

ScholarWorks@GSU

Provider Attitudes Toward Mobile Health App Technology to Augment Child Maltreatment Prevention Service Delivery: An Exploration of The Integration of JoyPop™ With SafeCare®

Authors	O'Hara, Kathryn
Citation	O'Hara, Kathryn. "Provider Attitudes Toward Mobile Health App Technology to Augment Child Maltreatment Prevention Service Delivery: An Exploration of The Integration of JoyPop™ With SafeCare®." Thesis, Georgia State University, 2022. https://doi.org/10.57709/28782633
DOI	https://doi.org/10.57709/28782633
Download date	2026-05-08 12:53:31
Link to Item	https://hdl.handle.net/20.500.14694/9803

ABSTRACT

PROVIDER ATTITUDES TOWARD MOBILE HEALTH APP TECHNOLOGY TO AUGMENT CHILD MALTREATMENT PREVENTION SERVICE DELIVERY: AN EXPLORATION OF THE INTEGRATION OF JOYPOP™ WITH SAFECARE®

By

KATHRYN THERESA O'HARA

APRIL 19, 2022

Emerging data indicates an exacerbated risk for child maltreatment (CM) during the COVID-19 pandemic. Accordingly, considering approaches to augment evidence-based CM prevention programs that are easily disseminable, and have the potential to enhance parent engagement, retention, and skill uptake, this study assesses the feasibility of augmenting SafeCare, an evidence-based program for the prevention of child physical abuse and neglect, with a mobile health application, JoyPop.

JoyPop™ is a mobile health app designed to assist in emotion regulation among users. Emotional regulation can be an important augmentation to CM prevention programs to enhance the overall emotional climate of the families involved.

168 SafeCare® providers complete an online survey assessing attitudes towards technology, especially mobile health apps, and its use in practice and service delivery. A subsample of the SafeCare® providers (N=12) were invited to complete a week-long trial of, JoyPop™ and a follow up qualitative interview.

The majority of providers believed that mobile health apps could improve client outcomes (n=108, 72.2%) and that these apps may promote good intervention practice (n=106, 72.6%). Providers who were interviewed indicated minimal use of mobile health apps in practice with SafeCare® but noted the ease of accessibility to information and support as a major benefit. When asked specifically about JoyPop™, providers identified strengths within the apps' features, especially in regard to the deep breathing and journaling, but noted a need for more advanced content related to programmatic target skills to encourage effective and meaningful use in practice.

SafeCare® providers show a willingness to adapt to technological augmentations relevant to the delivery of CM prevention services. For effective uptake, agencies should offer ample technological support to both providers and clients, and the mobile app technology should be relevant and program specific. These findings encourage further exploration of currently available mobile health apps as a method of supplementing evidence-based home-visiting parenting program delivery.

PROVIDER ATTITUDES TOWARD MOBILE HEALTH APP TECHNOLOGY TO
AUGMENT CHILD MALTREATMENT PREVENTION SERVICE DELIVERY: AN
EXPLORATION OF THE INTEGRATION OF JOYPOP™ WITH SAFECARE®

by

KATHRYN T. O'HARA

B.S., PENNSYLVANIA STATE UNIVERSITY

A Thesis Submitted to the Graduate Faculty
of Georgia State University in Partial Fulfillment
of the
Requirements for the Degree

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA
30303

APPROVAL PAGE

PROVIDER ATTITUDES TOWARD MOBILE HEALTH APP TECHNOLOGY TO
AUGMENT CHILD MALTREATMENT PREVENTION SERVICE DELIVERY: AN
EXPLORATION OF THE INTEGRATION OF JOYPOP™ WITH SAFECARE®

by

KATHRYN T. O'HARA

Approved:

Shannon Self-Brown, PhD
Committee Chair

Ashwini Tiwari, PhD
Committee Member

April 19, 2022
Date

Acknowledgments

I would like to express my gratitude to my primary supervisor and mentor, Dr. Shannon Self-Brown, as well as my additional mentors, Dr. Ashwini Tiwari and Dr. Kate Guastaferro, for your guidance and support. I would also like to thank my friends and family for your continued encouragement and enthusiasm as I explore my curiosities.

Author's Statement Page

In presenting this thesis as a partial fulfillment of the requirements for an advanced degree from Georgia State University, I agree that the Library of the University shall make it available for inspection and circulation in accordance with its regulations governing materials of this type. I agree that permission to quote from, to copy from, or to publish this thesis may be granted by the author or, in his/her absence, by the professor under whose direction it was written, or in his/her absence, by the Associate Dean, School of Public Health. Such quoting, copying, or publishing must be solely for scholarly purposes and will not involve potential financial gain. It is understood that any copying from or publication of this dissertation which involves potential financial gain will not be allowed without written permission of the author.

Kathryn O'Hara

Signature of Author

Table of Contents

ACKNOWLEDGEMENTS	4
LIST OF TABLES	7
INTRODUCTION	8
CHILD MALTREATMENT PREVENTION INTERVENTIONS.....	8
DELIVERY OF CHILD MALTREATMENT INTERVENTION	10
AUGMENTING CHILD MALTREATMENT INTERVENTION DELIVERY WITH MOBILE APPS	11
PURPOSE OF CURRENT STUDY.....	13
METHODS	13
PARTICIPANTS	13
PROCEDURES	14
MEASURES	15
ANALYTIC PLAN	17
RESULTS	18
AIM 1	18
AIM 2	18
DISCUSSION AND CONCLUSION.....	21
AIM 1	21
AIM 2	22
LIMITATIONS	22
CONCLUSIONS AND FUTURE DIRECTIONS	24
REFERENCES	26
APPENDICES	31

List of Tables

Table 2.1 Demographic Characteristics of Participants

Child maltreatment (CM), which includes physical, emotional, and sexual abuse, as well as neglect, remains a national public health issue in the United States (U.S. Department of Health and Human Services [DHHS], 2020). According to the most recently available CM data, in 2020, there were over 618,000 substantiated cases of CM and approximately 1750 related child deaths (DHHS, 2020). Among surviving victims, CM is linked to short- and long-term adverse health and behavioral consequences, including emotion dysregulation, poor cognitive functioning, psychopathology, substance use, violence perpetration, and risky sexual practices (Anda et al., 2006; Cicchetti et al., 2010; Kim & Cicchetti, 2010; Pears et al., 2008). The primary perpetrators of CM are at-risk parents, who may also be victims of trauma (DHHS, 2020; Bartlett et al., 2017). At-risk parents who were exposed to trauma may experience deficits in executive functioning and emotion regulation, which may exacerbate negative parenting behaviors (Crouch et al., 2019; Whitaker et al., 2008; Hiraoka et al., 2016; Sidebotham & Golding, 2001; Stith et al., 2009).

Child Maltreatment Prevention Interventions

Fortunately, evidence-based interventions exist that can prevent CM on primary, secondary, and tertiary intervention levels (Chen & Chan, 2016; Temcheff et al., 2018). However, dissemination is shown to vary across population type, delivery method, program dosages, and parental involvement (Chen & Chan, 2016). Current programs target universal, selected, and indicated populations with individual, group, and combined program delivery options for both mothers and fathers or, often, only mothers with sessions ranging from single-timepoint to more than 12 sessions over the course of weeks or months (Chen & Chan, 2016; Temcheff et al., 2018). These evidence-based programs have shown a reduction in child maltreatment perpetration, a decrease in risk factors for maltreatment, and an increase in

protective factors (Chen & Chan, 2016; Silvosky et al., 2011; Chaffin et al., 2021; Self-Brown et al., 2013; Self-Brown et al., 2018).

Common components are shared among evidence-based parenting programs (Temcheff et al., 2018). These programs include an assortment of topics like child-rearing practices, including discipline and supervision; the parent-child relationship; communication; stress management; child safety and child development; and resources (Shaffer et al., 2001). There are also shared objectives among many programs, including improvement of parenting skills, improvement of the parent-child relationship, increased child safety, and reduced risk of maltreatment (Temcheff et al., 2018).

SafeCare is an evidence-based home visiting program developed to target parent behaviors that may lead to child maltreatment for families with a child under the age of five (Self-Brown et al., 2014). The SafeCare parenting program has been found to be effective at reducing several maltreatment-related outcomes, such as parenting behaviors and parenting stress (Whitaker et al. 2020), child maltreatment recidivism (Chaffin et al. 2012), and out-of-home placements (Beachy-Quick et al. 2018). SafeCare providers serve more than 6000 families per year, providing parent training and intervention services that reduce and prevent the maltreatment of young children in 29 US states and eight countries.

The SafeCare program includes three modules: Child Health, Home Safety, and Parent-Child or Parent-Infant Interaction; delivered over 18 sessions by a trained SafeCare provider. Each module involves a baseline assessment of the targeted behavioral skills, in-home training sessions with a trained provider targeting specific parental skills and behaviors, and a postintervention assessment of knowledge and skill retention. The Child Health module seeks to educate caregivers on the symptoms of illness and injury and appropriate action steps, thus

training focuses on caregiver psychoeducation of common childhood illnesses, injuries, and preventative health care, and modeled practice of decision-making steps in response to hypothetical child health scenarios. The Home Safety module seeks to educate caregivers on home hazards that pose a danger to children and supervision of children around unsafe environments, thus caregiver training focuses on identifying hazards in the home and the active removal of hazards to reduce the risk of unintentional injuries. The Parent-Child or Parent-Infant Interaction module seeks to build a positive parent-child relationship, and caregiver training includes psychoeducation followed by modeling of positive interactions which are then implemented in real-life scenarios with caregiver and child.

Delivery of Child Maltreatment Interventions

The delivery of scientifically supported interventions that target CM perpetration is critically important, as emerging data suggest that the COVID-19 pandemic directly and indirectly exacerbates CM risk, both by increased risks like parental stress and violence (Campbell et al., 2020, Peterman et al., 2020; van Gelder et al., 2020; Bullinger et al., 2021b) as well as decreased protections like exposure to mandated reporters (Baron et al., 2020; Whaling et al., 2020; DHHS, 2020; Bullinger et al. 2021a; Bullinger et al., 2021b). Prior to the Covid-19 pandemic, parenting programs aimed at CM prevention, like SafeCare, were often delivered in-home by providers to parents and caregivers. For SafeCare specifically, this format of program delivery involved a trained provider visiting the client's home on a weekly basis to provide the established module curricula in-person to caregivers within their home (Self-Brown et al., 2014).

In response to national guidelines enforcing preventative distancing measures, SafeCare was rapidly adapted from standard in-person delivery practices in the home setting to a virtual delivery approach that included both entirely remote and hybrid delivery options (Self-Brown et

al., 2021). Remote options focused mainly on virtual delivery via video platforms like Zoom and FaceTime (Self-Brown et al., 2021). The goal of the virtual delivery option was to prevent disruptions in service provision for vulnerable populations during the COVID-19 pandemic (Stewart & Wallace, 2020; National SafeCare Training and Research Center, 2020).

Limited, but promising evidence explored prior to the pandemic suggests that teletherapy for at-risk children and parents is an effective alternative to in-person sessions (de Arellano et al., 2014; Traube et al., 2020) and that parents accept and may even prefer program formats involving television, social media, and online programs (Metzler et al., 2012; Fogarty et al., 2021; Love et al., 2013). However, despite general acceptability, there are concerns with telehealth services as they exist currently, namely in the realm of participant engagement, lack of direct access to assess child safety, and technology malfunctions or user difficulty (Fogarty et al., 2021).

Augmenting Child Maltreatment Intervention Delivery with Mobile Apps

John Lutzker, developer of SafeCare, suggested the field of parental support programs avoid complacency and aim for innovation as the needs of the field change and grow (Lutzker et al., 1983). Based on the current research and in the spirit of Lutzker's commitment to innovation, it is useful to consider additional supports or augmentations to the current delivery options (virtual and in-person) that can encourage and bolster positive behavioral changes and outcomes. Considering what we know on how technology-based platforms can augment tele-delivery of interventions (de Arellano et al., 2014; Traube et al., 2020), and emerging data suggesting the acceptability of mobile health apps as a supplement for mental health and trauma treatment (Huckvale et al., 2020; Rosen et al., 2020; Sherr et al., 2021; Wozney et al., 2018), it is important

to consider how mobile apps can support interventions targeting reductions in CM perpetration risk, a niche topic that has not been studied to date.

The addition of JoyPop™, a mobile app designed to target emotion regulation and higher-order cognitive functions, to CM interventions like SafeCare, an evidence-based parenting education program disseminated across 29 states and eight countries, may bolster outcomes for these families by offering effective coping skills for chronic stressors. If findings support mobile app usage and interest in JoyPop™, results can be leveraged to examine whether JoyPop™ increases client engagement and bolsters outcomes to prevent future perpetration and long-term adverse outcomes.

The JoyPop™ app offers multiple interactive features to deliver trauma-informed education and skill building to improve: (1) emotional awareness through a mood ratings feature (Hilt et al., 2011); (2) emotion regulation and physiological arousal via deep breathing exercises (Arch & Craske, 2006); (3) self-regulation, compassion and cognitive organization via expressive writing (Pennebaker & Chung, 2007); and (4) self-focus via a visuospatial flow game similar to Tetris (Rankin et al., 2019; Holmes et al., 2009; James et al., 2016). These four constructs have been identified as moderators to maltreatment by reducing parental stress (Chen & Chan, 2016; Skowron & Funderburk, 2022; Belsky, 1993; Lowell & Renk, 2017), especially during the Covid-19 pandemic (Wu & Zu, 2020). The app also includes a “Circle of Trust” feature allowing users to access their social support network which may include professionals, families, friends and resources; social support is another critical construct in reducing maltreatment perpetration (Bishop & Leadbeater, 1999; Stith et al., 2009). JoyPop™ represents an example of mobile technology that could be used as a supplemental tool to evidence-based CM interventions targeting behavioral change. However, successful integration of this

technology into service delivery requires user acceptance, feasibility of integration into intervention delivery, and assurance that augmentations will confer additional benefits to participants.

Purpose of Current Study

This proof-of-concept study is the first to explore the use and acceptance of a mobile app augmentation to bolster an evidence-based intervention servicing families impacted by CM. The goal of this study is to explore the feasibility of utilizing mobile health application technology to augment evidence-based CM interventions, with the ultimate goal of understanding potential positive effects on client engagement and outcomes with the following aims:

Aim 1: Examine active SafeCare providers' opinions on the use of technology in treatment delivery. Objective: Completion of an online, structured survey with 125 SafeCare providers to examine experiences with augmenting interventions using technology prior to and during COVID-19, as well as attitudes towards and interests in augmenting interventions with mobile apps.

Aim 2: Analyze active SafeCare provider and trainer opinions on the mobile health application, JoyPop™, and its compatibility with SafeCare service delivery. Objective: Recruit and complete qualitative interviews among 10 SafeCare providers or trainers who will test JoyPop™ features for use with SafeCare.

Methods

Participants

Aim 1. Between September 2020 and December 2020, study personnel contacted approximately 1,000 active SafeCare providers by email to participate in this phase of the study. Eligible individuals included active SafeCare Providers with a working email address in the National

SafeCare Training and Research Center (NSTRC) Portal. The Qualtrics survey included in the initial contact email was to be closed after 125 providers completed it due to funding limits; however, not all providers completed the survey after giving consent. The total sample includes 168 active SafeCare providers as this sample includes providers who submitted completed or partially completed surveys. Sample characteristics are described in Table 1.

Aim 2. Participants who completed the phase 1 survey were able to indicate interest in continuing participation in phase 2 of the study. The first 15 participants to indicate interest were contacted for consent. A total of five active SafeCare providers consented to participate in phase 2 of the study.

In addition to SafeCare providers, SafeCare trainers were contacted by email to participate in phase 2 of the study. A total of seven SafeCare trainers consented to participate. Together, a total of 12 active SafeCare providers and trainers participated in phase 2 of the study.

Procedure

Aim 1. Study personnel contacted eligible SafeCare providers by email using the NSTRC portal. Participants indicated consent at the start of the Qualtrics survey using the digital consent form approved by the Institutional Review Board that explained the present study and offered the opportunity for a \$20 Amazon gift card upon survey completion. After submitting consent, participants completed the survey. Survey items assessed attitudes towards technology, especially mobile health applications, and its use in practice. The survey was anonymous and collected no identifying information. Upon completing the survey, participants were directed to an outside page to provide contact information for compensation. On this page, eligible participants could indicate interest in continuing participation to phase 2.

Aim 2. Study personnel contacted participating providers and trainers by email to establish a meeting time to discuss study information and consent. Upon completion of this meeting, participants indicated consent using a Qualtrics link to an online consent form approved by the Institutional Review Board that explained the present study aim and offered the opportunity for a \$100 Amazon gift card upon study completion. Participants received a follow-up email with information about the mobile health application, JoyPop™, as well as a personal download code to waive the application cost. Participants provided proof of download in the form of a screenshot; receipt of this proof was considered day one of app use. At approximately day four of app use, study personnel contacted participants as a courtesy reminder to continue using the app, JoyPop™, for the remainder of the week and to establish a meeting time for a qualitative interview at the end of the week-long app use period.

Following the one-week app use period, participants completed a one-hour qualitative interview assessing provider and trainer attitudes towards technology use in practice, specifically the integration of JoyPop™ with SafeCare, via Zoom. Participants also completed an online demographic survey via Qualtrics. Both the interview and the demographic survey collected no identifying information. Any identifying information revealed in the qualitative interview was redacted.

Measures

Participant characteristics. Participants in phase 1 of the study self-reported their age, gender identity, race, ethnicity, the length of time trained in SafeCare, the length of time with their current agency, their personal experience level with technology in program delivery (Table 1), as well as the state in which they deliver SafeCare and the type of community they provide for, the

current status of program delivery (remote, hybrid, or in-person), and the available forms of technology at their agency.

Aim 1. Participants completed an online survey disseminated via Qualtrics to assess technology use in practice (23 questions, Matrix 1; Appendix A) and attitudes towards mobile health applications (41 questions, Matrix 2; Appendix A). Items were presented with a five-point Likert scale ranging from "Totally Disagree" to "Totally Agree." The items can be categorized in the following domains:

Perceived ease of use. These items aimed to assess provider attitudes towards the ease or difficulty of using technology and mobile health apps in practice. Example items include, "Using technology to enhance my practice is/would be easy," and, "I think that I could easily learn how to use a mobile health app with my clients."

Perceived usefulness. These items aimed to assess provider attitudes towards the benefits or drawbacks of using technology and mobile health apps in practice. Example items include, "Adding technology is useful in modernizing service delivery with clients," and "In general, I think a mobile health app could improve client outcomes."

Attitudes of the user towards the new technology. These items aimed to assess providers' confidence and affect towards using technology and mobile health app in practice. Examples of items include, "I feel comfortable with using technology with my clients to enhance my sessions," and "I think it is a good idea to use a mobile health app to supplement services during live sessions."

Intention to use. These items aimed to assess providers' likelihood to utilize technology and mobile health apps in practice. Examples of items include, "I would like to use technology to

enhance my service delivery with clients," and "I would incorporate a mobile health app if it becomes available in my practice as an optional feature."

Aim 2. Participants completed a one-hour qualitative interview via Zoom. The questions in this interview utilized an open-ended structure to allow for provider feedback. The questions can be categorized in the following domains:

Provider role and experiences. These items aimed to broadly understand the provider's role within their agency and their prior experiences with SafeCare clients.

General experience with mobile health app technology. These items aimed to explore the provider's thoughts on mobile health apps in general, including prior experiences with apps prior to using JoyPop™.

Evaluating the JoyPop™ app. These items aimed to explore the provider's personal experience utilizing the features of JoyPop™ during the week-long trial period. An example item is "Can you describe the features of JoyPop™ and what you think their purposes are?"

Using JoyPop™ within services. These items aimed to explore the provider's attitudes towards integrating JoyPop™ with SafeCare or SafeCare clients. An example item is "In your experience to date with your program, what are your thoughts on integrating JoyPop™ into the program?"

Analytic Plan

Aim 1. Data was managed using Qualtrics. To analyze provider attitudes towards technology and mobile health app use, each item's mean score and standard deviation were calculated; reverse coded items are indicated.

Aim 2. Due to the qualitative nature of the data, each interview was summarized for its main points; four interviews (25%) were sent to corresponding participants for approval. The

collective interviews were then reviewed for recurring points and outstanding comments to provide a narrative based on participant experience.

Results

Aim 1: Examine Active SafeCare® Providers' Opinions on the Use of Technology in Treatment Delivery

The majority of providers (n=109, 67.0%) indicated they would like to use technology to enhance service delivery with clients. Further, providers expressed favorable opinions on technology if their organization provided equipment (n=108, 60.2%); if their organization provided technical assistance (n=106, 80.2%); and if the mobile health application was free for users (n=105, 86.7%).

Providers agreed that using technology would be easy (n=112, 70.5%). Providers also agreed that technology is useful in modernizing service delivery for clients (n=109, 84.4%) and that technology adds a useful element to service delivery (n=108, 74.1%). In general, providers indicated that they feel comfortable using technology with their clients as a way to enhance sessions (n=112, 86.6%), and the majority of providers believe it is a good idea to use technology (n=105, 68.6%).

In regard to mobile health applications specifically, providers expressed that they could easily learn to use a mobile health application with their clients (n=107, 80.4%). Providers also agreed that mobile health applications could improve client outcomes (n=108, 72.2%) and may promote good intervention practice (n=106, 72.6%).

Aim 2: Analyze Active SafeCare® Provider and Trainer Opinions on the Mobile Health Application, JoyPop™, and Its Compatibility with SafeCare® Service Delivery

SafeCare® providers and trainers (hereafter: “participants”) who participated in a weeklong experience with JoyPop and a follow up interview reported varying opinions of mobile health applications in general. Participants noted they had little to no experience using mobile health applications in SafeCare® delivery. If any technology had been previously used, it was limited to communication-based apps with clients, like Zoom and Skype, or pre-recorded informational videos from YouTube or similar platforms. Participants viewed “the access of being able to do things right in your own home and not have to go somewhere” as a major benefit. However, five of the 12 participants worried that mobile health applications could diminish the personal connection between client and provider. These participants explained that mobile health apps are “not so personable” and worried about “the limit of no personal interaction” because technology does not involve a provider directly in the home. Participants also worried that clients may not interact with the application as it is intended, that clients may not commit to using the application appropriately, or that clients may view the application as “another overwhelming task for the day.” Still the general feeling toward mobile health app usage with SafeCare delivery was positive, and one participant summed this up by stating, “anything that we can use to help them (clients) is an add.”

Specific to JoyPop™, participants personally connected with some features of the app more than others, and this was largely due to personal preference for activities and therapeutic components. Participants who liked the breathing feature of the app reported commonly encouraging breathing with clients, even though this is not part of the SafeCare curriculum; this was also true for participants who liked and utilized journaling, drawing, or cognitive distractions like the visuospatial flow game in the app. One participant described these features as a positive addition to SafeCare program delivery “to reduce whatever's causing you stress or

behavior problems or mental health, to take note of it and know that there's support out there to help you right at your fingertip.” Another participant noted the benefit of the journal feature specifically, explaining, “your mind is so super focused on something and giving you a prompt to write about something different can help take your mind off of it as well, so that one (the journal feature) is helpful.”

Overall, the JoyPop™ app was considered user friendly. Eleven of the 12 participants noted the app is “easy to navigate” and “not difficult to learn.” However, 75% of participants noted specific confusion surrounding the Mood Rating feature. Participants who self-identified as being less tech savvy suggested more direction on features, but also recognized their confusion may be a general lack of technology competence. Five of the 12 participants suggested the application may be more compatible with younger generations as they tend to have a better understanding of technology.

Participants were willing to integrate JoyPop™ with SafeCare® delivery but suggested some additions to the app to make it more applicable to the program, such as “some parenting tips ... that they (clients) could access at their fingertips.” SafeCare® clients receive injury prevention information in the safety module and nutrition information in the health module; participants suggested the inclusion of this information within the application as an accessible feature for users. Participants also suggested a communication feature to allow for providers to assign homework within the application and to allow clients to contact their provider via the application system. Three participants also suggested a notification feature to encourage consistent usage of the app, such as “a little prompt, like, ‘Hey, did you log into JoyPop today?’” Other common suggestions for edits or changes included an option to save and revisit mood ratings, journals, and artwork, especially as a discussion-point in-session; a more structured

approach to the art feature, potentially including paint-by-number or coloring pages; and a greater variety of activities available.

In general, participants indicated a willingness to use JoyPop with clients and believed clients would be receptive to the app, though many participants explained they would “have to encourage them (clients) and motivate them to use it.” When asked what features of the app would be most beneficial to clients, participants indicated a wide array, including the social supports, the breathing exercises, and, according to one participant, “the fact it is *there*.” Overall, having access to the features of JoyPop in a mobile health app was considered a benefit, and one participant summed this up by stating: “I definitely think it (JoyPop) would be beneficial for the providers as well as the clients who are participating in SafeCare.”

Discussion

The goal of this study was to explore the feasibility of utilizing mobile health application technology to augment the home-visiting program, SafeCare, with the specific aims of understanding potential positive effects on client engagement and outcomes, both with technology use in general and with the mobile health app, JoyPop, specifically. Overall, providers and trainers reiterated a willingness to utilize technology in general in SafeCare® delivery, but many changes should first be considered before supplementing delivery with JoyPop™ specifically.

Aim 1: Examine Active SafeCare® Providers’ Opinions on the Use of Technology in Treatment Delivery

This study adds to the growing body of research suggesting providers consider technology to be a potential enhancement for service delivery (de Arellano et al., 2014; Traube et al., 2020), and the option of receiving assistance from their providing agency in terms of

equipment and technology training increased favorable opinions of technology use. Agencies considering technology supplementation in service delivery should also consider the supports they are willing and able to offer to the providers to ease potential difficulties in uptake.

Aim 2: Analyze Active SafeCare® Provider and Trainer Opinions on the Mobile Health Application, JoyPop™, and Its Compatibility with SafeCare® Service Delivery

Participants who completed a week-long trial of JoyPop had favorable opinions of technology, and, specifically, mobile health applications, which is similar to previous findings assessing mobile health app usage with mental health services (Huckvale et al., 2020; Rosen et al., 2020; Sherr et al., 2021; Wozney et al., 2018). However, participants cited numerous changes to JoyPop to make the app more relevant to SafeCare delivery. Participants saw JoyPop in its current format as a potential supplemental tool for clients in need of increased self-care practices. In its current form, JoyPop offers emotion regulation practices for users; these skills are often suggested to SafeCare clients but are not directly part of the SafeCare curriculum. Because self-care is not written into the SafeCare curriculum, providers can reference the JoyPop app and its features to guide clients through the learning of these skills and the building of healthy habits.

Participants did not view JoyPop in its current format as a technological tool for full integration with the SafeCare curriculum. For JoyPop to be accepted for full integration with the curriculum, features specific to SafeCare curricula should be added, such as health and safety information, parent-child interaction models, and communication portals for clients and providers. In essence, this creates an application specific to SafeCare clients, rather than a general wellness application for a larger audience.

Study Limitations

While this was a proof of concept study, there were limitations to the methods and approach, which limit the generalizability of the current findings. The survey portions of this study were conducted in the fall of 2020, only six to eight months into the Covid-19 pandemic; provider attitudes towards technology, telehealth, and mobile health apps may have changed in the subsequent two years of mandatory or voluntary virtual delivery of SafeCare. Recent studies assessing provider attitudes towards technology and telehealth report similar positive findings (Fogarty et al., 2021; Huckvale et al., 2020; Rosen et al., 2020; Sherr et al., 2021; Wozney et al., 2018), but the current study is the only one of its kind that assesses attitudes towards mobile health app integration.

This study only reports data from SafeCare providers, but other CM prevention programs exist that may better align with JoyPop or other existing mobile health apps (Traube et al., 2020; Traube et al., 2021). SafeCare has a well-established curriculum of parent-education modules (Self-Brown et al., 2014) that may not lend to easy integration of a new mobile health app, but other programs may have the flexibility to feasibility implement supplemental technology while maintaining fidelity.

The JoyPop application was tested with SafeCare providers and trainers, and while these participants were asked to consider client opinions in their review of the app, there is no direct client input on JoyPop's acceptability and usability from a client perspective. However, other studies have indicated client-level willingness to utilize technology and mobile apps to supplement current programming (Metzler et al., 2012; Fogarty et al., 2021; Love et al., 2013).

The sample of SafeCare providers and trainers interviewed for Aim 2 of this study is small (n=12). Opinions of participants cannot be generalized to represent all providers across the nation and internationally. While the participants represented various states and providing

environments (Florida, Georgia, Iowa, Montana, North Carolina, Oklahoma, Ohio, South Carolina, Texas, and Washington), SafeCare is provided in 29 states and eight countries serving families in urban, suburban, and rural communities with varying access to technology and internet, and the opinions of just 12 providers cannot represent the population as a whole.

Conclusions and Future Directions

In conclusion, this proof-of-concept study opened the conversation about mobile health app integration with in-home parenting programs. Future studies may aim to stratify provider data according to age, years providing the program, or self-reported comfort with technology to better understand the impact user confidence has on opinions of mobile health apps. A larger study controlling for urban and rural environments, socioeconomic status of clients, and clients' access to internet may provide valuable information for the feasibility of mobile health app uptake on a grand scale.

Future studies should aim to conduct a trial period including clients as participants to gather feedback from clients as a direct source. To further bolster results, clients from various programs should be included to understand the acceptability and feasibility of mobile health app integration with an array of evidence-based home-visiting programs. A large-scale trial involving providers and clients from varying programs across the country, controlling for community environment, SES, internet access, and both client and provider familiarity with technology, may provide substantial information to assist in deciding which clients may benefit the most from the integration of mobile health apps with home-visiting programs.

Extensive research is needed to explore the feasibility and fidelity of mobile health app integration as well as the acceptability from clients. This proof-of-concept study is only the

beginning of a growing field of research dedicated to the optimization of parent program service delivery.

References

- Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C. H., Perry, B. D., ... & Giles, W. H. (2006). The enduring effects of abuse and related adverse experiences in childhood. *European archives of psychiatry and clinical neuroscience*, 256(3), 174-186.
- Arch, J. J., & Craske, M. G. (2006). Mechanisms of mindfulness: Emotion regulation following a focused breathing induction. *Behaviour research and therapy*, 44(12), 1849-1858.
- Baron, E. J., Goldstein, E. G., & Wallace, C. (2020). Suffering in silence: How COVID-19 school closures inhibit the reporting of child maltreatment. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3601399>.
- Bartlett, J. D., Kotake, C., Fauth, R., & Easterbrooks, M. A. (2017). Intergenerational transmission of child abuse and neglect: Do maltreatment type, perpetrator, and substantiation status matter?. *Child abuse & neglect*, 63, 84-94.
- Beachy-Quick, K., Lee, C., McConnell, L., Orsi, R., Timpe, Z., & Winokur, M. (2018). SafeCare Colorado program evaluation report 2014–2017. Retrieved November, 15, 2020.
- Belsky, J. (1993). Etiology of child maltreatment: A developmental-ecological analysis. *Psychological bulletin*, 114(3), 413.
- Bishop, S. J., & Leadbeater, B. J. (1999). Maternal social support patterns and child maltreatment: Comparison of maltreating and nonmaltreating mothers. *American Journal of Orthopsychiatry*, 69(2), 172-181.
- Bullinger, L. R., Boy, A., Feely, M., Messner, S., Raissian, K., Schneider, W., & Self-Brown, S. (2021a). Home, but left alone: Time at home and child abuse and neglect during COVID-19. *Journal of Family Issues*, 0192513X211048474.
- Bullinger, L. R., Boy, A., Messner, S., & Self-Brown, S. (2021b). Pediatric emergency department visits due to child abuse and neglect following COVID-19 public health emergency declaration in the Southeastern United States. *BMC pediatrics*, 21(1), 1-9.
- Campbell, A. M. (2020). An increasing risk of family violence during the Covid-19 pandemic: Strengthening community collaborations to save lives. *Forensic Science International: Reports*, 2(April), 100089. <https://doi.org/10.1016/j.fsir.2020.100089>.
- Chaffin, M., Hecht, D., Bard, D., Silovsky, J. F., & Beasley, W. H. (2012). A statewide trial of the SafeCare home-based services model with parents in Child Protective Services. *Pediatrics*, 129(3), 509-515.
- Chen, M., & Chan, K. L. (2016). Effects of parenting programs on child maltreatment prevention: A meta-analysis. *Trauma, Violence, & Abuse*, 17(1), 88-104.
- Cicchetti, D., Rogosch, F. A., Gunnar, M. R., & Toth, S. L. (2010). The differential impacts of early physical and sexual abuse and internalizing problems on daytime cortisol rhythm in school-aged children. *Child development*, 81(1), 252-269.
- Crouch, J. L., Davila, A. L., Holzman, J. B., Hiraoka, R., Rutledge, E., Bridgett, D. J., ... & Skowronski, J. J. (2021). Perceived executive functioning in parents at risk for child physical abuse. *Journal of interpersonal violence*, 36(17-18), 8874-8884.
- Damashek, A., Doughty, D., Ware, L., & Silovsky, J. (2011). Predictors of client engagement and attrition in home-based child maltreatment prevention services. *Child maltreatment*, 16(1), 9-20.
- de Arellano, M. A. R., Lyman, D. R., Jobe-Shields, L., George, P., Dougherty, R. H., Daniels, A. S., ... & Delphin-Rittmon, M. E. (2014). Trauma-focused cognitive-behavioral therapy for children and adolescents: Assessing the evidence. *Psychiatric services*, 65(5), 591-602.

- Ericsson, A. (2015). Ericsson mobility report: On the pulse of the networked society. *Ericsson, Sweden, Tech. Rep. EAB-14, 61078, 2327-4697*.
- Feely, M., Raissian, K., Schneider, W., & Bullinger, L. (2020). Practical steps to prevent child neglect in the COVID-19 pandemic. *APSAC Alert, 11(3)*, 1-4.
- Fogarty, A., Jones, A., Seymour, M., Savopoulos, P., Evans, K., O'Brien, J., ... & Giallo, R. (2021). The parenting skill development and education service: Telehealth support for families at risk of child maltreatment during the COVID-19 pandemic. *Child & Family Social Work*.
- Hilt, L. M., Hanson, J. L., & Pollak, S. D. (2011). *Emotional dysregulation. Encyclopedia of Adolescence, 3 (1), 160-169. doi: 10.1016. B978-0-12-373915-5-00112-1*.
- Hiraoka, R., Crouch, J. L., Reo, G., Wagner, M. F., Milner, J. S., & Skowronski, J. J. (2016). Borderline personality features and emotion regulation deficits are associated with child physical abuse potential. *Child abuse & neglect, 52*, 177-184.
- Huckvale, K., Nicholas, J., Torous, J., & Larsen, M. E. (2020). Smartphone apps for the treatment of mental health conditions: status and considerations. *Current opinion in psychology, 36*, 65-70.
- Holmes, E. A., James, E. L., Coode-Bate, T., & Deepro, C. (2009). Can playing the computer game "Tetris" reduce the build-up of flashbacks for trauma? A proposal from cognitive science. *PloS one, 4(1)*, e4153.
- James, E. L., Lau-Zhu, A., Tickle, H., Horsch, A., & Holmes, E. A. (2016). Playing the computer game Tetris prior to viewing traumatic film material and subsequent intrusive memories: Examining proactive interference. *Journal of Behavior Therapy and Experimental Psychiatry, 53*, 25-33.
- Kim, J., & Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *Journal of child psychology and psychiatry, 51(6)*, 706-716.
- Love, S. M., Sanders, M. R., Metzler, C. W., Prinz, R. J., & Kast, E. Z. (2013). Enhancing accessibility and engagement in evidence-based parenting programs to reduce maltreatment: Conversations with vulnerable parents. *Journal of public child welfare, 7(1)*, 20-38.
- Lowell, A., & Renk, K. (2017). Predictors of child maltreatment potential in a national sample of mothers of young children. *Journal of Aggression, Maltreatment & Trauma, 26(4)*, 335-353.
- Lutzker, J. R., Wesch, D., & Rice, J. M. (1984). A review of Project 12-ways: An ecobehavioral approach to the treatment and prevention of child abuse and neglect. *Advances in Behaviour Research and Therapy, 6(1)*, 63-73. [https://doi.org/10.1016/0146-6402\(84\)90013-4](https://doi.org/10.1016/0146-6402(84)90013-4)
- Metzler, C. W., Sanders, M. R., Rusby, J. C., & Crowley, R. N. (2012). Using consumer preference information to increase the reach and impact of media-based parenting interventions in a public health approach to parenting support. *Behavior therapy, 43(2)*, 257-270.
- National SafeCare Training and Research Center. (2020, April). *Utilizing Technology: How to Engage and Serve Families during the COVID-19 Pandemic*. <https://safecare.publichealth.gsu.edu/files/2020/04/Engaging-Families-in-Virtual-SafeCare-Sessions-4.14.20.pdf>.

- Pears, K. C., Kim, H. K., & Fisher, P. A. (2008). Psychosocial and cognitive functioning of children with specific profiles of maltreatment. *Child abuse & neglect*, 32(10), 958-971.
- Pennebaker, J. W., & Chung, C. K. (2007). Expressive writing, emotional upheavals, and health.
- Peterman, A., Potts, A., O'Donnell, M., Thompson, K., Shah, N., Oertelt-Prigione, S., & van Gelder, N. (2020). *Pandemics and violence against women and children* (working paper 528). Retrieved from Center for Global Development website: <https://www.cgdev.org/publication/pandemics-and-violence-against-women-and-children>.
- Rankin, K., Walsh, L. C., & Sweeny, K. (2019). A better distraction: Exploring the benefits of flow during uncertain waiting periods. *Emotion*, 19(5), 818.
- Rosen, C. S., Glassman, L. H., & Morland, L. A. (2020). Telepsychotherapy during a pandemic: A traumatic stress perspective. *Journal of Psychotherapy Integration*, 30(2), 174.
- Self-Brown, S., Anderson, P., Edwards, S., & McGill, T. (2013). Child maltreatment and disaster prevention: A qualitative study of community agency perspectives. *Western journal of emergency medicine*, 14(4), 401.
- Self-Brown, S., McFry, E., Montesanti, A., Edwards-Gaura, A., Lutzker, J., Shanley, J., & Whitaker, D. (2014). SafeCare: A prevention and intervention program for child neglect and physical abuse. *Treatment of child abuse: Common ground for mental health, medical, and legal practitioners* (2nd ed., pp. 50– 58). Johns Hopkins University Press.
- Self-Brown, S., Osborne, M. C., Boyd Jr, C., Brown, N. D., Rostad, W., Patterson, A., ... & Lai, B. (2018). The impact of SafeCare® Dads to Kids program on father maltreatment risk and involvement: Outcomes and lessons learned from an efficacy trial. *Child Abuse & Neglect*, 83, 31-41.
- Self-Brown, S., Reuben, K., Perry, E. W., Bullinger, L. R., Osborne, M. C., Bielecki, J., & Whitaker, D. (2020). The impact of COVID-19 on the delivery of an evidence-based child maltreatment prevention program: Understanding the perspectives of SafeCare® providers. *Journal of family violence*, 1-11.
- Shaffer, A., Kotchick, B. A., Dorsey, S., & Forehand, R. (2001). The past, present, and future of behavioral parent training: Interventions for child and adolescent problem behavior. *The Behavior Analyst Today*, 2(2), 91.
- Sherr, L., Mebrahtu, H., Mwaba, K., Nurova, N., Chetty, A. N., Swartz, A., ... & Lachman, J. (2021). “Tipping The Balance”—An Evaluation of COVID-19 Parenting Resources Developed and Adapted for Child Protection During Global Emergency Responses.
- Sidebotham, P., Golding, J., & ALSPAC Study Team. (2001). Child maltreatment in the “Children of the Nineties”: A longitudinal study of parental risk factors. *Child abuse & neglect*, 25(9), 1177-1200.
- Silovsky, J. F., Bard, D., Chaffin, M., Hecht, D., Burris, L., Owora, A., ... & Lutzker, J. (2011). Prevention of child maltreatment in high-risk rural families: A randomized clinical trial with child welfare outcomes. *Children and Youth Services Review*, 33(8), 1435-1444.
- Skowron, E. A., & Funderburk, B. W. (2022). In vivo social regulation of high-risk parenting: A conceptual model of Parent-Child Interaction Therapy for child maltreatment prevention. *Children and Youth Services Review*, 136, 106391.
- Stewart, R. W., Orengo-Aguayo, R., Young, J., Wallace, M. M., Cohen, J. A., Mannarino, A. P., & de Arellano, M. A. (2020). Feasibility and effectiveness of a telehealth service delivery model for treating childhood posttraumatic stress: A community-based, open pilot trial of

- trauma-focused cognitive-behavioral therapy. *Journal of Psychotherapy Integration*, 30(2), 274.
- Stith, S. M., Liu, T., Davies, L. C., Boykin, E. L., Alder, M. C., Harris, J. M., ... & Dees, J. E. M. E. G. (2009). Risk factors in child maltreatment: A meta-analytic review of the literature. *Aggression and violent behavior*, 14(1), 13-29.
- Temcheff, C. E., Letarte, M. J., Boutin, S., & Marcil, K. (2018). Common components of evidence-based parenting programs for preventing maltreatment of school-age children. *Child abuse & neglect*, 80, 226-237.
- Traube, D. E., Hsiao, H. Y., Rau, A., Hunt-O'Brien, D., Lu, L., & Islam, N. (2020). Advancing home based parenting programs through the use of telehealth technology. *Journal of Child and Family Studies*, 29(1), 44-53.
- Traube, D. E., Taylor, A., Cederbaum, J. A., Naish, L., & Rau, A. (2021). Strategies for implementation of virtual home visitation in the United States. *Health & social care in the community*.
- U.S. Department of Health & Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2022). *Child Maltreatment 2020*. <https://www.acf.hhs.gov/cb/data-research/child-maltreatment>.
- van Gelder, N., Peterman, A., Potts, A., O'Donnell, M., Thompson, K., Shah, N., & Oertelt-Prigione, S. (2020). COVID-19: Reducing the risk of infection might increase the risk of intimate partner violence. *EClinicalMedicine*, 21, 100348. <https://doi.org/10.1016/j.eclinm.2020.100348>.
- Whaling, K., Der Sarkissian, A., Larez, N. A., Sharkey, J. D., Allen, M. A., & Nylund-gibson, K. (2020). Reduced child maltreatment prevention service case openings during COVID-19. *Research Square*, 1-13. <https://doi.org/10.21203/rs.3.rs-30930/v1>.
- Whitaker, D. J., Le, B., Hanson, R. K., Baker, C. K., McMahon, P. M., Ryan, G., ... & Rice, D. D. (2008). Risk factors for the perpetration of child sexual abuse: A review and meta-analysis. *Child abuse & neglect*, 32(5), 529-548.
- Whitaker, D. J., Self-Brown, S., Hayat, M. J., Osborne, M. C., Weeks, E. A., Reidy, D. E., & Lyons, M. (2020). Effect of the SafeCare© intervention on parenting outcomes among parents in child welfare systems: A cluster randomized trial. *Preventive Medicine*, 138, 106167. <https://doi.org/10.1016/j.ypmed.2020.106167>
- Wozney, L., McGrath, P. J., Gehring, N. D., Bennett, K., Huguet, A., Hartling, L., ... & Newton, A. S. (2018). eMental healthcare technologies for anxiety and depression in childhood and adolescence: systematic review of studies reporting implementation outcomes. *JMIR mental health*, 5(2), e9655.
- Wu, Q., & Xu, Y. (2020). Parenting stress and risk of child maltreatment during the COVID-19 pandemic: A family stress theory-informed perspective. *Developmental Child Welfare*, 2(3), 180-196.

Table 1

Demographic Characteristics of Participants (N= 168)

	M	(SD)	Range
Age	31.19	(11.34)	21-64
	N	(%)	
Gender Identity			
Female	127	(96%)	
Male	2	(2%)	
Other	2	(2%)	
Race/Ethnicity			
White	112	(81%)	
Black	11	(9%)	
Other	15	(11%)	
Years trained in SafeCare			
Less than one year	50	(38%)	
1-2 years	42	(32%)	
2-5 years	25	(19%)	
5 years +	14	(11%)	
Years providing at current agency			
Less than one year	43	(33%)	
1-2 years	28	(22%)	
2-5 years	30	(23%)	
5 years +	29	(22%)	
Experience with technology in practice			
Less than one year			
1-2 years	57	(44%)	
2-5 years	20	(15%)	
5 years +	14	(11%)	
	40	(31%)	

Note. Participants could select multiple responses for race/ethnicity.

Appendix A

Items included in Phase 1 survey

Matrix 1.

1. I feel comfortable with using technology with my clients to enhance my sessions
2. Using technology to enhance my practice is/would be easy
3. Working with technology in practice is so complicated
4. My clients find technology easy to use during sessions
5. Incorporating technology to support my practice is confusing
6. My agency has made it easier to use technology to augment practice with my clients
7. Using technology to augment my sessions would make me appear to be a better practitioner
8. I think there is a positive trend to use technology in service delivery
9. I think it is a good idea to use technology augment live sessions
10. Clients like when I use technology during sessions
11. Other practitioners use technology to augment their practice, so I feel like I should, too.
12. I think technology is better used as a tool outside of sessions, for example, as a supplement to providing content between sessions
13. Adding technology is useful in modernizing service delivery with clients
14. The use of technology in practice could help improve outcomes among clients
15. I think our clients are more engaged when we use technology in sessions
16. Using technology in practice has no significant effect on the quality of services (compared to services delivered without technology)
17. I can accomplish more when I use technology in practice than when I don't
18. I think technology adds a useful element to service delivery
19. I would like to use technology to enhance my service delivery with clients
20. Using technology to enhance my sessions would take too much of time away from other things I could be discussing with my client
21. I would prefer not to use technology in my sessions with clients
22. If my organization provided equipment, I would be interested in incorporating technology into my practice with clients
23. My clients would not be receptive to using technology in practice.

Matrix 2.

1. In general, I think a mobile health app could improve client outcomes.
2. The use of a mobile health app could be a useful addition to our services.
3. I think it is a good idea to use a mobile health app to supplement services during live sessions.
4. I think it is a good idea for providers to offer a mobile health app to supplement services outside of sessions.
5. A mobile health app could help me get the most out of my time with clients.

6. My clients would become bored with using a mobile app to engage in practice outside of sessions.
7. In general, a mobile health app may be useful to help my clients.
8. A mobile health app could facilitate my program delivery.
9. My clients would enjoy using a mobile health app.
10. The use of a mobile health app may improve engagement with my clients.
11. I think a mobile health app is relevant to my program.
12. I think that I could easily learn how to use a mobile health app with my clients.
13. I think it would be easy to perform the tasks necessary for my program using a mobile health app.
14. I think that my center has the necessary infrastructure to support the use of a mobile health app.
15. It would be easy to supplement my practice with a mobile health app.
16. I think that my clients would find it easy to use a mobile health app.
17. It would take too long to learn to use a mobile app to make it worth the effort to use.
18. I think a mobile app would be confusing to use in practice.
19. I believe a mobile health app would be easy to understand.
20. I would incorporate a mobile health app if it becomes available in my practice as an optional feature.
21. I would use a mobile health app to supplement my sessions with clients.
22. I would use a mobile health app in practice only if it were required.
23. My clients would not be able to support a mobile app because they do not have enough data.
24. I would use a mobile health app to supplement my sessions if I receive appropriate training on how to use the app.
25. I would use a mobile health app if I receive the necessary technical assistance during services.
26. I think my clients would be open to using mobile health apps if we asked them to.
27. I already recommend or use a mobile app with my clients.
28. I would use a mobile app only if my organization paid for the cellular data to use the app.
29. My clients would not be able to support a mobile app because they do not own a smart phone.
30. My clients would be able to support the mobile app if it could be used with Wi-Fi.
31. In general, I think clients would be interested in mobile health apps.
32. I think that a mobile health app is a flexible technology to interact with.
33. The use of a mobile health app may promote good intervention practice.
34. The use of a mobile health app designed to target mental health and behavior is compatible with my program's goals.
35. The use of a mobile health app would interfere with the usual delivery of services.
36. The use of mobile health apps may imply major changes in my clinical practice.
37. I like the idea of clients using a mobile app outside of, or in between sessions.
38. I would only recommend a mobile app in practice if it could be used with Wi-Fi.
39. My clients would be willing to purchase a mobile app if it costs \$5 or less.
40. I would be willing to use a mobile app if it costs \$5 or less.
41. I would use a mobile app in practice only if it was free to clients.