

# UCSF

## UC San Francisco Previously Published Works

### Title

Perspectives of Girls and Young Women Affected by Commercial Sexual Exploitation: mHealth as a Tool to Increase Engagement in Care.

### Permalink

<https://escholarship.org/uc/item/0c86t1d3>

### Journal

Journal of Health Care for the Poor and Underserved, 32(2 Suppl)

### ISSN

1049-2089

### Authors

Bath, Eraka P  
Godoy, Sarah M  
Perris, Georgia E  
[et al.](#)

### Publication Date

2021

### DOI

10.1353/hpu.2021.0054

Peer reviewed



# HHS Public Access

Author manuscript

*J Health Care Poor Underserved*. Author manuscript; available in PMC 2022 May 01.

Published in final edited form as:

*J Health Care Poor Underserved*. 2021 May ; 32(2 Suppl): 128–147. doi:10.1353/hpu.2021.0054.

## Perspectives of Girls and Young Women Affected by Commercial Sexual Exploitation: mHealth as a Tool to Increase Engagement in Care

**Eraka P. Bath, MD, Sarah M. Godoy, MSW, Georgia E Perris, BA, Taylor C. Morris, MSW, Madison D. Hayes, MSW, Kara Bagot, MD, Elizabeth Barnert, MD, MPH, MS, Marina Tolou-Shams, PhD**

ERAKA P. BATH, SARAH M. GODOY, GEORGIA E. PERRIS, TAYLOR C. MORRIS, and MADISON D. HAYES are affiliated with the Department of Psychiatry and Behavioral Sciences at David Geffen School of Medicine at UCLA and the UCLA Semel Neuropsychiatric Institute. MARINA TOLOU-SHAMS is affiliated with the Department of Psychiatry and Behavioral Sciences at David Geffen School of Medicine at UCLA and the Zuckerberg San Francisco General Hospital and Trauma Center. KARA BAGOT is affiliated with the Addiction Institute at Mount Sinai-Center on Addiction Alliance and the Department of Psychiatry at the Icahn School of Medicine at Mount Sinai. ELIZABETH BARNERT is affiliated with the Department of Pediatrics at the David Geffen School of Medicine at UCLA.

### Abstract

**Objective.**—We gathered the perspectives of girls and young women affected by commercial sexual exploitation (CSE) to understand the acceptability and feasibility of mobile health (mHealth) for enhancing access and engagement in health and social services during judicial involvement.

**Methods.**—We conducted four focus groups with 14 girls and young women (ages 14 to 21) with self-identified CSE histories.

**Results.**—Participants perceived mHealth as viable for accessing and engaging providers, and health and social services, and navigating judicial systems. Participants expressed that mHealth tools increased self-efficacy and self-navigation of required services. Recommendations to improve mHealth functionality included push-notification appointment reminders, wellness and safety promotion, enhancement of provider communication, peer-to-peer support, and access to health education and community resources.

**Conclusions.**—Findings provide insight for how mHealth may be leveraged to increase self-management skills, fulfill judicial obligations, and improve access and engagement in health and social services for CSE-affected girls and young women.

## Background.

Commercial sexual exploitation (CSE), commonly referred to as sex trafficking, is a public health issue adversely affecting adults and children world-wide. Though available research cannot accurately capture the full scope or prevalence of CSE, smaller datasets offer insight into salient risk factors and outcomes of exploitation. Vulnerable women and youth, such as racial-ethnic or sexual minority youth and those with histories of trauma, maltreatment, or running away, have an increased risk of experiencing CSE.<sup>1-5</sup> These predisposing factors may also lead to involvement in systems of care (i.e., juvenile justice and child welfare systems), resulting in a compounded risk for CSE. Additionally, these youth are often diverted into the justice and/or child welfare systems as a result of their exploitation, such as receiving criminal and status offenses that lead to judicial involvement and/or child welfare referrals because of the CSE.<sup>6-9</sup> Risk factors for and adverse outcomes of CSE increase youths' multiple, overlapping long-term needs, necessitating a continuum of comprehensive health care treatment and robust service delivery.

Youth experiencing CSE are at increased risk for emergent health needs resulting from forced sexual activity, violence, and abuse, such as sexually transmitted infections or unintended pregnancies.<sup>10-14</sup> Additionally, these youth may also experience elevated behavioral health needs, such as depression, anxiety, and suicidality.<sup>5,14</sup> The literature shows that individuals experiencing CSE are known to access health care treatment at public and private health offices, emergency departments, urgent care centers, and family planning clinics.<sup>12,15-19</sup> System involvement may also increase access to health care treatment or related services, as treatment is often court-referred or mandated. Yet, utilization or engagement in care can be challenging, often exacerbated by fragmented patterns of care delivery,<sup>20</sup> disrupting one's ability to obtain continuous and consistent care.

Several barriers to treatment utilization and engagement for youth with histories of CSE exist. Many youth with histories of CSE are likely to experience increased transience due to frequent changes or instability in housing, making it difficult to form bonds, build trust, or maintain consistent communication with service providers.<sup>9,18,19</sup> The frequency of youth running away from care and back to exploitative circumstances or risky environments pose additional barriers to accessing or engaging in traditional health care services.<sup>12,20,21</sup> Further, youth have identified additional factors that create barriers to treatment engagement, such as long wait times, feeling judged by providers, staff changeover (forcing them to repeat reporting their history), not having accessible transportation, and fear of legal ramifications resulting from presenting for health care.<sup>12,14,22</sup> The general lack of agency afforded to youth when accessing health care treatment has shown to further compromise their willingness to engage in services,<sup>20,22</sup> creating an additional barrier to obtaining continuous care.<sup>23</sup> These factors threaten continuity of care and lead to increased fragmentation of health-related treatment or mandated services.

Whether CSE-affected youth are connected to the child welfare or juvenile justice system, or both systems, navigating treatment and services within these institutions may pose additional challenges,<sup>24</sup> as salient information may not be readily accessible for youth. Yet, navigating their treatment and services within institutional systems is frequently a requirement as these

systems track youths' involvement in ways that affect their judicial trajectories and livelihood.<sup>24</sup> Although the juvenile justice system has harnessed technology to develop electronic surveillance tools to track whereabouts of youth, few other technology-based options have been explored to decrease negative outcomes among these populations.<sup>25</sup>

## The Potential for Digital Health Technologies

Digital technologies and, specifically, mobile health (mHealth) interventions may present a viable option to meet the multifaceted needs of youth affected by CSE, particularly those who are involved in the juvenile justice and/or child welfare systems. Specifically, mHealth interventions are able to deliver wide-ranging, individualized, and continuous care at relatively low costs<sup>26</sup> and appear to be a viable mechanism for health behavior change among youth.<sup>27</sup> mHealth has been shown to facilitate access to health care and health-related information, promote communication with health care professionals, and improve healthy lifestyle behaviors and sexual attitudes among underserved and transient youth populations.<sup>28–35</sup> These advantages, coupled with most youths' familiarity with technology,<sup>36</sup> illustrate the potential for mHealth applications to be effective in supporting the delivery of services to youth with histories of CSE. Although concerns regarding access to technology among underserved populations exist, available research consistently documents that individuals in underserved communities frequently access the Internet and use mobile devices,<sup>32,37–39</sup> including youth seeking health-related information.<sup>40</sup>

Despite the lack of research addressing the role of mHealth among youth affected by CSE, studies with related populations (e.g., youth in the judicial system, youth experiencing homelessness) suggest that digital technologies and mHealth tools among high-need youth populations may be acceptable and feasible.<sup>32,38,39</sup> Further, such tools may offer specific advantages for youth in juvenile justice and/or child welfare systems.<sup>41,42</sup> One study found that text messaging between youth on probation and juvenile justice personnel is common, and that text messaging communication would be an accessible and feasible means of sending youth behavioral health appointment reminders.<sup>42</sup> Furthermore, the ability to provide services across geographic boundaries and reduce barriers associated with face-to-face help-seeking,<sup>43,44</sup> make mHealth an innovative and practical intervention that can also target barriers to care among young women with histories of CSE, a population with frequent systems involvement and similar risk profiles. Finally, the flexibility of and on-demand access to mHealth may be especially useful given the transient lives of youth experiencing CSE who frequently experience housing instability.<sup>12,44</sup>

### Current study.

The aim of this study was to assess acceptability and feasibility of a mHealth tool to address the continuum of health and social service needs among girls and young women affected by CSE. Their needs include navigating a complex web within systems of care such as health, housing, and court-related requirements. We build on previous findings that demonstrated acceptability and feasibility of mHealth among underserved youth populations in the judicial system.<sup>41,42</sup> Our intention was to elicit feedback from youth with histories of CSE, especially those with justice and child welfare involvement on their priorities, needs, and

wants as it related to a mHealth application. We explored the perspectives of girls and young women currently or formerly involved in the child welfare and/or juvenile justice systems with identified histories of CSE to understand how a mHealth application could improve support for their identified needs and sustain engagement in treatment and service navigation across various service sectors, including housing, medical services, substance use, and court and probation requirements. This article addresses the following research questions:

1. What is the perspective of girls and young women with histories of CSE on the acceptability and feasibility of the use of a mHealth tool for the purpose of improving service delivery?
2. How can mHealth support youths' utilization and engagement in treatment and services, including health-related services?
3. What concerns from the girls and young women would deter engagement with mHealth tools?

## Methods

### Design.

The qualitative findings presented in this article are part of a larger, multi-year, mixed-methods study that took a community-engaged approach to seek perspectives from girls and young women affected by CSE and their multi-disciplinary service providers, including health care providers, case managers, and personnel related to foster care and judicial systems.<sup>10–12,15,20,23</sup> This article describes participants' views related to: (i) perception of utilizing mobile technology to improve service access and engagement; (ii) recommendations for developing and sustaining youth engagement in court-referred or mandated treatment and services through mHealth technology; and (iii) concerns associated with emergent technology. Pertinent findings were examined using iterative and inductive qualitative analytic techniques.<sup>45</sup>

Our team employed a community-engaged approach as a mechanism to improve health outcomes and reduce health disparities among individuals with histories of CSE.<sup>46</sup> We worked with local entities serving youth with histories of CSE, including a juvenile justice specialty court, a service provider organization, and a residential group home. Research was conducted in a large, urban county in the southwestern region of the United States. Study procedures were approved by community partners, our university's institutional review board (IRB), and the county's Superior Court, Juvenile Division.

### Participants.

In total, 14 girls and young women ages 14 to 21 participated in four focus groups in the study period, March through August 2018. Using a purposive sampling framework, all invited participants were identified by service providers due to age eligibility for study participation and histories of CSE as determined by the service providers through ongoing assessments of the youth. Study eligibility was re-confirmed by the research team based on the following criteria: 1) age (13–22 years); and 2) history of exchanging sexual activity for anything of material value (e.g., money) as a minor; or 3) having ever been forced,

manipulated, or coerced into exchanging sexual activity for anything of material value as an adult. The age range, sex, and gender of the invited participants reflected the population served by our community partners. The research team did not encounter potential participants who identified as male or transgender; therefore, no male or transgender participants were involved in this portion of the study.

### **Instrumentation.**

The data collection instruments included a brief (approximately 15-minute) survey and the semi-structured focus group guide. The study instruments were developed through an iterative team process. The survey included multiple choice, close-ended, and open-ended questions. The survey tool collected sociodemographic information (e.g., age, gender, and housing history). The semi-structured focus groups were facilitated using a 10-question tool (see Appendix A) and included specific questions on use of and access to mHealth and other digital technology, communication with service providers, and recommendations for developing and piloting a mHealth application for youth. Additionally, researchers encouraged feedback on other relevant information to be shared that might have not been directly elicited with a specific question. Researchers conducted focus groups until thematic saturation was reached, meaning themes were repeated, and no new themes emerged.<sup>47</sup>

### **Procedures.**

The research team explained study objectives and focus group aims to community partners and shared pertinent study materials (i.e., eligibility screener, survey tool, and focus group questions). Community partners then gauged the interest of potential participants and invited the research team to their respective sites to meet with staff and interested youth. Subsequently, researchers held information sessions at the sites, providing potential participants with the option to either join the focus group immediately following the information session or to volunteer for a focus group at a later date. Of the 15 girls and young women who initially expressed interest, 14 participated; one young woman agreed to participate but did not appear on the day of the focus group.

The four focus groups took place at two of the community-partner sites. Focus groups were held in a private room. Focus group size ranged from two to six participants. Researchers provided the girls and young women with packets of the study materials, explaining the study purpose and procedures. Informed assent (for those under age 18) and consent (for those age 18 or older) were conducted prior to participation. The written and spoken communication emphasized the researchers' obligations as mandated reporters and that participation was voluntary and independent of youths' status with the court or child welfare system. Due to the nature of the questions, the IRB deemed the study to have minimal or no known risk. With the understanding that most youth were likely under the supervision of the child welfare or juvenile justice system and these systems acted as guardians, parental consent was waived. This decision aligned with the recommendation of the community partners, who felt parental consent was not necessary as the focus group content was viewed as posing minimal risk and accessing parents/caregivers was likely to be a lengthy and complicated process.

Following informed assent/consent and prior to focus group participation, the girls and young women completed a brief, self-administered paper survey on sociodemographic characteristics. The demographic characteristics of participants are outlined in Table 1. Researchers were available to answer questions and ensure the surveys were completed in their entirety. Upon survey completion, researchers conducted the semi-structured focus groups. The focus groups were co-facilitated by two research team members. One research team member led the discussion and the other research team member served as a note-taker. The same three researchers conducted and took notes for all focus groups. Each research team member had direct experience working with vulnerable populations and was trained in qualitative methodology. Focus groups were audio-recorded and 60 minutes in length. Each participant was provided with a warm meal and snack foods and was compensated with a \$25 gift card.

### **Analyses.**

Audio recordings of the focus group discussions were first transcribed verbatim by research team members and then checked for accuracy by additional team members. Next, all personal identifiers were removed from the transcripts. Two research team members then examined the transcripts from the first two focus groups to develop an initial codebook. Using iterative thematic analysis and informed by constructivist grounded theory,<sup>45</sup> the codebook was continually refined to reach consensus. Two members of the team then coded the first two focus group transcripts together. Upon reaching a consensus about the codebook, two team members then separately coded the remaining transcripts. Transcripts were coded using the online data-sharing platform, Dedoose (Version 8.1.14, Manhattan Beach, CA). The research team held several meetings, discussing points of overlap or disagreement with specific codes and larger themes. Once coding was complete, several research team meetings were held to organize and seek to understand thematic findings. Using constructivist grounded theory as the framework, findings were interpreted with the understanding that data are constructed and influenced by experience.<sup>48</sup> Raw data and theoretical memos were used throughout the analytic process, ensuring the data reflected the girls' and young women's narratives and their voices were centered.<sup>49</sup>

## **Results**

### **Overview of findings.**

Though the research team initially sought to understand how mHealth technology could support engagement in health care treatment specifically, during data analysis it became evident that the girls and young women wanted digital technology that could facilitate their engagement and provide support in other service areas. Out of the 14 youth participants, 12 self-reported access to mobile phones and regular use of social media and text-messaging platforms, the latter of which they used to communicate with service providers.

Additionally, these youth reported using their mobile phones to maintain connections with a range of health and service providers. Notably, no youth reported use of or access to formal mHealth tools. Four overarching themes emerged about the girls' and young women's perspectives on mHealth. The themes relate to their perceptions and preferences regarding feasibility, acceptability, and implementation concerns and considerations. As depicted in



Figure 1, the four emergent themes are: (i) *what we want*, indicating what youth want from a mHealth application; (ii) *why we want it*, indicating the reasons why and how mHealth would benefit them; (iii) *how we want it*, indicating the specific design or functionality that could meet their identified wants and needs; and (iv) *considerations and concerns*, indicating salient safety, privacy, and confidentiality considerations for mHealth developers.

### Theme 1: What we want.

The envisioned mHealth application was described by girls and young women with history of CSE as a multifunctional tool that could act as a digital assistant and function in four important ways: (a) promote communication and support with service providers and peers; (b) share content about and perspectives from CSE experts with lived experience; (c) notify them of appointments and mandated obligations; and (d) provide access to health education and community resources.

**Communication and support.**—Communication among peers with histories of systems involvement and CSE was perceived as a mechanism to increase a sense of community and safety and a support system that differed from relationships and communication with service providers. One-on-one messaging and group chats were both perceived as desirable forms of communication with peers. There was emphasis that communication should be private, inaccessible to the general public, and anonymous, with an expressed preference for being able to communicate without sharing personal information (e.g., name and phone numbers).

The girls and young women conveyed wanting to build community through chatroom groups that included sharing health-related information and messaging and conveyed a desire to share resources and artwork with their peers, specifically through a *tag* or *share* function such as those used in social media. Sending pictures, using emojis, and creating representative avatars or bitmojis to convey emotion in their communication were specifically desirable. The participants particularly liked the notion of an assortment of chatroom topics that would allow youth to share health-related information or ask anonymous health-related questions; express their needs (e.g., pregnant and parenting) and identities (e.g., LGBTQ-specific chatroom); and act as a peer support system to one other, especially when going through hardships. Participants recommended that chatroom groups have “monitors” or administrators, to ensure conversations remain safe and appropriate, while also ensuring traffickers were not able to access you or your information through the application.

The girls and young women envisioned a mHealth application that could act as a mechanism to gain support during distressing situations. Suggestions for alleviating feelings of anger and frustration, especially while in foster care placement, included music, games, and positive text messaging or, as the young women suggested, “empowerment pop-ups.” The girls and young women emphasized the desire for fun and interactive content, rather than exclusively health-related information and resources, in order to assist youth during difficult times. Accessing and creating music playlists was perceived as an especially helpful coping skill. As one young woman explained, “Yeah, ‘cause like in placement I finished my program and what helped me, cause some of them don’t let you have like iPods and stuff,



this one did, so I would just listen to my music, and it helped me.” Another young woman shared, “I was getting irritated at placement, so I think that’d be actually cool for like a girl to get irritated in placement and she wanna go on to her little app, like, I finna play a game.”

Participants had mixed views about receiving affirmative messages through the application. Some expressed a perception that receiving stock messages could come across as “corny” or “robotic,” but positive messaging was also viewed as a helpful coping mechanism for some youth. In favor of positive messages, one young woman explained, “Sometimes people can be having a bad day and you just don’t know it and you get that message saying, ‘Hey keep your head up,’ or ‘Hey don’t let people get to you.’ That can really help people. ... Cause some people don’t get that message and before they get the message it’s too late.” Another young woman echoed similar sentiments by saying, “I would have ... positive affirmations because I’ve come from a home with verbal abuse, you know, so I think having that positive talk would help.” Additionally, personalized content such as a “Happy Birthday” message was considered acceptable and favorable among all.

**Lived experience expert content.**—Youth expressed a strong desire to include lived experience experts, which they defined as an adult with a history of CSE, in developing and delivering mHealth tools. Participants suggested three ways that the lived experience expert could contribute to content: i) delivery of health-related content; ii) sharing of lived experience experts’ success stories; and iii) community-building and communication. Thus, rather than solely using medical professionals or presenting facts and statistics on health-related information, the girls and young women emphasized the relevance of the perspective of the lived experience experts and felt the relatability of their voices would facilitate uptake of health information. When learning from lived experience experts with similar lived experience, participants expressed a high value of hearing expert stories to provide inspiration and hope. Specifically, the girls and young women requested the ability to ask leaders with lived experience questions to help guide their own choices and understand alternative paths. One girl suggested, “What about a Q&A with a lived experience expert of the week? What she did, how she did [it] differently, what she went through and how she overcame it?”

**Digital assistant and resources.**—The girls and young women expressed that digital technologies could fill a critical gap in services by acting as a digital assistant. As one girl explained, “Something that like gives you notifications like something is happening with your life. Cause like I feel like they make a lot of decisions about our life without us ever even knowing.” A calendar function with relevant reminders was perceived as essential because it could be a safe and trustworthy platform to share pertinent and time-sensitive information that would allow them to meet their mandated obligations. Notifications and reminders pertaining to mandated obligations, health-related information, and community events were seen as especially useful to youth in systems of care. The girls and young women also explicitly stated the need for their service team’s contact information, as their service team may change without their knowledge, and scheduled appointments to be readily accessible. The girls and young women recounted instances of using the calendar function on their phones to manage appointments and expressed the view that allowing service

providers access to the calendar to assign appointments and court dates would be an additional benefit of the application.

Additional preferences regarding notification requests included content related to general health and hygiene. One young woman dubbed the term “healthy habit reminders” to describe their desire for content related to health promotion, which included exercise and fitness (e.g., “quick easy workouts,” and “a[n] exercise like a day”), basic health (e.g., “Drink water,” “Wash your face,” and “Brush your teeth”), and quick and easy cooking recipes (e.g., food and dessert). Basic messages reminding youth to remain safe were also viewed as useful (e.g., “Be cautious of who you’re with, what you’re doing ...” and “Watch your surroundings”).

The girls and young women also requested that the application include resources related to health information and services (e.g., access to local providers); free or low-cost entertainment (e.g., music festivals); after-school programs; community service opportunities; resources for pregnant and parenting youth (e.g., health-information; coupons for diapers); public transportation; and education-related opportunities (e.g., college scholarships and deadlines). In addition to available resources in the community, the girls and young women articulated a need for instructional tutorials that provide directions for making appointments, completing governmental and system-related paperwork, and sending professional emails regarding employment opportunities.

Utilizing digital technologies to gather and share health-related knowledge and to access medical records across health care domains, including lab results, on an as-needed basis was viewed as particularly useful. Notably, the girls and young women perceived reproductive and sexual health knowledge as especially valuable, highlighting the need to access health-related educational content, available treatment options, and local services on demand. One young woman explained, “ ‘Cause you know people don’t—out there—don’t know what their dealing with, say if they catch somethin’ [sexually transmitted infection].” The girls and young women believed accessing brief articles and short videos via mHealth focused on their health and wellness could be a viable mechanism for providing medically accurate information and, ultimately, improving their engagement in care.

## **Theme 2: Why we want it.**

A prevailing perceived benefit included mitigating existing barriers to care, such as fragmented care and communication, by providing a platform where they could engage with service providers in a safe, timely, and confidential manner.

**Perceived benefits and utility.**—The girls and young women described that, by facilitating connections with their care team and a support network, a mHealth tool could decrease recidivism and increase continuity of care. Digital appointment reminders about treatment and services were deemed as “helpful.” When probed about how digital notifications could be useful, one young woman stated, “I think it would be helpful because I went to jail because I forgot I had court.” Not only is there a lack of communication between youth and their service team, but there is not a formalized system of digital reminders, “because if you [are] in placement, they [are] honestly keeping up with your

appointments yourself, like they don't even tell you [about your appointment] 'till the day of, low-key, like, you feel me?"

Another young woman reiterated the need to have appointment notifications and contact information regarding her care team co-located in one mobile application, stating, "It would be great to have like ... if we're talking about court, date of a court appearance, your attorney, and then contact number." The girls and young women also identified the benefit of syncing contacts across different phones and platforms. Syncing contacts was viewed as useful for an mHealth application to ensure access to services and treatment was not disrupted, as youth may change phones or housing placements frequently.

Additionally, mHealth was viewed as a resource to support youth in times of emotional distress. In order to inform a youths' care team about their emotional state, one girl suggested, "... you know how on Facebook you can post statuses? Probably that, so like a post if they having a good day or bad day, you have a bad day somebody probably see it, probably check up on you." Creating a space for ongoing and up-to-date communication with service providers was deemed especially important. It was perceived as especially beneficial for youth with histories of CSE to have consistent access to service providers and individuals in their support network, as risks and dangers associated with exploitation were underscored. As one young woman said, "... because you never know what any man or anybody could try.... But especially for girls, for CSEY [commercially sexually exploited youth], because it's more frequent ... it's a higher risk because of the situations that we're in, the positions that we're, that we could be in."

### Theme 3: How we want it.

**Make it fun and interesting via gamification.**—In addition to exploring functionality and anticipating features that would be especially useful, the girls and young women provided recommendations on how the tool could be implemented in order to sustain youth engagement. The girls and young women envisioned a mHealth tool that was fun and included games (gamification).

The girls and young women felt strongly that any mobile application "should be fun" to optimize engagement. As one young woman stated, "I can't be on no boring app." Games were quickly identified as a tool to sustain engagement with the stipulation that these activities should not be "boring" or "kid" games. Instead, they wanted "dope" and "addictive" games similar to the mobile games they were already playing (e.g., Fortnite, Subway Surfers). Both educational and non-educational games were deemed acceptable if the functionality allowed them to be able to unlock new levels to reveal new information, including health-related videos or articles.

Videos were viewed as a viable format to engage users in health-related information. The girls and young women specified that health-related videos should be short (30 seconds to 3 minutes), interesting, and sharable. None of the girls or young women expressed interest in making their own videos, although they hypothesized that other youth might be interested in such functionality. While the girls and young women were adamant that health-related content and videos should be short and concise, they stated exceptions for videos that feature

lived experience expert leaders sharing their stories, experiences, or relevant health-related information.

**Make it worth it via rewards and incentives.**—Solely including fun games was not a sufficient mechanism for sustaining engagement. Rather, the girls and young women desired “getting something out of it.” The concept of rewards and incentives emerged multiple times throughout the discussions. Incentives were consistently referred to as a means of benefiting from or remaining engaged in a game or educational function of the application. Notable incentives included public recognition on the application, gift cards, money, and certificates of completion. In addition to motivating use of the tool, rewards were perceived as a mode of encouragement. One young woman explained the importance of a reward system, “Just to make kids feel good, like they can do something” or for tangible gain. Additionally, certificates of completion could display “progress” that could be presented to a judge, probation officer, or social worker.

**Make it mine via personalization.**—The girls and young women stressed the importance of an app that was personalized to meet their individual needs and wants. Desired preferences for personalization included key aspects such as design (e.g., color scheme, avatar), content (e.g., cooking recipes), and communication (e.g., access to providers, type of notifications). It was also recognized that needs might change from day to day and person to person, so giving users control to determine what they access and when is important.

#### **Theme 4: Considerations and concerns.**

**Access to technology.**—Several concerns emerged relevant to the feasibility of implementation of a mHealth application, including consistent access to mobile phones, the Internet, and data plans. Inconsistency in cell phone access and data plans was identified as a potential barrier. Other concerns included inability to pay the bill, a parent or guardian disallowing use, and lack of access while residing in institutional systems (e.g., detention center, group home). The girls and young women suggested expanding the mHealth application to a separate, secure website available through a web browser and accessible on various technological devices (e.g., laptop and tablet) that do not require mobile phones or data plans.

**Privacy, confidentiality, and safety.**—The girls and young women deemed upholding privacy, confidentiality, and safety as primary concern, and emphasized without proper precautions they would likely discontinue the use of a mHealth tool. For example, due to a perceived lack of privacy related to hacking, some of the girls stated that they stopped using social media platforms that were no longer deemed safe, which may have implications for mHealth apps.

The back-and-forth nature of leaving and returning to risky environments associated with CSE created a sense of potential danger among users, especially if exploiters were to access the mHealth application and synced contact information. Therefore, it was recommended that users should log into their account upon each use and if an app was left idle that it

should log users out automatically; one girl suggested automatic log-out after 30 seconds of inactivity and another young woman suggested a five to 10-minute range. Security questions were also deemed useful and functionality that did not allow the app to save your password.

For applications with peer-to-peer networking functions, additional concerns arose related to potential disagreements and arguments among users. One girl explained, “So they [peers] will—the text messaging part—they might come with some weird beef and now you’re arguing on the safe site, you feel me and we ain’t got to do all that.” Safety concerns also included potential harassment or recruitment by peers or exploiters within chatrooms, underscoring the importance of having a *block* and a *report* function, as are found on many social media sites. Additionally, the girls and young women sought functionality that allowed youth to provide real-time alerts in emergencies or dangerous situations, including the ability to list service providers as emergency contacts and share their geospatial location.

## Discussion

This article contributes to prior literature focused on the perceptions and views of girls and young women with histories of CSE regarding engagement in treatment and services. It also expands the landscape to demonstrate that novel approaches to service delivery, such as mHealth applications, can be feasible with and acceptable to this population. Overall, the girls and young women seemed adept at mobile telephone technology as their responses reflected prior or current regular and frequent use of mobile applications. They articulated how digital technology could facilitate their engagement and provide support in multiple areas of their service provisions. Specifically, they envisioned how a mHealth application could support their varied mandated obligations, psychosocial needs, and intersectional identities. Notably, the lack of a centralized and consistent communication system that alerts youth to their judicial demands creates additional barriers to tracking and fulfilling their probationary demands, at times resulting in incarceration (as noted above). This digital disparity is often not accounted for by stakeholders who expect the system-involved to function without additional assistance beyond their care team. Given that judicial requirements are high-stakes and that care delivery is fragmented,<sup>41</sup> digital technologies may mitigate barriers to fulfilling demands.

The CSE-affected girls’ and young women’s preferences with regard to functionality, usability, and acceptability underscore the intersectional nature of their identities. As a reflection of their youthhood, the girls expressed a strong desire for gamification and short videos that would sustain their attention. Application developers may want to collaborate with youth to develop short and interactive content that is youth-friendly, age-appropriate, and culturally sensitive or rely on social media platforms that may have relevant content readily available. Lastly, application developers have an ethical obligation to be cognizant and wary of gamifying or making tools that are potentially addictive.

Due to their involvement in systems of care, the girls and young women emphasized the need for appointment reminders, access to records, and up-to-date information related to their cases. Although current health care systems tend to use their own patient portals/patient apps for people to see their appointments and results, gaps remain in the export of these

communication tools for those receiving health care in publicly-funded settings. Using digital systems may address barriers in access to routine care that the CSE survivors face and also increase youths' self-sufficiency while decreasing an overreliance on service providers to share salient information. As a result of their histories of CSE, they requested lived experience-centered content, and emphasized a need for functionality that upheld their safety and privacy while also protecting them from the potential harm of other youth and traffickers. These requests underscore how these girls and young women have needs that differ from other youth populations. Involving CSE experts with lived experience may help youth feel a greater sense of community and resilience. Service providers and researchers can collaborate with lived experience experts to share medically accurate health information in a manner that is deemed acceptable and desired. The girls' and young women's concerns on how mHealth tools may allow recruitment among peers or by traffickers if there is not proper monitoring is both valid and important. Therefore, it is imperative that safety, privacy, and confidentiality measures and precautions are at the fore of mHealth application development for this population.

The girls and young women expressed preferences for mHealth functionality in the context of their desire for support as they navigate their risk for emotional distress while being under-resourced. The suggestion that health-related information be relayed through lived experience expert leaders underscores a willingness to increase knowledge and education when it is offered in a manner centered around their preferences and that resonates with their lived experience. Videos that highlight lived experience expert stories and also incorporate educational content might be more meaningful and digestible for youth using the mHealth tool. Providing a platform to ask trained medical professionals and service providers salient questions regarding their health and overall care may reduce existing barriers to seeking and engaging in health care treatment while increasing opportunities to receive accurate, safe, and time-sensitive information. Further, the request to ask anonymous questions may affirm prior literature related to youths' desire for non-judgmental and confidential care when seeking medical treatment.<sup>12,15</sup>

### **Limitations.**

Our study found that girls and young women perceive a mHealth tool for service navigation use as acceptable and feasible, but with several limitations. We reached saturation in the various themes identified; however, our sample size of 14 youth, all cisgender females, was relatively small and reflected experiences of youth who were connected to the justice and child welfare systems in one geographic and urban location. Our sample was also geographically homogeneous and, accordingly, there may be regional idiosyncrasies that relate to our sample's experience of CSE that affected the perceptions of feasibility and acceptability of mHealth. The sample also consisted of girls and young women connected to three specific partner agencies, which limited our sample to individuals accessing services through these specific entities that are known to provide comprehensive case management services.

Youth who are affected by CSE are a heterogeneous population that include males, lesbian/gay/bisexual/transgender/queer (LGBTQ) youth, and those who may not be systems-



involved. Factors and variants in social and identity expression may affect other youths' perceptions of the utility of a mHealth tool and, thus, findings may not be generalizable to the diversity of youth experiencing CSE. Our sampling bias was affected by our limited access to potential participants, and our use of purposive sampling limited our ability to invite other participants to the study. Future research studies on this topic should include a more heterogeneous sample with diverse experiences and gender identities. Future research can also explore the perspective of stakeholders (e.g., social workers, probation officers, advocates) and current patterns of technology use related to service delivery. Nevertheless, our study provides some of the first data on acceptability and feasibility of mHealth from the perspectives of girls and young women with CSE histories, an understudied population that has not been centered in the discussions of digital health.

## Conclusion.

In summary, our findings point to mHealth applications as a promising tool for youth affected by CSE who are systems-involved. The concept and approach were found to be both acceptable and feasible to the girls and young women, and they highlighted various ways in which mHealth applications would be beneficial in addressing some of their service gaps. The youths' acknowledgment that an mHealth tool could serve as an important digital assistant in navigating probationary demands is noteworthy and indicates the capacity for digital technologies to have practical impact on judicial outcomes. These findings underscore that justice-involved youth affected by CSE need to have the ability to access their probationary and service demand data in on-demand and digital format. Accessing salient information as needed, such as appointments and contact information, could mitigate recidivism risk into the juvenile justice system. Finally, given the high level of insight and specificity of preferences, the development and implementation of a potential mHealth application should include a community-engaged and participatory informatics<sup>50</sup> approach with an emphasis on centering the voices and perspectives of girls and young women affected by CSE.

## Appendix A.

### mHealth Focus Group Tool

1. What are your favorite apps to use and why?
2. What peer networks or online chatrooms (for example: KIK, FB, IG, Snapchat) do you use to stay connected and communicate with other youth?
3. Has your cell phone helped you stay in touch with anyone from your care team or any other treatment providers (for example: caseworkers, social workers, therapists, health care providers)? If so, in what ways?
4. In any given week, how often do you use technology to communicate with anyone on your care team? Specifically, who are you engaging with (for example: advocate, probation officer, therapist, etc.)?



5. If there was an app or text-message system where you could receive information from your care team (for example: probation, advocates, attorney, etc.) to keep you on track with services, would you want to receive messages on your phone?
6. What types of messaging would be most helpful? Why?
7. What types of messaging would be least helpful? Why?
8. Would a game function on the app be interesting?
9. If you could design an app to help youth, what would you put in it?
10. Do you think that technology can help keep youth organized with all appointments and stuff they have to do?
11. Would videos like snapchat or YouTube be appealing to youth to get health messages for youth designed by youth?
12. If there was a peer-to-peer network to stay healthy and safe, would you want to use that?
13. How do you think technology could youth keep on track with all their appointments?
14. Are there any other questions, comments, or concerns?

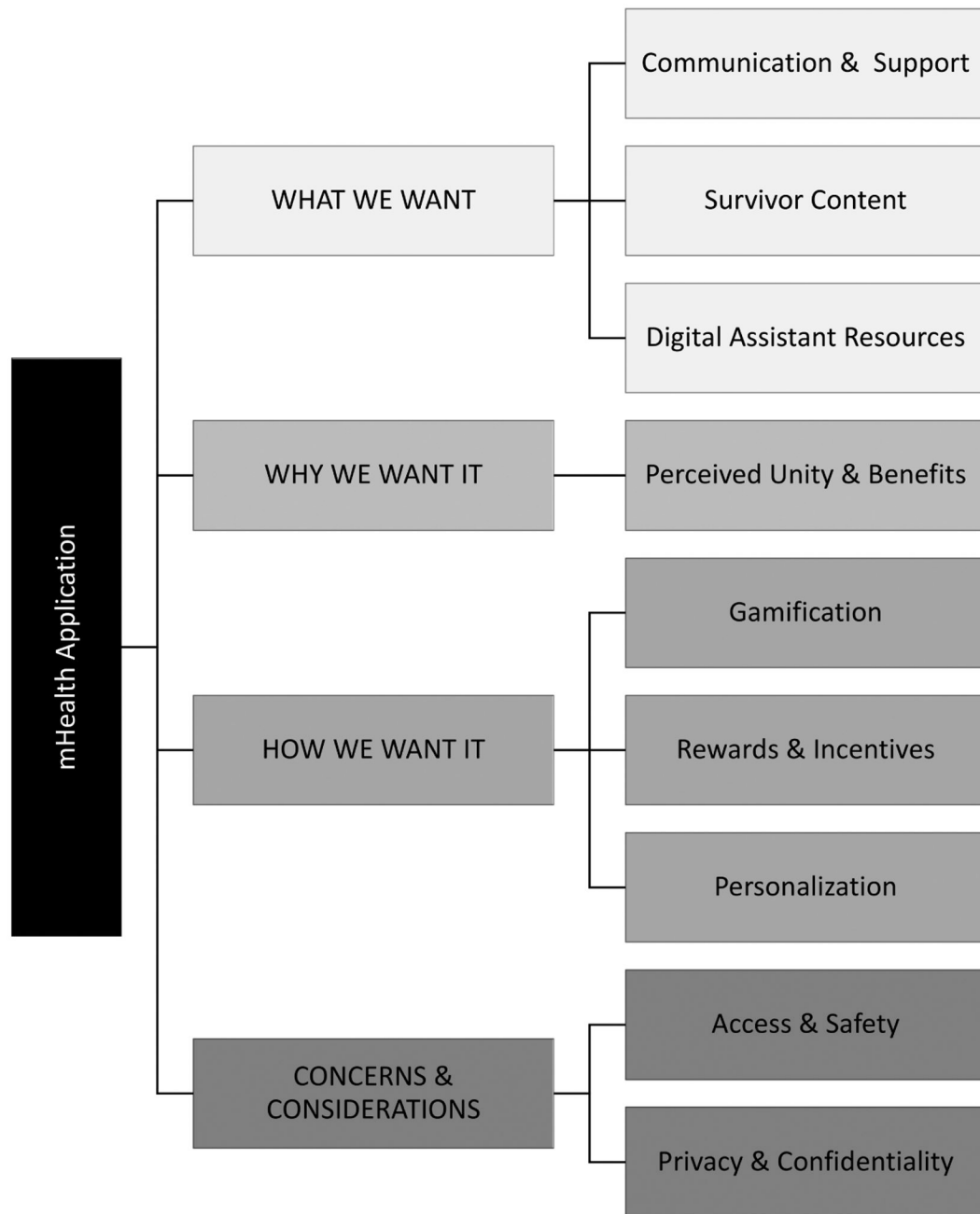
## References

1. Edinburgh L, Pape-Blabolil J, Harpin SB, et al. Assessing exploitation experiences of girls and boys seen at a child advocacy center. *Child Abuse Negl.* 2015 Aug;46:47–59. Epub 2015 May 15. 10.1016/j.chiabu.2015.04.016
2. Fedina L, Williamson C, Perdue T. Risk factors for domestic child sex trafficking in the United States. *J Interpers Violence.* 2019 7;34(13):2653–73. Epub 2016 Jul 27. 10.1177/0886260516662306 [PubMed: 27470203]
3. Greenbaum VJ, Dodd M, McCracken C. A short screening tool to identify victims of child sex trafficking in the health care setting. *Pediatr Emerg Care.* 2018 1;34(1):33–7. 10.1097/PEC.0000000000000602 [PubMed: 26599463]
4. Goldberg A, Moore J, Houck C, et al. Domestic minor sex trafficking patients: a retrospective analysis of medical presentation. *J Pediatr Adolesc Gynecol.* 2017 2;30(1):109–15. Epub 2016 Aug 26. 10.1016/j.jpjag.2016.08.010 [PubMed: 27575407]
5. Landers M, McGrath K, Johnson MH, et al. Baseline characteristics of dependent youth who have been commercially sexually exploited: Findings from a specialized treatment program. *J Child Sex Abus.* Aug-Sep 2017;26(6):692–709. Epub 2017 Jun 28. 10.1080/10538712.2017.1323814 [PubMed: 28656806]
6. Anderson VR, Kulig TC, Sullivan CJ. Agency records as a method for examining human trafficking. In: Deflem M, Silva DMD. (eds.) *Methods of criminology and criminal justice research (Sociology of crime, law and deviance, Vol. 24)*. Bingley, UK: Emerald Publishing Limited, 2019;165–78. 10.1108/S1521-613620190000024015
7. Andretta JR, Woodland MH, Watkins KM, et al. Towards the discreet identification of commercial sexual exploitation of children (CSEC) victims and individualized interventions: science to practice. *Psychol Public Policy Law.* 2016;22(3):260–70. 10.1037/law0000087
8. Bath E, Barnert ES, Godoy S, et al. Substance use, mental health, and child welfare profiles of juvenile justice-involved commercially sexually exploited youth. *J Child Adolesc Psychopharmacol.* 2020 7;30(6):389–97. Epub 2020 Mar 26. 10.1089/cap.2019.0057 [PubMed: 32213099]

9. Reid JA, Piquero AR. On the relationships between commercial sexual exploitation/prostitution, substance dependency, and delinquency in youthful offenders. *Child Maltreat*. 2014 Aug-Nov;19(3-4):247–60. Epub 2014 Jun 11. 10.1177/1077559514539752 [PubMed: 24920248]
10. Barnert ES, Godoy SM, Hammond I, et al. Pregnancy outcomes among girls impacted by commercial sexual exploitation. *Acad Pediatr*. 2020 May-Jun;20(4):455–9. Epub 2019 Dec 10. 10.1016/j.acap.2019.12.005 [PubMed: 31841662]
11. Kelly MA, Bath EP, Godoy SM, et al. Understanding commercially sexually exploited youths' facilitators and barriers toward contraceptive use: I didn't really have a choice. *J Pediatr Adolesc Gynecol*. 2019 6;32(3):316–24. Epub 2018 Dec 7. 10.1016/j.jpag.2018.11.011 [PubMed: 30529698]
12. Barnert E, Kelly M, Godoy S, et al. Understanding commercially sexually exploited young women's access to, utilization of, and engagement in health care: "Work around what I need." *Women's Health Issues*. Jul-Aug 2019;29(4):315–324. Epub 2019 Apr 5. 10.1016/j.whi.2019.02.002 [PubMed: 30962075]
13. Bath EP, Godoy SM, Morris TC, et al. A specialty court for U.S. youth impacted by commercially sexually exploitation. *Child Abuse Negl*. 2020 2;100:104041. Epub 2019 Jun 22. 10.1016/j.chiabu.2019.104041 [PubMed: 31239076]
14. Ijadi-Maghsoodi R, Bath E, Cook M, et al. Commercially sexually exploited youths' health care experiences, barriers, and recommendations: a qualitative analysis. *Child Abuse Negl*. 2018 2;76:334–41. Epub 2017 Nov 28. 10.1016/j.chiabu.2017.11.002 [PubMed: 29195171]
15. Lederer LJ, Wetzel CA. The health consequences of sex trafficking and their implications for identifying victims in healthcare facilities. *Ann Health Law*. Getzville, NY: HeinOnline, 2014. Available at: [https://heinonline.org/HOL/Page?handle=hein.journals/ano123&div=8&g\\_sent=1&casa\\_token=&collection=journals](https://heinonline.org/HOL/Page?handle=hein.journals/ano123&div=8&g_sent=1&casa_token=&collection=journals).
16. Powell C, Asbill M, Loius E, et al. Identifying gaps in human trafficking mental health service provision. *J Hum Traffick*. 2018;4(3):256–69. 10.1080/23322705.2017.1362936
17. Ravi A, Pfeiffer MR, Rosner Z, et al. Identifying health experiences of domestically sex-trafficked women in the USA: a qualitative study in Rikers Island jail. *J Urban Health*. 2017 6;94(3):408–16. 10.1007/s11524-016-0128-8 [PubMed: 28116589]
18. Varma S, Gillespie S, McCracken C, et al. Characteristics of child commercial sexual exploitation and sex trafficking victims presenting for medical care in the United States. *Child Abuse Negl*. 2015 6;44:98–105. Epub 2015 Apr 18. 10.1016/j.chiabu.2015.04.004 [PubMed: 25896617]
19. Godoy S, Abrams L, Barnert ES, et al. Fierce autonomy: how commercially sexually exploited young women perceive their health and exercise agency in healthcare decision-making. *Qual Health Res*. 2020;30(9):1326–37. 10.1177/1049732320913857 [PubMed: 32285750]
20. Bounds D, Julion WA, Delaney KR. Commercial sexual exploitation of children and state child welfare systems. *Policy Polit Nurs Pract*. 2015 Feb-May;16(1–2):17–26. Epub 2015 Apr 23. 10.1177/1527154415583124 [PubMed: 25908664]
21. Chelvakumar G, Ford N, Kapa HM, et al. Healthcare barriers and utilization among adolescents and young adults accessing services for homeless youth. *J Community Health*. 2017 6;42(3):437–43. 10.1007/s10900-016-0274-7 [PubMed: 27817043]
22. Barnert E, Kelly M, Godoy S, et al. Behavioral health treatment "Buy-in" among adolescent females with histories of commercial sexual exploitation. *Child Abuse Negl*. 2020 2;100:104042. Epub 2019 Jun 19. 10.1016/j.chiabu.2019.104042 [PubMed: 31227269]
23. Walker KE, Quraishi F. From theory to practice: creating victim-centered systems of care to address the needs of commercially sexually exploited youth. Washington, DC: First Focus, 2015. Available at: <https://firstfocus.org/wp-content/uploads/2015/03/From-Theory-to-Practice.pdf>.
24. Arnett C Virtual shackles: Electronic surveillance and the adultification of juvenile courts. *Journal of Criminal Law and Criminology*. 2018;108(3):399–454.
25. Kumar S, Nilsen W, Pavel M, et al. Mobile health: revolutionizing healthcare through transdisciplinary research. *Computer*. 2013 1;46(1):28–35. 10.1109/MC.2012.392
26. Fedele DA, Cushing CC, Fritz A, et al. Mobile health interventions for improving health outcomes in youth: a meta-analysis. *JAMA Pediatr*. 2017 5 1;171(5): 461–9. 10.1001/jamapediatrics.2017.0042 [PubMed: 28319239]

27. Akter S, Ray P. mHealth—an ultimate platform to serve the unserved. *Yearb Med Inform.* 2010;94–100. 10.1055/s-0038-1638697 [PubMed: 20938579]
28. Cordova D, Muñoz-Velázquez J, Mendoza Lua F, et al. Pilot study of a multilevel mobile health app for substance use, sexual risk behaviors, and testing for sexually transmitted infections and HIV among youth: randomized controlled trial. *JMIR Mhealth Uhealth.* 2020 3 17;8(3):e16251. 10.2196/16251 [PubMed: 32181747]
29. Cornelius S, Kath W, Motter A. Realistic control of network dynamics. *Nat Commun.* 2013;4:1942. 10.1038/ncomms2939 [PubMed: 23803966]
30. Klasnja P, Pratt W. Healthcare in the pocket: mapping the space of mobile-phone health interventions. *J Biomed Inform.* 2012 2;45(1):184–98. Epub 2011 Sep 9. 10.1016/j.jbi.2011.08.017 [PubMed: 21925288]
31. Jennings L, Lee N, Shore D, et al. J. US minority homeless youth's access to and use of mobile phones: Implications for mHealth intervention design. *J Health Commun.* 2016 7;21(7):725–33. Epub 2016 May 27. 10.1080/10810730.2015.1103331 [PubMed: 27232544]
32. Loescher LJ, Rains SA, Kramer, et al. A systematic review of interventions to enhance healthy lifestyle behaviors in adolescents delivered via mobile phone text messaging. *Am J Health Promot.* 2018 5;32(4):865–79. Epub 2016 Dec 6. 10.1177/0890117116675785 [PubMed: 27923885]
33. Widman L, Nesi J, Kamke K, et al. Technology-based interventions to reduce sexually transmitted infections and unintended pregnancy among youth. *J Adolesc Health.* 2018 6;62(6):651–60. 10.1016/j.jadohealth.2018.02.007 [PubMed: 29784112]
34. Ybarra ML, Prescott T, Mustanski B, et al. Feasibility, acceptability, and process indicators for Guy2Guy, an mHealth HIV prevention program for sexual minority adolescent boys. *J Adolesc Health.* 2019 9;65(3):417–22. Epub 2019 Jul 2. 10.1016/j.jadohealth.2019.04.025 [PubMed: 31277991]
35. Lenhart A. Teens, social media & technology overview. Washington, DC: Pew Research Center, 2015. Available at: <https://www.pewresearch.org/internet/2015/04/09/teens-social-media-technology-2015>.
36. Batastini AB. Improving rehabilitative efforts for juvenile offenders through the use of telemental healthcare. *J Child Adolesc Psychopharmacol.* 2016 4;26(3):273–7. Epub 2015 Aug 19. 10.1089/cap.2015.0011 [PubMed: 26288198]
37. Denby RW, Gomez E, Alford KA. Promoting well-being through relationship building: The role of smartphone technology in foster care. *J Technol Hum Serv.* 2016;34(2):183–208. 10.1080/15228835.2016.1168761
38. VonHoltz LAH, Frasso R, Golinkoff JM, et al. Internet and social media access among youth experiencing homelessness: mixed-methods study. *J Med Internet Res.* 2018 5 22;20(5):e184. 10.2196/jmir.9306 [PubMed: 29789281]
39. Park E, Kwon M. Health-related internet use by children and adolescents: systematic review. *J Med Internet Res.* 2018 4 3;20(4):e120. 10.2196/jmir.7731 [PubMed: 29615385]
40. Bath E, Tolou-Shams M, Farabee D. Mobile health (mHealth): building the case for adapting emerging technologies for justice-involved youth. *J Am Acad Child Adolesc Psychiatry.* 2018 12;57(12):903–5. 10.1016/j.jaac.2018.08.012 [PubMed: 30522732]
41. Tolou-Shams M, Yonek J, Galbraith K, et al. Text messaging to enhance behavioral health treatment engagement among justice-involved youth: qualitative and user testing study. *JMIR Mhealth Uhealth.* 2019 4 5;7(4):e10904. 10.2196/10904 [PubMed: 30950808]
42. Bakker D, Kazantzis N, Rickwood D, et al. Mental health smartphone apps: review and evidence-based recommendations for future developments. *JMIR Ment Health.* 2016 3 1;3(1):e7. 10.2196/mental.4984 [PubMed: 26932350]
43. Gulliver A, Griffiths KM, Christensen H. Perceived barriers and facilitators to mental health help-seeking in young people: a systematic review. *BMC Psychiatry.* 2010 12 30;10:113. 10.1186/1471-244X-10-113 [PubMed: 21192795]
44. Charmaz K *Constructing grounded theory: A practical guide through qualitative analysis.* 2nd ed. Thousand Oaks, CA: Sage Publications Inc, 2014.
45. Israel BA, Eng E, Schulz AJ, et al. *Methods in community-based participatory research for health.* San Francisco, CA: Jossey-Bass, 2005.

46. Morse JM. Qualitative methods: the state of the art. *Qual Health Res.* 1999;9(3):393–406. 10.1177/104973299129121938
47. Charmaz K *Constructing grounded theory: A practical guide through qualitative analysis.* Thousand Oaks, CA: Sage, 2006.
48. Charmaz K *Grounded theory: objectivist and constructivist methods.* In: Denzin NK, Lincoln Y. (eds.) *Handbook of qualitative research* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc, 2000;509–35.
49. Arevian AC, O’Hora J, Jones F, et al. Participatory technology development to enhance community resilience. *Ethn Dis.* 2018 9 6;28(Suppl 2):493–502. 10.18865/ed.28.S2.493 [PubMed: 30202203]



**Figure 1.** Overarching themes on the acceptability and feasibility of a mHealth application for girls and young women with CSE history: what we want, why we want it, and how we want it.

**Table 1.**

## DEMOGRAPHIC CHARACTERISTICS (N = 14)

Characteristic	no. %
Gender	
Female	14 (100)
Male	—
Transgender or non-binary	—
Age (years)	
Mean $\pm$ SD	17.5 (1.59)
Race <sup>a</sup>	
American Indian	1 (7)
Black	11 (79)
White	3 (21)
Other	—
Ethnicity	
Hispanic or Latina	1 (7)
Non-Hispanic	13 (93)
Language(s) Spoken	
English Only	12 (86)
Primarily English, Some Spanish	2 (14)
Last Grade Completed	
9	2 (14)
10	—
11	6 (43)
12	6 (43)
Experienced homelessness in prior 3 months	
Yes	9 (64)
No	5 (36)
Housing type in the prior 3 months	
Own home	2 (14)
A parent's home	3 (21)
Family member's home	2 (14)
Home of a friend	2 (14)
Foster or DCFS home	4 (29)
Streets	1 (7)
Other	4 (29)

Note:

<sup>a</sup>Participants may have selected more than one race.