, it still carries stigma and shame [126], making residents less likely to turn to each other for support in coping with the challenges and trauma associated with incarcerations [13, 22]. This stigma is an example of how racism can be internalized, causing racial trauma [13, 67, 106]. Racial trauma occurs when people of color experience or witness racialized oppression and violence, such as during hostile police encounters or seeing video footage of police violence [67, 106]. Storytelling has been explored as a way to respond to racial trauma [65], create counter-narratives that frame communities around their strengths rather than their deficits [37, 48, 116], and develop knowledge that values complexity, inter-connections, and the expertise gained from lived experience [22, 44, 84, 94, 115]. Through this co-design research engagement, we learned the importance of storytelling as a means of sharing support and telling a positive community narrative for the street outreach community.

3.2 Deficit Narratives and Black Criminality

To continue to shift HCI away from conducting "damage-centered research" [121, p.409] in disenfranchised communities to centering their strengths while critiquing the oppressive systems that create inequity [44, 49, 56, 68], we provide a brief account of how the concepts of Blackness and criminality have become linked in U.S. culture [46, 80, 92, 126].

Race is a tool that colonizers created to categorize people and justify the forced migration and enslavement of African and Indigenous people as well as the theft of their resources and lands [39, 48, 80, 115]. Race makes it possible to create a racial hierarchy and ascribe value and narratives to physical traits (e.g., associating criminality with dark skin) [80, 92, 103]. In white supremacist systems, whiteness is considered "normal" because it sits at the apex of the constructed hierarchy and therefore is the race against which others are compared and defined [27, 40, 48]. This hierarchical structure frames deviations from whiteness as abnormal or deficient [103, 116, 123, 128]. Deficit and dehumanizing narratives displace responsibility for racial inequities by attributing them to problems in communities of color, rather than to the racist policies, structures, and technologies that concentrate advantage in white communities [20, 92, 103, 121].

One potent and historically persistent deficit narrative is the concept of Black criminality, which attributes Black engagement in behaviors that are deemed "crimes" to cultural deficiencies and views crime as endemic to Black communities [13, 48, 80, 92]. Similar to how the definition of whiteness changes over time (e.g., Italian Americans were once not considered white) to maintain

white power [39, 80], definitions of what constitutes crime change over time in response to political and economic forces [63], and often serve to criminalize poverty and disproportionately incarcerate Black, Latinx, Indigenous, and some Asian communities [13, 46, 103, 124, 126]. The criminalization of Blackness is embedded not only in laws but also in policing, an institution whose history of surveilling and oppressing Black people dates back to the era of chattel slavery in the form of white slave patrols [46, 80, 92]. Black criminality is coded into policing technologies that use algorithms to predict where crime will occur, justifying the over-policing of those areas, and automating and amplifying the carceral state's "control, containment, and extraction" [112, p.112] of racialized communities [20, 78, 112, 126]. Grassroots and academic activists are countering the rapid deployment of predicting policing technologies [9, 70, 89], though they face an up-hill battle against reformist arguments that bias can be de-coded from these technologies [20, 120].

Connecting criminality with Blackness is a powerful dehumanizing narrative that suppresses resistance to mass incarceration by obscuring the structural context of crime and normalizing the criminalizaion of Black people [13, 63, 103]. As prison abolitionist geographer Ruth Gilmore states, "[d]ehumanization is [..] a necessary factor in the acceptance that millions of people (sometimes including oneself) should spend part or all of their lives in cages" [63, p.243]. Storytelling and creating counter-narratives is a way people of color have resisted harmful deficit narratives [37, 103], using personal and composite accounts of experiences with racism to provide a contextual analysis of racialized systems and how they intersect with constructs of gender and class [48, 56, 94, 116]. This study considers how co-designed technologies can reinforce assets-based community practices, such as sharing care, that counter dominant deficit narratives [49, 79, 127].

3.3 Transformative Justice

HCI's design justice [15, 45] movement draws from and aligns with the transformative justice framework, which responds to violence at the individual, community, and societal levels by replacing the oppressive structures that cause harm [22, 51, 62, 91]. Transformative justice calls for "creating responses to violence that treat individual justice and collective liberation as fundamentally intertwined" [62, p.iii]. Like restorative justice, transformative justice responds to instances of harm by holding people who engage in acts of harm accountable and providing the support the person needs to stop engaging in harmful behavior, but the framework also seeks to change the underlying structural contributors to harm [22, 62, 91]. This non-retributive approach to justice is supported by research indicating that caring and mutually supportive social networks are effective in preventing people from engaging in harmful behavior [13, 22].

In contrast, the U.S. criminal justice system follows a retributive ideology, viewing criminality as binary (a person is guilty or innocent), pathological ("crime" is abnormal and therefore people who engage in it are abnormal), and individualistic (the offender acts out of self-interest, and the social context is irrelevant), which rationalizes using punishment and isolation to respond to violence and crime [22]. Prison abolition is an example of a transformative justice approach [51, 91], as it challenges the beliefs that human life loses its value once a person breaks a law, and that responding to harm with harm is an ethical or effective approach (high recidivism rates provide evidence that it is not) [22, 46, 63, 126]. Transformative justice seeks to replace harmful and ineffective institutions (i.e., policing, prisons) by funding social programs and creating alternative structures that center care, accountability, and healing (e.g., restorative justice collectives [1, 25, 57], street outreach [22]). Due to the COVID-19 pandemic, the transformative justice movement of radical care [72, 105] and mutual aid [117] has bloomed in response to the exacerbation of preexisting health, housing, and employment crises in communities most impacted by the pandemic [32]. Care and mutual aid have been explored in HCI interventions that frame care as a community asset [79] and facilitate

collective action regarding labor practices [34, 75, 87], entrepreneurship [73], street harassment [50], and housing [17].

In concert with grassroots movements, counter-structural principles of transformative justice have been taken up in HCI [15, 45] and critical data studies [20, 89]. For instance, Ruha Benjamin's book *Captivating Technologies* uses liberatory imaginaries to critique how society and technology co-create descriminatory designs, such as those used in predictive policing. "To extricate carceral imaginaries and their attending logics and practices from our institutions, we will also have to free up our own thinking and question many of our starting assumptions, even the idea of 'crime' itself" [19, p.5]. This practice of recognizing the status quo (i.e., the "water" to a fish) and imagining alternative futures is central to transformative justice [51, 62, 72, 91]. In HCI, Mariam Asad's *prefigurative design* offers a framework for enacting, or pre-figuring, such futures in collaborative, community-based interventions. Asad pushes researchers to take a more reflexive approach by considering how the designs of their interventions benefit and/or harm their collaborators [15]. Our work incorporates principles from prefigurative design and transformative justice by co-designing and implementing an application with street outreach workers who are creating an alternative to policing by harnessing their communities' strengths, relationships, and care.

4 REFLEXIVITY STATEMENT

Adhering to standpoint theory [66], we include a statement about our positionality in relationship to the communities involved in this study and the practice of street outreach. The four academic authors are cis-gender women with collectively over two decades of experience working with Black and Latinx communities. The principal investigator (PI or lead researcher) is a Black woman from a working-class background, who would now be considered upper-middle class due to socio-economic and educational attainment. Over the past decade, she has collaborated with Black and Latinx community organizations to research community-based approaches to violence prevention in Chicago. The lead graduate research assistant and lead interviewer is a white (non-Latinx) woman from a lower-middle class household who would now be considered middle class. The other academic authors are Latina and white (non-Latinx) graduate research assistants that focused on app design, data collection, and data analysis. At the time of this study, the academic authors had lived in Chicago for a few years to a decade or more, but not in the communities involved in this study.

The authors from *Street Peace* identify as a Black cis-gender man and a white Sicilian American cis-gender woman who were both formerly incarcerated, raised by their mother or grandmother in low-income or working class households in Chicago and would now be considered middle-to-upper-middle class due to education attainment, employment opportunity, and a blessing. Together, they have nearly three decades of experience in the street outreach field, both beginning in on-the-ground street outreach roles for four years and then moving into administrative roles. Details regarding the lived experience of being a SOW are described in the fourth author's book [23]. The second author led *Street Peace's* strategic approach to street outreach at the time of the study, which included designing new initiatives such as the *SP app*, which he first conceptualized. Prior to the deployment of the application and the interviews discussed in this paper, the authors spent over two years establishing relationships with each other and with their respective organizations through the preliminary research and the co-design process, which consisted of weekly in-person meetings and phone calls.

Though we note our own oppressive experiences due to gender, class, and/or race [42] as a driving factor for our desire to work with, or for, organizations that are countering structural oppression, we recognize that our privilege and identities as heterosexual, cis-gender, middle-to-upper-middle class, non-disabled members of academic or nonprofit institutions may have

impacted our design decisions, data collection, and interpretation of the stories SOWs shared in interviews [68]. Given that the academic authors conducted the interviews, SOWs may have explained situations or ideas more explicitly due to the interviewers being outsiders and having limited "street" knowledge, though SOWs may have also withheld information they thought would not be understood or required a higher level of trust to share [68]. To address this, we took a co-design approach throughout the entire project and presented our study findings to teams of SOWs to get their feedback. In future work, we hope to engage SOWs more deeply in the research process, including deciding the research questions, conducting data collection and analysis, and disseminating the findings—an integrative research process that our funding did not cover.

5 STUDY DESIGN AND CONTEXT

Over the course of 18 months, the academic team and the project leads from *Street Peace* co-designed [111], developed, and implemented the SP app. *Street Peace* is a global street outreach organization that focuses on community-based approaches to violence prevention. We deployed the application for three months at six different sites belonging to three organizations, collecting data through interviews, surveys, and usage logs. This paper focuses on the interview data, though SOWs' demographics and app usage are drawn from the survey and log data to provide added context to the findings. In this section, we provide background on street outreach work, share findings from a prior study that informed the SP app design, summarize the design process and features of the SP app, and detail the study design.

5.1 Street Outreach Work

Street outreach workers are dedicated to mediating conflicts in a specific area of a community as well as spending time talking with community residents. The conflicts they mediate vary widely in terms of who is involved (e.g., gang or cliques, strangers, families), where the conflicts take place (e.g., streets, businesses, homes, on social media) and the time frame of the conflicts (e.g., spontaneous and immediate versus historical and pre-meditated). The variable and unpredictable nature of conflicts require that SOWs be flexible in how they respond to violent situations and be able to quickly access information through their social networks regarding the conflicts and the people involved.

Street outreach workers are from the communities in which they work, and their relationships, trust, and credibility within their communities are crucial assets to their work. Many SOWs were previously involved in gangs or cliques, which gives them unique insight into how people respond to conflict or violence and therefore helps them "read" dangerous situations and intervene safely and effectively. Their reputations and credibility as prior gang or clique members, as well as their relationships with people still engaged in those groups, gives them access to people, spaces, and information that enables them to learn about conflicts and prevent violence. In addition to mediating conflicts, certain SOWs have a caseload of high-risk "participants" with whom they work to address underlying risk factors to participating in violence, such as barriers to accessing employment or housing, or getting mental health or substance abuse support.

Although much of street outreach work depends on workers' personal histories and expertise, they also receive extensive training on conflict mediation tactics. *Street Peace* trained SOWs in a set of 13 mediation strategies, detailed in Table 1. Based on our interviews, SOWs typically do not consciously choose a strategy when they are responding to a conflict, but instead reflexively use these strategies to deescalate a violent situation. In cases where SOWs have time to plan their response to a conflict (e.g., if they are coordinating a response to an ongoing gang conflict with their team), they are more likely to discuss specific strategies.

Table 1. Thirteen conflict mediation strategies SP workers use

Strategy Name	**Definition**
Buy Time	Getting everyone to stand down while figuring out what is going on; Stall the situation to find out more information and to give parties time to cool down
Change Location	Related to de-escalating and constructive shadowing but requires a physical change of location
Constructive Shadowing	Babysitting a situation by keeping an eye on parties involved
De-escalating the Situation	Calming people down to decrease size, scope, or intensity of conflict; Not letting a conflict "blow-up"
Focus on Consequences	Talking the person through the possible outcome of a bad decision to encourage them to change their mind
Gather Information	Collecting facts about the situation from one or both parties.
Save Face	Providing a way out of the conflict that does not cause loss of street credibility
Use Middle Man	*Street Peace* staff uses outside parties not involved in the conflict to help mediate the conflict
Reach Agreement	Obtaining a resolution that does not involve violence (e.g, the parties agree to stay away or leave each other alone)
Reasoning/Alternate Solution	Reframing the situation to provide a different understanding for one or both parties or to get them to see each other's point of view
Use *Street Peace* Staff from Other Sites	Involve staff from other *Street Peace* sites in the mediation
Use Family/Friends	Using family/friends as a means of information gathering, communicating, and leveraging/influencing people involved
Use Other *Street Peace* Participants	Use other *Street Peace* participants to help in the mediation process

5.2 Co-Designing the Street Peace App

The second author, a senior administrator from *Street Peace*, developed the concept for designing a *Street Peace* mobile application to support street outreach workers. He worked as an on-the-ground SOW for four years before moving into the organization's administration, where he established street outreach practices in several U.S. and international cities and provided training and technical support to implementing agencies. Through his extensive experience in the street outreach field he identified opportunities for technology to support SOWs and understood how such a tool might integrate into their practices, leading him to approach the PI with the SP app concept. The collaboration began with the research team conducting a preliminary round of interviews with SOWs to understand the role of technology in their work and whether a mobile application was an appropriate intervention.

The preliminary interviews found that SOWs used existing information communication technologies (ICTs) to mediate violence by intercepting conflicts on social media, accessing information about brewing conflicts through relational networks, and coordinating team responses to conflicts. However, there were no clear channels for cross-site communication, meaning SOWs could only rely on their personal social networks for help with mediations, not other SOWs at other sites that they do not know personally. There was also a need for training refreshers on mediation strategies and more efficient team communication during emergencies. Therefore, we co-designed the SP app to: (1) strengthen social ties within and between violence prevention sites; (2) support SOWs' training; (3) encourage SOWs to consider different mediation strategies based on effectiveness;

and (4) enable SOWs to quickly share their location with their team during an emergency. Our co-design process involved meeting weekly to make design decisions, and meeting with SOWs to get feedback at the various prototyping stages (i.e., paper, wireframe, high-fidelity) and during the software testing prior to deployment.

One example of how we integrated SOWs feedback into the SP app design was during the initial design stage. After we designed the high-fidelity interactive prototype, we presented it to a focus group of 14 SOWs for feedback. The application initially did not have a social feature (i.e., the "connect feed") due to privacy concerns expressed by the preliminary interviewees. However, the focus group insisted that a social feature would be key to engagement with the app and would support their connection with other sites. Based on their feedback, we added the "connect feed," which was the most-used feature and is the focus of this paper. To address SOWs' privacy concerns and to comply with our IRB, we made the SP app only accessible to SOWs who participated in the study and we trained SOWs not to share any sensitive information through the app. This paper mainly explores the usage of the connect feed as it was the most-used feature, but we provide an overview of the functionality and use cases of each of the four features for context (pictured in Figure 1):

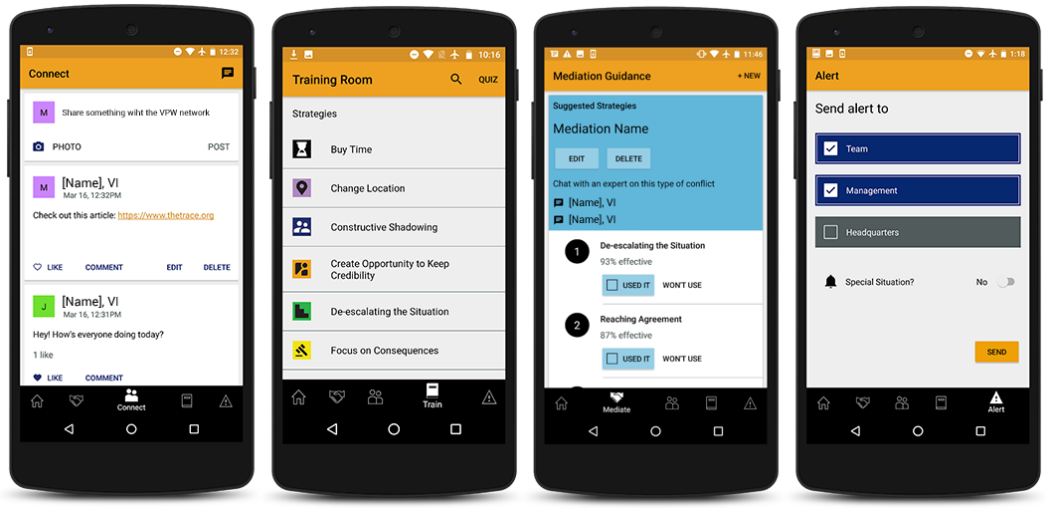

Fig. 1. The design of the four features of the Street Peace (SP) mobile app for Android, from left to right: the connect feed, the training room, the mediation guidance tool, and the alert.

- *Connect feed*: Enables SOWs to connect with other SOWs using a private, secure network. To aid usability and learnability, we used design conventions from social media platforms (e.g., users can post messages and photos, comment on each other's posts, and "like" posts). In addition, SOWs can send private messages to each other.
- *Training room*: Contains videos that feature SOWs explaining the mediation strategies and enables SOWs to contact other SOWs who are experienced in using the strategies. The training room can be used by new hires who are learning the strategies or more seasoned SOWs who tend to use a select set of strategies and want to refresh their knowledge about other strategies.
- *Mediation guidance*: SOWs input key conflict parameters (i.e., motivation for conflict, number of people and groups involved, presence of a weapon, if a gun was fired) to receive a list of the

top three statistically most effective strategies based upon historic mediation data gathered by our partnering organization. A SOW could use this feature during meetings to strategize about how to resolve a conflict— it would not be used during an in-person mediation.
- *Alert*: Allows SOWs to quickly request assistance from their team. The alert sends a text message that includes the sender's location is sent to the selected recipients. Sending an alert is the only time the app collects the user's location. A SOW may send an alert when they need support from their team or if they are concerned that a situation may involve law enforcement.

5.3 Participants

The *Street Peace* administrator who initiated our partnership led recruitment for this study by drawing on his relationships and existing collaborations with other street outreach organizations. Three organizations and six different street outreach sites participated in the study. A total of 56 SOWs and staff consented to participate to the study and took *both* pre- and post- surveys. Log data shows that 48 (86%) installed the application on their phones over the course of the three month study. We developed the app for the Android platform, because most SOWs at our partner organization owned Android phones. The SOWs who did not download the app were either iPhone users or opted not to install the application.

Based on the pre-survey, we selected 18 SOWs (3 from each of the 6 sites) who represented a variety of experience levels with technology and street outreach work to participate in pre- and post-interviews (see Table 2). All but one of the 18 interview participants identified their race

Table 2. Interview participants' demographic data and app usage log data ranked by total connect actions (comprised of connect posts, comments, and likes). Log data does not account for viewed content. Comfort is measured on a scale where 0 is extremely uncomfortable and 4 is extremely comfortable. This table represents only the interviewees' app usage (e.g., there were 280 posts by all study participants).

Pseudonym	Total Connect Actions	Posts	Comments	Likes	Age	Tenure as SOW	Comfort Smart Phones	Comfort Social Media
Aaron	97	12	4	81	63	10 yrs.	4	4
Earl	41	12	2	27	50	9 yrs.	4	4
Joshua	36	1	0	35	55	1–6 mos.	4	0
Ramon	22	17	0	5	39	1–6 mos.	4	3
Damien	16	0	6	10	59	1–6 mos.	3	2
Ian	15	12	0	3	37	1–6 mos.	4	4
Cory	6	4	1	1	43	7 yrs.	3	3
George	2	2	0	0	47	1–6 mos.	4	1
Adam	2	0	0	2	38	10 yrs.	4	4
Travis	2	0	0	2	40	1–6 mos.	4	4
Theo	1	1	0	0	45	6 yrs.	3	3
Mason	1	0	1	0	48	1–6 mos.	4	4
Lamont	1	0	1	0	56	2 yrs.	0	0
Bobby	0	0	0	0	55	1–6 mos.	4	3
Kendra	0	0	0	0	49	1–6 mos.	4	4
Rick	0	0	0	0	54	2 yrs.	4	3
Jack	0	0	0	0	50	1–6 mos.	3	3
Josiah	0	0	0	0	57	10 yrs.	4	0

as African American/Black, with one declining to say. Only one female SOW participated in the interviews, and although this ratio reflected the pre-survey data (3 of the study participants were women, but one had an iPhone and the other had participated in our previous study), it limits our ability to understand women's experiences as SOWs and with the SP app. Though fewer in number, female SOWs have made an substantial contribution to their field [22, 23] and bring unique strengths to the work [21].

5.4 SP app Training

We trained 43 SOWs and staff from four different sites in two separate sessions on the SP app. The training consisted of a 3-hour session in which the second author explained the different features of the app, shared protocols for using the app, and presented 11 scenarios that SOWs might encounter and asked them to discuss how they might use the application in those situations. The purpose of this exercise was to help participants understand how to integrate the application into their work and to clarify important protocols for using the app in order to protect sensitive information (e.g., details about mediations). For SOWs who were hired after the initial in-person training, we provided a handout that explained the main features of the app and highlighted safety and privacy considerations, and we went to each site in-person to answer any questions they had about the application.

5.5 Data Collection and Analysis

SOWs and staff (including site supervisors) were invited to complete pre- and post-surveys, which included questions about demographics, technology usage, and length of tenure as a SOW. Based on the pre-survey responses, we recruited 18 SOWs for pre- and post-interviews who had a range of experience with technology and street outreach.

We conducted interviews at the SOWs' sites during their working hours. To try to mitigate the power imbalance between the researcher and interviewee [68, 122], the interviewers used a conversational style and made space for any stories SOWs wanted to share, even if they did not directly relate to the interview protocol. The pre-interviews took 45 minutes–1 hour and occurred in the first month of the study (some participants had used the app by the time of the pre-interview due to scheduling challenges). The pre-interview protocol explored the SOW's initial use of the app, their in-person experiences with other SOWs, and their process for mediating conflicts. The post interviews took 15–25 minutes and occurred in the last week of the study. The post interview protocol focused on the experiences SOWs had with the app and their ideas for improving it, as well as how the app influenced in-person interactions (if at all) within and between sites and organizations. Three members of the researcher team analyzed the 36 interviews using inductive and axial coding to develop the six themes discussed in the following section [43]. No SOWs contributed to the analysis of the data due to time and funding constraints, which is a limitation we plan to rectify in future work. Instead, we presented our findings and themes and SOWs gave feedback on whether our interpretations represent their lived experiences.

In addition to surveys and interviews, we collected log data to understand app usage. Each interaction with the app was recorded, including posts to the connect feed, liked posts, and one-on-one messages. We informed participants at the start of the study that their use of the app, including group and one-on-one messages, would be recorded and anonymized in the database (also outlined in the IRB consent form). We present our analysis of the interview data and provide log data detailing their app usage (see Table 2).

6 FINDINGS

The connect feed was the most-used feature of the application by all study participants, with 280 posts to the feed during the three-month study. Table 2 provides log usage data of the app by interview participants (it does not reflect how many times people viewed content, however). Our findings illustrate how participants used the connect feed to enact immediate (i.e., conflict mediation) and long-term (i.e., community building) violence prevention practices. SOWs used the app to access on-the ground and virtual support, information, and care; build unity in their community; and create positive community narratives. Participants were comfortable engaging in these behaviors because the application was private to SOWs in Chicago who were participating in the study.

We use full quotations to illustrate the findings and have only edited them to preserve anonymity. We changed as few words as possible from the SOWs' quotes so that SOWs' voices are heard and not subjected to *epistemic silencing*, the practice of the dominant interpretive community to heavily edit stories of the lived experiences of those who have been historically oppressed [41]. Epistemic silencing mainly occurs in academic publishing venues [41], and we actively resist requests to make these stories more "palatable" for academic audiences. Furthermore, we urge readers to be attuned to how the internalized myth of Black criminality or anti-Black racism may impact their reading of SOWs' stories. Though many of these stories allude to conflict or violence, they are situated in the context of the work communities are doing to care for each other and heal themselves from the impacts of structural oppression.

6.1 Leveraging the City–Wide Network of SOWs in Conflicts

Efficient access to SOWs across the city was not available in a centralized way prior to the SP app, though it is important for being able to quickly mediate a conflict that involves people or groups from different areas. Adam explained that before having the app, his communication with other sites was limited. *"I don't have no good communication with the other sites. [..] I get a chance to catch somebody before the meeting start or events and stuff. That's the only time I'd be able to really communicate though" (Adam pre interview).* One reason why having strong cross-site communication is important is because SOWs use their network to learn about conflicts and violent incidents that could lead to more violence.

> *"Communication, that's the only way you're going to get down to the bottom of something. You gotta communicate. [..] Just say, for instance, you respond to the shooting or whatever. The person that got shot, they died or they passed or something. [..] The person that know about it, he might be some kin to a [SOW] from another site. You know what I'm saying? A little street information. That's good information that's beneficial to our work. It's good to have a communication with somebody else from another site" (Adam pre interview).*

Other participants similarly explained why they thought the connect feature was important for communication with other sites. *"If I'm on here, I post something that happened, and then somebody else might come in [and say,] 'Yeah, that's my sister, boyfriend, cousin, little brother,' or something" (Mason post interview).* As Mason imagined, two SOWs did reach out to their network on the app for help mediating conflicts. One person posted looking for information and connections relating to a conflict in a neighborhood where she was not based, writing *"We have a major situation in [neighborhood]. Retaliation with a key figure shot and survived. He wants revenge. I am close to him but he doesnt want to hear anything. if anyone has close contact with [community] area please get ahold of me asap. this is a bad situation. thanks"*. Damien explained his team's response to this post, saying *"she [posted], 'Does anybody know somebody from a certain neighborhood, give me feedback.' And we have done that. We had people actually in that particular community [..] where she needed*

help and they reached out to her, was able to get something taken care of" (Damien pre interview). By posting on the connect feed, the SOW was able to get support from the community of SOWs on the app to help mediate a conflict.

Another way in which interview participants discussed using the connect feed to leverage the broader community of SOWs was in the context of dangerous situations. For example, Cory discussed using it to warn other violence prevention workers that an area is too dangerous (i.e., "hot") to enter because of an escalating conflict. *"If something's too hot, we sometimes let it cool off, and look at the situation and say, look it ain't good right now, leave them alone. [..] We can't do nothing; we got to get out the way. That's a good warning sign to tell your co-workers, 'Man, leave them alone.' [..] Now, you just put it up [on the feed] and that's it." (Cory post interview).* The feed allows SOWs to share this kind of vital information quickly and with other sites and organizations rather than just their own site.

There was one case in which a participant used the connect feed in the midst of a dangerous situation to ask for help from anyone in the area, which was a scenario he and other participants had posed prior to the incident. In the pre-interview, Earl explained why he thought the app would be useful to mediate conflicts: *"That helps a lot, because you can reach out. It can be an area like, I don't have no inroads over here, [..] you can be somewhere on the other side of town [and post] 'Man, I'm having an issue right here, man. Who knows somebody over here?'" (Earl pre interview).* Earl later found himself in such a situation during the deployment of the app. He safely resolved the situation, during which he tried to get help by posting a message on the connect feed. He explained his experience, saying *"it was so hectic. [..] I'm like, 'Man. Okay, let me put the message up.'" (Earl post interview).* Shortly after he posted the message (which read: *"who working out west on [intersection] i have a situation right now"*) he was able to deescalate the situation on his own, but he did receive responses through the app. He admitted to not taking the app very seriously initially, but after this experience he felt strongly that the app would be an important tool for his safety and planned to use the alert feature in any similar situations.

These stories illustrate that SOWs viewed the ability to safely access informational and support resources in the SOW community as an asset for mediating conflicts. Their mediation practices strengthen their community's ability to prevent violence and therefore create a healing alternative to policing that reduces community members' interactions with the criminal justice system. Another way in which SOWs leveraged the SP app was in their work building their social networks through events.

6.2 Facilitating Community Building through In-Person Events

The goal for the app was not to simply build an online community of street outreach workers, but also to facilitate offline relationships. SOWs described the app as an important tool for attracting other SOWs to their events, because prior to the SP app, site supervisors managed communication with other sites and SOWs did not have a way to directly communicate with other sites, unless they had SOWs' personal phone numbers. Of the 280 posts to the connect feed, 191 of the posts containing text (rather than just a photo) were about events, and were posted by 8 different SOWs (one person posted 156 times and the remaining 7 posted between 1-13 times). The posts reflected the different types of events that SOWs hold or attend, including professional events (4 posts), shooting responses where SOWs occupy a public area and engage residents (11 posts), memorials to honor someone after a shooting (17 posts), and community events such as public activities in parks (152 posts).

The way in which most participants discussed meeting other SOWs was through repeated interactions at meetings or social events the sites hold in communities (e.g., barbeques in response to recent shootings, youth activities at parks, political activist rallies). Ramon explained how he

knew an acquaintance from another site: *"I don't know him personally but [..] he went to one of [the] events a couple of weeks ago, way over there on [Street name]. He came to one of our events just this Saturday" (Ramon pre interview).* Joshua echoed Ramon, saying, *"you always meeting somebody new anytime you doing an event" (Joshua pre interview).* These new connections strengthen the community of SOWs as well as the broader community and create new channels for interrupting conflicts before they become violent.

Prior to the app's deployment, information about events was mainly shared between supervisors of different sites rather than between SOWs. *"Normally, they'll send an email or text to my supervisor and inform us" (Theo pre interview).* Though some participants mentioned that they would need approval from their supervisors to post an invite on the feed, it did give them the ability to share event information directly with SOWs from other sites and to learn about events outside of weekly meetings. One participant explained that with the app, they *"don't have to wait until Wednesday to find out about activities. [We] know about the activities daily" (Adam pre interview).*

SOWs used the connect feed to invite other sites to upcoming events (7 posts) and share photos of current and past events (184 posts). Cory described how he used the app to advertise upcoming events and learn about events at other sites:

> *"I use it when we have an event coming up, we want to invite people. I use it for that. It's effective to get information out. And when the other guys on the team have events, they let us know. [..] Sometimes I see stuff on there about other events they have where we might not know about. Sometimes you might know about a event and you might forget about it, but you might forget to put it in your calendar. That's why it's good to look at the app, you can look at current events, scroll through" (Cory post interview).*

There was at least one instance when a participant attended an event because it was posted on the connect feed, as Earl said, *"I went to this event. Yeah, I went 'cause they put it on here" (Earl pre interview).* George credited an increase in attendance at his site's event to the photos his colleague posted of the event to the feed. *"We did a barbecue a few weeks ago, and we was in a certain part of the neighborhood. [..] [Name] took some pictures and posted them, and then guys from the other sites started showing up, supporting us" (George post interview).* George's perception that the connect post caused the other site to attend made him excited that he could use the connect feed to get support for his site's events.

By providing the infrastructure for SOWs to directly communicate with each other, it enabled them to connect their sites and create opportunities to meet in-person. These relationships are foundational to communities of care that build individual and community resiliency [22, 105]. Building relationships make SOWs more effective in their street outreach work, but also in developing a sense of solidarity among SOWs from different sites and organizations, which is important for developing mutual aid networks [117].

6.3 Showing SOWs' Collective Impact and Unity

SOWs explained that posting and seeing images and messages from street outreach sites across the city helped them see the collective impact of their work, which they described as inspiring and motivating. Prior to the SP app, there was no centralized channel for SOWs to share their work and their stories with each other. The ability to communicate across organizational lines allowed the SOWs to create a narrative of a unified and supportive street outreach community, which contrasts with mainstream deficit narratives about Black and Latinx communities in Chicago that focus on shootings and crime [92, 103].

SOWs expressed feeling hopeful when they scrolled through the connect feed, because it allowed them to see the work the street outreach community is doing across the entire city. Through the

connect feed, SOWs' created a positive narrative about their work and their communities that many SOWs felt was inspiring. For example, Adam explained why he looked at the feed, saying *"I just like to see the peace in the high risk [areas]. I just like to see the peace. They can come together and talk about it. I like seeing that" (Adam pre interview).* Adam was referring to photos of community events in areas with high levels of gun violence that brought residents together. Aaron also felt that images of coworkers and events were good for morale. *"This positive stuff, [..] you know pictures, you know with your other co-workers, [..] they way on the other side of town. And I mean and this is like, I promise you, this is like an excellent idea for us" (Aaron post interview).*

The ability to communicate and build relationships with workers across the city also contributed to SOWs' feeling an enhanced sense of efficacy as a community. Mason explained, *"It's inspirational, because [..] as long as we got a pipeline or a communication line open, I feel man we can really take over the city. You know what I am saying? It's all about keeping in tune and that's the magic word even on the streets" (Mason post interview).* Earl also felt that the app was an important tool for creating a sense of solidarity among SOWs. *"I think it helps unify us a lot, 'cause it's our own social media [..]. We know who is who, and, in some cases, you might not be familiar with somebody, but like, 'Man. Okay. I'ma remember him from on here.' You can get familiar with them just being on here, just posting" (Earl post interview).* Mason and Earl's statements show how the connect feed helped create a feeling of being part of a larger community of SOWs, which they described as motivational, because they had a greater sense of their collective ability to impact change.

SOWs also used the connect feed to build camaraderie among street outreach sites by inciting friendly competition. For instance, Earl explained that when he saw photos of other sites it made him want to post photos of his site. *"We have a little fun competitive thing. 'Cause I'm looking like, 'Man, that picture is looking nice.' [It shows that] they unified, a group picture. They out there. [..] Now, when we go counseling, [I say] 'Hold on y'all, let's take a picture'" (Earl pre interview).* SOWs' competitiveness was driven by a desire to represent how active their site was in the community and to motivate each other to do more. As Adam explained: *"When I see the pictures, it makes me feel like doing better... Making you shoot a higher goal" (Adam post interview).* Ramon echoed this motivation for posting photos of the work his site does in the community: *"Well we basically posted this to just really to just show that we out there too and that we are active with the community. You know, and you know to show like if other sites see it, you know... not so much that they're not doing a good job but that, you're... you kind of encourage them" (Ramon post interview).* Thus, competition was another way in which SOWs used the connect feed to create a shared identity among SOWs and inspire each other to continue to engage and bring their best to street outreach work, regardless of how challenging it is.

The sense of hope and resiliency that SOWs expressed feeling when sharing and viewing content on the connect feed suggests that building a positive counter-narrative about their communities was an important experience for them individually and for building solidarity within the community of SOWs [103, 116, 117]. In addition to telling stories, SOWs shared ideas for ways that they could use the SP app to resist and heal from the harms caused by violent institutions.

6.4 Resisting Structural Violence

SOWs saw potential in using the connect feed as a tool to counter and subvert the structures that have harmed, and that are harming, their communities—namely, concentrated incarceration and disinvestment [13, 36, 82]. They described using the SP app to document their work, which is important for gaining funding and changing the dehumanizing narrative of Black criminality that enables State violence [19, 63, 92, 103].

Josiah thought SOWs could use the connect feed to capture data that tells a story about the community-based prevention work that SOWs do. *"You know you might use [the feed to] showcase*

your work, and we out here in the field, and we doing stuff like that so I think it's good, cause it's all about data. So you know letting people know that we doing something. We're not, you know, just get money and you know [not] working" (Josiah post interview). Earl also felt that it is challenging for SOWs to get credit for their work, because when they do their jobs well, violence does not happen. *"A lot of stuff we do, we don't get no recognition for it, because it don't happen. We prevent it from happening" (Earl pre interview).* Josiah and Earl's statements suggest frustration about the difficulty of "proving" the effectiveness and legitimacy of their work and an understanding of the role of data in securing funding for street outreach programs. Funding enables SOWs to do their preventative and healing work, which counters the harmful practice of traditional policing. Street outreach programs are frequently underfunded, yet criticized when rates of violence increases. SOWs suggest that the SP app has the ability to document their work to demonstrate their efforts to outsiders, including potential funders.

Another way in which SOWs discussed using the app that subverts violent institutions was to reconnect with friends and acquaintances from prison. The criminal justice system violently disrupts relationships by removing people from their families and communities and isolating them in prisons. Once incarcerated, people may develop friendships, but those relationships can be difficult to maintain upon reentry due to unknown contact information and people living in different communities. The app provided a way for people who had been incarcerated together to reconnect, which subverts the power that the criminal justice system gains from separating people from their communities. *"I love this app, I do. And then when I go scrollin' up to see the peoples that I know was in the penitentiary with me. They on this app too" (Jack pre interview).* SOWs saw the connect feed as an opportunity to rekindle these relationships. *"I know a lot of the brothers out West [from being incarcerated], but some of 'em don't have any numbers, stuff like that, it kinda keep us in tune, helps the picture, people see their face more often, and we be in communication more often" (Earl pre interview).* Using the app to reclaim old relationships that were formed while incarcerated turns an experience of disenfranchisement into a source of strength and community.

Josiah also saw potential in using the connect feed to counteract the systemic effects of incarceration by sharing information about how to get one's criminal record cleared. Depending on the type of offense and whether a person was convicted, a person can apply to either expunge or seal their records. If successful, this process removes major barriers to securing employment and housing [5]. Josiah had attended workshops about how to navigate this complicated process and explained why he wanted to share what he learned on the app: *"'Cause we all come from the same walk [of life] and got a record so sometimes, us Black folks, we kind of feel targeted. You know what I'm saying? [..] Now we got an opportunity to kind of clean this stuff up and stay clean so to speak. Yeah. So I just wanna give them an opportunity" (Josiah pre interview).* Nationally, Black men are six times more likely to be incarcerated than White men [4], which is likely why Josiah felt like a police target. His reference to staying clean alludes to the revolving door of incarceration—once incarcerated, a person is more likely to be re-incarcerated, because there is no system designed to provide structured support through reentry [13, 22], though recent work in HCI aims to support returning citizens [95]. Although communities are over-policed, relatively few murders are solved, which SOWs drew attention to by holding a community outreach event for nine women who had recently been killed or gone missing. Ian posted a photo from the event and wrote: *"Hopefully there will be some justice for the 9 young ladies who has been missing from the [community] area."* SOWs also participated in political activism to change the criminal justice system and posted photos to the connect feed from a peaceful protest they participated in at the state capital to advocate for equity in the criminal justice system.

SOWs discussed using the connect feed to resist the impacts of disinvestment in their communities by posting information about preventative resources (e.g., community events, job opportunities, and

other supports) for SOWs to share with the youth they work with. SOWs use the term "participant" to refer to youth who are at risk of being involved in violence and are part of a program to address underlying causes of crime and violence, such as employment barriers or mental health challenges. Adam thought that the connect feed should include information on *"what's going on local, daily. [..] something for the workers to give to the youth, to the participants [..] We only get certain information for certain events. I'm like, more events, more interactive with other sites where we know there a lot of more activities" (Adam pre interview).* Sharing opportunities for youth to develop relationships and access resources necessary for gaining employment is a way SOWs work to counteract the impacts of disinvestment in their communities and a practice that could be amplified through the connect feed.

SOWs' visions for leveraging the connect feed in their work to repair harm caused by institutions reveals their dedication to their communities beyond their role as conflict mediators, indicating that though they are working within a formal institution, they are engaged in the transformative justice work of building a counter-structure [22, 51]. SOWs also expressed their commitment to each other and their communities through gestures of care and support both in-person and through the SP app.

6.5 Care in the Street Outreach Community

The emotional support that violence prevention workers provide each other was evident in their interactions in their workplaces, the stories they shared in interviews, and the photos and messages of support they posted to the connect feed. They used the connect feed as another avenue to express care for each other, seek personal support, and mourn family and community members who died.

While visiting the sites for interviews, we noticed a strong sense of camaraderie and care between SOWs, as expressed through gestures of affection, laughing together, pausing work to check in on each other, and eating meals together (i.e., "breaking bread") *(field notes).* Mason highlighted the care present in his team when he explained, *"We talk about how to better ourselves, and how to better the program, and our participants, and if you need some help, you know I got you. It's a real loving community" (Mason pre interview).*

In most interviews, SOWs laughed with us but some also cried when they shared stories about their personal losses without prompting *(field notes).* Through work and their personal lives, it is very likely that SOWs have experienced trauma. Tragically, during the study, one SOW (who was not an interview participant) lost his grandson and used the connect feed to invite all SOWs to a prayer event, writing *"I appreciate the support. At 6:00pm on [Street] and [Street]. They are having a prayer vision for my grandson [name]. Stop the violence. Stop the killing. Save our children."* In his pre-interview, Earl cried when he shared that he recently lost his son to gun violence, and explained how coming together in community and telling stories helped him process his grief and encourage others who lost loved ones not to resort to retaliatory violence.

> *"It was [an] open platform what it was, anybody that had a story to share, and I feel like [..] I can talk to somebody to hold back from retaliating or something. I lost a son. It's not like I'm not able to retaliate, [..] I'm trying to stop people from getting killed, that's not gonna bring my son back. [..] It was nice, and other people sharing stories. I mean 'cause it hurts, I mean 2 years, that's really fresh. It's fresh. And so, I have to deal with it every day" (Earl pre interview).*

Another way in which violence prevention workers relied on their community for grieving losses was by holding cookouts (public gatherings with hot food) or vigils. One event that several SOWs posted about commemorated the loss of a fellow SOW and included SOWs from several organizations as well as residents. Ian posted a photo of the event and captioned it, *"Balloon release for*

[name]. Supporting the brothers." SOWs also shared photos from several different community vigils, which are gatherings SOWs hold in public spaces after shootings to mourn the loss of community members. A vigil creates a safe space where residents can gather and is an opportunity for SOWs to build trust with residents, hand out information about their work, and gather information about the shooting to try to intercept any retaliatory violence.

The personal experiences that SOWs shared in interviews and on the connect feed suggest that holding space to tell stories is an important component of how they work to heal themselves and their communities from the impacts of State violence [116]. Although SOWs work in formal organizations, the care they share with each other and community members is characteristic of grassroots mutual aid and care networks [32, 72, 105, 117]. The privacy the app afforded helped create a virtual safe space for SOWs to share expressions of care.

6.6 Privacy

The privacy of the SP app was a key reason why SOWs were comfortable sharing information and stories on the connect feed, whereas many of them disparaged mainstream social media platforms for fueling violence while making a profit. Conflicts that start online quickly escalate and turn into violence in-person, as expressed by George when he said, *"I don't like Facebook, Instagram, I don't like none of it. Because I feel like that's what driving a lot of this violence that's going on right now, and [..] they're making so much money off it, [..] but if they watched it like they should, a lot of this violence that's going on wouldn't be happening" (George pre intverview).* Privacy was also important to SOWs who were concerned about revealing the identities of the youth participants they work to non-SOWs. *"It be our participants. All them be coming [to events] too. It would be like even though we don't have no problem with exposing ourselves, they don't like exposing they self" (Adam pre interview).* Recent work has challenged the CSCW community to better evaluate the field's technological determinism towards the usage of social media platforms that have caused and continue to cause trauma and harm to Black people [56]. The SOWs recognize the trauma and harm that traditional social media platform cause and appreciated the SP app for its privacy.

Participants also liked that the app allowed them to separate their personal life and work life, rather than having to be "friends" with coworkers on social media: *"that's the really good thing about this, it's just amongst us" (Earl post interview).* The SP app also afforded privacy, because it is a way to communicate without sharing personal phone numbers. Many participants were comfortable sharing their numbers with a SOW they had just met, but some were not. One SOW explained his trepidation of sharing his phone number: *"Sometimes it all depends on who it is. Because I don't know ... To be honest, we share common interests, it's the job, but I don't really know a lot of them personally" (Mason pre interview).* Since the app allows one-on-one messaging between any SOW who has an account, it allows people to communicate with acquaintances without having to share personal contact information.

By creating a private infrastructure for SOWs from different sites and organizations to connect with each other, they were able to leverage the strengths in their communities [49, 79, 127] to advance their transformative and healing work at the individual, community, and societal levels.

7 DISCUSSION

Our findings suggest that while street outreach workers saw value in the using the *Street Peace* app to get support while mediating conflicts, their deeper motivations for using the app stemmed from their desire to heal their communities and transform the institutions and policies that perpetuate violence [13, 22, 31, 80, 82, 103]. The story SOWs told through the app of community care and solidarity is a counter-narrative [48, 116] to dominant deficit narratives, such as Black criminality [92, 103, 123]. Although SOWs were able to use the connect feed as a space to extend their transformative justice

practices and build their counter-narrative, we identify an opportunity for HCI researchers and community groups to work in solidarity with formally organized counter-structures like street outreach by creating infrastructures for disparate groups to join their strengths, resources, and stories, building off of prior work in HCI on assets-based design [38, 49, 79, 127] and grassroots activism [17, 50]. We extend prior HCI literature on community approaches to violence prevention [14, 53, 54] by contributing design implications from the deployment of a tool designed to support community-led violence prevention. Following a design justice approach [45], the mobile application we co-designed connected formally organized groups that are creating an alternative to policing while building a strengths-based community narrative that centers care and commitment [80, 92, 123].

7.1 Violence Prevention as a Counter-Structure

The ways in which street outreach workers described using the SP app aligned with the framework of transformative justice, in that they worked at the individual level (e.g., mediating conflicts and connecting youth with resources), community level (e.g., creating safe spaces to build communities of care), and societal level (e.g., re-enfranchising residents and creating an alternative to policing) to bring peace to their communities. By enacting transformative justice, SOWs are building a counter-structure [15, 44] against the racist systems and institutions that created the inequities that catalyze violence in their communities [13, 31, 80, 82, 103]. Counter-structures are "alternative structures that fulfill community needs using methods that are most just and less harmful. [They] incorporate local contexts, histories, and resources to address the specific ways in which violence is enacted on a community." [16, p.166]. For SOWs, resisting oppression involved connecting their strengths and resources to build supportive social networks that foster healing and desistance from violence [22, 105] and by challenging deficit narratives about their communities [123].

Our findings suggest that by creating a private infrastructure to connect directly with other sites and share resources, SOWs could leverage their trust and relationships with each other through the SP app and extend their counter-structural practices online. The direct communication across sites and organizations that the SP app enabled was important because counter-structures are built from the bottom-up [26]. Prior to the implementation of the SP app, there was no formal system for SOWs to communicate with SOWs from other organizations or sites, and they welcomed the agency that the SP app afforded them to collaboratively mediate conflicts and build community. Bridging sites and resources (e.g., field support, information, care) through the SP app was only possible because SOWs felt an inherit degree of trust with other users, as they expected fellow SOWs would understand how to handle sensitive information given their shared personal and professional backgrounds. The app, therefore, tapped into trust in the community by creating a private virtual space for connection, which SOWs used to build a sense of solidarity across organizations and tell a counter-narrative [48, 103, 116] that celebrated the joy and care in their communities as well as their work to resist oppression and bring peace to their communities .

The support that SOWs shared on the SP app demonstrated that developing communities of care, or networks of people who provide aid and stewardship for each other through difficult experiences, is essential to the counter-structure of street outreach [13, 22]. Communities of care are important for formerly incarcerated people returning to their communities because they provide connections to resources and emotional support that help people disengage from activities that are criminalized [13, 22, 23]. Supportive care networks also are essential in coping with traumatic events, as SOWs in this study experienced [67]. Surprisingly, the SOWs we spoke to did not express experiencing burnout, and we speculate that their strong support networks contribute to their resiliency. By building communities of care, SOWs are healing their communities from structural violence while creating the conditions for peace. Building a community of care requires having a space where

people can feel comfortable sharing stories [65], offering and receiving support, and expressing vulnerability—which is not afforded by public social media platforms [98, 100].

Our findings suggest that creating safe online spaces for disconnected groups who share a transformative justice goal [22, 51] can further their work by providing a venue to connect their strengths and resources [38, 49, 127], build caring mutual aid networks [72, 117], and develop powerful, humanized narratives about their communities [37, 50, 116]. Such counter-structural systems may be most effective in contexts where the users have a sense of shared history, have deep attachments to the community, and have opportunities for developing in-person relationships. It is also important that researchers working with communities who are resisting structural violence and building liberated futures take an assets-based design approach that centers the strengths, values, knowledge, and existing practices of the community [49, 61, 101, 107, 128] while mitigating potential for harm through research [15, 45, 68].

7.2 Supporting Formally-Organized Counter-Structures through Design

The aim of the SP app was to facilitate street-outreach, which is a counter-structural approach to ending interpersonal violence that is implemented by institutions but shares qualities with grassroots social movements because the SOWs are deeply connected to their communities and act as SOWs even when they are not "on the clock." Prior work in HCI has largely focused on anti-violence approaches where individual people without ties to an organization work together to stop violence in their communities [14, 53, 54], while there are examples of algorithmic technologies designed to support SOWs in public health and sociology [59, 96]. We contribute design implications for tools that support formally organized counter-structures and provide an example of a street outreach technology that street outreach experts and academic researchers co-designed and implemented through an two-year collaboration.

SOWs used the SP app to connect the city-wide violence prevention community, which they drew on for support in conflict mediations, to motivate each other to continue their important but challenging work, and in grieving losses of family and community members. The SP app did not provoke any new behavior, rather SOWs used it to magnify their existing collaboration and community building practices (e.g., asking for help or information in a mediation, holding events, sharing emancipatory resources, honoring lost loved ones). Although SOWs engaged in these activities prior to the SP app, they did not have the infrastructure to easily access SOWs from other organizations, or even from other sites within their own organization. The SP app shifted the organizations' vertical, top-down communication model (where information flowed primarily through supervisors) to a flat model where SOWs could interact directly with each other, enabling them to scale up their counter-structural practices.

The flow of communication and information in street outreach programs illuminates a key difference between studies focusing on grassroots counter-structures and formally organized counter-structures [15]. Because the counter-structure of street outreach is implemented by institutions, there exists a hierarchy not present in grassroots counter-structures (e.g., [51, 62, 102, 105]). This hierarchical model creates friction with street outreach functioning as a counter-structure, because counter-structures typically have a flat, egalitarian organizational structure [26]. By creating a tool that flattened the informational hierarchy, the SP app brought the street outreach organizations into closer alignment with traditional counter-structures. The communication agency SOWs felt the SP app afforded them was key to their engagement with the SP app. Therefore, design interventions with formally organized counter-structures should be attuned to power dynamics regarding communication and information sharing within the organization.

By making the communication model more egalitarian among the three participating street outreach organizations in the study, SOWs were able to amplify their motivating, hopeful narrative

about their work and communities through the SP app. The positivity and collective power they saw when scrolling through the connect feed gave many SOWs an enhanced sense of their ability to make a difference, which is important for protecting against burnout and maintaining engagement in a social movement or a workplace [18, 64]. Though the SP app was functionally simple [101], SOWs used it to craft a narrative about their community that focused on care and commitment that was a stark contrast to mainstream narratives that focus on crime and poverty in Black communities [37, 92, 103]. The similarity of the SP app to other social media platforms also made it easier for some SOWs who had limited experience with technology (as can be the case with people who have been incarcerated for an extended time [126]) to learn and participate in the community on the connect feed. Based on feedback from SOWs, future iterations of the connect feed will better enable storytelling by allowing users to post videos and potentially live-stream. Counter-structural groups seeking to build technologies to amplify their work should consider how their designs can support interactions for sharing resources, care, and stories that further their development of liberatory imaginaries [19].

8 ACCOUNTABILITY

Answering calls for HCI researchers to be more accountable to their collaborators [15, 56, 68], we share how we perceive the intervention impacted SOWs. Some SOWs expressed a "love" of the app, and were acutely disappointed when they learned we would not be maintaining the app indefinitely. As planned in the beginning of the project, the PI transferred the intellectual property (IP) of the app to *Street Peace* as well as the development code so the organization could continue to maintain the software. The IP process required signing over the IP rights through general counsel for both the PI's institution and the *Street Peace* organization. However, because *Street Peace* shifted its organizational model, they decided to not put additional resources into the app. The research team delayed disconnecting the server for six months after the study in hopes that the organization would take over the server costs, during which time some SOWs continued to post to the connect feed. We regret any harm we may have caused by raising SOWs' excitement about a tool that was discontinued, but we hope that the insights generated from this study can amplify their transformative work in the future. A tangible benefit the intervention provided was that it helped the organization raise funding to hire additional SOWs. Following the completion of the study, we returned to the sites to share a meal, present our findings, and answer SOWs' questions about the intervention.

9 LIMITATIONS AND FUTURE WORK

The behaviors SOWs engaged in on the connect feed were bound by the interactions that the design afforded and access to the SP app was limited to SOWs who had Android phones, which included mostly older SOWs. Integrating the new technology into a population where the median age was 46, and where some SOWs did not have access to technology while formerly incarcerated, presented a challenge for some participants. Although the research team brought the designs to different SOWs intermittently throughout the design process for feedback, only our lead collaborator (who is experienced with technology) was involved weekly in making design choices, and no SOWs were involved in the analysis. This is a challenge with co-design [111]; community-based collaborators' time is typically very limited, and their roles often do not recognize or reward full participation in research or design. Furthermore, when a collaborators' job is to prevent people from being killed or incarcerated, taking their time for research can be difficult to justify.

An organizational shift arose during the deployment of the SP app, which is a common issue faced by many who engage in academic and community-based research partnerships. Specifically, the lead street outreach collaborator was recruited to another street outreach organization just as the

app deployment and pilot began. Losing the main champion of the SP app within the Street Peace organization was challenging for several reasons: (1) There was a period of transition while the Street Peace organization attempted to assign a new lead collaborator, which resulted in a short (but perhaps meaningful) time lapse. (2) With a new internal collaborator, the academic team's access to sites may not have been as open and robust as anticipated. (3) The new internal collaborator was also tasked with additional duties beyond our original collaborator's role, including responding to a funding crisis within *Street Peace* (a non-profit organization), which may have affected the project's priority, buy-in, and integration of new technology at sites. Given that street outreach has now expanded into 30 Chicago communities due to recent increases in funding and shifting state and local approaches to violence, a longer-term pilot with more sustained support for integrating the SP app into work practices would be necessary to further evaluate the tool's potential to amplify street outreach practices.

Future work should explore co-design practices and funding models that enable participation throughout the entire research process while not exacerbating heavy workloads or causing harm [15]. Future co-design interventions with street outreach organizations should investigate ways to specifically enable SOWs' strengths-based [49, 127] counter-structural practices [15, 22] and communities of care [72, 117]. To bolster SOWs' argument that their community building work *is* violence prevention (and should be prioritized in public safety funding), future research should also support SOWs in developing ways to capture alternative forms of data that they can use to build their counter-narrative and align with their existing work practices [103, 116]. To address issues of sustainability and ownership, future work would benefit from using development platforms that the community can maintain and customize without outside support from researchers [34].

10 CONCLUSION

Black urban communities are often portrayed one-dimensionally as dangerous places that are plagued by gun violence and poverty [80, 92]. This racist, deficit-based narrative perpetuates the idea of Black criminality and numbs people with privilege and power to the structural violence and practices of inequality that destabilize and incarcerate not only Black communities, but also Latinx, Indigenous, and some Asian communities [13, 46, 60, 82, 103]. Structural racism cannot be solved by technology. However, based on this study we see an opportunity for technology to amplify the work that transformative justice initiatives like street outreach are doing to create more just and safe futures. The findings of this study can be applied to other formally organized counter-structures that challenge deficit narratives and structural violence. For example, community health care workers are creating alternatives to support Black mothers outside of traditional maternal health [2], in which Black women more likely to die during childbirth due to racist practices embedded in healthcare [11]. Black community youth-serving organizations are self-organizing to create meaningful learning experiences for youth outside of schools [55], as there is currently a dearth of quality opportunities for Black and Latinx young people in their communities [12, 35, 38]. Given these examples of counter-structures in healthcare and education, there is potential to co-design other technologies that extend community resources and strengths [49, 127, 128], such as expertise [107], care [79], and stories [50], and foster relationships to bolster community-led transformative justice initiatives [15, 22, 45].

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