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MOBILE SYSTEMS

Mobile Phones and Psychosocial Therapies with Vulnerable People: a First State of the Art

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Abstract Mobile phones are becoming a communication tool commonly used by people all over the world; and they are started to be adopted in psychosocial therapies involving vulnerable people. We are herein presenting the results of an academic literature review. We identified scientific papers published between 2006 and 2015 resorting to academic databases available on the Internet, applying a systematic selection method based on quality criteria. Secondly, we analysed contents, highlighting the scarcity of research involving vulnerable people. The available literature specialized in psychosocial therapies offers investigation results which involve mobile phones and patients in general, focusing particularly on the clinical psychology field and, to a lesser extent, on the social work field. Particularly significant are the investigation works developed in the United States. In the present paper we introduce a first "state of the art", identifying opportunities and also the limitations surrounding the use of mobile phones in psychosocial therapies targeting the vulnerable. Issues concerning privacy and data confidentiality, and the access of vulnerable people to mobile phones and how they use them, pose significant challenges; but they offer the opportunity to reach isolated or impoverished populations, or even to facilitate access to social and healthcare services. We close this paper formulating possible orientations, hypotheses and goals to design new investigation works involving vulnerable populations.

Keywords Psychosocial therapy · Mobile phones · Text messaging · Vulnerable people · Social work · Clinical psychology

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Introduction

Vulnerable people are those in risk of abuse because of their condition of social, economic, cultural or psychological disadvantage; these include the elderly, the disabled, women, children, indigenous peoples, migrant workers, political refugees, sexual minorities or detainees. Mechanic and Tanner [28] claim that vulnerability is owed to developmental problems, personal disabilities, disadvantaged social statuses, poor interpersonal networks, degraded social environments and a complex interaction between these factors. There is a Digital Divide that excludes those who are disconnected or without access to mobile phones, but also a Knowledge Divide which excludes those who are unable to use their mobile phones for personal development or to improve the quality of their lives [10, 39]). But nowadays, according to data from the "International Telecommunications Union" [21], there are 96,8 worldwide mobile phone subscriptions per 100 inhabitants; there are more mobile phones than people in developed countries (120.6 per 100 inhabitants) and almost one phone per inhabitant in developing countries (91.8 per 100 inhabitants). The mobile phone is quickly spreading around the world and can become a universal communication tool between people. Despite this, there is a Gender Divide since, as indicated in a study by the GSMA Foundation [18], there are more than 1700 million women in the world, living in low- and

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middle-income countries, who do not own a mobile phone. And, on average, a woman is 14 % less likely to own a mobile phone than a man, which creates a Gender Divide of 200 million fewer women than men who have a mobile phone. Moreover, 1 in 3 women in the world has endured, or endures, some form of violence in her childhood, adolescence or adulthood, according to the World Health Organization, which impacts her mental health [6].
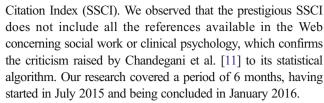
Mobile phones can become valuable tools in psychosocial therapies. They can produce detailed and personalized data to help diagnose, treat, prevent or rehabilitate vulnerable or socially excluded people. But in our review of specialized literature we observed a greater interest in studying Internet based health services targeting medical or psychological care of people with different pathologies; people with mental disorders, diabetics, young people, smokers, teenagers, amongst others.

Mobile phones can collect objective data for psychological and social studies [1] but they need to be understood as a work tool by the psychosocial therapist. From the social intervention point of view we must understand that social work professionals cannot exist as mere facilitators of information or public aid managers; social work professionals must direct their intervention activities to achieve the biopsychosocial autonomy of those who are sick or at risk of exclusion [13, 19]. Moreover, clinical psychology must be coordinated with, and complemented by, social work, creating prevention and/or rehabilitation methodologies for the sick and/or excluded. Therefore, the application of technological advances in the information and communication field to psychosocial therapies shows great promise. We start from the premise that Physical and Mental Health cannot be separated from Social Health. We agree with the definition developed by the World Health Organization which ceases to perceive Health as the absence of illness to define it as a state of physical, mental and social well-being [31], which emphasizes the social nature of medicine as well as its interdisciplinary character.

Our objectives are the following: (1) to present results of a systematic review of scientific papers published internationally between 2006 and 2015 and identified in academic databases accessible through the Internet, based on previously established search and selection criteria (2) to open a reflection on the advantages and limitations of mobile phones in psychosocial therapies (3) to introduce a debate on the orientations and questions that must be formulated in future investigation works in order to develop socially inclusive psychosocial therapies for the vulnerable.

Method

We developed a descriptive and analytical review of scientific papers focused on the study of mobile phones and text messaging in psychosocial therapies. We collected studies published between 2006 and 2015 from the major academic databases, such as Scopus, Google Scholar, Science Direct, Springer Link, Francis and Taylor, PubliMed and Social Science Citation Index (SSCI). We observed that the prestigious SSCI does not include all the references available in the Web concerning social work or clinical psychology, which confirms the criticism raised by Chandegani et al. [11] to its statistical algorithm. Our research covered a period of 6 months, having started in July 2015 and being concluded in January 2016.

We used keywords by way of descriptors in Internet search engines, in two languages: Spanish and English. Scientific journals with publications on related topics included: Addictive Behaviours, International Journal of Clinical and Health Psychology, Journal of Medical Internet Research, The Lancet, J. Telemed Telecare, Computers in Human Behaviour, Personal and Ubiquitous Computing, Journal of Technology in Human Services, Journal and Social Work, Clinical and Social Work Journal, International Social Work, Social Work in Health Care, Asian Journal of Psychiatry, BMC Psychiatry, British Journal of Clinical, Telemedicine Journal and e-Health, Professional Psychology: Research and Practice, Social Work in Health Care, Social Work Today, Journal of Affective Disorders, Asian Social Science, Revista de Psicopatología y Psicología Clínica, Dirsi, Revista de Trabajo Social y Salud, Portularia, Arbor: Ciencia, Pensamiento y Cultura, Athenea Digital, UOC Papers, Base de Datos Crohrane de Revisiones Sistemáticas, Revista Zahonar, Documentos de Trabajo Social and Cuadernos de Trabajo Social. In each case we identified one paper, except for Cuadernos de Trabajo Social and Journal of Affective Disorders, with 2 papers each.

Initially, we searched for titles in English or Spanish including "Mobile Telephones" "Cellular Phones" and "Psychosocial Therapy" or "Teléfonos Móviles" and "Terapia Psicosocial"; and related words in both languages, such as: vulnerable people, social inclusion, social exclusion, information and communication technology, text messaging, texting therapy, e-health, mental health, online therapies and online social work. Our database queries covered the fields of "Title of the Article", "Abstract" and keywords included by the editors. We subsequently selected 32 of the 132 identified documents, based on two criteria: (1) empirical studies and (2) theoretical studies. We selected 16 papers referred to as resulting from practical research works and 16 theoretical papers.

Generally speaking, the selected articles on investigation results had to comply with the following criteria: (1) a clearly defined methodology (2) clearly specified results and (3) a discussion and a reference to its limitations. Concurrently, theoretical articles had to comply with specific criteria: (1) a systematic background selection method (2) a clearly specified time period and (3) including a critical and reflective analysis. In Tables 1 and 2 we offer a summary of all selected articles; in these we include information about the authors, the year of publication and a short reference to its content; we discriminate between empirical studies and theoretical studies or reflections; and we discriminate between Tables 1 and 2 depending on the professional affiliation of the authors to

Table 1   Selected articles with the theme of mobile phones and clinical psychology

Article	Summary
Lester et al. [24]	Empirical study carried out in Kenia concerning the effectiveness of therapies involving impoverished HIV infected people via mobile phones and text messaging. They obtain satisfactory results.
Pijnenborg et al. [33]	Empirical study from Europe involving the effectiveness of text messaging with schizophrenic people. The study observes that it may be useful to offset the effects of pharmacological interventions.
Person et al. [32]	Empirical study from the United States on the effectiveness of text messaging in therapies involving HIV, tuberculosis and syphilis patients. The authors note that they are affective amongst young people but the costs need to be lowered and literacy increased.
Aguilera and Muñoz [2]	Empirical study from the United States on therapies involving text messaging in patients with low incomes. They note that these are affective, people feel constantly attended, but they highlight issues involving privacy and literacy.
Morris and Aguilera [29]	Theoretical reflection on the potential of ICTs to improve healthcare and how these advances can improve assessment and intervention in the practice of Psychology.
Proudfoot et al. [34]	Empirical study involving text messaging in patients with anxiety disorders. They observe high levels of satisfaction with the results and highlight the need for more studies on the subject.
Dowlinga and Rickwooda [15]	Theoretical reflection. They note that online interventions are used by psychologists and social workers but there is little investigation on the field and new experiences need to be known.
Wagner et al. [40]	Empirical study involving patients with moderate depression. They note that Internet based psychotherapy is as effective or more than face to face therapy. They show that online therapy is more effective with relapses when the treatment is concluded.
Chandra et al. [12]	Empirical study from India involving the effectiveness of text messaging with vulnerable women, with a view to promote mental health. They highlight patriarchal control issues and their value in emotional management and prevention.
Kong et al. [23]	Empirical study involving the use of text messaging to quit smoking. The authors note that they improve quitting rates and that they hold great potential to improve health in general. They deny the reluctance of vulnerable people towards text messaging treatments in the United States.
Botella and Bretón-López [7]	Theoretical reflection. They identify and introduce several online applications in clinical psychology; especially in treatments involving Virtual and Augmented Reality. They reflect about its therapeutic value.
Amichair-Hamburger et al. [4]	Theoretical reflection. The authors contend that online therapies can become a serious asset in the United States as they render mental healthcare treatments easier. They note the existence of an obvious demand and claim that the future of online therapy lies in the transformation of social wellbeing programs.
Kannisto et al. [22]	Theoretical reflection based on the analysis of text messaging effectiveness as a reminder of medical treatments. The authors claim that these are poorly implemented yet effective systems.
Aguilera [1]	Theoretical reflection. Reflects on the potential of technologies in healthcare improvement. The author notes that the United States are very enthusiastic about their application in the health field but there is a significant lack of data on its impact. The factors that prevent the effectiveness of clinical intervention include limited human resources and the slow dissemination of evidence-based treatments. The author states that digital technologies allow psychologists to reach populations that are otherwise hard to reach.
Aguilera et al. [3]	Empirical study from the United States involving text messaging as a mood measurement instrument in patients suffering from depression. They stress the need to increase literacy amongst mobile phone users. The authors highlight the value of a continuous production of data for monitoring and treatment adjustment.
Campbell et al. [9]	Empirical study from the United States based on a survey of outpatient services to determine mobile phone use patterns amongst people with mental health issues. They notice that text messaging is the most popular and may help in mental health prevention, although privacy issues must be studied

clinical psychology or social work, which in turn are the key disciplines of psychosocial therapy.

In order to systematize the information we developed a bibliographic database with 4 fields: (1) a literature review field with key location data (2) a quantitative field with measurable data on citations, number of pages, number of authors (3) a descriptive field with qualitative information about its content and (4) a synoptic field including a summary of the document. Subsequently, we created an analysis matrix with the most relevant information from these records to categorize and analyse the main ideas.

Mobile phones and clinical psychology

Mobile phones allow for a continuous contact and to go beyond the traditional therapeutic context. Clinical psychology

Table 2   Selected articles with the theme of mobile phones and social work

Article	Summary
Casacuberta [10]	Theoretical reflection. It claims and contends that digital training for social inclusion must be a cognitive, as opposed to a merely instrumental, process.
Garcés [16]	Theoretical reflection. It contends that the social worker must include the social factor in therapies involving patients with mental health problems; providing the resources for social inclusion and rehabilitation, and intervening in psychosocial therapies alongside psychologists and other professional therapists.
de Federico [14]	Theoretical reflection on the role of Social Networks in the Internet and the social work field. It claims that the possibilities offered by the Internet to psychosocial therapies need to be studied.
Travieso and Planella [39]	Theoretical reflection. Critical evaluation of ICT use; it shows that digital inclusion does not mean social inclusion. Social exclusion is more complex and involves knowing how ICTs are used in key aspects of active citizenship, such as autonomy, work, social inclusion and the production of knowledge.
Garcés [17]	Theoretical reflection. It claims that the social worker must fulfil a rehabilitation and integration role.
Soto et al. [38]	Theoretical reflection on cyber therapies as social intervention methodologies. It claims that there are no differences between the results observed in online and face to face therapies.
Rubia [37]	Empirical study from Brazil based on interviews to vulnerable women and involving the use of telephones and text messaging. It confirms that mobile phones support family life, the work and general wellbeing of the families.
Horvath et al. [20]	Empirical study from the United States on text messaging in retroviral treatments with HIV patients. It claims that text messaging therapies are more effective and display a lower dropout rate when compared with face to face therapies.
Arriazu and Fernadez [5]	Theoretical reflection involving Internet use in the social work field, identifying emerging forms of socio-sanitary participation and intervention; they introduce and observe the development of computer apps designed as Internet based social services.
Rearmer [35]	Theoretical reflection based on the observation of cases in the United States. It states that technology has changed the nature of social work practice. It can provide online counselling services and web based interventions, electronic social networks, e-mail and text messaging. The introduction of these digital technologies and electronic social services create ethical risks.
Barreto et al. [6]	Empirical study. Qualitative research from Brazil based on interviews to social care professionals who deal with abused women living in shelters. They confirm the scarcity of resources and the problems surrounding mental health care.
Lopez [25]	Empirical study from the United States, involving therapists and patients, to demonstrate the effectiveness of ICT as a support tool in face to face psychosocial therapies involving vulnerable people. He observes that text messaging is less effective when compared to video or chat messaging. He reflects on the Socio-Therapeutic Alliance.
Lopez [26]	Empirical study from the United States, based on a web of psychosocial services. He shows that the web may offer a feeling of closeness, calmness, tranquillity, of being "permanently connected", as well as reminders of what they were or should be doing, a connection with the group and an increased trust of the patient towards the therapist. He claims that no differences were observed between face to face and web therapy patients.
Martínez-Fernández et al. [27]	Empirical study in Guatemala involving a health system and mobile phones in indigenous rural areas. They study the impact amongst pregnant women and observe a statistical reduction of maternal and infant mortality.
Rearmer [36]	Theoretical reflection on the ethical challenges surrounding ICT in terms of privacy and confidentiality. He introduces online therapy as an instrument that, in the hands of the clinical social worker, enables the recording positive/negative messages from the patient. He evaluates the relevance and the utility of Social Networks, such as Facebook, in the prevention of relapses, postpartum depression, mood disorders, alcoholism etc. The author insists that social workers must know and follow the laws and codes of conduct; the development of strict protocols that ensure confidentiality is of the utmost necessity.
Bryant et al. [8]	Theoretical reflection based on cases from Australia. They contend that online social work in rural areas and remote communities must not become a "Macdonalization of Social Services", dehumanizing direct relationships; yet they speak positively of the results obtained with videoconference. They advocate a social work that combines online therapy with face to face visits, in other words, hybrid online and face to face health care systems.

in the United States has proved to be dynamic where the development of, and experimentation with, online therapies as a complement to face to face therapies is concerned. The largest number of papers identified in databases involves prefeasibility studies carried out in the United States between 2011 and 2015, promoted by public health systems along with

universities and with the cooperation of private foundations. Generally speaking, the papers herein under analysis start from the observation and assessment of information and communication systems as healthcare tools, then moving towards the focus on mobile phones. These papers present investigation results raise questions and highlight benefits and limitations.

What has been done in the online health intervention field

Morris and Aguilera [29], Wagner et al. [40] review technical advances that can be used to improve assessment and intervention in the practice of psychology. Based on the studies they carried out in the United States and in Switzerland, they meditate on the potential of communication technologies to improve healthcare: allowing real time data collection, improving care and treatment and promoting an immediate intervention. These authors note that there is much enthusiasm surrounding computer health applications but little concrete data on the impact of technology. They believe that traditional interventions are very limited, and these limitations could be addressed by implementing technological solutions, but they specifically refer to two factors that hinder the effectiveness of clinical intervention: limited human resources and the slow dissemination of evidence-based treatments.

Given this scenario, Aguilera [1] contends that digital technologies let therapists work with populations that are hard to reach through traditional channels and that online therapies are very low cost and convenient for both the therapist and the client. Aguilera [1] poses the following question: what has been done with online health interventions? And proceeds to answer that, in the years 2000, online interventions started as websites merely offering information and addressing themes such as depression, smoking, obesity or diabetes; yet the effectiveness of these interventions revealed significant limitations, as website based therapies reveal high dropout rates and many people left these interventions without completing them. When compared to websites, Aguilera [1] states that mobile phones offer worldwide ubiquity; simple or standard models are attractive for the mental health field and therapies for their low cost and steady presence, allowing people to send and receive data, texts, audio and photos; more advanced phones and Smartphone include Internet, programmable video, location and movement applications, facilitating the collection of spatial and temporal monitoring data. He contends that in a study carried out in Australia, 76 % of the people considered mobile phones effective for mental health and self-management purposes; and that 98 % of alcoholics were interested in using interactive text messaging.

There are free messaging services that doctors can use as treatment and appointment references and also more interactive systems. Kannisto, Koivunen and Välimäki (2014) reviewed international literature on the use of text messages as reminders and note that their use is still limited yet effective. For instance, the United States government has launched a free SMS system to quit smoking, called "smokefreetxt". A ground breaking study from a clinical psychology point of view was developed by Aguilera and Muñoz [2] who, through text messaging sent to mobile phones, randomly asked about the mood of patients throughout the day; this offered the therapist ongoing data to assess and adjust therapy strategies; for instance, the patients were asked to meditate on the positive or useless thoughts about the day or about their mood; this system also allowed them to keep up with the daily activities, social interactions or sleep patterns of patients. Aguilera and Muñoz [2] observe that their text messaging system via mobile phones increased the feeling of safety amongst patients, letting them know that someone was constantly concerned for their health.

Notwithstanding, we must not ignore the fact that some people may not want to participate due to privacy concerns and this is understandable. And let us not forget that therapists are sometimes reluctant to implement technologies. There is currently a great concern with data and its privacy. In the United States, therapists and clients, where privacy is concerned, are protected by the "Health Insurance Portability and Accountability Act"; but according to Aguilera [1] this can negatively impact the development of innovative treatments, as therapists who may face lawsuits limit their initiatives; this author also points out that private companies may be reluctant towards Mobile Health apps to protect data and doctors may be afraid of being replaced by technology. Aguilera [1] contents that, in the United States, investigation works in this field are slow when compared to the speedy technological development of online communications, and public subventions for research projects require a margin of 11 years for results to be obtained.

Moreover, it is clear that the Digital Divide creates social barriers in the access to Mobile Health, owing to inequalities and problems in the access to Internet or Smartphones by people with lower incomes and education levels. The creation of large databases through the use of mobile phones and online therapies can be a blessing or a curse for patients, and can overwhelm physicians and clinical or social therapists, as storage and treatment problems emerge. Aguilera [1] advocates an interdisciplinary character and the integration of online psychosocial and medical therapies in coordination with technologists and computer programmers, and wonders about the future, which requires a solid basis for interventions.

Dowlinga and Richwooda (2013) state that online interventions are especially used by psychologists and therapists, that there is little investigation on this field and that new experiences need to be known. Amichair-Hamburger et al. [4], and Botella and Bretón-López [7] are very optimistic as to the value of communication technologies in the Health field. Amichair-Hamburger et al. [4] believe that they hold great

potential to change aspects of the social structure worldwide, as they enable the provision of individual support and health care to millions of marginalized people all over the world. They contend that 14 % of the mentally ill in the world have no access to counselling or any form of assistance from mental health caregivers, and that 75 % of them are living in impoverished countries. The access to these services or the Internet raises financial questions; but eight million people die each year from mental health related problems.
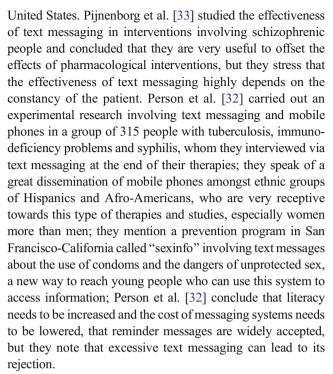
Given this reality, Wagnert et al. [40] and Amichair-Hamburger et al. [4] believe that online therapy can become a serious asset, as treatments promote the mental and physical well-being of people who are excluded; online therapies are required in order to create a well-organized and socially just State. These authors believe that there is a clear demand for online therapies, but they do not know how many people currently use them or could potentially use them; more studies and in-depth research are required in this field. They claim that online therapy treatments effectively support and ensure wellness, prevention or rehabilitation, but the future of online therapy lies in the transformation of the existing social welfare programs.

Chandra et al. [12] investigated the effectiveness of text messaging in promoting positive mental health amongst impoverished women in the city of Bangalore; the experience lasted 1 month and involved 40 patients aged between 16 and 18, who received text messages every day and could make warning voice calls or missed calls in case of emotional problems. The study identified cultural issues involving gender and patriarchal relationships; males were excessively concerned with the origin of the texts women received and the latter, as well as their mothers, insisted on data confidentiality. Before the texts were sent, the researchers organized face to face discussion groups with mothers and daughters in which they chose which texts suited emotional management and mental illness prevention amongst the participating women. The analysis of the data and of the results obtained was controlled in the discussion groups. The authors concluded that online therapies in patriarchal societies raise gender disadvantages and pose confidentiality issues, being nonetheless very effective when complemented with face to face therapies or when reaching low-income populations who are normally excluded from mental health services.

Indeed, from a less optimistic point of view, we must reflect on the limitations and future directions of online therapy, studying accessibility and privacy issues that influence the development and application of such therapies. Therefore, in our opinion, both the benefits and limitations must be studied.

Can text messaging via mobile phones overcome barriers

Many authors have investigated online mental health therapy experiments through text messaging and mobile phones in the United States. Pijnenborg et al. [33] studied the effectiveness of text messaging in interventions involving schizophrenic people and concluded that they are very useful to offset the effects of pharmacological interventions, but they stress that the effectiveness of text messaging highly depends on the constancy of the patient. Person et al. [32] carried out an experimental research involving text messaging and mobile phones in a group of 315 people with tuberculosis, immunodeficiency problems and syphilis, whom they interviewed via text messaging at the end of their therapies; they speak of a great dissemination of mobile phones amongst ethnic groups of Hispanics and Afro-Americans, who are very receptive towards this type of therapies and studies, especially women more than men; they mention a prevention program in San Francisco-California called "sexinfo" involving text messages about the use of condoms and the dangers of unprotected sex, a new way to reach young people who can use this system to access information; Person et al. [32] conclude that literacy needs to be increased and the cost of messaging systems needs to be lowered, that reminder messages are widely accepted, but they note that excessive text messaging can lead to its rejection.

Aguilera and Muñoz [2], Proudfoot et al. [34], Kong et al. [23], Reamer [36], Campbell et al. [9], Aguilera et al. [3] conducted a series of experimental studies on online mental health therapies through text messaging with different patients, suffering from depression, anxiety, alcoholism, addictions, etc., and describe the development and use of text messaging via mobile phones in cognitive behavioural therapy (CBT). They all believe that the purpose of text messaging is to increase the effectiveness of therapy related tasks, improve self-awareness and help the patient progress. In these experimental case studies, text messages were sent daily from mobile phones to counsel, remind, prevent or get information about the effectiveness of treatments or mood.

In the ground breaking study of Aguilera and Muñoz [2] patients were asked to give individual answers as to their positive and negative thoughts, report agreeable activities, positive and negative contacts and physical wellness; the group was comprised by 12 persons who agreed to receive text messages in their mobile phones during and after the prescribed treatment. Participation rates varied but constituted the majority, with 65 % of answers to every text message sent. Aguilera and Muñoz [2] propose text messaging as a therapeutic communication tool oriented towards general healthcare and low-income populations in particular; they claim that these online therapies do not replace face to face sessions with the patient but can be complementary. They note that, in their experimental study, all 12 patients had never used text messaging but were willing to learn and "quickly learned"; 8 were Hispanic, 3 were European Americans and one was Afro-American; 6 were women and 6 were men. The mean age was 52, with low incomes. The authors describe this

investigation process as follows: (1) questions were tested with control groups (2) patients filled out a questionnaire with general information (3) text messages were sent manually, on a daily basis, during the first months (4) and they were subsequently automated. A total of 58 daily messages were sent to each patient; they were asked to respond to these messages as soon as they could and were offered free phone and messaging services.

Aguilera and Muñoz [2] stress the importance of a public-private partnership; in their case, the San Francisco Public Hospital facilitated the research and the private company was offered the chance to know an online therapy system based on real cases; but they stress that patient data was excluded to guarantee their anonymity and comply with the legislation in force. In short, Aguilera and Muñoz [2] show in their experimental study that text messaging via mobile phones can overcome barriers. They are extremely useful for people with low incomes who cannot access face to face therapies owing to dislocation costs or insufficient incomes; yet they point out universal internet access issues in the United States and little training; they observed that some San Francisco Hospital patients did not conclude their traditional therapies because of the dislocation and high costs attached. In their investigation work they concluded that text messaging and online therapies can be provided from a primary care setting where the regular contact of patients with their physician encourages them to participate. Subsequently, they showed that every patient that participated decided to continue with the text messaging, and the authors note that, many times, people already have these services in their personal phones but do not know how to use them and many of them lack information on purchasing aids; moreover, the study confirmed that the difficulties of use increased with age.

Aguilera and Muñoz [2], Proudfoot et al. [34], Kong et al. [23], Campbell et al. [9], Aguilera et al. [3], from the results of investigation works carried out in the United States, conclude and agree that the use of text messaging in mental health care can help maximize resources and increase profit. They notice that patients who complete their online treatments have lower relapse rates and reduce their need for chronic depression treatments, enjoying an increased access to low cost health care services. They content that people with low incomes can greatly benefit from these interventions and that these technologies can be used in large populations.

In short, all points towards the usefulness of data collected through text messaging systems for physicians and therapists who define patient treatments. This method allows for the inclusion of the family and caregivers, when applied, and helps increase the prescribed tasks in addition to preventing relapses following noncompliance of tasks or for lack of face to face care sessions. But the results obtained in these investigations point out certain limitations: as these are based in small samples, and constitute prefeasibility studies from which we cannot draw general conclusions. Interesting questions may be raised as to the effects and behaviours in different age groups: young people, adults, elderly people, or gender related, with vulnerable women from different cultures, ethnical groups, and others.

Mobile phones and social work

We are experiencing a fast paced growth of Mobile Healthcare. Mobile devices allow for the control of the activity level of the patient, his treatment, his habits and also his mobility through GPS and cartography. They can monitor vital signs, moods, sleep disorders, heart rates or skin temperature. From a social standpoint, they also hold great potential for the prevention, diagnosis and treatment, and create important challenges for the social work practice and online psychosocial therapies. It is important to stress that mobile phones can collect objective data for psychosocial and vulnerability assessments; however, mobile phones pose great challenges and limitations in the ethical sphere and where privacy is concerned. Nevertheless, in our review of published articles we confirmed that the most significant use of information and communication technologies adopted by social workers involved the mental health field, when they were previously focused on bureaucracy and administrative tasks only [16, 26]. Therefore, social work practice evolves as technology evolves.

Social inclusion and digital inclusion

We must not assume that digital inclusion presupposes social inclusion [39]. Social exclusion pertaining to the use that people make of ICTs (Information and Communication Technologies) is a complex matter and requires knowledge of the use that excluded or potentially excluded people make of ICTs in key aspects surrounding the exercise of citizenship; such as autonomy, work, social integration and production of knowledge. We must perceive the Social Divide as a Digital Divide as well, as the two are closely connected. It is widely known that social ghettoes are also characterized for not being clearly connected to important information circuits; i.e., those that allow for individual and/or collective progress through knowledge. Travieso and Planella [39] and Casacuberta [10] contend that digital literacy must educate people to be autonomous, reflective, critical and responsible in order to transform society; and this is why it is important to bring digital literacy to people or social groups who are marginalized or in risk of vulnerability, in order to fight social exclusion. Indeed, we perceive a lack of training courses focused on an effective use of ICTs, as the available specialized courses are excessively bureaucratic and technical [39].
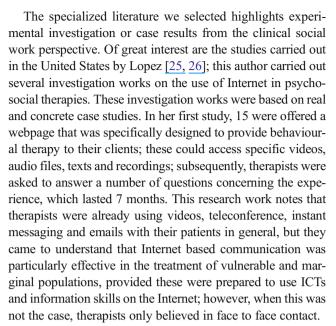
We share the opinion of Casacuberta [10] when he states that social exclusion is not exclusively material and that digital education and training must be cognitive as opposed to merely instrumental processes that teach things like "how to use the operating system, word processing or spreadsheet"; this training must include the development of cognitive information processing strategies that makes users more than simple consumers Web information. This information that is available through the Internet must be fundamental in the intervention of the educator, therapist or social worker in prevention, treatment and rehabilitation programs targeting marginalization and/or social vulnerability of concrete people and communities.

Internet based social services

Garcés [17] contends that the social worker must play an active role in integration, favouring the participation of the individual in social life, and must use communication technologies to fight exclusion. Arriazu and Fernández [5] studied the use of the Internet in the social work field, identifying emergent forms of socio-sanitary participation and intervention; they introduce and observe the development of computer apps design as Internet based social services; such as: "SOS Ayuda al maltrato", "Teléfono de la Esperanza" and telecare services. Both authors reflect on the advantages and disadvantages of Internet based social work, identifying two types of online communication: synchronous, via chat and videoconference, and asynchronous, via social networks like Facebook; offer the example of applications that promote the dialogue and communication between social work professionals via mailing lists, specialized networks for social work such as the "National Association of Social Work", the discussion forum of the "New Social Working Online", or Microblogging via Facebook.

In general, in the academic literature under review, the authors identify a number of inconveniences: the limited information skills of vulnerable people and groups, the difficulties of creating group dynamics on the Web or evaluating results; as well as the protection of confidentiality and the non-existence of an "Online Social Work Code" for services provided in this medium. But Arriazu and Fernández [5] also reflect on the great potential of online social work intervention when problems arise in the communication process; that is, in situations involving people or groups with verbal communication difficulties; for the socio-therapeutic treatment of people with mobility problems and certain disorders such as the disabled; or in the socio-therapeutic treatment of people with spatial and geo-temporal mobility problems, such as mothers with small children, people at risk, people deprived of their liberty, held in prisons, rehabilitation centres, shelters for battered women, refugee centres, amongst others.

The specialized literature we selected highlights experimental investigation or case results from the clinical social work perspective. Of great interest are the studies carried out in the United States by Lopez [25, 26]; this author carried out several investigation works on the use of Internet in psychosocial therapies. These investigation works were based on real and concrete case studies. In her first study, 15 were offered a webpage that was specifically designed to provide behavioural therapy to their clients; these could access specific videos, audio files, texts and recordings; subsequently, therapists were asked to answer a number of questions concerning the experience, which lasted 7 months. This research work notes that therapists were already using videos, teleconference, instant messaging and emails with their patients in general, but they came to understand that Internet based communication was particularly effective in the treatment of vulnerable and marginal populations, provided these were prepared to use ICTs and information skills on the Internet; however, when this was not the case, therapists only believed in face to face contact.

Lopez [25] observes that when people know they can contact other people via text, video or voice messaging, they feel connected and that positively impacts their overall health. In this study the author noticed text messaging and emails had a smaller effect when compared to video or chat messaging, but all of them relieved the anxiety if the recipient. Horvath et al. [20] used text messaging in a study involving HIV patients to promote compliance with antiretroviral treatments, noticing an increased effectiveness and lower dropout rates; the author observed that text messaging via mobile can reach large populations, but highlights privacy related limitations.

As to the value and potential of online psychosocial therapies in developing countries, the experience carried out in Nigeria by UNICEF with a view to prevent the dissemination of the Ebola virus via mobile phones and text messaging is extremely interesting; UNICEF can use mobile phone access as a fast and inexpensive communication method in poor and isolated communities [30]. Lester et al. [24] carried out an investigation work in Kenia creating a text messaging service via mobile phones for antiretroviral therapies involving a group of 538 impoverished people infected with HIV. They observed that 168 of 273 patients who received the intervention via text messaging responded significantly better when compared to 132 of 265 patients who received face to face care. In Guatemala, Martínez-Fernández et al. [27] studied the development of an online health system via text messaging and mobile phones in indigenous rural areas, observing a statistically significant reduction of maternal and infant mortality amongst 6783 pregnant women.

On the other hand, Bryant et al. [8] contend that online social work in rural areas and remote communities of Australia cannot become a "*Macdonalization of Social Services*", dehumanizing direct relationships, standardizing treatments and therapies, posing ethical and legal problems

and hindering relationships of mutual aid; yet, at the same time, they speak positively of the results obtained by video-conference care, which sometimes surpass face to face results; as an example, they cite the case of bulimia treatment by videoconference in remote areas. In short, the authors advocate a social work that combines online therapy with face to face appointments, that is, hybrid online and face to face health systems between rural and urban areas.

Lopez [25] introduced a concept that belongs to clinical psychology that could be valid in the social work field; we are referring to the so called "Therapeutic Alliance" or "Working Alliance" which alludes to the professional relationship between client and therapist that aims to achieve positive therapeutic results; focuses on the qualities that the therapist brings to the relationship: empathy, positive communication, emotional validation, trust and authenticity; it is also a mutual agreement on how the client and the therapist can work together; the social worker must adopt this "Alliance" and encompass the social component to achieve a "Socio-Therapeutic Alliance". We agree with Soto et al. [38] and Lopez [25] when they say that Internet based therapy remains understudied, but in the case of social work we must add that it is underdeveloped. Social workers must base themselves in the fact that, in the case of clinical psychology, face to face "Therapeutic Alliance" showed no significant differences when compared to the online option [38].

In a second study carried out by Lopez [26] in Denver, in the United States, 11 therapists and 6 groups of women and men with different education levels and occupations under treatment from a previous diagnosis participated; 61 in total. From these, 54 used the website designed for online therapy, 7 participated in the qualitative data collection (6 women and 1 man). All the participants were unemployed, Caucasian and aged between 19 and 56 years old. Their participation was fully consensual. The designed website comprised two sections; one for clients and one for therapists; there were different sections which required a private password to initiate services. Data collection included observation, notes and daily e-mail correspondence over a period of two and a half years. There was no sampling. The study showed that the Web may offer a feeling of closeness, calmness, tranquillity, of being "permanently connected", as well as reminders of what they were or should be doing, a connection with the group and an increased trust of the patient towards the therapist. Clients remarked that the website was easy to use and that they could always find what they needed, and therapists said that the website allowed for a greater openness from the client, helping them complete their treatment, as well as greater family involvement; they believed no differences were observed between face to face and web therapy patients. In short, the studies developed by Lopez [25] show that communication technologies reinforce face to face treatments and support the therapy of the clinical social worker; in many cases,

therapists encourage the use of the website as part of the therapy and as a tool to enhance treatments.

On the other hand, Lopez [26] and Rearmer [35, 36] believe that communication technologies are essential for the social work practice but there are underlying concerns as to their ethical use. Lopez [26] mentioned that in 2011, the American "National Association Social Workers" (NASW), with 150.000 members, asked its friends and followers on Facebook their thoughts on the online practice of clinical social work and related legal and ethical concerns; and what technology would best promote the online provision of social work services. In general, the benefits of providing services to remote and marginalized populations were recognized, yet concerns surrounding ethical practice, ethical codes and confidentiality were raised; concerns over clients with no money to use technologies and concerns over the lack of knowledge on how to proceed.

Lopez [26] notes the emergence of concerns amongst mental health professionals, as to the therapeutic use of communication technologies, where confidentiality was concerned; faced with this mistrust, codes of conduct are starting to emerge in the United States for the practice of online therapy in different organizations. Conversely, Soto et al. [38] observe that Internet based "Therapeutic Alliance" does not limit interpersonal links and even promotes anonymity and intimacy, encouraging sincerity. This conflict remains open and demands further research.

Rearmer [35, 36] and Lopez [26] criticize the traditional codes of conduct governing the social work practice, perceived as old and obsolete, yet they point out the absence of specific laws on online social work in the United States, where each state is responsible for its own codes and laws. Lopez [26] states that the provision of online therapy services first emerged in California with the Telemedicine Development Act of 1996; despite this, in 2003, in the United States, psychologists, clinical social workers and family therapists started offering telemedicine services in technology and e-health, but currently every social worker using information and communication technologies must follow the code of conduct NASW 2008.

Lopez [26] also points out social inequalities in the access to online social or healthcare services. In this study, developed in Denver, the author confirmed that the customers who access communication technologies and online social work and therapies are younger, Caucasian, with higher incomes and literacy levels, which reveals the existence of inequality in this access. Similarly, Afro-Americans, Hispanics and people over 65 have less means and that the lack of access to communication technologies leads to social inequality, which raises the need for the existence of social training and access programs for the poorest classes. Lopez [26] contends that the social worker must be informed of the available state aids to help disadvantaged people access online therapy services and

community or social work centres offering Internet services, Wi-Fi or computers in waiting rooms; as well as specific programs for the disabled and those unable to type or use a mousepad.

From a social and ethnographic perspective we highlight the ethnographic focus of Rubia [37] on the social impacts of mobile phones amongst women living in poverty or extreme poverty in the Brazilian town of Curitiba. In his fieldwork, developed over a period of 8 weeks, she interviewed 41 women living in a vulnerable area of Curitiba, known as "Jardim Clarice"; these were vulnerable women with a sociodemographic profile of low education levels and incomes, mostly young, under 39 years of age, mothers who had their first child in their adolescent years, women who professed religion, women with low-skilled jobs, such as domestic workers or collectors of used recyclables. Rubia [37] notes that Brazil presently exceeds the mobile phone per inhabitant rate and that its use is widespread, but the high cost of services attached is a prevailing issue; in his study he concludes that the interviewed women voice a number of concerns, such as the high cost of mobile phone services, the relevant role the mobile phone in child care, its usefulness in the maintenance of family ties and the wellbeing of the family as a whole, its role in the professional sphere, the support it ensures during illness periods and the benefits of Internet access, for themselves and for the education of their children.

On the other hand, it is important to mention the study of different social support networks from the point of view of psychosocial therapies. de Federico [14] contends that the social worker must dig deeper into the complementary networks of people under care or therapy; collecting complementary data concerning family relationships, neighbours, work, etc., with a view to create useful social intervention at a community level, and not only on an individual level. The author believes that Social Work, as an academic subject, must teach professionals to differentiate between useful and less useful networks, preparing them to manage these according to social rehabilitation, prevention or diagnosis. In this context and, in our opinion, interesting questions can be raised as to the online dimension of these useful social networks and facilitating communication technologies via the Internet.

Rearmer [36] claims that in the year 2000, clinical social workers in the United States were already providing online counselling via chat to patients diagnosed with depression, bipolar disorders, anxiety and others; and presents virtual online therapy as an instrument in the hands of the clinical social worker which allows him to record positive/negative messages from the patients. Moreover, the author evaluates the interest and the utility of Social Networks, such as Facebook, in the prevention of relapses, postpartum depression, mood disorders, alcoholism, etc. All of this raises ethical challenges concerning privacy and confidentiality. Rearmer [36] believes that social workers must not use their personal

Social Networks for therapeutic purposes; they are viewed as dangerous for their informal character and the lack of control over the dissemination of information; he stresses that social workers must be aware of the laws and codes of conduct; This demands the development of strict protocols that ensure the confidentiality of collected data.

Conclusions

Psychosocial therapies via mobile phones are very affordable and accessible to people with difficulty accessing traditional "face to face" therapies. They are of particular interest to people residing in rural and marginal areas, people with limited mobility, the disabled and even people with social responsibilities, such as mothers with children, dependents, etc. Moreover, they facilitate the conclusion of treatments as they offer a complement to "face to face" therapies. Patients often find themselves more accompanied and note that somebody cares constantly for them.

We believe that an interdisciplinary focus allows for collaboration between clinical psychology and social work with a view to designing and applying psychosocial therapies via online communication systems in mobile phones. This can significantly promote the access to psychosocial therapies by traditionally excluded communities from developing countries.

In this context, we need to question the role of mobile phones amongst vulnerable people as well as their relevance as enabling technologies for psycho-behavioural therapies and social inclusion in developed and developing countries. How can mobile phones be of use to these people? For what? When? How? Where? In which places? For leisure only? What apps do they use? And also, what type of training do they receive? Is it useful? What communication and information systems exist in their families? How are their gender relationships? What is the range of diagnostic and social characteristics in their homes? We must understand and analyse their communication and information patterns through their information intake, use and demand habits via mobile phones. We must study online communications in order to identify connections and typify patterns of good and bad practices and to subsequently design psychosocial therapeutic methodologies via mobile phones. This involves designing social intervention methodologies based on preventive or rehabilitation therapies via mobile phones, text messaging, video messaging and/or other formats. Developing a community communication environment that promotes the social inclusion of vulnerable people, which complements the purely clinical or psychiatric field, is of the utmost importance.

The systematic review of papers identified in specialized databases allows us to propose directions for future research works according to type, for which we formulate the

following hypotheses: (1) mobile phones and their intelligent use reduce social vulnerability of people (2) vulnerable people can be the subject of psychosocial therapies using mobile phones as tools of social prevention, inclusion or rehabilitation (3) mobile phones are innovative tools for psychosocial therapies against social exclusion and mental health pathologies amongst women and men (4) the Gender Divide is greater amongst vulnerable women.

It is thus necessary to increase the degree of specialization in research concerning the use of mobile phones, text messaging, and its utility in psychosocial therapies. We need studies addressing different social, ethnic, racial, rural, urban, developed, rich, poor, etc., populations from different backgrounds, such as vulnerable women and men with mental health problems, long-term unemployed people, abused people, women victims of gender violence, etc.

As to the design of specific psychosocial therapies for vulnerable people, interdisciplinary research projects need to: (1) identify and categorize good and bad practices in communication and information systems via mobile phones with different types of vulnerable people (2) facilitate the transmission of results to those in charge of public policies for social inclusion and health and to the private corporate sector dealing with psychosocial therapy methodologies via mobile phones (3) design, apply and analyse the impacts of a new experimental methodology against the exclusion of vulnerable people (4) promote a network of universities and companies that are interested in studying mobile phones as instruments of inclusion and psychosocial therapy amongst vulnerable people, and (5) develop an international line of compared and interdisciplinary research, addressing social inclusion, mobile phones and vulnerable people.

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