

**The effectiveness, ethics and risks involved in the use of mHealth apps  
by psychologists as an additional tool in psychotherapeutic treatment**

Name: Danielle Pitanga Thomaz

Student Number: N00173000

Word Count: 6346

Institute of Art, Design and Technology, Dun Laoghaire

MSc Cyberpsychology

Supervisor: Liam Challenor

April 2019

## **Declaration**

This thesis is the result of my own work and was submitted exclusively to the master's degree in Cyberpsychology from the Institute of Arts, Design and Technology - Dun Laoghaire.

Name: Danielle Pitanga Thomaz

Signature:

Date: 29/04/2019

## **Acknowledgements**

I would like to dedicate this thesis to my friends, my partner, family, and classmates who supported me and fully trusted in my ability to complete this great challenge.

I would like to thank my supervisor, Liam Challenor, for his support in the development of this thesis.

Lastly, I would like to thank all those involved directly or indirectly in the process of building this study and the participants who greatly contributed to making this study possible.

## Table of Contents

Declaration.....	i
Acknowledgements.....	ii
Table of Contents.....	iii
List of Figures .....	v
Abstract.....	vi
Chapter 1: Introduction .....	1
Chapter 2: Literature Review .....	3
2.1 Mental Health Applications (mHealth apps).....	3
2.2 Reliability, Efficacy, and Security.....	6
2.3 Ethical Aspects and Regulations.....	7
2.4 Research Aim and Objective .....	8
Chapter 3: Methodology.....	10
3.1 Research Design .....	10
3.2 Participants.....	11
3.3 Procedures and Data Analysis .....	11
3.4 Ethical Considerations .....	12
Chapter 4: Results.....	13
4.1 Theme 1: Weaknesses.....	13
4.2 Theme 2: Lack of Trust .....	15
4.3 Theme 3: Lack of Information .....	16
4.4 Theme 4: Strengths .....	17
Chapter 5: Discussion.....	20
5.1 Introduction.....	20
5.2 Thematic Analysis.....	20

5.3 Strengths and Limitations of the Study.....	22
5.4 Suggestion for Future Research .....	23
Chapter 6: Conclusion .....	24
References .....	26
Appendices.....	32
Appendix 1: Consent Form.....	32
Appendix 2: Information Sheet .....	33
Appendix 3: Interview questions .....	35

## List of Figures

Figure 1. Annual number of global mobile app downloads 2017-2022. ....	4
Figure 2. Model of Qualitative Data Analysis.....	10
Figure 3. Factors regarding the use of mHealth apps by professionals .....	13

**THE EFFECTIVENESS, ETHICS AND RISKS INVOLVED IN THE USE OF MHEALTH APPS  
BY PSYCHOLOGISTS AS AN ADDITIONAL TOOL IN PSYCHOTHERAPEUTIC  
TREATMENT**

**Abstract**

The rapid growth of mHealth apps has led to a new health care setting, offering benefits such as symptom monitoring, diagnosis, patient support outside the therapeutic setting, and more engagement in relation to the treatment. Following this technological trend, health professionals began to include this tool as an additional tool in the psychotherapeutic treatment of patients.

This study explores the use of mHealth apps from the perspective of psychologists, analysing aspects related to the effectiveness of mHealth apps in relation to data protection, ethical issues, confidentiality, and the barriers involved in using such technologies.

*Keywords:* mHealth apps, effectiveness, ethics, confidentiality, data protection.

## Chapter 1: Introduction

Technology involving smartphone apps and psychological apps was launched in 2008 and has quickly grown, reaching billions all over the world as a self-educative and self-managed tool in the health field (Bush, Armstrong & Hoyt, 2018). By its definition, mobile applications or mental health apps (mHealth apps) are mobile devices that are used as tools, with the objective of supporting the health profession by providing diagnosis, symptom monitoring, data collection, and functioning as an educational tool, as well as providing easier communication between the professional and the patient (Gaggioli & Riva, 2013). As a result, technology through mHealth apps has led to a new path in the health field, adding value to the relationship between the health professional and the patient. Furthermore, it provides benefits such as broadening access to health care, acting as a treatment extension, supporting the patient outside the clinic, which consequently improves patients' engagement with their treatment (Armstrong, Ciulla, Edwards-Stewart, Hoyt & Bush, 2018).

Several studies regarding mHealth apps has shown its use as a tool that helps in the reduction of mental health disorders such as Bipolar Effective Disorder (Beiwinkel et al., 2016), anxiety disorder, Obsessive Compulsive disorder (OCD), and posttraumatic Stress Disorder (PTSD) (Roschlen, Zack & &Speyer, 2004).

However, although the advantages of the use of mHealth apps has been seen in the reduction of queues, low costs, transportation, and so on, it is generally agreed upon in current literature that its use also demands concern and caution. This concern mainly revolves around privacy and confidentiality, as well as the risk of personal data being shared or exposed. Also of concern is how these data are handled by third parties and/or by app developers (Lui, Marcus & Barry, 2017).

A persistent theme regarding this subject is the protection of individuals' data. Recently, regulations and guidelines about this concern were revised by the General Data Protection Regulation (GDPR) in order to demand more responsibility concerning



safety and privacy policies from companies holding such data. This, together with the use of personal data related to mobile phones and social media, aims to ensure individuals' rights in relation to their personal data (General Data Protection Regulation (GDPR), 2018).

However, even with existing laws that ensure data protection, professionals have to face other obstacles such as ethical implications, lack of information about use and purpose of mHealth apps, lack of training, lack of an appropriate guide, and lack of evidence that proves effectiveness in symptom reduction and an app's utility therein (Pierce, Towhig & Levin, 2016). Regarding the functionality of mHealth apps, studies also show that even apps that have certifications do not have clear privacy policies and do not guarantee complete data security and confidentiality (Huckvale et al., 2015). In addition, there is a shortage of empirical data that demonstrate the efficacy of mHealth apps as being complementary to psychotherapeutic treatment and in symptom reduction (Bush, Armstrong & Hoyt, 2018).

Thus, this study proposes to investigate the effectiveness of the use of mHealth apps as an adjunct in psychotherapeutic treatment, in relation to ethical, confidentiality, and effectiveness aspects, through the experience and opinion of psychologists.

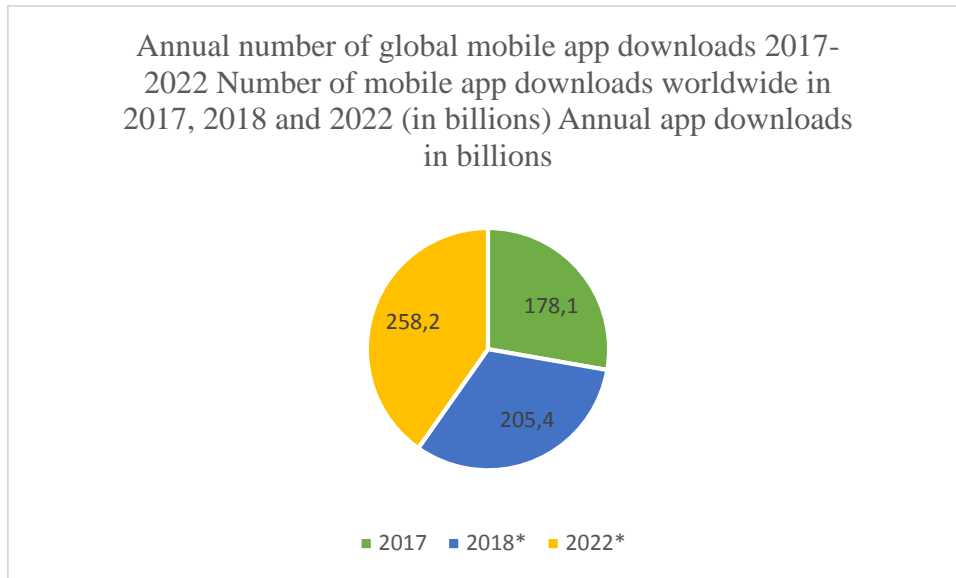
## Chapter 2: Literature Review

### 2.1 Mental Health Applications (mHealth apps)

The technological rise in the mobile phone market began with the launch of the first smartphone by IBM in 1992. Following this, was the launch of tablets, such as the iPad in 2001, and the launch of Apple's first smartphone, the iPhone, in 2010 (Gnadinger, 2014). Today, the mobile phone is an indispensable device in people's lives, with data showing that 86% of the population in Ireland use mobile phones to access the internet (CSO, 2018).

Currently, mobile phones have a direct influence on people's lives as part of their personal identity, as well being directly related to social interaction, convenience of use, and sense of security (Tian, Shi & Yang, 2009). Following the evolution of mobile phones, Apple iTunes and Android Market have launched mHealth apps with the promise of a tool that is both innovative and interactive, a technology that has shown so far to be gaining an increasing number of followers (Giota & Kleftras, 2014).

According to Statista (2019), more than 178 billion apps were downloaded in 2017 worldwide and it is estimated that this number will exceed 258 billion by 2022. Among these numbers m-health apps exceed 3 billion downloads (Statista, 2019). The data are shown in the graphic below:



**Figure 1. Annual number of global mobile app downloads 2017-2022.**

Source: Statista (2018)

The World Health Organization defines mobile Health as a “medical and public health practice supported by mobile devices, such as mobile phones, patients monitoring devices, personal digital assistants (PDAs) and other wireless devices” (Martínez-Perez et al., 2013). The mHealth apps in the field of psychology combine psychotherapeutic treatment with the patient with the technology of a mobile phone, with mHealth apps aiming to be an extra instrument in psychotherapeutic treatment (Clough & Casey, 2015).

Some studies have pointed to the benefits associated with the use of mHealth apps such as reducing access barriers to mental health treatment, improving patients' engagement in psychotherapeutic treatment, functioning as out-of-therapy support tools, and facilitating access, especially in relation to geographical limitations (Armstrong et al., 2018).

Furthermore, the benefits of using mHealth apps by psychologists include the identification and management of symptoms, helping to indicate when the individual needs professional support, helping with patients' engagement with treatment, and

providing information to the therapist on the status of the patients' symptoms (Olf, 2015).

Online therapy is another practice that has been growing as a psychological support tool, either as a complement to present therapeutic work or as a way of individual therapy online, offering such benefits as, practicality, accessibility for people that travel or live in remote places, or helping those with limited mobility (Roschlen, Zack & Speyer, 2004). However, although online therapy has been expanding among patients as an option in relation to psychological treatment, there is concern due to issues concerning privacy and other ethical boundaries (Mallen, Vogel & Roschlen, 2005).

Studies using the basic principles of Cognitive Behavioural Therapy (CBT) have shown that psychotherapy associated with the use of mHealth apps gained positive results in the reduction of symptoms of anxiety disorders, Obsessive Compulsive disorder (OCD), posttraumatic Stress Disorder (PTSD), and depression (Roschlen, Zack & Speyer, 2004).

Another approach that has been growing is mindfulness apps, with techniques of meditation and relaxation, helping in the reduction of psychological suffering and increasing wellness, all of which has been considered effective in the reduction of depression and anxiety symptoms (Mani et al., 2015). However, studies point to the low quality of such mindfulness apps in terms of functionality and features, with a lack of compatible resources with the concept and objective of mindfulness practice (Plaza et al., 2013). Other studies conducted by researchers sought to analyse such efficacy regarding these mobile apps as an adjunct of mental health treatment. A randomized study of 1837 participants with symptoms of anxiety disorder was conducted in 2016 to examine whether the use of smartphones was effective in the treatment of Anxiety Disorder. The result of the study pointed to a small to moderate improvement in anxiety symptoms after using smartphones but concluded that there were limitations regarding the use of smartphones and its effectiveness compared to face-to-face psychological treatment (Firth et al., 2017).

Another pilot study was conducted using IntelliCare apps which are for the purpose of reducing depressive and anxiety symptoms, and the results showed a 37% significant reduction in symptoms, 40% mild reduction, and 22% without any improvement of symptoms (Mohr et al., 2017). A test was also conducted with SIMBA (Social Information Monitoring for Patients with Bipolar Effective Disorder) to test the effectiveness of the app in monitoring symptoms in patients with Bipolar Effective Disorder, as well as whether the app was able to measure the level of depressive and others clinical symptoms and changes. Once again, although the experiment had positive results regarding the app's ability to monitor symptoms, some gaps were noted in the app's functioning, particularly in relation to recognizing clinical symptoms (Beiwinkel et al., 2016).

## **2.2 Reliability, Efficacy, and Security**

Although mHealth apps are seen as tools that support mental health treatments, there is uncertainty about the effectiveness, as well as privacy and security, of these apps (Sampat & Prabhakar, 2017). Pierce, Towhig and Levin (2016) conducted a study within the Acceptance and Commitment Therapy (ACT) approach in order to understand the main barriers encountered by professionals in using mobile Apps and pointed out factors such as poor application orientation (lack of adequate guidance), doubts about reliability and privacy, and difficulty in finding an app that addresses different psychological approaches. Additionally, although the literature can show the efficacy of mHealth supported by experiments, studies do not demonstrate any conclusive results (Payne et al., 2015). In addition, although findings in the literature show positive acceptance of the application in mental health, there is a lack of qualitative data in relation to user experience and opinion, as well as other aspects such as the background of application developers, lack of professionals in the health area, academic involvement in application development, and the lack of theory and techniques with content (Dennison et al., 2013).

Factors involving the structure of mHealth apps and features can affect both patients and professionals and also interfere negatively in the treatment of the patient. As such, the development of regulations and guidelines are essential in minimizing risks

in the use of mHealth apps (Lewis & Wyatt, 2014). Moreover, there is a critical view of practitioners regarding the insertion of this technology into the lives of their patients, and whether the apps are reliable and suitable for providing therapeutic support, notwithstanding any uncertainty about privacy and confidentiality concerns (Aguilera & Muench, 2012).

### **2.3 Ethical Aspects and Regulations**

Ethical and confidentiality aspects have been widely discussed in the field of mental health as main factors that influence the decision of professionals when recommending such applications to their clients. As such, scholars emphasize aspects in relation to safeguarding and confidentiality and urge caution in the use of mHealth apps (Jones & Moffitt, 2016).

As the psychologist has an ethical duty to preserve personal information and confidentiality, which becomes doubly important when integrating this new technological to the therapeutic contract, the app therefore becomes part of the therapeutic contract and patient consent and the therapist must inform the patient about factors relating to the confidentiality and security of such applications and in keeping personal data secure (Armstrong, Ciulla, Edwards-Stewart, Hoyt & Bush, 2018). Although the American Psychological Association (APA) does not provide clear and specific guidelines on the use of mHealth apps (Jones & Moffitt, 2016), the guidelines on Telepsychology regarding the use of mobile devices, videoconferencing, blogs, social media and so on, do require that the psychologist inform the patient about the risks regarding privacy and confidentiality (APA, 2013).

The European Parliament of the Council endorsed in 2016 the General Data Protection Regulation (GDPR) 2016/679, which applies to the whole European Union, and the proposal aims at providing consumers with clearer and more organized information about their personal data (Official Journal of the European Union, 2016). The GDPR was created in order to protect individual's personal data, such as name, photo, e-mail address, bank data, posts in social media, medical information, GPS data, and cookies (General Data Protection Regulation (GDPR), 2018). Moreover, it proposes to

synthesize the rules for the use of personal data in order to reduce the hold of companies that do not have clear and concise rules on privacy and data security policy for consumers (Official Journal of the European Union, 2016). The regulation also highlights the right to compensation for individuals who have their rights disrespected and thus requires greater transparency of data by companies following the principle of accountability (Edwards, 2018).

However, although the regulations are recent, from 2016 and updated in 2018 (GDPR, 2018), many Apps still do not have clear privacy policies and end up breaking confidentiality agreements (Torous & Roberts, 2017).

#### **2.4 Research Aim and Objective**

The purpose of this study is to investigate the effectiveness, risks/ limitations and ethical implications involved in the use of mHealth apps by psychologists. The main question of this study is:

*“Do mental health apps help in psychotherapeutic treatment and what are the implications of its use?”*

In order to find out the effectiveness the study proposes to investigate the following research questions:

1. What is the opinion of psychologists regarding the use of m-Health apps as an additional tool in psychotherapeutic treatment?
2. Are psychologists aware of laws and regulations related to mobile applications?
3. How do psychologists associate ethics with the use of m-Health apps?
4. What are the main barriers to using m-Health apps?

Thus, the research proposed for the present study aims to investigate whether mental health apps help in psychotherapeutic treatment and what the implications related to the use of this technology are. In doing so, the study aims to deepen the research from

the point of view of the professional psychologist, exploring their opinion and experience regarding the use of mHealth apps as an additional tool in psychotherapy.

In addition, the study will check whether professionals are aware of laws and regulations related to personal data protection, as well as the ethical aspects associated with such use. Ultimately, it will investigate the main barriers encountered in the use of mHealth apps.



## Chapter 3: Methodology

### 3.1 Research Design

Qualitative research allows for direct contact with the participants, in a natural environment, mainly in a face-to-face situation, primarily carried out through interviews that allow behaviour observation and greater interaction with the participant (Creswell & Creswell, 2015). The process of data gathering and analysis of qualitative research has a flexible design, allowing for the participants' experience and an exchange about the presented problem, as well as gathering information on participants' personal history, background, and opinions. With this, the researcher can shape their interpretations and attribute significance to any themes that arise in this process (Creswell & Creswell, 2018).

By examining data gathered in detail, themes emerge through data, showing significant information associated with the study's research questions (Braun & Clarke, 2006). This Thematic Analysis is complex and involves three steps: noticing, collecting, and thinking. Through a detailed data analysis, the researcher can identify key points through the themes and characteristics, which are then coded and related back to the research objective (Seidel, 1998).

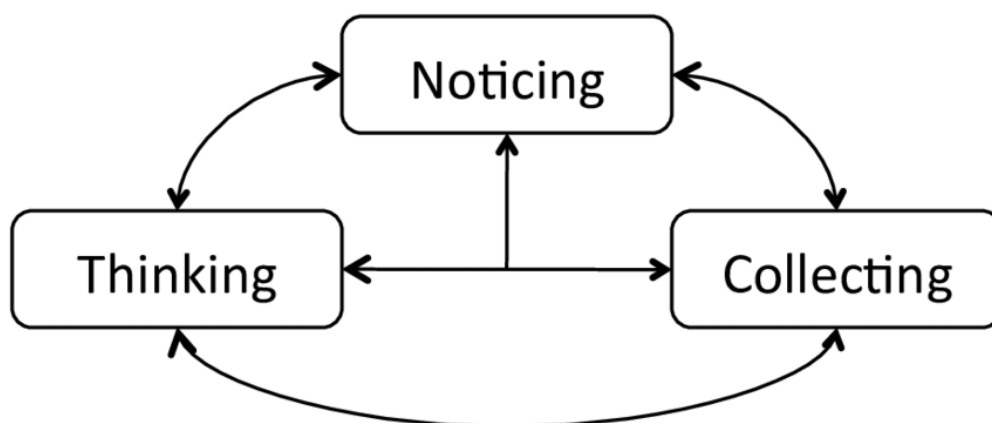


Figure 2. Model of Qualitative Data Analysis

Source: Seidel, 1998

Qualitative analysis involves building, interpreting, and learning, with the researcher's remarks and notes adding to the overall experience and point-of-view of the participants involved in the study (Braun & Clarke, 2006). For the present study, the qualitative method was chosen in order to understand the experiences of the psychologist in using mHealth apps when considering the ethical issues involved in the therapeutic process.

This study used individual interviews (Appendix A), to gather data, giving participants the opportunity to share their experience regarding the use of mHealth Apps through open questions.

Thematic analysis was then used to analyse the data collected, which allowed the researcher to gain an in-depth view of participants' opinion and their experiences.

### **3.2 Participants**

The research included two groups of psychologists, those who use mHealth apps and those who do not. Participants were recruited from different institutions, such as universities, clinics of psychological assistance in Dublin, as well as from the Psychological Society of Ireland (PSI).

Contact was made with a total of 54 people through email, from which 10 supplied the researcher with feedback. Details of the study were sent to the participants by email. All the participants were psychologists registered in a recognized institution in Ireland; however, two were practitioner students.

### **3.3 Procedures and Data Analysis**

The interviews were recorded in order to guarantee more profound and detailed data analysis, and this was done with the consent of the participants (Creswell & Creswell, 2018). In addition, the researcher took notes during the interview based on behavioural observation and other relevant data that arose during the interview. The data analysis process was conducted through four steps, such as transcribing the interviews, reading the whole data collected, coding, and then categorizing by themes (Seidel, 1998).

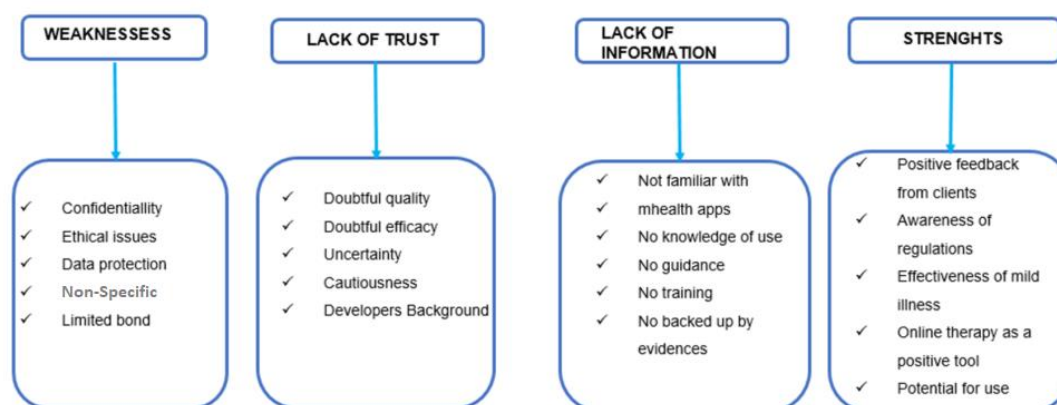
### **3.4 Ethical Considerations**

The interviews were conducted following the criteria of private space and by participant choice. Information regarding the study's goals and targets were provided to the participants through the Information Sheet (Appendix B) and the Consent Form (Appendix C). Those documents clearly informed them of their rights to volunteer and the anonymous nature of the research. The participants were informed by the researcher about security and privacy, as well as their right to withdraw from the research at any time, without any issues (APA, 2013).

## Chapter 4: Results

Through data analysis, four main categories (themes) emerged:

1. Weaknesses;
2. Lack of Trust;
3. Lack of Information;
4. Strengths



**Figure 3. Factors regarding the use of mHealth apps by professionals**

Source: Author's own

### 4.1 Theme 1: Weaknesses

The theme of weaknesses appeared many times during the interviews and referred to the psychologists' perception of the mHealth apps and their direct influence over the decision to use and recommend to their patients. From this category, weaknesses mentioned included confidentiality, ethical problems, data protection, apps being non-specific, and limited bonds made between patient and therapist.

**Confidentiality and ethical issues** were pointed out as the main cause of not using mHealth apps due to the lack of clear guidelines that ensured the protection of

personal data. Ethical problems were related to confidentiality and data protection, in the sense that any issues with the apps and their data could imply a breach of professional secrecy.

In relation to this lack of security in using mobile apps, the participants inquired about how the third sector managed personal data, and other factors such as lack of security in using apps with notes regarding patients, concerns about data being hacked, how to keep information protected in cases of robbery or loss of mobile phone, how to guarantee a safe environment in case of online therapy, and how to guarantee the confidentiality of mHealth apps for their client, and so on.

All the participants mentioned confidentiality and ethics as concerns in the use of mHealth app in online therapy. Some statements show this concern by participants:

“What kind of control it has in case of the phone be stolen, how the information are delivered, which support is given from the app (participant 2)” ... “Big potential for harm (participant 2)” ... “I prefer keep my notes confidentially (participant 3)” ... “Ethics itself would involve confidentiality issues Participant 10)” ... “Confidentiality and ethics are the main barriers for professionals (participant 7)”.

Issues relating to **apps being non-specific** were related to the difficulty in finding apps that are targeted for specific cases and in accordance to professional and patients' specific needs. Some participants mentioned the lack of clarity regarding some apps and their aim, mentioning that mHealth apps are mostly generic. Participants mentioned their opinions about this topic through answers such as:

“I believe that in relation to functions the apps must be specific (participant 1)” ... “The app should target according to the profile of the patient and the professional (participant 5)” ... “Focus specifically on timely user needs (participant 2)” ... “...Must have a specific screening for each case (participant10)”.

Regarding **Limited Bonds between patient and therapist**, the participants talked about the difficulty of creating bonds with the patient and that online therapy does not replace traditional face to face interaction. Furthermore, participants mentioned online therapy as a tool that can only be used temporarily, and that normal therapy

has more efficacy due to the possibility of working better in the natural therapeutic setting. Some examples of participants' answers regarding online therapy include:

"Doubts about if it can be effective after a year or more (participant 2)" ... "If it can replace a person therapy (participant 8)"... "It's difficult to create bonds in online therapy (participant 6)"... "In online therapy the bond may take longer to be established (participant 9)"... "Online therapy is better than not having help (participant 5)"...

#### **4.2 Theme 2: Lack of Trust**

This main theme was identified through responses regarding the uncertainties of how mHealth apps work, and regarding the process of development of a mobile app and the criteria used, especially around the mHealth apps developers' background. In this category, the following sub themes were found: doubtful quality; doubtful efficacy; Uncertainty; Being Cautious, and App Developers' Background.

***Doubtful quality and doubtful efficacy*** came up many times in participants' answers about how they see mHealth apps as a tool used in psychotherapy. Some statements centred on the doubt regarding functionality, quality and safety use, and which apps are truly effective and fit for purpose. Participants questioned evidence regarding the effectiveness of mHealth apps and if they work in tandem with the work conducted in psychotherapy. Some of participants answers reflected this opinion:

"I don't know how trust is it (participant 3)" ... "Even as a support there's some questions about effectiveness (participant 4)" ... "it's difficult to find a good app (participant 1)" ... "I need some evidence how good it works (participant 2)"... "I'm not sure about apps helping me professionally (participant 7)" ... "I think apps can be as effective as a tool in psychotherapy but need to have quality (participant 6)" ... "I do not think the apps are effective, they are generic (participant 4)"... "What is suitable for that (participant 10)"... "App experience is still a blank, limiting (participant 2)".

***Uncertainty, Cautiousness and Developers' Background*** were extracted through statements about caution in using mHealth apps and the decision of not using mobile apps or about sporadic use. The lack of access to the operation of mobile apps and the uncertainty about the developers' background were observed many times in participants' answers, as well as the lack of trust on the app's proposal and evidence

backing up mHealth app claims, primarily whether the involved professionals in this app process belonged to the health sector. Thus, the majority of participants reported using only select apps to work with patients, specifically ones that do not require personal data and only apps aimed at relaxation/ mindfulness. Some participants' statements showed this:

"Which one is developed by professionals (participant 4)" ... "If it is developed just to sell apps (participant 1)"... "I'm caution about them (participant 2)"... "I don't go looking for them (apps) because of all uncertainty that they have ((participant 3)"... "We should be quite rightly cautious for using apps (participant 7)"... "Apps work as a homework and always out of the therapeutic setting (participant 9)"... "Would recommend apps within the area of mindfulness (participant 5)" ... "I do not know if I would recommend other types because I do not know (participant 6)"... "No background check (participant 2)"... "Not having mental health professional linked to the app, professionals without background, ethics goes into doubt if the app is causing damages or benefits to the user (Participant 4)".

#### **4.3 Theme 3: Lack of Information**

The theme Lack of information was extracted based on participants' statements regarding the lack of relevant information on the use of mHealth apps. Due to the huge variety of apps, participants mentioned a lack of credibility concerning mHealth apps and their specific objectives. In this category, further sub themes were identified: not familiar with mHealth apps; no knowledge of use; no guidance; no training; and not backed up by evidence.

***Not familiar with mHealth apps*** was a theme that arose. Aspects such as not being familiar with mHealth app operations and for which specific purpose these apps are developed were highlighted many times by the participants:

"I'm not familiar with mHealth apps (participant 8)"... "I don't know about any technical aspects of apps (participant 3)"... "Very much left up to each individual (participant 2)"... "I'm awareness in a very limited way (participant 7)"... "Which one are for each client groups (participant 1)"... "Very little knowledge (participant 5)"... "Lots of people (professionals) are not familiar with that (participant 2)".

***No knowledge of use, No guidance, No training, and Not being backed up by evidence*** were highlighted in participants' answers that mHealth apps are generic and

do not lead to consistent results, as backed up by theoretical and scientific evidence. Many participants referred to the lack of clear information and the lack of explanation from involved professionals regarding mHealth apps features. Also mentioned were the lack of specific apps for specific psychological disorders, and the lack of guidance and training to use such apps:

“Lack of evidence (participant 4)” ...” Don’t have somebody showing me sample of apps proving some evidence for effectiveness (participant 2)” ...”No guideline and introduction of them (participant 2)” ...”No knowledge about how they work (participant 5)” ...”Demonstrate they are value to people (participant 1)” ...”Probably some training involved (participant 1)” ...” I wonder what help the patient will get when deciding to use an application (participant 2)” ...” I believe that in relation to functions the apps must be specific (participant 9)” ...”The app should target according to the profile of the patient and the professional (participant 10)” ...” It is important to have a professional behind to guide you because you may have ethical problems (participant 8)” ...”How it demonstrate that mental health can add something as an adjunct therapy (participant 2)”.

#### **4.4 Theme 4: Strengths**

The theme Strengths was extracted from participants’ answers and is related to the opinion of those who do not use mHealth apps and how they consider their possibility for future use. Aspects about law and regulations were also brought up. In this category the following were identified: Positive feedback from clients; Awareness of regulations; Effectiveness in mild disorders; Online therapy as a positive tool; and Potential use.

***Positive feedback from clients and Effectiveness in mild disorders*** appeared in participants’ answers as connected features. Regarding patients’ feedback, participants reported that patients had a major commitment in their treatment and convenience to adapt to the use of mobile apps. Regarding effectiveness, participants related that apps are effective in mild anxiety cases, stress, and for difficulty in getting to sleep:

“The clients can feel more independent by using apps (participant 2)” ...”People respond them well (participant 7)” ...” Patient feedback was super-positive (participant 9)” ...” Use for control quality of sleep (participant 6)” ...”I recommended for anxiety (participant 9)” ...”It was indicated for cases of work stress, anxiety and difficulty sleeping (participant 4)” ...”May be effective for mild



symptoms (participant 5) "... "As a tool I find it beneficial because patients engage more in treatment (participant 9)".

**Awareness of regulations** was observed in 80% of participants' answers. Participants mentioned being aware of regulations around data protection (GDPR) and some participants mentioned being aware of professional ethics code:

"I am aware of the GDPR Participants 2,4,5,6,7,9,10"..." I am aware about the data protection regulation and the PSI code (participant 6)".

**Online Therapy as a positive tool** was mentioned several times by the participants. Although some participants had doubts regarding the ethical and confidentiality issues of online therapy, the technique was seen as a support tool and they expressed positive opinions about it. Some advantages were mentioned related to online therapy such as bridging geographic limitations, its practicality, and its use with patients who have mobility concerns. Nevertheless, in participants' opinions, online therapy does not replace face-to-face therapy:

"I worked with patients with multiple sclerosis and had difficulties of locomotion, made calls by Skype (participant 6)" ... "I'm more open but researching how the ethical issue is regarding online care (participant 10)"... "Online therapy is better than not having help (participant 3)"... "Online therapy can have benefits, access to the psychologist, ethically ok, it is a support (participant 8)"... "Online therapy is more flexible, a useful alternative (participant 2)"..." Online therapy is a good tool, but I believe that face-to-face therapy has more effect (participant 9)".

Finally, **Potential use** was also observed in participants' answers. Regardless of the difficulties mentioned by participants regarding the opinion and experience with mHealth apps, it was mentioned that the apps, once developed in a safe way, have the potential to be used as important tools in psychotherapeutic treatment. Some statements illustrate this line of thinking:

"I can see potential (participant 2)" ..."I can see potential but need to improve (participant 4)"..." I think apps can be effective as a tool in psychotherapy but need to have quality (participant 10)"..." My opinion about apps is, I think be valid because of the technology these days (participant 8)"..." Tools that support mental health (participant 6)"... "I find interesting apps for ease, one more tool (participant 9)".

Student Number: N00173000

## Chapter 5: Discussion

### 5.1 Introduction

The purpose of this study was to investigate the effectiveness, risks/ limitations and ethical implications involved in the use of mHealth apps by psychologists. The main question of this study was:

*“Do mental health apps help in psychotherapeutic treatment and what are the implications of its use?”*

Factors affecting the effectiveness of mHealth apps used in psychotherapeutic treatment were identified in this study, based on the opinions and experience of the participants interviewed. Through conducting interviews with participants, the data gathered showed four themes:

1. Weaknesses;
2. Lack of Trust;
3. Lack of Information;
4. Strengths

These themes will now be analysed in relation to previous literature.

### 5.2 Thematic Analysis

The first theme that emerged was related to Weaknesses, emphasising aspects such as confidentiality, ethical issues, and data protection, all points that affect the psychologist’s decision regarding the use of mHealth apps. Other factors mentioned in interviews included limited bonds made between the therapist and patient through a mobile app, difficulties in finding apps for specific cases/disorders and the uncertainties surrounding mHealth apps developers’ professional qualifications and background.

The second category, Lack of Trust, showed a gap regarding the quality and efficacy of mobile apps, leading to uncertainty and caution in using mHealth apps by professionals, considering the ethical implications as well as the lack of guarantee concerning personal data safety.

The literature corroborated a great deal of what was appearing in the data, pointing to a lack of clarity of some mobile apps related to privacy policy, confidentiality, and safety (Pierce, Twohig & Levin, 2016; Jones & Moffitt, 2016). It was seen from the data gathered that, although online therapy has been expanding as a tool in relation to psychological treatment, there is concern due to issues concerning privacy and other ethical boundaries (Mallen, Vogel & Rochlen, 2005; Sampat & Prabhakar, 2017). The study of Dennison et al. (2013) highlighted much of what was occurring in the interview data, such as the lack of qualitative data in relation to user experience and opinion, as well as other aspects such as the background of application developers.

Ethical and confidentiality aspects have been widely discussed in the field of mental health as main factors that influence the decision of professionals when recommending apps and online technology to their clients. This was very clear in the findings of this study. Many of the participants urged caution with mHealth apps, which is a common issue in the literature (Jones & Moffitt, 2016; Armstrong, Ciulla, Edwards-Stewart, Hoyt & Bush, 2018). The lack of guidance on these apps regarding confidentiality and data protection was a feature of the responses given in this current study, spotlighting that, although GDPR regulations are recent, from 2016 and updated in 2018, many apps still have no clear privacy policies (Torous & Roberts, 2017).

The third theme, Lack of Information, demonstrated the absence of familiarity and knowledge with the use of mobile apps. Factors involving the structure of mHealth apps and features can affect both patients and professionals and also interfere negatively in treatment (Lewis & Wyatt, 2014). This theme focused on the question of the main barriers related to the use of mHealth apps, such as the efficacy of this instrument, a factor also noted in other studies (Lui, Marcus & Barry, 2017; Aguilera & Muench, 2012). Many of the participants mentioned in the interviews that many of

the apps show a lack of functionality with current therapy practices, and show a lack of theory and practice in their design. This was highlighted also in the literature (APA, 2013; Aguilera & Muench, 2012), highlighting a deficit in scientific evidence to prove the efficacy of the use of mHealth apps (Luxton, McCann, Bush, Mishkind & Reger, 2011; Lewis & Wyatt, 2014).

Finally, the last theme, Strengths, highlighted factors resulting from the use of mHealth apps, such as positive feedback from clients, effectiveness in smaller therapy symptom cases, professionals' positive acceptance of online therapy and the potential use of mHealth apps in the future. The literature points to the use of mHealth apps as an additional instrument of psychotherapeutic development also (Clough & Casey, 2015), and it was seen by psychologists as a tool for mild anxiety disorders (Firth et al., 2017) and depression (Mohr et al., 2017; Roschlen, Zack & Speyer, 2004). Some studies have pointed to the benefits associated with the use of mHealth apps such as reducing access barriers to mental health treatment, improving patients' engagement in psychotherapeutic treatment, and facilitating access (Armstrong et al., 2018; Olff, 2015). These were mentioned in the participant responses in this current study.

### **5.3 Strengths and Limitations of the Study**

The results of this study show several questions of theoretical and practical use. Regarding the strengths observed in this study, the results show a clear relationship between related studies in this area and the results of this thesis, indicating barriers found by health professionals in the use of mHealth apps. In detail, this study highlights the existing literature revealing that the lack of efficacy of mHealth apps is motivated by the professional's view of the lack of confidence, ethical aspects, and data safety. The study also demonstrate the lack of proper guidance, and regulations aligned with theories and scientific results.

Findings in this study have shown that the decision to add mHealth apps in psychotherapeutic treatment is greatly influenced by a lack of clear resources regarding confidentiality and data protection as well as ethical implications. This has

practical implications for both the patient and the mental health professional for not using mHealth apps as a support tool.

Findings also suggest that companies that develop mental health apps should work in partnership with health professionals in the development of apps, and direct the specific use of each mobile application through the development of a user-training guide instead of engaging only in increasing the number of followers and profit purpose.

Regarding limitations, the qualitative method chosen for this study does not allow for an objective analysis of facts, as the data collected data were based on personal opinions and on participants' experiences.

#### **5.4 Suggestion for Future Research**

The results of the research, shows a further need for more scientific studies that demonstrate the efficacy of mHealth apps in the reduction of mental health symptoms, based on consistent samples from the psychology field. Additionally, there is a need for published studies on the functioning of mHealth apps based on scientific theories and with regulations based on health concepts, showing specific purposes for use, as well as clear evidence of safe use in relation to health policy, privacy, and confidentiality. This would ultimately lead to an app that offers the professional and user confidence in the use of such apps.

Thus, in order to integrate psychologists further into the technology field, it is suggested that developers should provide more specific guides for psychologists, with clear and full information about mHealth apps such as regulations, features, purpose of the use, developers' background, and so on.

## Chapter 6: Conclusion

The purpose of this study was to investigate the effectiveness, risks/ limitations and ethical implications involved in the use of mHealth apps by psychologists. In order to find this out, the study investigated the following research questions:

1. What is the opinion of psychologists regarding the use of m-Health apps as an additional tool in psychotherapeutic treatment?
2. Are psychologists aware of laws and regulations related to mobile applications?
3. How do psychologists associate ethics with the use of m-Health apps?
4. What are the main barriers to using m-Health apps?

These questions were answered throughout this study.

First and foremost, the overall consensus from psychologists regarding health apps was that the technology was still in its infancy regarding the issues highlighted above, but that there was still scope for improvement in the future. Weaknesses, emphasising aspects such as confidentiality, ethical issues, and data protection, all factored into psychologists' negative opinion regarding these apps. Other factors mentioned in interviews included limited bonds made between the therapist and patient and the uncertainties about mHealth apps developers' professional qualifications and background. Psychologists were clearly aware of the laws and regulations surrounding confidentiality, and were quick to highlight the apps lack of such features and ambiguity relating to data protection. The literature corroborated a great deal of what was appearing regarding barriers to such use.

Ethical and confidentiality aspects have been widely discussed in the field of mental health as main factors that influence the decision of professionals when recommending applications to their clients. In addition, it was one of the main barriers to such use, a factor heavily featured in the literature (Jones & Moffitt, 2016; Armstrong, Ciulla, Edwards-Stewart, Hoyt & Bush, 2018; Lui, Marcus & Barry, 2017;

Aguilera & Muench, 2012; Luxton, McCann, Bush, Mishkind & Reger, 2011; Lewis and Wyatt, 2014).

However, despite everything, the use of mHealth apps were noted as being something they would consider in the future. Some strengths were highlighted in this study such as positive feedback from clients on some apps, effectiveness in smaller therapy symptom cases, professionals' positive acceptance of online therapy, and the potential use of mHealth apps in the future. Some studies have pointed to the benefits associated with the use of mHealth apps such as reducing access barriers to mental health treatment, improving patients' engagement in psychotherapeutic treatment, and facilitating access (Armstrong et al., 2018; Olff, 2015). All of these were mentioned in the participant responses in this current study, showing a positive opinion from the psychologists.



## References

- Aguilera, A., & Muench, F. (2012). There's an App for That: Information Technology. *Applications for Cognitive Behavioral Practitioners*, 35, 65-73.
- Alexander, C., Armstrong, C. M., Edwards-Stewart, A., Hoyt, T., & O'Donohue, W. (2018). Mobile Applications for Client Use: Ethical and Legal Considerations. *Psychological Services*. *Advance online publication*. Retrieved from <http://dx.doi.org/10.1037/ser0000321>
- American Psychological Association. (2013). Guidelines for the practice of telepsychology. Retrieved from <http://www.apa.org/practice/guidelines/telepsychology.aspx>
- Andrea G., and Giuseppe R. (2013). From mobile mental health to mobile wellbeing: Opportunities and challenges. *Stud Health Technol Inform.*, 184, 141-7.
- Armstrong, C.M., Bush, N., Ciulla, R.P., Edwards-Stewart, A. & Hoyt, T. (2018). Best Practices of Mobile Health in Clinical Care: The Development and Evaluation of a Competency-Based Provider Training Program. *Professional Psychology: Research and Practice*, 49(5-6), 355-363.
- Beiweinkel, T., Kindermann, S., Maier, A., Kerl, C., Moock, J., Barbian, G., & Rossler, W. (2016). Using Smartphones to Monitor Bipolar Disorder Symptoms: A Pilot Study. *Journal Medical Health*, 1.
- Ben-Zeev, D. (2013). Mobile Technologies Among People with Serious Mental Illness. *A. P. Health*, 4(40), 340-343. doi:doi:10.1007/s10488-012-0424-x.
- Ben-Zeev, D., Brenner, C. J., Begale, M., Duffecy, J., Mohr, D. C., & Mueser, K. T. (2014). Feasibility, Acceptability, and Preliminary Efficacy of a Smartphone Intervention. *S. Bulletin*, 40(6), 1244-1253. doi:doi:10.1093/schbul/sbu033

- Braun, V. and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. Retrieved from <http://dx.doi.org/10.1191/1478088706qp063oa>
- Bush, N. E., Armstrong, C. M., & Hoyt, T. V. (2018). Smartphone Apps for Psychological Health: A Brief State of the Science Review. *Psychological Services*. Retrieved from <http://dx.doi.org/10.1037/ser0000286>
- Clarry, L., Rathbone, A.L. & Prescott, J. (2017). Review Assessing the Efficacy of Mobile Health Apps Using the Basic Principles of Cognitive Behavioural Therapy: Systematic Review. *Journal Of Medical Internet Research* 19(11), e399. doi:10.2196/jmir.8598
- Clough, B. A., & Casey, L. M. (2015). The smart therapist: A look to the future of smartphones and mHealth technologies in psychotherapy. *Research and Practice*, 46, 147-153. doi:<http://dx.doi.org/10.1037/pro0000011>
- Conway, G., Dennison, L.; Morrison, L. & Yardley, L. (2013). Opportunities and Challenges for Smartphone Applications in Supporting Health Behaviour Change: Qualitative Study. *Journal Of Medical Internet Research* 15(4), e86 doi:10.2196/jmir.2583
- Creswell, J.D. & Creswell, J.W. (2015). *Research design: qualitative, quantitative, and mixed methods approaches*. Los Angeles, Sage
- Creswell, J.D. & Creswell, J.W. (2018). *Research design: qualitative, quantitative, and mixed methods approaches*, 5<sup>th</sup> edition. Los Angeles, Sage.
- CSO (2018). Information Society Statistics – Households 2018. Retrieved from (<https://www.cso.ie/en/releasesandpublications/er/iss hh/information societystatistics-households2018/>)
- David D. Luxton, Russell A. McCann, Nigel E. Bush, Matthew C. Mishkind, and Greg M. Reger (2011). mHealth for Mental Health: Integrating Smartphone

Technology in Behavioral Healthcare Professional Psychology. *Research and Practice*, 42(6), 505–512.

Edwards, E. (2018). GDPR just a day away: everything you need to know. Irish Times, Thu, May 24, 2018. Retrieved from <https://www.irishtimes.com/business/technology/gdpr-just-a-day-away-everything-you-need-to-know-1.3504621>

European Union (2016). EU Law and Publication. Retrieved from <https://eur-lex.europa.eu/eli/reg/2016/679/oj>

Firth, J., Torous, J., Nicholas, J., Carney, R., Rosenbaum, S., & Sarris, J. (2017). Can smartphone mental health interventions reduce symptoms of anxiety? *Journal of Disorders*, 15-22. doi:<http://dx.doi.org/10.1016/j.jad.2017.04.046>

Gale, N, Gemma Heath, Elaine Cameron, Sabina Rashid and Sabi Redwood (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research*,13, 117.

Gnadinger, K. (2014). The Apps Act: Regulation of Mobile Application Privacy. *S. S. Rev*, 17. Retrieved from <https://scholar.smu.edu/scitech/vol17/iss3/5/>

Guest, G., MacQueen, N. (2012). "Introduction to Thematic Analysis". In *Applied Thematic Analysis*. Thousand Oaks, California: Sage.

Ireland Citizens Information (2019). Legislation relating to the General Data Protection Regulation (GDPR). Retrieved from [https://www.citizensinformation.ie/en/government\\_in\\_ireland/data\\_protection/legislation\\_relating\\_to\\_the\\_general\\_data\\_protection\\_regulation.html](https://www.citizensinformation.ie/en/government_in_ireland/data_protection/legislation_relating_to_the_general_data_protection_regulation.html)

Istepanean, R. S., & Lecal, J. C. (2003). Emerging mobile communication technologies for health: some imperative notes on m-health. *IEEE*, 2, 1414-1416.

Seidel, John V., (1998) Qualitative Data Analysis, [www.qualisresearch.com](http://www.qualisresearch.com) (originally published as Qualitative Data Analysis, in the Ethnograph v5.0: A Users Guide, Appendix E, 1998, Colorado Springs, Colorado: Qualis Research).

Jones, Nick, N. & Moffitt, M. (2016). Ethical Guidelines for Mobile App Development Within Health and Mental Health Fields Professional Psychology: Research and Practice. *American Psychological Association*, 47(2), 155–162, 0735-7028/16 <http://dx.doi.org/10.1037/pro0000069>

Junqi, S., Tian, L. & Yang, Z. (2009). Why Does Half the World's Population Have a Mobile Phone? An Examination of Consumers' Attitudes toward Mobile Phones, DOI: [10.1089/cpb.2008.0335](https://doi.org/10.1089/cpb.2008.0335)

Kit Huckvale, José Tomás Prieto, Myra Tilney, Pierre-Jean Benghozi and Josip Car Huckvale (2015). Unaddressed privacy risks in accredited health and wellness apps: a cross-sectional systematic assessment. *BMC Medicine* 13, 214. DOI [10.1186/s12916-015-0444-y](https://doi.org/10.1186/s12916-015-0444-y)

Kleftaras, G. & Giota, K.G. (2014). E-Health Telecommunication Systems and Networks. SciRes. Retrieved from <http://www.scirp.org/journal/etsn>, <http://dx.doi.org/10.4236/etsn.2014.33003>

Lewis, T. L., & Wyatt, J. C. (2014). mHealth and Mobile Medical Apps: A Framework to Assess Risk. *Journal of Research*, 16. doi:doi:10.2196/jmir.3133

López-Coronado, M., Martínez-Pérez, B. & Torre-Díez, I. (2013). Mobile Health Applications for the Most Prevalent Conditions by the World Health Organization: Review and Analysis. *Journal Of Medical Internet Research* 15(6), e120 doi:10.2196/jmir.2600

Lui, J. H., Barry, C. T., & Marcus, D. K. (2017). Evidence-based apps? A review of mental health mobile applications in a psychotherapy context. *Professional Psychology: Research and Practice*, 48(3), 199-210.

- Mallen, Michael J., David L. Vogel, Aaron B. Rochlen (2005). The Practical Aspects of Online Counseling: Ethics, Training, Technology, and Competency. *Sage Journals*, 33(6), 776-818.
- Mani, M, Kavanagh, DJ, Hides, L, Stoyanov, SR (2015). Review and Evaluation of Mindfulness-Based iPhone Apps. *JMIR*, 3(3), e82 DOI: 10.2196/mhealth.4328
- Mohr, D. C., Tomasino, K. N., Lattie, E. G., Palac, H. L., Kwasny, M. J., Weingardt, K., Schueller, S. M. (2017). IntelliCare: An Eclectic, Skills-Based App Suite for the Treatment. *Journal of Research*, 9(10). doi:doi:10.2196/jmir.6645
- Official Journal of the European Union (2016). Regulation of the European Parliament and of the Council. Retrieved from <https://eur-lex.europa.eu/eli/reg/2016/679/oj>
- Olf, M. (2015). Mobile mental health: a challenging research agenda. *European Journal of Psychotraumatology*. Retrieved from <https://doi.org/10.3402/eipt.v6.27882>
- Pierce, B., Twohig, M. P., & Levin, M. E. (2016). Perspectives on the Use of Acceptance and Commitment Therapy Related Mobile Apps: Results from a survey of students and professionals. *Journal of Contextual Behavioral Science*, 5, 215-224.
- Plaza, I, Demarzo, MMP, Herrera-Mercadal, P, García-Campayo, J. (2013). Mindfulness-Based Mobile Applications: Literature Review and Analysis of Current Features *JMIR*, 1(2), e24
- Prabhakar B. & Sampat, B. (2017). Privacy Risks and Security Threats in mHealth Apps. International Information Management Association.
- Roberts, L., & Torous, J. (2017). *Needed Innovation in Digital Health and Smartphone Applications for Mental Health Transparency and Trust*. Retrieved from <http://jamanetwork.com/pdfaccess.ashx?url=/data/journals/psych/0/>

Rochlen, Aaron B. Jason, S. Zack., Cedric, Speyer (2004). Online therapy: Review of relevant definitions, debates, and current empirical support. *Journal Of Clinical Psychology*, 60(3), 269–283.

Statistica (2018). Number of mHealth app downloads worldwide from 2013 to 2017 (in billions). Retrieved from <https://www.statista.com/statistics/625034/mobile-health-app-downloads/>).

Statistica (2019). Number of mobile app downloads worldwide in 2017, 2018 and 2022 (in billions). Retrieved from <https://www.statista.com/statistics/271644/worldwide-free-and-paid-mobile-app-store-downloads/>

## Appendices

### Appendix 1: Consent Form

I confirm that I have been reading the information sheet on this study and that I have had the opportunity to have my doubts clarified ( )

I am aware that I may withdraw from this study at any time ( )

I am aware that the information in this study will be completely anonymous and will be preserved safely by the researcher ( )

I give my consent to participate voluntarily of this study ( )

Signature: \_\_\_\_\_

## **Appendix 2: Information Sheet**

**The study title:** The effectiveness, ethics and risks involved in the use of mHealth apps by psychologists as an additional tool in psychotherapeutic treatment.

The present study is part of the requirement for the MSc Degree in Cyberpsychology in the Institute of Art, Design and Technology – IADT, Dun Laoghaire.

The present research is conducted in order to investigate the effectiveness, risks and ethical aspects that involve the use of Mhealth apps by psychologists.

You are being invited to take part in this project as a participant of an interview conducted by the student of IADT Danielle Pitanga Thomaz.

It is important that you are aware of what the present study is about and how your participation is important for the development of this research. If you have any questions please do not hesitate to ask, it is important that all your doubts are clarified.

The aim of this study is to investigate the effectiveness of mHealth app as an additional tool for psychotherapeutic treatment as well as ethical issues and risks associated with the use of the apps.

Your contribution will be valuable not only for this study but also for the field of knowledge in this area, so once you decide to participate in this study, your participation will be voluntary and extremely confidential and all information will be protected. You are free to withdraw from this study at any time.

If you decided of taking part in this study you will be required for an individual interview that will address issues related to the research theme. The interviews will be pre-scheduled by phone and the location will be suggested in a reserved room at the IADT or at a location determined by the psychologist. The interview time will be approximately 40 minutes, not exceeding one hour, and the researcher will record the interview.



Student Number: N00173000

All anonymous information will be protected on a password protected computer. Only the researcher and the supervisor will have access to the stored information. The information will be stored for a year, after will be safely disposed of and deleted.

If you have any questions or concerns about the study, please do not hesitate to contact me at [N00173000@student.iadt.ie](mailto:N00173000@student.iadt.ie) or my supervisor Liam Challenor at [liam.challenor@dcu.ie](mailto:liam.challenor@dcu.ie).

Danielle Pitanga Thomaz

### Appendix 3: Interview questions

- 1) Name (Abbreviation)
- 2) Can you tell me about your line of work and where do you work?
- 3) How long have you been working with children/adults?
- 4) Have you worked with different populations?
- 5) Are you aware about mHealth apps?
- 6) What is your opinion about mHealth apps?
- 7) Do you use mHealth apps? Why do you not use?
- 8) Do you know colleagues that use mHealth apps?
- 9) What do they say about it?
- 10) How do you see the use of mHealth apps as a second treatment?
- 11) Do you recommend mHealth apps to your clients? Why not?
- 12) How long have you been worked with mHealth apps with your patients?
- 13) Do you test the app before you recommend it to your client?
- 14) Which mental health diagnosis do you think that mHealth apps have better results? Why?
- 15) Which apps do you usually recommend to your clients? Why?
- 16) Can you tell me about how this app works?
- 17) Why do you recommend this app?
- 18) Do you get a positive feedback from your clients about this App?
- 19) Which apps do you not recommend? Why?
- 20) What do you think about the main barriers that professionals have in the use of mHealth apps?
- 21) Which features do you consider important in an App?
- 22) Which features do you consider difficult to manage in an app?
- 23) What kind of features do you think help the professionals the most?
- 24) What kind of features do you think help the patients the most?
- 25) What do you think about the main barriers that professionals have in the use of mHealth apps?
- 26) How do you see the confidentiality of mHealth apps?

- 27) How do you see the ethics aspects associate of the use of mHealth apps?
- 28) Are you aware of laws and regulations about mHealth apps?
- 29) Have you seen these mHealth apps? (screenshots)
- 30) Do you think the mHealth apps are effective as a tool in a psychotherapy treatment? Why? Why not?
- 31) What are the benefits do you think the apps offered as a second treatment?
- 32) What kind of limitations do you think the apps have?
- 33) What do you think the mHealth apps need to improve?
- 34) Considering that the apps cover the functions that you see as important, would you recommend the app to your clients? Why not?