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# Treatment Barriers in Mental Health: Perspectives of Using Mobile Technology

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# Treatment Barriers in Mental Health: Perspectives of Using Mobile Technology

by

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MSW Clinical Research Paper

Presented to the Faculty of the  
School of Social Work  
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Master of Social Work

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The Clinical Research Project is a graduation requirement for MSW students at St. Catherine University - University of St. Thomas School of Social Work in St. Paul, Minnesota and is conducted within a nine-month time frame to demonstrate facility with basic social research methods. Students must independently conceptualize a research problem, formulate a research design that is approved by a research committee and the university Institutional Review Board, implement the project, and publicly present the findings of the study. This project is neither a Master's thesis nor a dissertation.

### Abstract

#### Treatment Barriers in Mental Health: Perspectives of Using Mobile Technology

Mental health problems are common with adolescents and given that adolescents are the biggest consumer of mobile technologies, these technologies hold a tremendous promise as a unique intervention. The research method used is a qualitative study with four clinicians to address themes in their experiences of utilizing mobile technology with adolescents. Much of the research finds that using technology with adolescents improves patient satisfaction through areas around convenience, ease of use, and availability. The research findings show common themes related to adaptability, reduced stigma, clinical relationship and lack of access. This research is important because it highlights the social work code of ethics in promoting client self-determination theory and allowing adolescents to enhance their capacity in addressing their own needs. Discussion includes how mobile technologies can offer a powerful adjunct to therapy that can work to reduce many barriers adolescents have to overcome in a traditional therapy model. Mobile health technology is discussed in increasing access to mental health treatment.

*Keywords: self determination theory, social learning theory, mobile health technology, stigma, access, adolescents*

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### **Introduction**

The use of technology for psychological treatment is on a rapid ascent... and the widespread use of mobile devices has resulted in a dramatic increase in the use of mobile technology to enhance and facilitate access to treatment (Kobak, Mundt, Kennard, 2015). It has been found that mental health problems are common in young people with 75% of disorders beginning in adolescence (Reid et al., 2011). It has also been shown that mental health conditions are projected to grow exponentially both in the United States and globally and are expected to be too costly that it will lack a labor force to keep up with the demand for mental health services (Jones et al, 2014). Leigh & Flatt (2017) report that while referrals to mental health services have increased, investment in mental health services have decreased. Mobile health technologies are so important to assist in treatment because it holds tremendous promise as cost-effective and youth-friendly mental health interventions for the adolescent population (Chacko, Isham, Cleek, MchKay, 2016; D'Alfonso et al., 2017).

In the context of prevention, smartphone applications have the potential to aid in risk assessment, provide psycho-education and information on available resources, and offer access to crisis support and coping tools. Young people also cite a preference for mobile phone use to have their data collected regarding communication and coordination of behaviors, daily activities, and self-management before the use of therapeutic clinical services (Witt et al., 2017; Chandra, Sowmya, Mehrotra, Duggal, 2014).

Perry & Singh (2017) explain that young people are the biggest consumers of technological advances with 95% aged 12-17 using the internet, 81% have a social media account and 51% of those admit to checking in daily. Adolescents are an important subgroup when we discuss interventions for mental health, because of high attrition rates and having

limited decision making when it comes to treatment. Reid et al. (2011) explains that new methods are needed that focus on the early stages of mental health problems before clinically diagnosable mental health disorders are identified. Poor recognition of symptoms by young people creates a significant barrier to communicating, detecting, and receiving help for mental health problems.

Many psychological interventions are now available quickly and easily. Online cognitive behavioral therapy has been shown to be equally as effective as face-to-face therapy for a myriad of psychiatric disorders with a marked positive effect in young people... and has been shown to be effective in monitoring, communicating, triaging, and even assisting in diagnosis. (Perry & Singh, 2017). Text messages have been used in multiple areas of mental health... with the majority of interventions employed as supportive messages. Emerging findings document a positive patient attitude towards text messaging as well as improved treatment adherence, symptom surveillance, appointment attendance, and patient satisfaction with management and health care service provisions. (Agyapong et al., 2016). Despite high accessibility of mobile technologies, their application in the area of mental health and addictions service delivery is relatively limited.

With a focus on assisting the access of mental health interventions for adolescents, it is best that clients are viewed using a strengths-based lens to allow for the best advances in achieving personal goals in the therapeutic process. The purpose of therapy is to enable clients to achieve personal goals and clients viewed as collaborators of the therapeutic process (Clarke, 2013). In recent years, there has been a widespread shift in the focus of research and practice in psychology, mental health, social work, and psychotherapy from an emphasis on disorder, dysfunction and deficits to a focus on well-being, resources, strengths and positive mental health

(Coulter, 2014). While access to mental health services is being highlighted in the field, practitioners are beginning to recognize that mobile access empowers clients to use interventions that can work for them in a variety of ways. In respect to adolescents, the field of mobility and access to these interventions play an important role in the prevention of significant difficulties.

Within social work practice, the NASW (2017) Code of Ethics states that one ethical principle of social workers is to respect the inherent dignity and worth of the person. Social workers need to promote clients self-determination and to enhance their capacity and opportunity to change or address their own needs. With the evidence of adolescent mental health prevalence and access to mental health technologies, it seems clear that social workers need to address and enhance upon these technologies to allow for young people to address their mental health needs. As social workers address mental health treatment interventions for adolescents, it is unmistakable that the advent of mobile health technologies is able to assist in giving access to promote positive strategies. Because of the multitude of barriers for adolescents seeking mental health therapy such as stigma, high attrition rates, and geographic location just to name a few, mobile health interventions can offer, at minimum, a powerful adjunct to therapy and work to reduce many barriers for these clients.

### **Literature Review**

A review of the research literature revealed a number of positive benefits in using mobile devices, with areas including increased access, reducing stigma and barriers to treatment, along with developing a relatively new treatment model for practitioners. Mobile health seems most helpful for tracking and management of symptoms, giving independence and empowerment to the client, and as a tool for relapse prevention. Mobile health applications can align with the social work code of ethics in allowing clients to feel empowered in the care of their mental health and gain self-determination. These applications can help in promoting the rights of clients and assist in their efforts to identify and clarify their goals.

### **Early Intervention and Access**

Prevention and early intervention leads to better prognosis for young people's mental well-being in the short and long term, especially with the fact that ten per cent of young people experience mental health difficulties at any one time (Gallagher & Schlosser, 2015). Mental health diagnoses related to the effects of serious childhood abuse and neglect are particularly problematic, and there is a need for innovative, youth centered treatment approaches to address the effects of trauma (Mueller & McCullough, 2017). In current research, there are many interventions and models that are changing the way we look at the traditional model of therapy.

When we look at increasing access to mental health services for adolescents, it may be useful to find interventions that are already relatable to adolescents and easy to navigate. This is a large area that continues to need further development. Adolescent smartphone ownership is estimated at between 74% and 86% in the developed world (Kobak, Mundt, Kennard, 2015). Research suggest that smartphone ownership is not restricted by socioeconomic status and they represent a widely available and highly accessible medium for capturing data about diverse

populations (Kenny, R., Dooley, B., Fitzgerald, A., 2016). It is also shown that providing adolescents with mobile access platforms in a method that promotes outreach gives the potential to enhance service accessibility (Furber et al., 2017). Traditional hurdles to social interaction are flattened by online communication platforms, rendering geographical location irrelevant, allowing young people from marginalized groups to engage and participate, free from conventional barriers (Burns & Birrell, 2014).

We are seeing an increasing demand for psychological services and a decrease in resources that explains there is not enough highly trained professionals to treat all patient with a one-to-one therapeutic model (Jones et al., 2014; Leigh & Flatt, 2015). Mobile technologies are still largely untapped sources of innovation to improve efficiency and patient self-care in mental health. Mobile phones have widespread consumer appeal, and wireless signal coverage is in place for 85 percent of the world's population. The portability, privacy, and round-the-clock availability of mobile phones offer mental health workers and patients a direct, private, and instantaneous method of communication as well as access to information and self-care support almost anywhere in the world (Jones, et al., 2014).

### **Mental Health Stigma and Barriers**

Stigma is one of the most frequent barriers to mental health care and have been associated with negative experiences and outcomes that may impact behavior (Haugen, McCrillis, Smid, Nijdam, 2017). The failure to engage with mental health services has been attributed to many well-established barriers which include stigma and negative attitudes towards help-seeking. Additionally, geographic and financial barriers can further amplify difficulties associated with help-seeking. A technology-based style of engagement implies a shift in power

from the clinician to the consumer and is a style of mental health services that is at odds with the traditional power distribution and hierarchy in healthcare (Orlowski et al., 2016).

The stigma attached to mental illness continues to serve as a barrier to seeking assistance translating to people not receiving timely, appropriate help and care. The utilization of the internet as a source of information for health issues, including mental health concerns continues to escalate, clearly demonstrating the role of online space can play in the provision of support and care for those enduring mental illness (Burns & Birrell, 2014). Using technology to share helpful mental health resources may also extend reach to underserved populations and fill gaps in the context of limited availability of mental health services (Radovic et al., 2016). One research study by Buccieri & Molleson (2015) found that a homeless youth group created a mobile application based out of frustrations about living in poverty and the limitations they felt prevented from fully accessing services and supports.

A traditional medical model in health care makes many assumptions that are not suited for adolescents. One assumption is that the family doctor will provide treatment for the illness, however this assumption fails because young people generally do not seek help when they are experiencing symptoms that suggest a mental health problem (Burns & Birrell, 2014). Arguably the most sensitive stigma for adolescents would be through social stigma and the negative perceptions of youth toward peers with mental health disorders. In the literature, youth with mental disorders are commonly viewed as less popular, aggressive, and more socially rejected (Moses, 2010). For youth who are feeling rejected by their peers and facing the stigma of a mental illness, it is unlikely that they will seek help in a traditional model treatment.

### **New Intervention Models**

Mobile phone-based programs have been shown to be effective support for behavior change and helping bridge the divide for socioeconomic groups and underserved, hard to reach populations (Whittaker et al., 2017). Perry & Singh (2017) state that new technologies and the subsequent data analysis may create a paradigm shift with respect to how psychiatric disorders are classified, their diagnostic criteria, and new standards of care. In youth mental health, the traditional medical model fails because young people do not seek help when they are experiencing symptoms that suggest they have a mental health problem. It's argued that young people are using technologies to access information and assistance in relation to mental health concerns and that technologies could, therefore, provide an important adjunct to support traditional forms of clinical engagement and/or act as a support platform enabling professionals to interact via the Internet. It was also argued that different types of technologies, such as mobile apps, could be used to communicate and encourage interactive participation between the young person and the service or clinician (Burns & Birrell, 2014).

The increasing aging population will benefit from 21st Century self-care techniques, easing burden on healthcare by enabling self-monitoring at home, office or other location. In order for self-care of a chronic condition to be sustained, self-management techniques need to be integrated into one's life (Anderson, Burford, Emmerton, 2016). Mobile health and sustainability is important in a cost measure for mental health care, but it also can have a great effect for the person utilizing it. According to Lewis et al. (2012) in a study in relation to non-suicidal self-injurious activity, one of the commonly reported benefits with online activity is that of social and peer support and we see many youth increasingly go online to share their experiences and connect with others. With all of the potential in mobile and app-based

treatment, they are characterized by a number of shortfalls including a lack of scientific credibility and subsequent limited clinical effectiveness. At the very least these apps should be well informed, scientifically credible, and evidence based. (Leigh & Flatt, 2015).

The high prevalence and complexity of youth mental health problems, combined with difficulties in engagement with services, makes this group vulnerable. Providing clients with direct mobile phone access to their therapist in a youth outreach mental health service has the potential to enhance therapeutic relationships and service accessibility. This is consistent with the published data that support the use of mobile phone in healthcare as well as the important role mobile phones play in the lives of adolescents and youth (Furber et al., 2011).

### **Ethical Implication to Clinical Practice**

The NASW standards for technology (2017) state that “technology has transformed the nature of social work practice and greatly expanded social workers’ ability to assist people in need.” By incorporating new means of technology, it has created new ways to interact and communicate with clients, along with raising ethical implications in clinical practice. Technological advances have also proven to be a difficult subject for the social work profession to address. As Reamer (2014) states, it is fair to say that anticipating the current era of the digital period took professionals by surprise and there are complex issues related to social worker use of technology.

As technology expands into the use of clinical social work practice, the ethical use of technology is important to those delivering services. The ability to provide services electronically has many benefits as well as risks that social workers should consider and assess for when services are provided (NASW, 2017). While many young people and clinicians can be positive about the use of technology in mental health treatment, it should be emphasized that any addition of

technology should have a clear rationale and clinical benefit to the client's treatment plan, along with being followed up throughout the course of treatment (Montague, Varcin, Simmons, Parker, 2015).

### **Conceptual Framework**

#### **Self-Determination Theory**

To approach the research in an organized way that resembles the cognitive model, it requires an approach based upon self-determination theory of the individual client. Self-determination theory is an organismic theory and humanistic perspective of motivation with an emphasis on self-actualization (Sheldon, Williams, Joiner, 2003). Gagne & Gagne (2014) explain that Self Determination theory (SDT) has developed gradually over the last 40 years to become a major theory of human motivation. It was initially developed by Edward L. Deci and Richard M. Ryan and has been elaborated and refined with the help of many other scholars from around the world.

Motivation is such a key concept because adolescents are known to be more resistant to accepting mental health treatment compared to any other age group and this high rate of disengagement poses a major obstacle to effective clinical service and positive outcomes (Montague et al., 2015). Gagne & Gagne (2014) further illustrate the importance of motivation when they state that competence is necessary for any kind of motivation, whether it be extrinsic or intrinsic; otherwise, one is likely to feel helpless and amotivated. Recent research has indeed shown that people need to feel both competent and autonomous in order to experience intrinsic motivation.

Self-determination theory gives meaning to such concepts as free will, healthy values, and true self, by focusing on individuals quest for phenomenal ownership of their behavior as a

central cause to positive adaptation and development (Sheldon, Williams, Joiner, 2003).

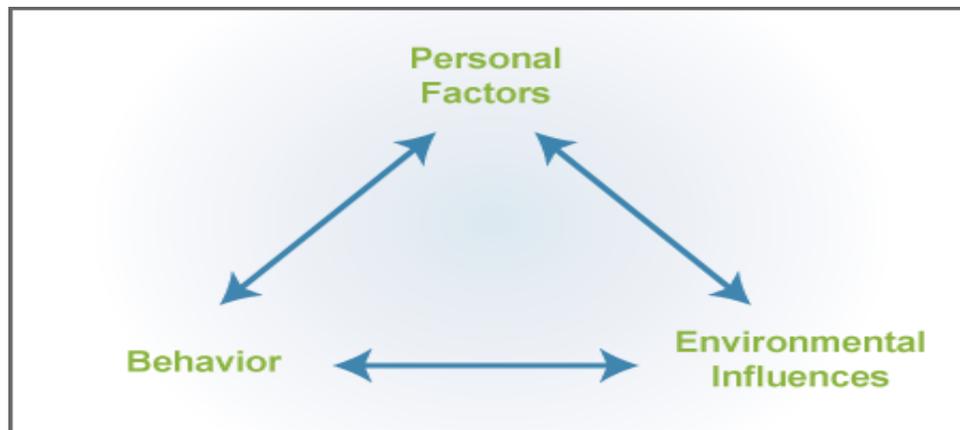
Because self-determination theory gives such focus on areas that the current literature points to in reducing barriers, increasing motivation and engagement for adolescents, it is appropriate as a conceptual model for this type of research.

### **Social Learning Theory**

Social learning theory proposes that children's real-life experiences and exposures directly or indirectly shape behavior (O'Conner, 2013). As adolescents are constantly communicating in a social environment, either using social media and internet platforms or in more traditional settings like home and school, young people are learning from others in their environment. Social learning theory comes from the cognitive formulation of social cognitive theory composed by Stanford psychologist Albert Bandura who describes self-efficacy as one's belief in his or her capabilities to exercise control over their own functioning and over events that affect their lives (Perron, Gomez, Testa, 2016). Bandura explains human behavior in a three-way model in which personal factors, environmental influences, and behavior continually interact (see Figure 1).

Figure 1

#### *Social Cognitive Theory*



Adapted from: Bandura, A. Social Foundation of Thought & Action: A social Cognitive Theory, 1<sup>st</sup> Edition, 1986.

This theory suggests that learning is achieved by mentally rehearsing and then imitating the observed actions of other people, who serve as models of appropriate or acceptable behavior. Bandura argued that "most human behavior is learned through modeling" (Colin, 2015). Social learning theory is often used in schools because of its emphasis on modeling and observed actions of others (teachers, peers). Bandura noted four conditions that are necessary for a person to successfully model the behavior of another: attention, retention, reproduction, and motivation. Learning requires that the learner is paying attention to the behavior in the first place, that he remembers what he saw or heard, that he is actually able to physically reproduce the behavior, and that he has a good motive or reason to reproduce it, such as the expectation of reward (Colin, 2015). As many adolescents are able to access infinite knowledge and modeling examples through mobile technology, it is such an important platform because it is able to capture attention and motivation of youth at a high rate. Children's strategies for managing emotions, resolving disputes, and engaging with others are learned from experience and carried forward across setting and time (O'Conner, 2013).

## Methods

### Research Design

The purpose of this study was to gain a full understanding of what type of mobile technologies and interventions are utilized by clinicians in practice with adolescents, along with attempting to understand the effectiveness of these type of interventions. A qualitative research design was used to collect data for this study. A qualitative study was chosen for this research study because it typically follows an inductive approach to advance and build theory... these observations lead to the identification of patterns which some tentative hypotheses are formulated and developed into theory (Barczak, 2015). In comparison, quantitative studies are a deductive approach in which the researcher identifies a theory that relates to the topic being studied, develops a hypotheses based on the theory, and then tests those hypotheses with data (Barczak, 2015). The method that was utilized for this research were qualitative individual semi-structured interviews. Because this study focused on the experiences of clinicians in their practice settings, it would have been difficult to measure such experiences in a quantitative way. The nature of the semi-structured interviews allowed for the researcher to have a prepared set of questions to each interviewee and allow for data analysis to compare/contrast the questions. The semi-structured interview also allowed for additional questions that could be asked to clarify a particular point or expand on issues presented. The research questions used in the semi-structured interviews were collected through audio recordings. The research questions involved low-risk questions and not involve identified data of at risk or vulnerable populations. This qualitative study provided clinicians the opportunity to share their experiences to allow for this research exploratory framework.

## **Sampling**

The participants for this study were gathered through a purposive sample. This involved looking for and recruiting mental health professionals who met the criteria for this study. To recruit participants for this study, the researcher contacted faculty with the school of social work at the University of St. Thomas and St. Catherine's University. An email and phone contact was provided to the potential participants. Participants contacted the researcher via email or phone to express their interest in participations. Snowball sampling from participants already in the study was also used to gain additional participants.

For the purpose of this study, "mobile technologies" is defined as a broad term to describe using mental health interventions such as text messaging, internet applications, and mobile applications. The requirements to participate in this study was that the mental health professional is an adult providing some type of mobile technology therapeutic intervention with adolescents, either in current clinical or past clinical practice. Participants were requested to be willing to share their experience in an audio recorded interview, either in person or over the phone. Participants for this study could have been male or female and there were no requirements based on what type of mobile technology intervention was used. No participants were ruled out based on their intervention use of mobile technologies. It should be noted that ruling out participants was limited based on the sample size collected.

## **Participants**

The participants identified for this research study comprise of four adults with experience in providing mental health services and therapeutic interventions with some type of mobile technology. All participants were female. Two of the participants reported to currently using mobile technology as part of their clinical practice. The other two participants reported to have

used mobile technology in past clinical settings. Two of the participants described their mobile technology intervention similar to a ‘Skype’ based platform, with access to face to face and audio communication through a computer screen. The other two participants described their mobile technology intervention as a text messaging platform. All participants were classified a mental health professional with two participants identifying as graduate social workers and the other two participants identifying as licensed practitioners (LP).

### **Protection of Human Subjects**

The participants in this proposed study were protected in two different ways including (a) The University of St. Thomas Institutional Review Board (IRB) approval to complete this study, and (b) informed consent by giving each participant an informed consent letter to review sign prior to the qualitative interview. A review application was submitted to the IRB following the research committee approval of the research proposal. An informed consent letter was submitted to the IRB and was approved to be used in this research study. The informed consent contained information regarding the focus and purpose of the study, the interview research and procedures, risks and benefits involved in the study, measures taken to ensure privacy and confidentiality, and the voluntary nature of the study (See Appendix A).

Information in the consent form was reviewed at the time of the interview and signed by all the participants before the interview began. The participants were given the opportunity to ask any additional questions at the beginning of the interview. The participants were informed of the audio recording process for the interview and were told that they could choose to not answer any questions and end the interview at any time. All signed forms were scanned and placed on the University OneDrive storage account to maintain confidentiality and per IRB instructions will be destroyed after three years of the date signed by the participant.

The consent form was distributed to participants before the interview took place via email for the participant to read over and ask any questions if needed. The consent form contained information regarding the focus and purpose of the study, the interview and research procedures, risks and benefits to participate in the study, confidentiality, protection of participants, and the voluntary nature of the study.

Information in the consent form was reviewed before the interview and signed by the participants prior to starting the interview. Participants had the option of refusing to participate for any reason upon reviewing the informed consent as well as refusing to answer any or all questions during the interview at without penalty.

The researcher took measures to ensure the confidentiality of the participants. The participant's names or any other identifiable information was eliminated during the transcription process. The participants in this study remain confidential and will not be shared during the research or presentation. All interviews were recorded, transcribed and stored on a secure online University storage system, OneDrive. All contact information such as phone numbers or email addresses that participants supplied for this study were saved on the University OneDrive storage system and will be deleted upon the completion of this study. All recordings and transcripts collected for this research study will be destroyed by May 15, 2018.

### **Data Collection**

Data was collected through qualitative semi-structured interviews with individuals consenting to participate in the study. Due to the qualitative nature of the study, open ended questions were chosen to allow for individual variations in responses and attempt to best answer the research question. The questions (see Appendix B) were formed based upon the themes found in the literature review. The questions were chosen to create a better understanding of

experiential use of technology in clinical settings and a fuller picture of how these methods work or don't work. Data was collected through an in-person or over the phone interview during the month of March, 2018 at a location of the participants choosing that could be private. Each interview lasted approximately 35 minutes. After the interviews were completed they were then transcribed by the researcher to interpret the results.

### **Data Analysis Plan**

This study looked to answer the research question: Can mobile technologies assist in reducing barriers associated with mental health treatment? This study was analyzed using a grounded theory approach. Grounded theory is a commonly used methodological approach in conducting qualitative research. It is noted that grounded theory is not a theory at all, but a method that strives to generate theory that is grounded in the data. The method of grounded theory allows the researcher to engage in a specific approach to the qualitative data collection and analysis, ultimately generating a theoretical explanation for the phenomenon being studied (De Chesnay, 2014). Grounded theory approach in qualitative research is then coded by the use of open coding, which refers to the initial phase of the coding process. Once the open coding process was completed, axial coding was used next. Axial coding is the process of refinement and development of specific categories, and selective coding, where categories are related around a central theme in an attempt to explain a phenomenon (Benaquisto, 2012). For this type of research, axial coding allowed for each theme to be refined into sub-themes and helped in supporting the data from the findings.

## **Findings**

This research attempted to answer the question: Can mobile technologies assist in reducing barriers associated with mental health treatment? The mobile technologies that were found to be used by the participants included text messaging, telemedicine, mobile apps, and internet resources (see Table 1). The data collected from the four participant interviews was coded and analyzed by the researcher for themes and sub-themes within the data (see Table 2). The overarching theme that was found within the data was mobile technologies allow for increased accessibility for mental health treatment. From the main theme of access to treatment, the data continues to categorize. The first theme was adaptability which was then broken down into five subthemes: ease of use, efficiency, crisis situations, availability, and growing technology. The second theme was reduced stigma which was then broken down into four subthemes: confidentiality/anonymity, rural areas, parental barriers, all populations. The third theme was the clinical relationship with two subthemes: lack of non-verbal communication and use of interventions. The fourth theme was lack of access to mental health services for adolescents with two subthemes: health insurance and transportation.

### **Adaptability**

Many of the experiences described by the clinician's focused on how adaptable the use of mobile technology is when working with adolescents. There were many subthemes found within adaptability including: ease of use, efficiency, crisis situations, availability, and growing technology.

#### **Ease of use**

All of the clinician's shared their experience with the ease of use mobile technology has played within the clinical relationship. One clinician emphasized the importance of adolescents

having their phone with them. “Well like instead of giving them a handout I will have the handout in my office and say ‘take a picture of this with your phone’ because it’s easier for them because they just always have their phone.”

Regarding telemedicine, one practitioner reported how the adaptiveness of technology assists with the convenience:

They are at school, they don’t have to get to any clinic, they are already there. This way you don’t have to house therapists in schools and it’s still a convenient way for kids to get that service. Especially for teenagers. I work with high schoolers and it’s not weird for them at all and they are very comfortable because they are always face timing and using this technology. I guess the biggest pro is the convenience.

A practitioner further describes the ease of use with adolescents with their experience with the technology:

You know I think they adapt to it really well. I mean most of the clients that I work with use Skype or Facetime. That’s how they talk to their friends... for most of them they were used to it... so I feel that it’s a great population because they are smart with the technology and talking and connecting with people that way.

Finally, a practitioner describes the ease of use in a simple statement. “It’s a pretty straight forward thing. I definitely want to use it because it can be a time saver and such a good way to connect to clients.”

### **Growing technology**

Many of the clinician’s reflected on the adaptable use of technology and how the needs of the adolescents can be addressed using mobile technology:

I think we need to respond to the need... and meeting them where they are at and so if there is a better way to respond in any other way like email or text or whatever it doesn't make sense to continue to use out dated forms of communication if it's not going to work for the clients.

One clinician describes the importance of adapting with technology and how relevant it is in the professional environment:

I think as technology continues to increase and expand and change we need to expand and change and start utilizing those things as well. I can just see how we have to keep our eye on that and make sure that we are culturally responsive and not left in the dust. We are going to need to stay relevant and have people be able to access services.

Another clinician described how adolescents have easy access to the developing technology at all times:

There was a lot of kids with depression and anxiety and they taught me with apps that they found for monitoring their mood, journaling, you know they are very savvy. They are very quick. They enjoy that. It's easy to do and it's quick and they have their phone at all time.

Finally, one clinician provides a straightforward view of growing technology. "I mean technology is getting bigger in general so you're going to have to adapt to it."

### **Efficiency**

As clinician's described adapting to technology with their own practice, they also responded to adapting to technology in the organizational setting. Technology offers undeniable access in efficiency to organizational settings. One clinician describes how working in a mobile environment can give a great effect in saving resources:

I think for our organization it was, it was easier. I think it uses less resources to do it that way... like I could literally end a session at 2:55pm and be in clinic at 3:00pm. They didn't want wasted resources in me having to drive to the school and to the building [clinic]... They wanted to try and balance us like doing this service... with the time piece I mentioned and being able to be back in the clinic.”

Another clinician provides a benefit for clients in saving resources in travel with her experience of using telemedicine. “So that people don't have to drive two hours to go to a one-hour therapy session and drive two hours back. That's a waste of time and energy.”

### **Crisis Situations**

In the interviews two practitioners had experience working in crisis centers that use adaptive technology in reaching adolescent clients. One clinician describes how text messaging was vital in crisis counseling. “In the context of crisis counseling that was really important. Teens just have a hard time reaching out on that kind of personal level... I think they feel a level of comfort with text messaging.”

Another clinician describes how her experience with a crisis mobile app could be used in the context of suicide prevention:

There's also the national suicide prevention lifeline created an app called the 'MY3', which it's kind of an app for basically a safety plan for who to call if their suicidal... it has the suicide prevention lifeline phone number programmed into it so that if they're in that moment they can just click that app and call this person and talk to them.

As two clinicians describe their experience of how mobile technology can be beneficial in crisis situations, it was interesting to hear one clinician describe her perspective using telemedicine not being appropriate for high need clients, specifically regarding suicide. “And

our program specifically, is not [for] the highest need kids simply because if we have someone who is suicidal or has really complex things going on we are not in the building to help should something come up or be a crisis situation.”

### **Availability**

As adolescents have access to mobile technology almost all the time, clinicians have seen the benefit of adapting to the needs for clients to be available at any time. A clinician describes her use of mobile apps for clients to use when they are not with her. “I would let the clients know about some apps that existed to utilize when they are not with me.”

One clinician explains the mindset she uses when thinking of the availability of mobile technology in accessing a therapist:

I have a very short amount of time where I could go get mental health services. Whereas if I could access them on my phone by text messaging a therapist or calling a therapist or doing Skype with a therapist that expands the amount of time I can do that.

Another clinician describes a specific intervention she tells adolescents to use on their own. “I tell them to go on YouTube and find different relaxation, stretching, yoga things to help with sleep.”

Another clinician describes how the texting program she used with adolescents provided for availability to mental health treatment:

I think it helps with you know for us it became 24/7 so it became anytime, anywhere and the phone went with them everywhere to they had access to us. I think one of the taglines was counselor in your pocket where they could really reach out anytime anywhere.

### **Quick Feedback**

A couple clinicians highlighted the importance of how mobile technology can provide

feedback to clients in an instantaneous environment. The first clinician describes the advantage of utilizing mobile technology to monitor mood and how that provides faster and more reliable feedback:

[Technology] It makes it easier to find patterns and stuff which then you can use in a clinical setting to understand the client. Like they notice their mood has patterns to it because they are recording it consistently because it's in their pocket, you're getting answers much faster and you can address those things much quicker... You could see a pattern instead of relying purely on self-report and trying to recall the weeks before a session.

A second clinician describes how mobile technology can assist in providing quick feedback to clients in a relational sense. "The pros are being able to kind of check in about the little things, doing the quick interventions, letting people know that I thought about them... giving them little reminders."

### **Reduced Stigma**

Stigma continues to be a major barrier in accessing and positive engagement with mental health treatment. The clinicians shared many subthemes related to the reduction of stigma. The subthemes are: confidentiality/anonymity, rural areas, parental barriers, and working with all populations.

#### **Confidentiality/Anonymity**

A strong theme that came through with the clinician's discussions were that of confidentiality and anonymity. All of the clinicians shared a part of this theme by talking about how the sense of confidentiality and anonymity reduces the stigma of accessing mental health treatment. The first clinician discussed how not having to disclose information was helpful to

the engagement. “It was a confidential thing for the teens, they didn’t need to disclose to anyone, you know that they were texting a crisis counselor. We were 24/7 so they could text in from anywhere anytime.”

A second clinician discusses the importance of anonymity that is afforded when using the type of mobile technology:

I think it also helps with us that we were an unseen face so that they [clients] could admit or talk through the things that they might feel uncomfortable to do with someone they know. There was a number of people who eventually ended up in interventions where they had some desire to live because they were reaching out... they were in their own and didn’t want to see or tell anyone that they knew in their lives, so it helped that we were distant.

Another clinician describes, in regard to text messaging, an adolescent can reach out with a clinician and talk about their feelings in a more secretive setting:

It’s easier for teenagers to be able to text somebody instead of talking over the phone. They can do it a little bit more secretly. I remember talking to kids that were in the back seat in the car with their parents and didn’t want to talk with their parents about how they were feeling. They weren’t comfortable talking with their parents.

A clinician also describes the importance the anonymity can have in accessing services: There is definitely a barrier for teens and young adults picking up the phone to call a crisis counselor when they are in crisis. It happens a lot where they are sitting in the car with their parents or friends and they have had suicidal or self-harming thoughts, they could just pick up the phone and start texting with us... and no one has to know. So, I think it helps with the anonymity.

**Rural areas**

Clinicians describe how those living in rural areas do not have as great of access to traditional types of therapy compared to those living in urban areas and how mobile technology shows promise as an intervention model in rural environments. The first clinician discusses how adolescents in rural areas don't have access to those in metro areas:

In the metro we have tons of different like outpatient and other type services for people to get mental health resources at low cost or free. If you live out in the middle of the 'boondocks' then there is a whole lot of nothing. You're limited to the crisis lines and emergency intervention type things. I know that 'TXT4Life' was... primarily for adolescents in rural Minnesota and on reservations because those youth were completing suicide to like an astronomical rate compared to the teens in the metro.

In response to the question of seeing growth of mobile interventions in the future one clinician stated. "I think so. Especially because of the lack of resources. Telemedicine has really increased peoples access to psychiatrists and therapists in rural areas. So, I think that will definitely continue."

Another clinician discusses how mobile technology access is helpful in rural areas. "Especially like rural communities, now that people all have cell phones and stuff it's a little bit easier to be able to access those things. Stuff where internet access might still be limited in rural areas."

Finally, a clinician describes how mobile technology can be beneficial for access in the future within the profession.

I could see where this would be especially, if technology is improving... could be a real asset moving forward in terms of making it more accessible and especially in rural communities where it feels less stigmatized to ask for help.

### **Parental Barriers**

In reducing stigma, clinicians describe that parents are also a barrier to accessing services based on their understanding of what it means to seek mental health treatment. The barrier seems to be evident as adolescents are willing to seek treatment, but parents still need to consent. One clinician describes her experience with adolescents and getting parents to also be engaged in treatment:

For whatever reason family members are working multiple jobs, don't get mental health stuff... I see some struggles in terms of getting parent buy in for the populations we work with. I'd have clients just say that they were the ones who signed parents' permission forms"

Another clinician discusses her experience of working with adolescents in schools and the reluctance parents can exhibit.

I guess for maybe more affluent clients... there is pressure to do so good in school now [that] parent's, even if their kid has like serious major depression, they hesitate to pull them out for appointments and that can be a barrier.

### **Works with all populations**

The data also presented a theme that while mobile technology may be initially thought of as the best population age to work with adolescents, clinicians describe that utilizing technology can work with all client populations. The first clinician illustrates this theme:

I think they are appropriate for teenagers and younger people... I think like initially that probably comes off as the ones who can be served the most because they are probably the quickest to adapt to it. I wouldn't say that they are the population that could be best served. I think that there could easily be other populations well served by it. I don't know I would say that teens are best served by it. I think they're the ones going to be utilizing it, but I don't know if they would be best served.

Another clinician discusses that anyone can use mobile technology:

I feel like that is a great population just because they are smart with the technology and talking and connecting with people that way. I feel they just have with technology more accessible to them, but it could work with anyone I suppose. People seem to take to it more quickly.

### **Clinical Relationship**

The use of mobile technology has many benefits, but participants also discuss the two negative effects that technology can have on the clinical relationship. Participants discuss how the face to face interaction is missed and not being able to read non-verbal communication makes it difficult for a clinician to make a thorough assessment. The three subthemes within the clinical relationship are: the relational experience, lack of non-verbal's, and interventions.

#### **Relational Experience**

For several participants, the relational experience was affected by the use of mobile technology. The clinical relationship was either hindered in some way because of the limitations of technology or there was a feeling by clinicians as not being as professional with its use. One clinician discusses how she feels her client relationship could be stronger without the use of mobile technology.

I have some of the student's I have been seeing via the 'telemed' program for like over two years now. I have a strong relationship with them and from my point of view that would be stronger if I had been seeing them in person versus the screen.

Another clinician touches on how difficult it can be to make a connection with someone using mobile technology. "Which for me is the most difficult thing. Getting to know someone not in person and have it be through the screen."

There was also a strong sense by clinicians that mobile technology can affect how they perceive themselves as professional with clients. One clinician discusses how her professional relationship is questioned when working with clients:

I think it sometimes does erode the professional relationship here... I think it does make it feel like we are more 'buddy-buddy' than we are as a professional. So, I am always mindful of that too and the tone and do I put the emoji in, do I put a smiley face? Does that seem like that is too friendly? Does that somehow take away the professionalism?

Another clinician discusses on the humanistic importance of the clinical relationship and how mobile technology doesn't allow for that same sense of professionalism as meeting face to face with a client:

I think there is that danger becoming, almost 'deprofessionalizing' us in a way if we just sit their text messaging or using apps. Our work as social workers in relational and repairing relationships and so I think we do have to respond and we do have to use it in a mindful way and make sure we do in an ethical and professional way... I think we still need to keep that human piece. You know sitting in a room and seeing the other face is really important.

**Lack of non-verbal's**

The other subtheme found in the clinical relationship was the lack of non-verbal's when using mobile technologies. In interventions such as text messaging and telemedicine, participants describe how technology changes their ability to make an assessment and disadvantages that can create. Non-verbal communication such as body language, tone of voice, and expressions greatly affect the clinical judgment. One clinician discusses using text messaging with adolescents and the limitations that are presented:

I think with text messaging the hardest thing is like you don't get the tone of voice. It's all just flat. So, you just really have to take people at their words. Like I'm doing stuff over the phone or in face to face with a client you can read their body language or read their voice. If you're just getting a text you just have to accept what it is. Also, with that too, if somebody hangs up the phone when I'm doing crisis counseling and they were high risk, I need to call 911 for an intervention. I know when they hung up the phone. Whereas a text message conversation, if they stop responding it may take 10 minutes before I know when they stopped responding. I know there are lulls in conversations with text messaging.

Another clinician discusses the way in which the lack of non-verbal has on the clinical relationship:

I guess I'm fairly old school in the sense that I feel like there is a clinical piece that is lost or a little bit harder so that would be one of those cons. You only see a kid from the shoulder up and like if they are leaning forward or slouching the wrong way I will have to tell them to sit up because I can't see their eyes or can't see their face and there are a

lot of non-verbal's that are lost. Just kind of that face to face interaction I feel like you can get deeper with your interventions.

Finally, a clinician describes the loss in communication when using text messaging and how she must allow for additional thought in what she wants her message to be:

I think the con is kind of inherent of the form of communication with text messaging where you're not actually talking over the phone where you can have the voice inflection or face to face where you can get the non-verbal's. I think that sometimes things can be misconstrued when you're texting, so I have taken a lot of time thinking 'how do I want to word this?'

### **Interventions**

While the technology is limiting with the absence of non-verbal communication and building a stronger relational experience, clinicians did express what types of interventions they utilize and found beneficial when working with mobile technology. Specific interventions using relaxation techniques appeared as a theme with the use of mobile apps when working with adolescents. One clinician discusses how adolescents are already using apps in the clinical relationship.

There was a lot kids with depression and anxiety and they taught me with apps that they found for monitoring their mood and journaling... We do meditation for a lot of relaxation or CBT or other stuff they have the apps on their phones. I will mention let's check in your mood and even write somethings down and like, oh no there's an app and stuff for that.

Another clinician discusses that she recommends apps for adolescents to use to assist

with relaxation and mindfulness. “I often when working with teenagers with behavior changes, I will ask them to download apps to help with that... especially for like relaxation and mindfulness and things like that.”

### **Lack of Access**

The final theme that was found in the research data was lack of access to mental health treatment for adolescents. Two subthemes emerged within the lack of access including: lack of health insurance and lack of transportation.

#### **Lack of health insurance**

A clinician plainly identified health insurance as a barrier to accessing mental health treatment. “Working with just adolescents, I would say for them the biggest thing they would say is health insurance.”

Another clinician shares that many families she works with are not documented and access to health insurance poses a major barrier to them:

A lot of families I work with are undocumented, so the health insurance is a big problem. Or even consistency, like some of the families that have Medical Assistance often at the beginning of the new calendar year will have a lapse in coverage just because they, if there English isn't very good they don't do the paperwork, or they don't understand what they need to do.

#### **Transportation**

Another area that affects adolescents is lack of access to reliable transportation where mobile health technologies appear to offer an advantage to accessing treatment. One clinician discusses the limitations of adolescents not having access to transportation. “In particular we

work with kids at schools so like today I had a kid who didn't have transportation... so there are just some limitations.”

Another clinician highlights that adolescents are often limited to their access to mental health treatment. “Big thing is transportation. Many of them don't have a license or if they do they don't have cars.”

Table 1

*Types of Mobile Technology Interventions by Practitioners*

<b>Participant</b>	<b>Technology Intervention</b>	<b>Other interventions</b>
Participant 1	Text messaging	None
Participant 2	Text messaging	Mobile Apps
Participant 3	Telemedicine	Internet (Youtube), Mobile Apps
Participant 4	Telemedicine	Text messaging

Table 2

*Major Themes and Subthemes from Findings*

## Major Themes

<b>Adaptability</b>	<b>Reduced Stigma</b>	<b>Clinical Relationship</b>	<b>Lack of Access</b>
Ease of Use	Anonymity/Confidentiality	Relational Experience	Health Insurance
Efficiency	Rural Areas	Lack of non-verbal's	Transportation
Crisis Situations	Parental Barriers	Interventions	
Growing Technology	All Populations		
Quick Feedback			

Subthemes

## **Discussion**

The data gathered in this qualitative study allowed for comprehensive feedback that answered the research question: Can mobile technologies assist in reducing barriers associated with mental health treatment? The themes that were discovered in the findings support the themes uncovered in the literature review. The discussion will consider how the findings relate to the literature of using mobile technologies to increase access with mental health treatment. The discussion will then consider how the data relates to the conceptual framework for this study, implications on practice, policy and future research. It will then identify the limitations and strengths of the study.

### **Consistency with the Literature**

The data presented in this research study provided a better understanding to what clinicians are experiencing as barriers for adolescents seeking mental health treatment and how experiential knowledge in using mobile technology can assist in reducing the identified barriers. Overall the participants described a positive experience in using mobile interventions such as text messaging, telemedicine, internet, and mobile apps. These positive experiences were also subdued by the clinicians describing the limitations that mobile technology brings within the context of the clinical relationship.

One finding to this research was the adaptability in using mobile technology in mental health treatment. The research participants describe that adolescents have constant access to some type of mobile technology and they were utilizing that gave them resources when they were independent of the clinician. This theme is aligned with the literature that the use of technology is well suited for psychological interventions with adolescents as a high percentage of adolescents having access to mobile technology (Kobak, Mundt, Kennard, 2015).

Adolescents using mobile technologies in crisis situations were common when the participants described their experience. This is also a common theme in the literature. While crisis situations are not ideal as a practitioner, adolescents generally do not seek help when they are experiencing symptoms that suggest a mental health problem (Burns & Birrell, 2014). Mobile health technologies appear to be a major benefit to adolescents seeking mental health treatment because it's likely the one method where they will engage. The portability, privacy, and round the clock availability of mobile phones offer... a method of access to information and self-care support anywhere (Jones, et al., 2014).

In addition to the commonality of using mobile technology, adolescents are comfortable using technology to keep track of mood and symptoms. One clinician reported that there was a lot kids with depression and anxiety ... with apps that they found for monitoring their mood and journaling. This is related to the literature in which people benefit from self-care techniques by integrating self-monitoring at home (Anderson, Burford, Emmerton, 2016). The benefit of self-care techniques aligns with self-determination theory and focus on finding patterns of behaviors that the adolescent can gain greater ownership of their own behavior. Clinicians found mobile apps helpful in working with adolescents in gaining insight with a reliable response. The findings are related with the literature in which mobile apps can be used to communicate and encourage interactive participation between the young person and the service or clinician (Burns & Birrell, 2014). The literature also states that young people are comfortable and prefer for mobile technology to collect their data (Witt et al., 2017; Chandra, Sowmya, Mehrotra, Duggal, 2014) which was reflected in participants responses that the adolescents they work with are comfortable using the technology in a clinical sense because it is convenient, and they are used to it.

Another important finding in the use of mobile health technology with clinicians is the awareness of efficiency that technology can have in an organization. The participants of the research discussed how technology used less resources especially in the idea of limiting traveling time for clinicians and clients. The literature also acknowledges the importance of mobile technology and there is an increasing demand for psychological services and a decrease in resources that explains there is not enough highly trained professionals to treat all patient with a one-to-one therapeutic model (Jones et al., 2014; Leigh & Flatt, 2015).

The participants reported that adolescents responded well to interventions that they felt were confidential and anonymous. Adolescents also preferred using text messaging to engage in treatment because they didn't have to see or talk to someone. The stigma for adolescents to seek out mental health treatment creates such a barrier, it makes mobile technology a preferred choice. The literature also responds to the stigma that youth are commonly seen as less popular and more socially rejected (Moses, 2010). Reducing the stigma associated to mental health treatment is likely a reason why the literature finds that text messaging interventions are found to have positive patient attitude and satisfaction (Agyapong et al., 2016).

One of the promising results of use with mobile health technology is the increased access in rural areas. The literature identifies this barrier in access by stating that traditional hurdles are flattened by online communication platforms, rendering geographical location irrelevant (Burns & Birrell, 2014). Participants were able to identify the lack of resources that are common in rural areas and saw the prospect that mobile technology will continue in helping increase access.

Mobile technology treatment is limited in its clinical effectiveness. At the very least these apps should be well informed, scientifically credible, and evidence based. (Leigh & Flatt, 2015). All the participants spoke to the effect that the clinical relationship was limited in some way when using technology. Many participants felt that the clinical relationship could be stronger in a face to face environment and that technology limited the professional manner of the relationship.

Using technology to share helpful mental health resources may also extend reach to underserved populations and fill gaps in the context of limited availability of mental health services (Radovic et al., 2016).

### **Conceptual Framework within the Data**

The research data that presented was seen through a lens of self-determination theory and social learning theory. Because increasing access for adolescents to mental health treatment was focused on increasing engagement through their self-ownership and learning from peers, these frameworks were appropriate with the findings. Many participants found that adolescents were self-engaged using mobile apps to monitor their behavior or journal feelings. The data also presented that adolescents were comfortable in using technology to monitor their behaviors or symptoms. Based on the concepts of self-determination including free will and focusing on individual ownership to positive development (Sheldon, Williams, Joiner, 2003), mobile health technology shows evidence of being an applicable conceptual framework.

In regard to social learning theory, it supposes that most human behavior is learned through modeling (Colin, 2015). In the research data, participants discussed how mobile technology has been helpful in providing and assessing feedback of the adolescents in a clinical setting. Clinicians are able to teach, model, and give quick feedback in an environment that

adolescents are then able to utilize on their own. The data is appropriate for this theory as strategies for managing emotions, resolving disputes, and engaging with others are learned from experience and carried forward across setting and time (O'Conner, 2013). Social learning theory is also a strong framework when utilizing technology as adolescents are used to popular apps that are connecting them with other peers. Participants described the convenience of using telemedicine because adolescents are already used the format in communicating with friends. The modeling of appropriate or acceptable behavior (Colin, 2015) is relatively easy to demonstrate with adolescents because they are accustomed to the technology.

### **Implications for Social Work Practice**

The findings of the data show an overarching theme that mobile technology is a beneficial tool in increasing accessibility to mental health treatment. The research has a considerable effect on social work practice as related to the social work code of ethics. As the NASW Standards for Technology (2017) states regarding standard 2.21: Access to Technology that when appropriate, social workers shall advocate for access to technology and resources for individuals... who have difficulty accessing them because they are a member of a vulnerable population... or other challenges. Advocating for these types of technology is helpful in areas of meeting client needs and reducing the stigma associated for those attempting to seek mental health treatment. Advocating for access to electronic services is part of social worker's commitment to social justice (NASW, Standards for Technology, 2017).

### **Implications for Policy**

The findings of the data show that mobile technologies have shown to reduce barriers in mental health treatment. Policy should reflect the current need for mobile technologies as data shows it is beneficial in adaptability, reducing stigma and gaining access to treatment. The data

shows that mobile technologies would be easy to implement in appropriate settings as adolescents are already utilizing it and clinicians view it as convenient. It should be noted that mobile technologies have the ability to be efficient and save on resources in an environment where mental health treatment lacks proper funding. In rural areas where mental health treatment already lacks proper resources, mobile technology shows promising results in increasing access.

### **Implications for Research**

This research study was able to add to the growing research on mobile technologies in mental health treatment. Much of the data can continue to guide clinical practice and future research in this area. As participants noted in their responses, mobile technology is only growing and becoming more significant in adolescents' lives. In regard to future research, one finding that was particularly interesting was the theme that mobile technologies can work with any aged population. Participants described that although adolescents are initially identified as most appropriate, all ages could find a benefit in utilizing mobile technology for mental health treatments and further research should focus on this finding.

### **Strengths and Limitations**

The research method included strengths in gathering data from primary sources that were able to highlight why adolescents have difficulty in traditional forms of mental health treatment and ways in which mobile health treatments can be used as an intervention to overcome many of the identified barriers in the literature. The research method utilized qualitative data to expand upon the participants experiences and found common themes that presented within the data. Another strength is that multiple perspectives had the opportunity to express themselves and allowed greater insight, description, and attitudes toward mobile technology type treatments.

The qualitative data was able to gather information that cannot be easily replicated by a quantitative study.

A weakness was having a limited number (4) participants for this qualitative research. While common themes were found within the data from the participants, the data could have been richer in content with a greater number of participants. Based upon the limited number of participants and the nature of any qualitative study, the reliability and validity of this research would need further replication to produce a greater sample size. As these research findings are promising as data trends in mobile technologies, a larger representation of clinicians would assist in providing compelling evidence in mental health treatments.

### References

- Agyapong et al. (2016) Cross-sectional survey evaluating Text4Mood: mobile health program to reduce psychological treatment gap in mental healthcare in Alberta through daily supportive text messages. *BMC Psychiatry* 16:378. doi: 10.1186/s12888-016-1104-2
- Anderson K., Burford O., Emmerton L. (2016). Mobile health apps to facilitate self-care: a qualitative study of user experiences. *PLoS ONE* 11 (5): e0156164. doi:10.1371/journal.pone.0156164
- Barczak, G (2015). Publishing qualitative versus quantitative research. *Journal of Product Innovation Management*, 32(5), 658. doi:10.1111/jpim.12277
- Benaquisto, L. (2012). *The SAGE encyclopedia of qualitative research methods*. L.M. Given (Ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Buccieri, K., Molleson, G. (2015). Empowering homeless youth: building capacity through the development of mobile technology. *Journal of Community Practice* 23: 238-254. doi: 10.1080/10705422.2015.1027802
- Burns, J., Birrell, E. (2014). Enhancing early engagement with mental health services by young people. *Dove Press Journal: Psychology Research and Behavior Management*. 25 November 2014.
- Chacko, A., Isham, A., Cleek, A., McKay, M.M. (2016). Using mobile health technology to improve behavioral skill implementation through homework in evidence-based parenting intervention for disruptive behavior in youth: study protocol for intervention development and evaluation. *Pilot and Feasibility Studies* 2:57. doi: 10.1186/s40814-016-0097-4
- Chandra, P.S., Sowmya, H.R., Mehrotra, S., Duggal, M. (2014). SMS for mental health – feasibility and acceptability of using text messages for mental health promotion among

young women from urban low income setting in india. *Asian Journal of Psychiatry 11* (2014) 59-64.

Clarke, J. (2014). Utilization of clients' metaphors to punctuate solution-focused brief therapy interventions: A case illustration. *Contemporary Family Therapy: An International Journal*, 36(3), 426-441. doi:10.1007/s10591-013-9286-y

Collin, Catherine (2015). *The psychology book: big ideas simply explained*. New York, NY: DK Publishing Inc.

Coulter, S. (2014). The applicability of two strengths-based systemic psychotherapy models for young people following type 1 trauma. *Child Care in Practice*, 20(1), 48-63. doi:10.1080/13575279.2013.847057

D'Alfonso, S., Santesteban-Echarri, O., Rice, S., Wadley, G., Lederman, R., Miles, C., ... Alvarez-Jimenez, M. (2017). Artificial intelligence-assisted online social therapy for youth mental health. *Frontier Psychology 8:796*. doi: 10.3389/fpsyg.2017.00796

De Chesnay M. (2014). *Nursing research using grounded theory: qualitative designs and methods*. New York, New York: Springer Publishing Company.

Furber, G.V., Crago, A.E., Meehan, K., Sheppard, T.D., Hooper, K., Abbot, D.T., ... Skene, C. (2011). How adolescents use sms (short message service) to micro-coordinate contact with youth mental health outreach services. *The Journal of Adolescent Health 48*. 113-5. doi: 10.1016/j.jadohealth.2010.05.022

Gagne, M., & Gagné, M. (2014). *The Oxford handbook of work engagement, motivation, and self-determination theory* / edited by Marylène Gagné. (Oxford Library of Psychology). New York: Oxford University Press.

- Gallagher, J., Schlosser, A. (2015). Service users' experiences of a brief intervention service for children and adolescents: A service evaluation. *Child Care in Practice*, 21(4), 374-391. doi:10.1080/13575279.2015.1028894
- Haugen, P.T., McCrillis, A.M., Smid, G.E., Nijdam, M. (2017). Mental health stigma and barriers to mental health care for first responders: a systematic review and meta-analysis. *Journal of Psychiatric Research*, 94, pp. 218-229.
- Jones, S.P., Patel, V., Saxena, S., Radcliffe, N., Al-Marri, S.A., Darzi, A. (2014). How google's 'ten things we know to be true' could guide the development of mental health mobile apps. *Health Affairs* 33, no.9 1603-1611. doi: 10.1377/hlthaff.2014.0380
- Kenny, R., Dooley, B., Fitzgerald, A. (2016). Ecological momentary assessment of adolescent problems, coping efficacy, and mood states using a mobile phone app: an exploratory study. *Journal of Mental Health*.
- Kobak, K.A., Mundt, J.C., Kennard, B. (2015). Integrating technology into cognitive behavior therapy for adolescent depression: a pilot study. *Annals of General Psychiatry* 14:37. doi: 10.1186/s12991-015-0077-8
- Leigh, S., Flatt, S. (2015). App-based psychological interventions: friend or foe? *Evid Based Mental Health, Vol. 0, 1-3*.
- Lewis, S.P., Heath, N. L., Michal, N.J., Duggan, J.M. (2012). Non-suicidal self-injury, youth, and the internet: what mental health professionals need to know. *Child and Adolescent Psychiatry and Mental Health* 6:13.
- Montague, A.E., Varcin, K.J., Simmons, M.G., Parker, A.G. (2015). Putting technology into youth mental health practice: young people's perspective. *SAGE Open April-June 2015: 1-10*. doi:10.1177/2158244015581019

- Moses, T. (2010). Being treated differently: stigma experiences with family, peers, and school staff among adolescents with mental health disorders. *Social Science and Medicine*, 70, pp. 985-993.
- Mueller M.K., McCullough, L. (2017). Effects of equine-facilitated psychotherapy on post-traumatic stress symptoms in youth. *Journal of Child Family Studies* 26: 1164-1172. doi: 10.1007/s10826-016-0648-6
- National Association of Social Workers. (2017). *Revised Code of Ethics of the National Association of Social Workers*. Washington, DC. NASW Press.
- National Association of Social Workers (2017). *Standards for Technology in Social Work Practice*. Washington, DC. NASW Press.
- O'Connor, T.G., Matias, C., Futh, A., Tantam, G., Scott, S. (2013). Social learning theory parenting intervention promotes attachment-based caregiving in young children: randomized clinical trial. *Journal of Clinical Child & Adolescent Psychology*, 42(3) 358-370. doi: 10.1080/15364416.2012.723262
- Orlowski et al. (2016). The promise and the reality: a mental health workforce perspective on technology-enhanced youth mental health service delivery. *BMC Health Services Research*. doi: 10.1186/s12193-016-1790-y
- Perron, J., Gomez, A., Testa, R. (2016). Harnessing the power of rigor and self-efficacy in the classroom. *Leadership*, September-October pp. 8-10. Retrieved from [http://nass.us/rc\\_files/43/Harnessing%20self-efficacy.pdf](http://nass.us/rc_files/43/Harnessing%20self-efficacy.pdf)
- Perry, B.I., Singh S. (2017). A virtual reality: technology's impact on youth mental health. *Indian Journal of Social Psychiatry* 2016;32:222-6.

- Radovic, A., Vona, P.L., Santostefano, A. M., Claravino, S., Miller, E., Stein, B.D. (2016). Smartphone applications for mental health. *Cyberpsychology, Behavior and Social Networking* 19:7. doi: 10.1089/cyber.2015.0619
- Reamer, F.G. (2014). The evolution of social work ethics: bearing witness. *Advances In Social Work*, 15(1), 163-181.
- Reid, S.C., Kauer, S.D., Hearps, S.J., Crooke, A.H., Khor, A.S., Sancu, L.A., Patton, G.C. (2011). A mobile phone application for the assessment and management of youth mental health problems in primary care: a randomised controlled trial. *BMC Family Practice* 12:131.
- Sheldon, K. M., Williams, G., & Joiner, T. (2003). *Self-determination theory in the clinic: motivating physical and mental health*. Retrieved from <https://ebookcentral.proquest.com>
- Steele, W. (2009). An evidence-based intervention for trauma victims. *Journal for reclaiming children and youth Spring 2009* 18:1 pp 20-23.
- Whittaker, R., Stasiak, K., McDowell, H., Doherty, I., Shepard, M., Chua, S., ... Merry, S. (2017). Memo: an mhealth intervention to prevent the onset of depression in adolescents: a double-blind, randomized, placebo-controlled trial. *The Journal of Child Psychology and Psychiatry* 58:9, pp. 1014-1022.
- Witt et al. (2017). Effectiveness of online and mobile telephone applications ‘apps’ for the self-management of suicidal ideation and self-harm: a systemic review and meta-analysis. *BMC Psychiatry* 17:297 doi: 10.1186/s12888-017-1458-0

## Appendix A



### Consent Form

#### 1159013-1 | Mobile Technology Access in the Treatment of Mental Health

You are invited to participate in a research study about mobile technologies being used as a therapeutic intervention to therapy and its use in providing better access to mental health care. You were identified as a possible participant by the University of St. Thomas School of Social Work Faculty and because you are involved in providing a type of mobile technology as an intervention in mental health care. You are eligible to participate in this study because you can provide valuable insight into how mobile technologies can help in providing access to care. The following information is provided in order to help you make an informed decision whether or not you would like to participate. Please read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Ryan Goman with the University of St. Thomas with the graduate social work program. This study is being chaired by Judith Hoy, faculty of the graduate social work program at the University of St. Thomas. This study was approved by the Institutional Review Board at the University of St. Thomas.

#### Background Information

The purpose of this study is to see if mobile technologies can assist in reducing barriers associated with mental health treatment. The hypotheses of the research are that mobile technologies can at minimum be a helpful adjunct to traditional therapy and can provide better access for all populations when seeking mental health treatment. Mobile technologies are still a largely untapped source of innovation to improve efficiency and patient self-care in mental health treatments.

#### Procedures

If you agree to participate in this study, I will ask you to do the following things: Be willing to engage in an audio recorded interview that would include structured interview questions by the researcher. The interview would only take place one time and expected to last 30-60 minutes. The interview will take place at the request of the participant, in a setting that is quiet and private. There will not be any further follow up once the interview is completed.

### **Risks and Benefits of Being in the Study**

The study has risks. The researcher will take measures to ensure the confidentiality of the participants. The participant's names will be changed when reporting the data and allow for confidentiality when the data is transcribed. Any other identifying information will be removed from the data before it is presented to others. The interview will be conducted in a private room. The interview will be audio recorded for transcription purposes. The audio recorded interview and transcripts will be stored on the University of St. Thomas' OneDrive account to ensure security.

A participant may feel a sense of mental fatigue or embarrassment during the interview. To reduce this risk, participants have the option to decline answering any question during the interview. The participant may also choose to withdraw or end the interview early for any reason without any consequence for choosing to not participate.

The direct benefits you will receive for participating are: There are no direct benefits for participating in this study.

### **Privacy**

Your privacy will be protected while you participate in this study. Participants have the option to decline answering any or all questions presented to them in the interview. The participant will also be able to choose the location and room for the interview. The participant may end the interview early for any reason.

### **Confidentiality**

The records of this study will be kept confidential. In any sort of report I publish, I will not include information that will make it possible to identify you. The types of records I will create include audio recordings and transcripts. The audio recordings will be stored on the University of St. Thomas' OneDrive storage account. The audio recordings will be destroyed once they are transcribed by the researcher. The transcribed documents will be stored on the University of St. Thomas' OneDrive storage account and will be destroyed by May 14, 2018. All signed consent forms will be kept for a minimum of three years upon completion of the study. Institutional Review Board officials at the University of St. Thomas reserve the right to inspect all research records to ensure compliance.

### **Voluntary Nature of the Study**

Your participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your current or future relations with employers, individuals or the University of St. Thomas. There are no penalties or consequences if you choose not to participate. If you decide to participate, you are free to withdraw at any time without penalty or loss of any benefits to which you are otherwise entitled. Should you decide to withdraw, data collected about you will not be used. You can withdraw by contacting Ryan Goman at (612) 834-4703 or [Goma4129@stthomas.edu](mailto:Goma4129@stthomas.edu) and request to be withdrawn from the study. You are also free to skip any questions I may ask.

**Contacts and Questions**

My name is Ryan Goman. You may ask any questions you have now and any time during or after the research procedures. If you have questions later, you may contact me at (612) 834-4703 or [Goma4129@stthomas.edu](mailto:Goma4129@stthomas.edu) You can also reach my research advisor, Judith Hoy at (612) 817-7686 or [jmhoy@stthomas.edu](mailto:jmhoy@stthomas.edu) You may also contact the University of St. Thomas Institutional Review Board at 651-962-6035 or [muen0526@stthomas.edu](mailto:muen0526@stthomas.edu) with any questions or concerns.

**Statement of Consent**

I have had a conversation with the researcher about this study and have read the above information. My questions have been answered to my satisfaction. I consent to participate in the study. I am at least 18 years of age. I give permission to be audio recorded during this study.

**You will be given a copy of this form to keep for your records.**

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**Signature of Study Participant**

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**Date**

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**Print Name of Study Participant**

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**Signature of Researcher**

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**Date**

**Appendix B**

## Research Questions –

1. Mental health organizations have increased access to mobile interventions for their clients. Why do you think organizations are embracing these types of interventions?
2. Do you have experience using mobile technology for mental health interventions? What are the positives/negatives with using this technology intervention?
3. Have you ever used mobile apps, internet, text messaging for mental health reasons with clients? If yes, in what ways?
4. In your experience, what mobile intervention do you use the most with clients?
5. In your opinion, what is the most beneficial intervention in working with client's and their mental health needs?
6. In your experience what do clients identify as barriers to accessing mental health services?
7. Do you think mobile applications are an appropriate mental health intervention for younger people? Which population is best served?
8. Do you think clients would feel comfortable keeping a record or log of behaviors, symptoms, feelings using technology?
9. What methods have worked/not worked when you helped a client receive mental health services?
10. Do you see mobile application interventions increasing in the future in the areas of mental health?
11. In your opinion, is there a better clinical approach compared to using a mobile application intervention?

## Appendix C

### Recruitment Script

Hello, my name is Ryan Goman and I am a graduate student with the University of St. Thomas looking to gather information about mental health access with mobile technologies for a research study. The purpose of this research study is to learn how access to mental health services may be better served using mobile technologies with adolescents. The requirements for the study include a mental health practitioner who has provided mobile technology interventions to participate in a 30-60 minutes interview at a setting chosen by you to answer questions related to mobile technologies and mental health.

As a participant, you are eligible to participate in the study. You will be asked questions related to mental health treatment interventions. You will also be asked to share your opinions if you think it is useful in using mobile apps, internet, or social media as a tool in treating mental health issues. If you are interested in the research study you can call myself, Ryan Goman, at (612) 834-4703 or through email [Goma4129@stthomas.edu](mailto:Goma4129@stthomas.edu)