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## The future of online therapy



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### ABSTRACT

The digital world, and the Internet in particular, have a significant impact on almost all aspects of our lives. The realm of psychotherapy is an area in which the influence of the Internet is growing rapidly. This paper suggests a model for comprehensive online therapy with a therapist at its center. We start by explaining the main components of both traditional therapy and online therapy. We discuss the principal criticisms leveled against online therapy and assess the efficacy of various responses. The paper moves on to explain the advantages of online therapy, focusing on the unique aspects of this approach. The paper proposes that online therapy should exploit other online resources, including online techniques for information gathering. This is true both in the therapeutic session and outside of it. In addition, the paper suggests that therapists incorporate online role play, online CBT and intervention techniques using the smartphone. All of these tools are suggested as important components in a process of comprehensive therapy run by a therapist working online.

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## 1. Introduction: E-therapy-should we go there?

The Internet has created an alternative to psychotherapeutic services offered in person (face-to-face) by mental health professionals. In fact, many psychoanalysts and psychotherapists have utilized the opportunities offered by the Internet, thus prompting change in parts of the psychotherapeutic world (Litowitz, 2012). China, for example, is currently employing psychoanalytic intervention and even training via Skype (Fishkin, Fishkin, Leli, Katz, & Snyder, 2011).

E-therapy has been defined in various ways (Barak, Proudfoot, & Klein, 2009). One of the more comprehensive definitions is “a licensed mental health care professional providing mental health services via email, video conferencing, virtual reality technology, chat technology or any combination of these” (Manhal-Baugus, 2001). Mental health services conducted on the internet have been described as web-based therapy, e-therapy, cybertherapy, e-mail therapy, e-interventions, computer-mediated interventions, online therapy/counseling, internet-based therapy, and a combination of these terms.

There are different types of interventions in e-therapy. This paper will focus on one-on-one psychological intervention via the internet. Such interventions resemble “face-to-face” therapy in that a patient meets a therapist for a therapeutic dialogue. The internet may prove most effective as a therapeutic tool in specific short term, skills based interventions, where the focus is on the here and now. Such psychotherapeutic interventions, especially Cognitive Behavioral Therapy (CBT) have been the focus of research in the internet arena (e.g. Barak, Hen, Boniel-Nissim, & Shapira, 2008; Spek et al., 2007). The advantages and disadvantages of such one on one online therapy are discussed below, after which the paper will go on to describe four innovative directions that could be included as part of the one-on-one online intervention.

## 2. E-therapy: Pros and cons

### 2.1. Criticism of e-therapy

Online psychotherapeutic interventions have provoked debate among both researchers and practitioners (e.g. Dunn, 2012; Fenichel et al., 2002; Rochlen, Zack, & Speyer, 2004). Many professionals oppose e-therapy on the basis that it is impossible to surmount the limitations of distance (e.g., Lester, 2006; Wells,

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Mitchell, Finkelhor, & Becker-Blease, 2007). This is a broadly based criticism which includes within it adverse consequences for many aspects of the therapeutic process. For example, due to the different locations of therapist and patient there may be considerable differences in the space, hour, and season of the setting for each of them (Scharff, 2013). It may initially make it more difficult to create the treatment contract and working alliance between therapist and patient, as compared to traditional therapy. It may also make it more difficult for the patient to commit to therapy and therefore may be easier to discontinue treatment. In addition, the distance between therapist and patient may impede the formation of important features of therapy such as transference (client's unconscious redirection of feelings from a person in his life to the therapist), countertransference (therapist's unconscious/conscious redirection of feelings toward a client) and handle other aspects such as regression (reliving earlier experiences and behaviors). Others have criticized the lack of face-to-face visibility which, they believe prevents the transmission and detection of nonverbal cues and body language as well as voice qualities. Issues of confidentiality and privacy, as well as a variety of potential ethical challenges and legal problems have also been raised (Ragusea & VandeCreek, 2003).

Closely related are concerns surrounding disruptions in setting: because they are both working online, the internet itself may prove a distraction for both the therapist and the patient. Managing crises is another aspect of internet therapy that raises disquiet. For example: a patient becoming resistant to therapy or even becoming suicidal and/or homicidal. Another issue of criticism is the cultural, racial and ethnicity differences between patient and therapist that maybe even more apparent in the global diverse online world as compared to traditional psychotherapy (Sue, 2006).

Opponents of this mode of treatment also highlight potential technical glitches. On the internet there may be a slight delay in the voice and the image may be fuzzy.

Some are concerned with possible internet infrastructure failures or failures in power-supply during sessions. In addition, others question the payment issues which may be more challenging online.

There is no correlation between being a good psychotherapist and being proficient in technology and it is worth noting, as Wells, Mitchell, Finkelhor, and Becker-Blease (2007) points out, that many psychotherapists are extremely technophobic (e.g. Wells et al., 2007). Perhaps the most pivotal point is that, although the use of internet is increasing internationally, there is a lack of long term research and official guidelines to justify its use.

## 2.2. Countering criticism of e-therapy

Proponents believe that although there is a physical distance, e-therapy maintains the standard tenets of traditional one-on-one treatment. For example, Fishkin et al. (2011) believe that the degree of physical communication via the internet approximates that of the in-person analytic session. Other supporters of e-therapy maintain that when the route of touch or smell in the communication is blocked, as it is online, other modalities will, in all probability, compensate, (Andersson & Cuijpers, 2009). In addition, some proponents emphasize manifestation of "telepresence," the feeling of being in someone's presence without sharing physical space, as a vital component of online therapy (Fink, 1999). Concerns over confidentiality and privacy are well-founded, although software solutions are available. It is important to point out that in traditional interventions security and confidentiality are also a major concern. In addition, the internet has advantages, including components such as online written assessments (e.g., self-report questionnaires) as well as computerizing and recording verbatim

and videos of the sessions, which help therapist and patients monitor the progress in the therapeutic process, assist in training and supervision and may also help in medical-legal issues.

For many people the internet is perceived as a safer, more secure environment than the offline world, (Amichai-Hamburger & Hayat, 2013; Hamburger & Ben-Artzi, 2000), which in itself will aid in the creation of a therapeutic relationship online. As for the therapeutic contract and commitment, internet studies indicate that people tend to feel that the internet is a "secure arena". Thus, the removal of face-to-face interaction may actually increase self-disclosure and honesty. Some people feel less shame and anxiety online and therefore the transition to an intimate level may be faster than in a traditional therapeutic setting. It may be easier for some people to enter online treatment as opposed to traditional face to face treatment because of it may have less of a stigma associated with it. In addition, online therapy may help some people to start traditional psychotherapy (Amichai-Hamburger & Barak, 2009).

The internet may help in establishing the patient-therapist relationship. Potential patients may learn about the therapists by conducting an official authentication procedure. Clients may locate an online therapist by an internet search, referral or web link. Similarly, therapists may learn about the patients from online information. In any case, it is important that online patients understand that this type of intervention has unique advantages and that it need not always be the second choice, after traditional psychotherapy. The online therapist should explain that e-therapy's long-term effectiveness has yet to be fully studied (Recupero & Rainey, 2005).

Supporters of e-therapy believe that it is functionally equivalent to an in-person analysis and integrates traditional components in the analytic process such as transference and countertransference experiences, resistance, and working with unconscious communication (Fishkin et al., 2011; Scharff, 2013). Those welcoming e-therapy believe that resistance in psychotherapy via the internet may take both similar and/or different forms from that of face to face psychotherapy. Examples of resistance may be forgetting to go online/call, speaking softly, not using a headset, moving away from the microphone, accepting other calls, and chatting as if on a social call, in addition to silence, hesitation, coughing, lateness, nonpayment, displacement and so on.

At times of crises the use of the internet, while highly challenging, may in fact, not be wholly different from offline crises. Although there may be advantages to traditional face-to-face risk assessments, online assessments maybe accessible and reduce waiting time in public or private practices. Online therapists can be trained in assessment of suicide risk online by examining risk and protective factors as well as warning signs, as is the practice when assessing suicide risk in traditional clinical face-to-face evaluations (e.g. Posner, Melvin, Stanley, Oquendo, & Gould, 2007). Today, it is common practice throughout the world that crisis hotlines are run through the phone and online (Witte et al., 2010). Therapists should work with adequate emergency backup systems in the early stages of treatment with all patients, even if a patient does not think such a backup is relevant or important. For those who pose a suicide risk a safety plan should be conducted (Stanley et al., 2008).

Both traditional and online therapy should take into account legitimate cultural concerns. Psychotherapists in any medium are required to develop their cultural awareness and sensitivities (Gelso & Mohr, 2002; Ponterotto, Gretchen, Utsey, Rieger, & Austin, 2002; Sue, 2006). The internet has a particular advantage in that it may facilitate translations and cultural adaptations. The internet also enables patients from a minority culture or those living in smaller communities, to find a therapist who shares their culture or religious belief and receive treatment, even if he or she is based in another state or even another country. Similarly,

both therapists and patients can receive interventions from experts around the world.

Regarding the issue of technical difficulties, these definitely still exist, but they are decreasing, and nowadays there are solutions including software for privacy, online threats (from spam, identity theft), secure payments, etc. Therapists and patients have to be aware of these technical issues and take them into account as another component of the intervention. As for distortions in voice or image, online therapists should learn the various possibilities for misinterpretation when working with each specific technology. It is crucial that the therapist makes sure that the patient fits the type of intervention he/she is providing in terms of technical and writing skills. As for the psychotherapists who are technophobes, it seems that the younger generations who have grown up conducting intimate communication on the internet, are generally less resistant as compared to older generations. The relative lack of long term research and official guidelines is something that should be rectified in the next few years.

Online interventions have many other advantages, including that of logistics. For many people online therapy may be the more available and affordable than any offline alternative, and certainly gives people in outlying areas a far greater choice of therapists to choose from as compared to the number and variety in their community. It may also allow access to people with disabilities who could not otherwise benefit from traditional psychotherapy (e.g., people who are unable to leave the house (agoraphobics), those with hearing impairment, prisoners, etc.) (Marks et al., 2003; Wright, Stepney, Clark, & Jacob, 2005). Moreover for those who have little time or are frequent travelers, the ability to receive therapy in their own home or office is a boon. Online interventions may make treatment cheaper, reduce time and expenses of travel and reduce waiting lists (Marks et al., 2003; Wright et al., 2005).

### 2.3. Outcomes in e-therapy

Barak et al. (2008) found that online interventions (CBT, psycho-educational and behavioral interventions) have an effect size of about 0.53 (medium effect) and concluded that internet-based therapies are as effective, or nearly as efficacious, as face-to-face therapy (Anderson et al., 2012). The efficacy of e-therapy has also been the subject of many non-quantitative studies, including illustrative descriptive case studies (e.g., Chechele & Stofle, 2003; Luce, Winzelberg, Zabinski, & Osborne, 2003). It was found that a working alliance can be developed when therapy is delivered online (Cook & Doyle, 2002; Sucala et al., 2012), and as in traditional face-to-face therapy, it has been found that in e-therapy there is a relationship between therapeutic alliance and outcomes (Sucala et al., 2012).

The efficacy of web-based interventions has been assessed by a large number of trials for a variety of mental health problems, including insomnia (Ritterband et al., 2009), depression, anxiety disorders, alcohol and substance abuse (see reviews below). In the last years a number of reviews and meta-analyses have examined the efficacy of internet based treatments. A review by Cuijpers, van Straten, Andersson, and van Oppen (2008) found impressive effect sizes for health related issues. A review by Spek et al. (2007) showed good results for anxiety, but not for depression (Spek et al., 2007). A review by Andersson and Cuijpers (2009), however, concluded that digital treatments hold promise as potentially evidence-based treatments of depression. They found that when compared with control groups, internet-based psychological interventions were found to be statistically significantly superior. Another meta-analytic review concluded that therapy involving the use of electronic devices may match the outcomes of face-to-face traditional interventions (Cuijpers et al., 2009).

### 3. Online comprehensive tools for e-therapy

The digital world is constantly advancing and with it new opportunities to enhance e-therapy arise. This paper will suggest tools that can be adopted by therapists conducting one on one online therapy. The tools pertain to two main areas of online therapeutic work: (i) use of technology to capture valuable information during therapy itself and outside it; and (ii) use of online therapeutic techniques.

#### 3.1. The use of technologies to capture valuable information

Technological innovations may be utilized effectively to capture valuable information, both during the therapy session and during the daily life of the patient. This may be done, for example, by recording the patient's behavior during online sessions and through his or her mobile phone usage.

##### 3.1.1. Gathering information during therapy

When a therapy session takes place on the Internet, the therapist is provided with a large number of opportunities to broaden his or her understanding of the patient's emotions, cognitions and behaviors and to assess the patient's progress. In this section a number of the existing options will be assessed, and suggestions will be discussed for the type of software developments, which will, in the near future, allow therapists to better analyze their e-therapy patients and therapeutic sessions.

Technology is able to detect emotions in a variety of ways, including the identification of the individual's verbal content, postures, gestures (Castellano, Kessous, & Caridakis, 2008), and facial expressions. One way to utilize this is by using the patient's verbal content or text messages in an e-therapy session. Recent research has shown that computerized text analysis can assist in detecting people's emotional state, attentional focus, thinking styles, individual differences and social relationships (Tausczik & Pennebaker, 2010). This may be done by searching for the ratio of specific key words (or verbs, adjectives, pronouns and prepositions) (Phalke & Emmanuel, 2014), as an indication, for example, of the patient's levels of depression, or therapeutic rate of progress. The information may be gathered by saving the patient's typed messages or by the use of computerized automatic speech recognition (ASR) software. Although ASR technologies have hitherto been regarded by many as being of insufficient quality, major technological advances have made these technologies more reliable and user-friendly (Kitzing, Maier, & Ahlander, 2009; Kotler & Tam, 2002). The fact that these technologies are not yet perfect should not put off the therapist, since the results of ASR and similar technologies will constitute one part of the assessment and will be examined in the light of the rest of the clinical information gathered.

##### 3.1.2. Gathering information beyond therapy sessions (before starting the intervention and between sessions)

Many people use the internet for very long periods of time, and these rates are rising steadily (Amichai-Hamburger, 2012). The Internet helps many people to shape their identities in ways that hitherto did not exist (Amichai-Hamburger, 2012). The online life of the patient will include his or her interests, membership of groups, online identity, etc. These aspects of the patient's life are likely to constitute a major influence on his or her self-definition (Amichai-Hamburger & Hayat, 2013). Therefore, it is becoming increasingly important that therapists do not ignore this pivotal source of information about their patients. It is vital that therapists gain an understanding of the psychological impact of the internet on people's lives, self-image and well-being. Today many believe

that the social net-working activities of an individual offer another important reflection of the personality of the user (Back et al., 2010; Lipschitz, 2013).

The model we suggest is built upon the patient fully agreeing that such information may be collected by the therapist. Many people in therapy, particularly those signed up to receive online therapy, are likely to have no objection to authorizing such an agreement, based on the understanding that this valuable information will allow the therapist to know them much better as people, and allow for a more effective diagnosis and an efficient method of following progress. During therapy sessions, patient and therapist can look at the online information together.

Today the omnipresent smartphone, accessible and available 24/7 provides the means to create a comprehensive impact for therapy between the sessions or in the session. The smartphone can help to detect the behavioral, emotional and cognitive state of the patient through the use of sensor-based logging, physiological or neurological data. Mobile applications in this category use sensors to capture sensor-based data, sometimes in addition to manual reports of behavioral data. The sensor measurement can be manual or automatic, for example sending a measurement to the mobile device at fixed time intervals. Sensor data includes built-in sensors such as GPS or ambient light, but can also include advanced sensors (external or internal in recent phones) such as heart rate, electrodermal activity (EDA), or electroencephalography (EEG). While most traditional EEG studies use time-locked protocols, there is a growing body of research related to extracting online measurements of cognitive (e.g., Matthews, McDonald, Hervieux, Turner, & Steindorf, 2007) and emotional states (e.g., Petrantonakis & Hadjileontiadis, 2010) from EEG, or from a combination of EEG and autonomous signals.

Recent technological developments have allowed people to monitor their own physiological measurements such as heart rate (e.g., Stress Doctor, visualizes respiratory sinus arrhythmia (RSA), the rising and falling of the heart rate) and skin conductivity (e.g. PIP www.galvanic, a biosensor device that measures EDA).

In addition, recent research has shown (Burns et al., 2011) that technological solutions such as context-aware mobile systems (e.g. Mobilyze) can predict the patient's categorical contextual states (e.g., location), alerting him or her to a possible state of depression (being at home on the weekend for unexpected lengths of time), and consequently encouraging activity or sport as a means of alleviating possible symptoms of depression.

Online and mobile technologies can empower both the therapist and the patient, and subject to the patient's permission, can enhance patient–therapist digital collaboration. One important way is through monitoring tools made available to the therapist. By utilizing these tools, the therapist will be able, conveniently and securely, to track the patient's behavioral data between sessions, either from manual reports or automatic sensor-based measurements. The therapist and patient monitor panel will include various visualizations that will enable a daily, weekly, monthly, or yearly view of the patient's behavior measures. Another method is through the analytic online tools the therapist can employ. For example the therapist will be able to analyze data in an effort to detect meaningful patterns and dependencies, such as cyclic behavior patterns over time, and connections between a patient's behavior and his or her daily schedule (see Burns et al. (2011) Fig. 1 as one example for dependencies between mood and location). These may also include, for example, associations between a patient's behavioral measures and his or her social interaction patterns on social networks, or associations between a patient's behavioral measures and current events.

Thirdly, therapists' regulation tools for practice between sessions (and in sessions): the therapist will be able to select the most appropriate feedback method from a library of strategies, and fine-tune its

parameters so as to adapt it to the patient's individual needs and progress. For example, The therapist may consider imparting information tips (psycho-education) as a basic strategy or rather choose a mobile game as a more advanced feedback strategy.

### 3.2. Use of therapeutic techniques online during and between sessions

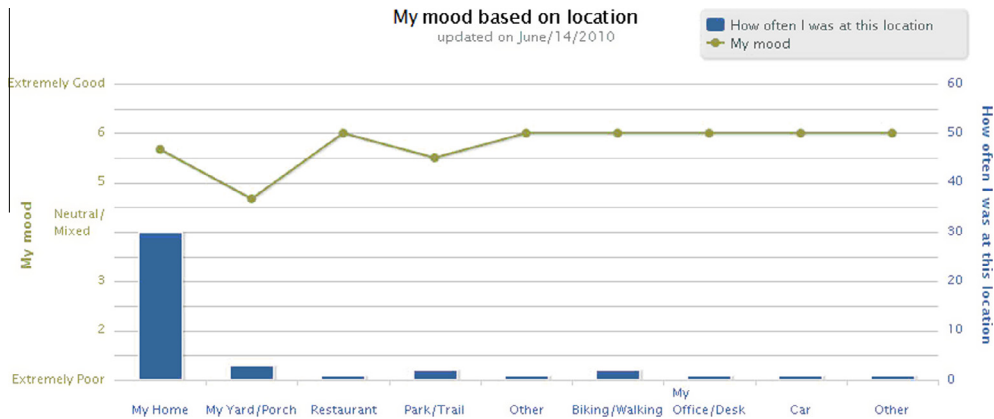
CBT is usually divided into three broad phases: Initial phase, middle phase and termination phase. During the initial phase the therapist assesses the patient's clinical status as well as motivation and expectations for treatment, a CBT treatment plan is established and a treatment contract is set. During the middle phase cognitive, emotional, behavioral and interpersonal strategies are learned and practices are put in place to address the patient's unhelpful thoughts, emotions behaviors and relationships. The termination phase of CBT generally includes a summary of the work including the new skills obtained by the patient, with a particular emphasis on methods to prevent a relapse (e.g., Stanley et al., 2008). In this paper, three online tools are presented. These include the use of virtual reality components, online role playing, and the use of smartphones in psychotherapy. All three can be exploited during all phases of the treatment, but the therapist may find them to be most useful in the first and middle phases of treatment.

#### 3.2.1. Virtual reality

Use of components from virtual reality CBT (VRCBT) therapy for the treatment of anxiety (e.g., Wallach & Bar-Zvi, 2007) or Virtual Reality Exposure Therapy (VRET) (e.g., Miyahira, Folen, Stetz, Rizzo, & Kawasaki, 2010) may provide an alternative to the traditional exposure and desensitization exercises employed in traditional offline CBT. In VRET, using virtual reality, clients are gradually exposed to their own feared objects and situations. In other areas of online CBT, VR components may be utilized to allow patients to practice and revisit different cognitive and/or behavioral skills learned. In addition, VR may be used to practice adaptive interpersonal skills. As a component of e-therapy, VR may increase motivation by allowing patients to witness changes in their behavior, emotion, and cognition. Moreover, patients may well experience feelings of empowerment as they observe changes in their behavior and reach their conclusions based on their experiences. VR participants are often represented by animated avatars. It has been found that people adapt their behavior according to the expected behavior of their avatar; this has been termed the Proteus effect (Yee & Bailenson, 2007). This effect can be enhanced using a set of technologies and techniques. First, by using a head mounted display (HMD), participants can feel fully embodied in a virtual avatar, such that when they look down they see a virtual body superimposed on their own body. Using motion tracking the virtual body can be made to move in synchrony with the real body. Moreover, it has been found that synchronous tapping of the real body and the virtual body can create a very strong illusion of incorporating the virtual body. This was initially demonstrated in the seminal study of the "rubber arm illusion" (Botvinick & Cohen, 1998), and has been extended to other body parts using VR techniques (Ehrsson, 2007; Slater, Marcos, Ehrsson, & Sanchez, 2009).

A VR session in e-therapy can approximate settings appropriate to the individual patient and can be used by the therapist to enhance many different types of e-psychotherapy for the treatment of various disorders. For example, patients who experience difficulties or anxieties in interpersonal communication may well benefit from an opportunity to enhance their skills through virtual exposure to a social environment, such as a dinner party. Such settings have been studied using VR (e.g. Pan, Gillies, Barker, Clark, & Slater, 2012). In these VR studies, subjects interacted with virtual characters who were controlled either autonomously controlled or semi-autonomously by confederates. Recently, there has been





**Fig. 1.** Taken from Burns et al. (2011). Graphical feedback available to users on the website (blue bars denote locations that a participant reported on the mobile phone, and the frequency with which each location was reported; the green line denotes the participant's average reported mood in each location). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

a series of studies showing that this sense of virtual embodiment may result in particularly strong psychological effects on the participant. Studies have established that participants can be virtually embodied in virtual bodies that are radically different from their own, including a strong sense of gender swapping (Slater, Spanlang, Sanchez-Vives, & Blanke, 2010). Virtual embodiment was suggested as a tool for reducing erroneous body perception and the treatment of obesity and eating disorders (Riva, 2011), and it has indeed been shown that virtual embodiment can affect individuals' assessment of the size of their belly (Normand, Giannopoulos, Spanlang, & Slater, 2011). Virtual embodiment was also shown to decrease the perception of pain (Hänzell, Lenggenhagerl, Känell, Curatolol, & Blankel, 2011).

VR psychotherapy was examined in the last decades in the context of a variety of psychopathologies including anxiety and specific phobias (Rothbaum et al., 1995), fear of flying (Tortella-Feliu et al., 2011), public speaking anxiety (Safir, Wallach, & Bar-Zvi, 2012), Post Traumatic Stress Disorder (PTSD) (e.g. Miyahira et al., 2012), eating disorders (Riva, 2005), body image disturbances (Riva & Melis, 1997), and Asperger's Syndrome (Cobb et al., 2002). A meta-analysis (Parsons & Rizzo, 2008) of VR exposure therapy for anxiety and specific phobias reported an improvement of patient's symptoms. The meta-analysis, however, also indicated that the affective enhancements may be related to other factors besides the VR treatment. Moreover, attempts to perform moderator analyses to identify factors that may play a role in the reduction of anxiety were unsuccessful due to inconsistent reporting in the VRET literature. Clearly, there is a need for additional studies to investigate the clinical outcomes.

### 3.2.2. Role playing

Role play is widely used as a diagnostic and therapeutic tool for adults and children (Levenson & Herman, 1991). It is frequently conducted between patient and therapist in CBT. Role plays in CBT may include learning and practicing of new roles and skills. In role-playing, the therapist and patient act out the skills that the patient is learning in the treatment in a non-threatening way. In this way the patient can practice many useful skills such as: cognitive restructuring, emotion regulation, problem solving and effective communication. Often the therapist will select a relevant topic with a manageable task and is encouraged to make it as engaging as possible. In some cases, the patient and therapist may switch roles. Similarly, a therapist and a patient may conduct an online role-play. These role plays may almost replicate offline role-playing, with only the therapist and patient are involved, though in this case using the internet. Another option is that the therapist

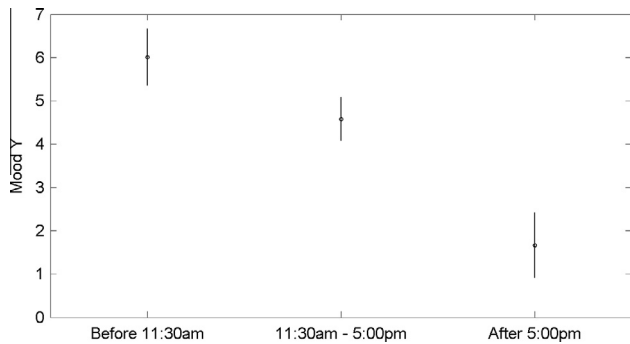
uses an online game to conduct role plays. Through taking the other side's perspective patients can develop a deeper understanding and reduce misconceptions and stereotypes regarding the other side (Amichai-Hamburger, 2012). Online role playing usually uses an adopted figure, a virtual character with its own specific attributes and functional abilities (Williams, Kennedy, & Moore, 2011). Online role-plays can enable highly positive social interactions (Cole & Griffiths, 2007), allowing people to acquire friends (Smyth, 2007). Thus, relationships are formed (Ceranoglu, 2010), by the simple immersion in this playful arena and the building of an alternate identity. Turkle (1997) suggests that this new alternative identity may be generalized later on to the offline world.

### 3.2.3. Mobile phones as a therapeutic tool

Mobile applications can serve as an effective tool for data collection as well as an intervention in sessions. For example manual-logging and sensor-based logging enable new paradigms of e-therapy, through which effective feedback is given to patients in order to promote improved behavior. In a similar way, in the context of the reports they receive from the patient, the smartphone application can provide him or her with guidance, at anytime and anywhere. In this way the smartphone may assumed to stand in lieu of the therapist in learning skills like adaptive emotion regulation, and problem solving. Another option may be that the therapist monitors and supervises the use of the smartphone application. This option may have advantages since the therapist will be able to interpret the results from a professional standpoint and play an important role in encouraging the patient's achievements and providing help at difficult times. Mobile therapy apps often enable users to report several subjective measures, including their mood, anxiety level, energy levels, sleep patterns, daily activities, and food intake. Based on manually-reported data, applications may offer the user therapeutic exercises; including breathing visualizations, guided relaxations, and suggestions as to how deal with stressful situations.

One such research-based application is mobile therapy created at Intel Corp's Digital Health Group. Morris et al. (2010) examined the potential of mobile phone technologies to broaden access to cognitive behavioral therapy techniques and to provide in-the-moment support. The researchers claim that by using this app, participants are able to increase their self-awareness in moments of stress, develop insights into their emotional patterns and practice new strategies for modulating stress reactions.

Fig. 2 demonstrates the longitudinal improvement reported by Morris et al. (2010). Their results shows improvements in anger control ratings, anxiety ratings and energy ratings.



**Fig. 2.** Taken from Morris et al. (2010). Progressive drop in Tobias' energy through the day. The circles show the mean values in the diurnal segments indicated on the abscissa. Error bars show the 95% confidence limits on the means. Note that the total mood Y range available to the user is  $[-7, +7]$ .

Morris et al. (2010) concluded that this preliminary study indicated the potential for coupling experience sampling tools with mobile therapies to encourage self-awareness and coping in daily life.

#### 4. Last word

People have the ability to utilize the Internet as a tool for empowerment (Amichai-Hamburger & Furnham, 2007; Amichai-Hamburger, McKenna, & Azran, 2008); E-therapy is an excellent example of how this can be achieved. Clearly, e-therapy has both advantages and disadvantages, but we suggest that despite its limitations, the integration of technology into the therapy domain brings with it considerable benefits. As Scharff (2013) points out e-therapy has got a built-in deficit in the loss of the actual physical presence of patient and therapist. This must be acknowledged and identified, in each individual case in terms of how it affects the specific patient and therapist and worked through. It is important to remember that traditional, face-to-face interventions also have to contend with limitations, including low evidence for the efficacy of some types of traditional psychotherapy (Barlow, 2010). Moreover, even in evidenced based interventions, it is still often unclear as to which components are the most effective (e.g. Lerner, White, & McPartland, 2012). Many of what are believed to be effective components in traditional therapy can be delivered online as well. It is believed that today, a therapist can enjoy many digital tools and wider information which can make e-therapy more effective than before. While some of the tools may be utilized by the client without the therapist, it is our suggestion that this reduces the potential benefit. Placing the therapist and the patient-therapist relationship at the center of the therapy creates a process that is significant, and is more likely to lead to positive outcomes. A competent e-therapist, who utilizes valid tools and does not see them as competition is likely to create a better diagnosis and a better prognosis. Some of the components suggested are still being developed, but we believe that in time they will serve as significant tools in the therapeutic process. There is no doubt that judging by its current performance the internet will continue to be an ever-increasing presence in our lives, and that its significant role should not be ignored by the field of psychotherapy.

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