



# Opportunities for and Tensions Surrounding the Use of Technology-Enabled Mental Health Services in Community Mental Health Care

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## Abstract

Technology-enabled mental health services have the potential to expand the reach of care and reduce clinician demand. While the efficacy of technology-enabled mental health services is well established, there have been few successful implementations of such services into community care settings. Using mixed methods, 89 clinicians and supervisors at a mental health service organization shared attitudes toward and interest in using a variety of technologies in their work. Participants discussed several challenges and opportunities for technology-enabled mental health services. Whilst clinicians saw potential for technology to engage individuals both in and outside the clinical environment, the range of therapeutic techniques used by clinicians presented a challenge in implementing a tool to meet their needs. Client technology access was a concern, and although text messaging would facilitate communication, current HIPAA and payment structures restrict this ability. With these considerations, we offer recommendations for implementing technological services in community mental health organizations.

**Keywords** mHealth · eHealth · Community mental health · Evidence-based treatments

Worldwide, mental health care systems are struggling to meet the demand for services among the populations they serve. In the United States, approximately 70% of individuals in need of mental health treatment do not receive any services (Kessler et al. 2005), and of individuals who do receive treatment, only about a third receive at least the minimum level of treatment expected to produce results (Wang et al. 2005). There are substantial mental health shortage areas, and available resources are over-stretched, waitlists long, and evidence-based practices unassured (Kazdin 2017; Thomas et al. 2009).

Technology-enabled mental health services, such as those delivered via the web or mobile apps, may help to expand the reach of clinical care and lessen the demand on the mental

health care system by reducing the amount of time clinicians spend with individual patients (Mohr et al. 2013). The efficacy of web-based services for mental health treatment has been established (Andrews et al. 2010; Karyotaki et al. 2017), and there is growing evidence for the effectiveness of mental health treatment and support through mobile apps (Firth et al. 2017). There is also growing interest in these services generated by both the general public and clinicians (Dragovic et al. 2018; Schueller et al. 2018).

However, technology-enabled mental health services are not routinely embedded within health care systems where they have the potential to make a substantial impact. While successful internet-based cognitive behavioral therapy clinics have been established in Sweden, Denmark, Norway, Canada and Australia (Titov et al. 2018), these eHealth clinics are funded directly from federal or provincial governments in countries with universal health care and thus reflect a significantly different payment structure than community mental health in the United States. Further, they have been primarily established by researchers rather than being representative of an implementation of a new service within a health system. In fact, to date, many technology-enabled mental health implementation attempts have failed (Gilbody et al. 2015; So et al. 2013). Within the United States,

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numerous healthcare systems have attempted to implement technology-enabled mental health services. Unfortunately, while the results of these implementation have not been documented in the published literature, there are reports of high failure rates (Bertagnolli 2018; Bertagnolli et al. 2015). As with the implementation of any evidence-based psychosocial service, both the service characteristics and the context interact to produce successful implementation (Lyon and Bruns 2019).

The lack of successful implementations of technology-enabled mental health services may in part be driven by the development of digital mental health tools occurring independent of mental health care providers and the context of the health system, and thus, they are not well-designed for the target users. Without an understanding of the specific needs of providers and the organizations, and without understanding provider workflow processes and requirements, the adoption and sustainability of any health innovation is unlikely (Aref-Adib et al. 2018; Granja et al. 2018). Additionally, there is a growing demand to redesign services to be more usable, compelling and implementable (Lyon and Bruns 2019).

Because there is a growing interest in and perceived need for technology-enabled mental health services, and because past implementation efforts have largely failed, we conducted a mixed-methods study within a large community mental health service organization. This study builds on the literature examining factors influencing the adoption and use of evidence-based practices in community mental health settings (Beidas et al. 2015; Gallo and Barlow 2012; Proctor et al. 2007), and highlights the multilevel determinants that may impact the implementation of technology-enabled mental health services. Using the Exploration, Preparation, Implementation, Sustainment (EPIS) framework (Aarons et al. 2011), we examine key outer context (e.g., system, policy, funding), inner context (e.g., organizational characteristics, leadership, provider characteristics), innovation (e.g., fit between an intervention and the needs of the end-users or the characteristics of the service system) and bridging factors (e.g., the community-academic partnership) that are important to consider in implementation of technology-enabled services for mental health.

The aims of this study were to (1) understand community mental health provider attitudes toward and interest in using a variety of technologies in their work, including technology-enabled mental health services, and (2) to identify barriers to and facilitators of the successful implementation of a technology-enabled mental health service for community mental health providers. A number of challenges and opportunities for digital mental health services arose in our discussions with administrators and providers. Here, we present the findings from our study, highlight the tensions identified, and offer recommendations for implementing

technology-enabled mental health services in the context of community mental health organizations within the United States.

## Methods

### Study Site

We partnered with a large, community service organization that provides services to more than 27,000 people annually throughout a state in the Midwestern United States. The organization operates out of 21 offices and clinics and serves a predominantly lower-income population. Their services include a wide variety of mental health counseling services across the age span, as well as drug and alcohol addiction treatment, foster care placement, foster family training, and job training services. The majority of programs are fee for service, and there are future plans to move toward managed care for behavioral health services. The community service organization we studied appeared representative of many similar organizations across the United States, as several satellite locations served different local communities, clinicians were predominately masters-level, there was a strong focus on psychiatric rehabilitation, and the organization faced the financial concerns typical of publicly funded agencies (Drake and Latimer 2012). This community service organization had initially contacted our research center to explore opportunities and options for incorporating technology-enabled mental health services, such as the mobile app platform called IntelliCare (Lattie et al. 2016; Mohr et al. 2017a, b); thus, using the EPIS framework, this study is part of the Exploration phase of a practitioner-initiated project to implement IntelliCare (Aarons et al. 2011). IntelliCare is a modular app platform of 12 interactive apps that provide practice elements from a variety of evidence-based mental health treatments, such as cognitive restructuring, goal setting, and relaxation. Each app focuses on one treatment strategy, and each are designed to be used in short bursts of time so that they can be used in a brief but frequent manner. In past trials of IntelliCare, the apps have been provided to users with lightweight coaching support delivered primarily via SMS (Mohr et al. 2017a, b, in press).

### Procedures

We first conducted a survey-based study, and then used the data gathered from the survey to inform the development of a focus group protocol. All study procedures received IRB approval prior to participant contact.

A survey was sent out to all clinical staff members (approximately 300 individuals) within the community service organization. The survey took an average of 9 min

to complete. Questions included items on: demographic characteristics; theoretical orientation and current use of technology; and perceptions of the organization's ability to adapt to change. To examine the inner context and provide an overview of the organization climate and leadership for evidence-based practice implementation, participants completed the 18 item Implementation Climate Scale (Ehrhart et al. 2014) and the 12 item Implementation Leadership Scale (Aarons et al. 2014). These measures evaluated shared perceptions of policies, practices, procedures, and behaviors that are rewarded, supported, and expected to facilitate effective evidence-based practice (EBP) implementation (Ehrhart et al. 2014); and perceptions of the organization's leadership and the leadership's behaviors related to organizational culture and climate for EBP implementation (Aarons et al. 2014). Both comprised Likert-type scales with scores ranging from 0 to 4 and higher scores corresponding with greater perceived support for the facet being evaluated, and internal consistency of both measures was high in our sample ( $\alpha = .933$  for the Implementation Climate Scale and  $\alpha = .963$  for the Implementation Leadership Scale). Participants who completed the survey were eligible to enter themselves into a lottery to win one of four available \$50 gift cards.

Approximately 1 month after the survey was sent out, authors SMK and EGL visited the organization's central office. A total of 7 focus groups, which lasted approximately 1 h each, were conducted onsite during the workday. Staff members were recruited for the focus groups via email. With participants' consent, focus groups were audio recorded to aid data analysis. Food and a \$5 gift card were provided to all participants as a small incentive for participation.

Data collected in the surveys were used to inform the development of the focus group protocols. While the survey focused on an overview of practices and attitudes, the focus groups honed in on these topics to identify issues related to work processes. For example, surveys revealed that many clinicians were already using text messaging to communicate with clients, that the majority of clients had symptoms of depression and anxiety, and that the majority of clients served owned smartphones. Thus, the focus group protocol was designed to generate further discussion on current use of technologies in clinical practice for treating clients with a variety of mental health needs.

For the clinician groups, focus group questions included asking participants to describe a typical clinical encounter, to explain how they usually communicate with patients, to describe resources or tools they currently use for treatment of common mental health problems, and to describe their feelings around the use of technology-based resources or tools in their work. Then, participants were introduced to a specific technology-enabled mental health service model in which apps are recommended to clients, and through an online dashboard, clinicians can view app usage and

communicate via SMS (IntelliCare; Lattie et al. 2016; Mohr et al. 2017a, b). Clinicians were then asked how the innovation would fit into their current workflow, along with what changes would be needed for it to fit.

For the supervisor group, focus group questions included asking participants about the challenges they had observed in treating and managing patients with common mental health problems within this organization, and how new services and initiatives were evaluated within the organization. Questions focused on the outer context (e.g. relevant policies, funding) to identify additional factors to consider in the implementation of a technology-enabled service. Similar to the clinician group, participants were introduced to the technology-enabled mental health service model of IntelliCare (Lattie et al. 2016; Mohr et al. 2017a, b) and asked how the innovation would fit into their financial model for delivering services, along with what changes would be needed within the clinical staffing structure for it to practically and financially fit.

## Participants

A total of 57 staff members completed the full survey, which equates to a response rate of approximately 19%. The majority were female (91%), identified as White (71.4%), and were well-educated (78.6% had a master's degree). The survey respondents were largely representative of the staff as a whole, in which 87% are female, 70.5% are White and 62.5% have a master's degree. We note that the survey respondents had a slightly higher than average level of education compared to the non-respondents. The majority of staff who participated in the survey were clinicians and worked across a wide range of specialty services (e.g. in-school services; in-home services, outpatient clinic services), while a minority served in administrative and supervisory roles. Approximately half of the survey respondents ( $n = 27$ ) had a background in social work, and the majority of remaining respondents had a background in counseling ( $n = 18$ ). Clinicians averaged 25.1 h of client contact per week, and reported that approximately 76.4% of their clients have symptoms of depression and/or anxiety. In regards to their employment, participants had worked within the organization for an average of 5 years (range: less than 1 year to 27 years). Many participants were relatively new to the organization with 39.7% having worked at the organization for 2 or less years, and only 10.3% having worked at the organization for more than 11 years. There was a considerable range in the amount of practical experience held by these clinicians (range: less than 1 year to 27 years, mean = 7.3 years). The dominant theoretical orientation of the clinicians was cognitive-behavioral (51.2%). While a substantial portion of clinicians (25.6%) reported that their orientation was eclectic, other theoretical orientations were

not frequently observed (family systems: 9.3%, humanistic/experiential 2.3% and psychodynamic 2.3%).

Focus group sizes ranged from 7 to 10 individuals, and a total of 58 people participated in these focus groups. Participants were mental health clinicians, administrators and clinical supervisors within the organization, and were assigned to groups based on the clinical services that they primarily provide. Of the 7 groups, two groups were comprised of clinicians who provide in-home services for children and adolescents, two groups were comprised of those who provide in-school services for children and adolescents, one group was comprised of those who provide services through an outpatient clinic, one group was comprised of those who provide services to adults, and one group was comprised of clinical supervisors and administrators across these services. Data on demographics and professional status were not collected during the focus groups. There was overlap in participants from the survey and focus groups, and in total, there were 89 unique participants in this study.

## Data Analysis

Descriptive statistics were used to characterize the quantitative data collected from the surveys. Means, standard deviations, and percentages are listed in the results. Free response items from the surveys were coded and collapsed to identify common responses. While this study employed a largely sequential mixed methods design, such that quantitative data was collected prior to the majority of the qualitative data, and survey data informed the development of focus group protocols, the quantitative and qualitative data were embedded and collectively examined to inform the findings of this study.

Focus groups were transcribed, and the written transcripts were coded by authors EGL, JN, and AAK using a thematic analysis approach (Braun et al. 2019). This approach allowed the coders to become familiar with the data as they systematically organized individual coded data into broader final themes. The transcripts were first reviewed for thematic content, and coders identified primary themes that were used to create a codebook. Then, a second round of review took place in which, the coders reviewed the codebook, made edits as needed and completed a final round of coding. The coders met regularly throughout the analytic process to discuss these codes and ensure validity. Due to the size of the focus groups, the transcriptions do not identify individual speakers, and thus participants are not linked with specific quotations in these analyses. To provide context regarding the work conducted by each speaker, we provide a group identifier along with each cited quotation. Two groups were comprised of clinicians who provide in-home services for children and adolescents (labeled “In Home 1” and “In Home 2”), two groups were comprised of those who provide

in-school services for children and adolescents (labeled as “School 1” and “School 2”), one group was comprised of those who provide services through an outpatient clinic (labeled at “Outpatient 1”), one group was comprised of those who provide services to adults (labeled as “Adult 1”), and one group was comprised of clinical supervisors and administrators across these services (labeled as “Supervisors 1”).

## Results

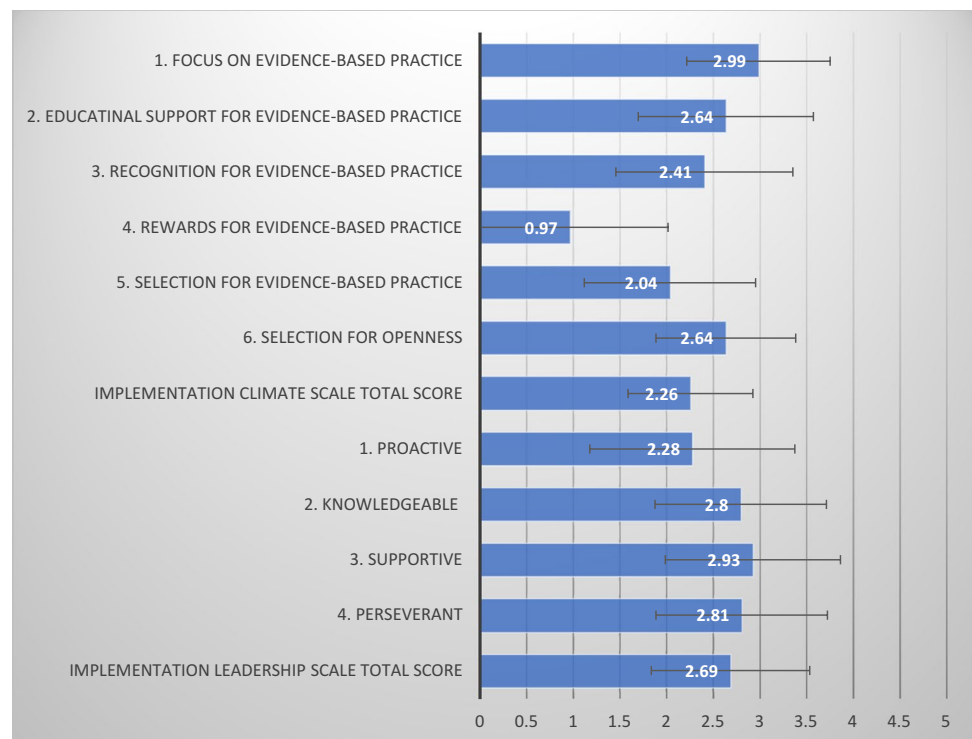
First, we examined the inner context of this organization. For innovations to be successfully adopted, the organization must be ready to make the requisite changes (Lehman et al. 2002). Participants responded to Likert-type questions rating personal and organizational ability to adapt to change. The majority of participants (66.1%) rated themselves as being quick to adapt to change, with fewer (48.2%) rating the organization as quick to adapt. Overall, participants felt the organization was currently undertaking a suitable amount of change.

To provide an overview of the climate and leadership surrounding evidence-based practice, participants completed the Implementation Climate Scale (Ehrhart et al. 2014) and the Implementation Leadership Scale (Aarons et al. 2014). These are both Likert-type scales with scores ranging from 0 to 4 and higher scores corresponding with greater perceived support for the facet being evaluated. The implementation climate for evidence-based practice was viewed as moderate, with a total average score of 2.26 (SD 0.67). Details of the implementation climate subscales are provided in Fig. 1, focus on evidence-based practice was rated most highly (2.99; SD=0.77) and rewards for evidence-based practice was rated least highly (0.97; SD=1.05), indicating a lack of financial incentive for using evidence-based practices. Participants rated the overall implementation leadership as moderate (2.69, SD=0.85). There was a low degree of variability in the subscores of the Implementation Leadership Scale, indicating that participants perceived the leadership as moderately proactive, knowledgeable, supportive, and perseverant regarding the implementation of evidence-based practices in their organization.

## Tensions Surrounding the Introduction of Technology for Clinical Care

Participants identified a number of tensions regarding the anticipated benefits and potential shortcomings of using digital mental health technologies to support mental health treatment delivery in this community mental health setting. These tensions could be classified into three broad groups

**Fig. 1** Implementation climate scale and implementation leadership scale scores



related to technology, therapy, and the health system and embedded organization.

## Technology Tensions

### Supporting Skill Building and Empowerment with Vetted Digital Tools

From providing younger clients with the opportunity to play games as rewards, to using games and apps to guide therapeutic conversation, to showing psychoeducational YouTube videos, many clinicians reported already using apps and other technological resources to support their clinical work. Results from the survey indicate that approximately half had recommended websites (46.4%) and apps (50%) to clients. The most commonly recommended website was YouTube, followed by a variety of educational websites (e.g. Mayo Clinic, WebMD) and websites aimed at connecting people with services and resources (e.g. 211.org). Apps for meditation and relaxation were the most commonly recommended, followed by skills-based apps for general mental health or a specific disorder (most often depression or anxiety).

Advantages of using the internet and mobile apps to connect with clients were convenience (78.6%) and speed (57.1%), while the low cost was less of a factor (28.6%). Further advantages of technology discussed during the focus groups were the appealing nature of technological

tools, especially for younger or teenage clients, or hard to engage individuals. Technology was also discussed as a way to empower clients to practice and implement skills learned in sessions within their day-to-day lives.

During the focus groups, a fair amount of informal resource sharing occurred among clinicians as they talked about which technological resources they used. This highlighted a need for further education about identifying appropriate technological tools to use with clients as well as ethical and legal guidelines around the use of technology-enabled mental health services. Within the organization, clinicians felt there was a need for a common bank of technological resources to take the onus off clinicians and their clients finding and vetting digital tools themselves. As one clinician explained,

“I wish there was a place where ...we really all collaborated and said, “These are the apps that we use... I think if all of that existed in one place, for a client to be able to explore that on their own... where a client doesn’t have to look and guess I think would be really beneficial” - Outpatient 1.

While there are public resources available (e.g. psyberguide.org), there appears to be a need to support knowledge sharing within this organization, tailored to the specific populations and problems clinicians encounter most frequently to support client use of digital resources.

## Concerns About Confidentiality and Privacy

Despite the enthusiasm for using technology in their clinical work, significant concerns were raised about the confidentiality and privacy of digital tools. Concerns about hacking, or inadequate data privacy standards were foremost, as described by one clinician,

“Yeah, I guess one of my concerns is the confidentiality piece... I am a little apprehensive. Is Russia gonna get a hold of my clients’ mental health or behavior health issues or concerns?” – In Home 2.

Additional privacy concerns related to unintentional disclosure from clients sharing their phones with other people in their lives, either formally (as in, two members of a family sharing a phone) or informally (as in, a friend or family member intermittently using someone’s phone). This spoke to the importance of non-descript app names, to ensure that the name of the app “reads as something that you might just pass by if you don’t know what its intention is, which can be good for teenagers who are afraid of people looking into their stuff”—School 1. Clinicians were therefore concerned about the implications of privacy and confidentiality breaches for their clients.

However, privacy concerns were not unique to technological tools. Some clinicians spoke about similar issues existing with traditional paper and pencil methods, compared to which smartphone-based tools offer a greater degree of privacy. Lack of privacy around traditional tools also affected their use and engagement, because clients “don’t wanna have that paper sitting out on their desk. They don’t want anybody to know what’s going on”—Supervisor 1. Further, they noted that the physical act of meeting with a therapist and potentially seeing people in the waiting room was enough to deter many people from services. Clearly, traditional methods of delivering mental health services come with confidentiality and privacy concerns, and technology-enabled mental health services were perceived to have benefits that mitigate some of the risks associated with traditional methods. While concerns relevant to technology-enabled mental health services need to be addressed with patients and providers, they are unlikely to be insurmountable barriers but rather, additional nuances to consider and to navigate the trade-offs regarding privacy and security.

## Technology is Not the Answer to All Problems

While clinicians had broad use of, and interest in, technological tools to support their clinical work, there was a general consensus that such tools are not appropriate for everyone. For some groups however, clinicians thought technology assisted tools would increase engagement and further the goals of therapy, as articulated by one clinician “I don’t

know if that would work for all of our clients, but maybe if there was a certain criteria that they had to maybe qualify for something like this, then that would be a benefit”—In Home 1. Groups that were considered particularly suited to the introduction of adjunctive technological tools were those with high motivation and younger people, including children, teens, and emerging adults.

Similarly, supervisors were largely aware that technology-enabled services would not be acceptable to clinicians and clients across the board, and that specific staff members and client subpopulations who are more technologically-savvy would be more interested in piloting such services. There was agreement that the supervisory staff would have to be very intentional about selecting staff members to participate and selecting clients who would be a good fit for these types of services to maximize the likelihood of pilot success as the organization would figure out the inevitable kinks of a new system.

Another consideration when it came to the introduction of technology was how such tools could be tailored for these different client groups. It was suggested that tailoring may be required on a number of factors, for example “whether it’s depression, anxiety, anger. You can break it down into like child, adolescents, and they are tailored to those”—In Home 1. Within an organization with varied service lines, both the appropriateness of tools for different subpopulations must be considered, as does the tailoring of tools within applicable subpopulations.

## Therapy Tensions

### Diversity in Therapeutic Techniques and the Structured Nature of Technology-Enabled Services

When speaking of their approaches to therapy and in-session work, a focus on rapport with their clients was consistently highlighted by clinicians. Clinicians built rapport in a variety of ways, from casual conversation to routinely encouraging client strengths, to special activities, such as painting an adolescent client’s nails while talking. Rapport was considered especially important with those that were not voluntarily seeking help or were difficult to engage, as “once they see that I care, that I’m invested, and I’m going to be around, then they’re a little bit more willing, but it takes so long for me to get these kids to get onboard”—In Home 1. In fact, rapport building and non-specific therapeutic skills were the main activities described by clinicians when discussing typical therapeutic encounters.

When describing therapeutic techniques used with their clients, clinicians discussed a wide range including

the use of art, music, and supportive counseling. For example, one clinician noted:

“A lot of my clients, I give them the freedom of kind of choosing what they want to do. They’ll either choose to play a game, or they’ll choose to talk or just to draw. It all kind of depends. But those are more the easy days, that they kind of just tell you what they need instead of you having to fight around and figure out what they need” -In Home 2.

Clinicians demonstrated a willingness, or even necessity, to vary their approach to meet their clients’ needs. This emphasis on rapport and the use of a variety of therapeutic approaches in the focus group discussions contrasted the survey results in which the majority of clinicians identified their therapeutic orientation as cognitive-behavioral. This uncovered diversity in therapeutic approaches may present a challenge to the implementation of digital mental health services, as many available apps and programs are focused on building CBT and mindfulness skills. Therefore, CBT-focused digital tools may not facilitate, or may even conflict, with the practices currently happening within session, providing a lack of value to both the clinician and the client. For example, while skill building was important for many clinicians to encourage in sessions, as one clinician remarked “*we’re building skills, and were trying to get them tools, so that they can go out and handle things on their own*”—School 1, specific cognitive-behavioral techniques were rarely mentioned.

Some of the diversity in techniques reported by our participants could be the result of the training of the clinicians. Most clinicians are masters-level providers, with degrees in counseling, marriage and family therapy, or social work. In these training programs, trainees typically receive an introduction to different therapeutic modalities, and programs vary substantially in the types of evidence-based interventions that are taught (Becker-Haimes et al. 2019). Importantly, therapeutic technique diversity also appears to be due to adaptations clinicians have made to their approach over time as they have gained experience and found that “*following the book isn’t as helpful*” (Adult 1) in a community mental health setting. Another clinician noted the need to be flexible, “*I’ve adapted quite differently than I thought I would when I was going through my training. But, I guess I’m a here and now therapist, where I come in, and visit with them, and address whatever their needs are at the moment*”—Adult 1. In some settings, such adaptations may impact the fit of CBT-centered technological interventions, however, asking clinicians their therapeutic approach may not be sufficient to uncover the mismatch.

## Competing Value of Face-to-Face Communication for Trust and Client Support Between Sessions

Clinicians discussed a role for apps to supplement the limited time they are physically present with their clients. Technology-enabled tools, such as apps, could support the often forgotten between session work they recommended to their clients. This opportunity was well-recognized by the supervisors as well, with one commenting:

“I like the idea of something like that where it’s at their fingertips all the time. The worker can’t – worker might only see them Tuesdays at 2:00, but if they need to practice something in between or need a little support in between, they’ve got something else to rely upon.” – Supervisor 1

Simultaneously, there appeared to be strong value placed on face-to-face communication with clients. On the survey, a preference to limit connections with clients to face-to-face visits was the main reason clinicians were not using the internet or apps to connect with patients (33.9%), followed by the perspective that the information from the internet or mobile apps is unreliable (30.4%). The unreliability of information from the internet or mobile apps was also raised in the focus groups, with clinicians expressing concerns about the honesty of their clients. Clinicians spoke of the importance of non-verbal cues when communicating with clients, and worried “*if we can’t see their body language and their facial expressions, are they really being honest? That’s my whole thing is, I have a lot of clients who just tell you a story and you can tell by their body language that they’re lying, so then can work from there. If you can’t see them it’s hard to build on that*”—In Home 1. Clinicians emphasized the importance of face-to-face communication and the development of rapport in their role and were concerned about the loss of non-verbal cues and trust when communicating remotely through technology. Therefore, clinicians were hesitant about developing a primarily remote-delivered mental health service within their organization, although they reported some perceived benefits of having a remote-delivered service that complements face to face services or exists alongside them.

## Concerns About Managing Crises and Duty of Care Associated with on-Demand Tools

While there are a number of perceived benefits to using digital tools to streamline communication and support client self-care and self-management, digital communication modalities present a challenge for monitoring, safety, and clinician responsibility. Clinicians reported hectic workdays during which they often spend unpredictable amounts of time with clients due to crises. The frequency

with which crises occur in many of the service lines were a cause for concern about digital tools among some clinicians who wanted to ensure that clients received the support they needed at these times. One clinician reflected:

“My concern too, with that kind of situation, if there is a crisis and they do choose to use the app to communicate that. If there’s not someone monitoring it at that time, then the crisis goes unrecognized by the therapist because we’re not on our phones at all hours of the night” – School 2.

In this way, without significant changes to their role, or dedicated staff monitoring the inputs and communications from digital tools, clinicians felt uncomfortable with the idea of their clients relying on digital tools. The crisis-oriented nature of the work also creates a number of challenges in complying with organizational initiatives. These challenges could easily spread to challenges implementing a new technology-enabled service line. For example, as the organization currently highlights a focus on routine measurement of symptoms and functioning, one supervisor noted. *“It does sometimes feel like staff are just putting out fires and the measurement tools are sometimes pushed to the last priority because you just gotta go with what the immediate needs are sometimes”*—Supervisor 1. This need to balance organizational and system guidelines and rules with new uses of technology is further discussed in the following section.

## Organizational and System Tensions

### Provision and Restriction of Technology Within Care Coordination

Clinicians reported ample access to technology from the organization as part of their role. They were provided with smartphones and laptops, and the organization had a telehealth service, by which clinicians could provide remote services via secure videoconferencing software. Clinicians expressed that their agency-issued smartphones and laptops made certain tasks easier, such as documenting therapeutic encounters in the electronic health record on the go.

However, while the organization provided technology to facilitate care, it also imposed limits on the technologies that created barriers to care provision. Provided smartphones had a number of restrictions, for example, *“they limit what we – we can’t download – if we find a really cool app, we can’t download it. We have to go through our supervisor to go through IT and get it approved. It’s a process”*—In Home 1. Many clinicians expressed frustration regarding the limitations placed their use of technology.

## Differential Access to Technology

While the use of technology within care afforded advantages, and clinicians had access to communication technologies, the clients served appeared to have much more variable access. On the survey, participants reported that 71.7% [range 0–100%] of their clients owned a smartphone with a text messaging and data plan. However, in the focus groups, a slightly different picture emerged. Although clinicians were recommending apps to clients, they noted that *“a lot of clients will tell me they have no memory left to download apps. They have to delete stuff to add an app, and it has to be more important than their game”*—Adult 1. As this topic was expanded upon, it became clear that smartphone access did not translate into reliable means of communication between client and clinicians, nor did it mean that clients were always able to take advantage of the full spectrum of opportunities available through smartphones. Clinicians spoke of a number of barriers in using digital mental health resources with their clients including phone service interruptions, phone number and address changes, no consistent access to a data plan and/or reliance on WiFi connectivity.

## Enhanced Communication Violates HIPAA and Billing Structures

Many clinicians believed that text messaging would improve communication with their clients and other relevant parties such as clients’ parents. Despite informing clients of restrictions on text communication regarding clinical information, several clinicians had clients who reach out via text message. Clinicians provided a number of reasons they believed their clients preferred text messaging, including expressing themselves in the moment, the increased discretion over phone calls, limitations on their phone service plans, or convenience of access. As one clinician summarized:

“The majority of our clients have smartphones better than the one I have. They don’t want to answer their phone. They wanna text you. So, you know the phone is on them, and even with the teenagers or kids that we’re working with, they have the smartphone. So, I think anything that we can give them that they can have access to almost instantaneously, I think, will be helpful”- Supervisor 1.

Some benefits of text messaging have already been experienced. For example, working within the rules of their current system, one clinician noted, *“I can tell mom throughout the day how you’re doing. And they kind of like that. That I’m catching them being good and I’ve found the parents are receptive to it too”* - School 2.



However, despite this enthusiasm by clinicians and clients, there is an ongoing debate regarding the appropriate use of text messaging under HIPAA and many organizations, including the community service organization studied here, currently restrict this form of communication (Freundlich et al. 2017). Further, in discussing the outer context for implementation, clinical staff and supervisors recognized that if secure messaging were allowed under HIPAA, the organizational and health system's financial structures currently do not support this method of care provision, as it is not billable under current reimbursement practices. A number of uncertainties arose around how one would be able to bill for time spent communicating and providing care to clients using text messaging.

Possible solutions for billing arose that involved including an additional or alternate mental health care worker that focused on supporting client app use and digital communication. However, there were also several tensions voiced about adding new professionals to client care plans. For some, these tensions were hinged on the productivity requirements that are placed on clinicians. There was trepidation about *“just handing over productivity to somebody else ... And then is [name of worker] getting the productivity for my client for that time she's been talking with them that I could have been talking with them?”*—School 1. For others, the tensions were due to experiences that clinicians had in offering other services to their clients, such as social work, and those clients declining, being unwilling to add another health professional into their care. There was therefore an awareness that to establish a reasonable implementation plan, these concerns around productivity and client perspectives would have to be carefully weighed.

## Discussion

This study of a community services organization highlights the tensions likely to arise when considering implementing technology-enabled mental health services into an already complex array of services. Further, given differences in information gained through the survey and focus groups, our results emphasize the need for mixed-methods research when examining interest and readiness for implementation (Albright et al. 2013). Staff members generally rated their workplace as being reasonably adaptive and supported for change, yet there were abundant tensions that emerged for integrating new technologies into their workflow and into their broader organizational culture. Examining these tensions allows us to identify the following key considerations for implementing technology-enabled mental health services into community mental health settings.

Clinicians reported differential smartphone access among their clients. While survey results indicated that

a majority of clients owned smartphones with a text messaging and data plan, the focus group results highlight that consistent smartphone access with adequate storage capacity was much sparser, restricting the ability of many clients to take full advantage of opportunities made available through smartphones. This suggests smartphone ownership may not be a good metric for determining who can use mobile health tools in their lives (Bender et al. 2014). We encourage individuals and organizations looking to implement technology-enabled mental health services to engage in a more thoughtful, mixed-methods assessment of technology use in their setting that goes beyond *whether* clients have smartphones, and examines what barriers exist among those who do have smartphones. Such an assessment could substantially shed light on readiness for and desirability of such tools and guide the selection of appropriate tools and interventions for the target population. An organization may initially be interested in implementing an app-based service, but after further examination of their client base, may instead wish to implement an SMS-based service. Alternatively, an organization may choose to provide smartphones to individuals interested in receiving the app-based service. This strategy comes with additional costs, yet may serve as a valuable way to connect particularly vulnerable individuals with needed services (Schueller et al. 2019).

With an initial understanding that clinicians identified as practicing CBT, the use of CBT-focused digital tools appeared to be a natural fit to support current practices. However, the deeper reflection on their current work practices within the focus groups revealed that CBT-focused digital tools may not clearly complement the in-session work that many clients are working on. This ties into past research which found that a CBT orientation was a poor predictor of the use of CBT skills in sessions (Creed et al. 2016). For a technology-enabled mental health service to be successfully implemented in a care setting, it must solve problems for the individuals who are tasked with managing the service (Mohr et al. 2017a). Thus, we need to think about supporting people in their jobs and not just giving them what we think they need. If the organization determines that CBT is going to be supported as the dominant form of treatment offered, then CBT-focused digital tools are likely to be perceived as solving a problem for the organization, yet, it may be met with resistance by clinicians who want more flexibility in how they practice. However, if the organization is more agnostic about the theoretical orientation and the practices in which their clinicians engage, then CBT-focused tools may be far less likely to be used. Implementing technologies that have the potential to shape care can surface organizational tensions. These tensions should be uncovered prior to implementation so that decisions can be made to either adapt the

technologies or technology choices to reduce tensions, or to the extent that they may be there, develop methods of managing them.

There appeared to be a desire among clinicians to use technology-enabled mental health resources with their clients (e.g. apps, websites), but they were frequently at a loss for knowing which resources would be appropriate, secure and evidence-based (Torous et al. 2019). These types of training issues and perceived difficulty in accessing training are known barriers in the implementation of non-technology-enabled mental health innovations (e.g. face to face evidence based psychosocial practices (Cook et al. 2009). As mentioned above, there are public resources available to support finding appropriate tools (e.g. psyberguide.org), but this information needs to be better disseminated to frontline service providers who are already strapped for time. It is important that not every clinician has to vet their own resources, as technology-enabled services are increasingly popular things for clients to want. Some service organizations may want to increase use of technology-enabled services as resources, but may not be ready for, or interested in, implementing a specific technology-enabled service within their service line. In these cases, it could be particularly worthwhile for organizations to have a list of vetted apps and programs from which clinicians can choose. The Veterans Health Administration and Kaiser Permanente provide examples of this strategy. The collection of Veteran Affairs (VA) Mobile Health apps have been developed to provide access to patient data and additional opportunities for veterans to actively participate in their health and wellness care (Frisbee 2016). Relatedly, Kaiser Permanente has compiled a list of vetted behavioral apps from which providers can recommend to clients, and if clients' consent, Kaiser can access app use data to analyze use and impact. Further, it may be helpful to train clinicians on how to locate and ethically use these types programs in their practice. One solution would be to provide such training as part of continuing education credits through relevant professional societies and conferences.

Finally, there were clinician concerns about the practical feasibility of incorporating technology-enabled mental health services into their array of available services, both from a financial standpoint and from a privacy standpoint. Clinicians expressed concerns about doing work that wouldn't be billable, and concerns about the acceptability of text messaging under HIPAA (Freundlich et al. 2017). While technology-enabled mental health services offer the possibility of reducing costs per client (Donker et al. 2015), if clinicians are working within a fee-for-service model and are not able to bill for their time, they have very little incentive to engage in these services. Thus, even if all other identified barriers were solved, there is unlikely to be a substantial change in practice without changes in patient privacy policies and billing structures.

## Limitations

While the community service organization studied appeared to be representative of community service organizations serving both urban and rural areas of the U.S., this study was conducted with a single organization, and there were likely nuances captured in our results that are specific to the organization. Clinicians who participated in this study were predominantly White females. While these demographics are largely representative of the mental health workforce in the United States (American Psychological Association 2015), these findings may not be generalizable to a more diverse clinical workforce. Further, the survey response rate was approximately 19%, which is within the range of what is considered typical in web-based surveys of healthcare providers (Cunningham et al. 2015; Sebo et al. 2017), but it is possible that our results were skewed by the individuals who volunteered to participate in the study and we note that survey respondents had a slightly higher level of education relative to the non-responding staff. Tensions elucidated here concerning the implementation of technology-enabled services into a community mental health service represent only the viewpoints from the community mental health organization (i.e. clinicians and supervisors). An examination of client perspectives and needs regarding technological services would likely uncover unique considerations critical to the success of implementation efforts. This examination appears particularly important, as the population served by this community service organization is largely representative of the help-seeking population in this country, and simultaneously, is not representative of who joins clinical trials for digital mental health tools (Alegría et al. 2016; Titov et al. 2018).

## Conclusions

There remains a significant and substantial public health potential for integrating technology-enabled mental health services into community mental health organizations. While the clinicians and supervisors who participated in this study demonstrated considerable enthusiasm toward using new communication technologies to support the therapeutic process, tensions about technology, therapy, and the health system emerged which, if not properly addressed, could limit the success of any new technology-enabled service implementation. To maximize the likelihood of implementation success, we must be aware of, and carefully strategize to overcome these tensions.

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## Compliance with Ethical Standards

**Conflict of interest** Disclosure of potential conflicts of interest: David C. Mohr has accepted honoraria from Apple Inc. and has an ownership interest in Actualize Therapy, which has a license from Northwestern University for IntelliCare. Emily G. Lattie has received consulting fees from Actualize Therapy, LLC. Joshua J. Skerl is employed by Ohio-Guidestone.

**Research Involving Human Participants and/or Animals** All procedures performed were in accordance with the ethical standards of Northwestern University's IRB and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

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