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NEW AND OLD TOOLS IN PSYCHOTHERAPY: THE USE OF TECHNOLOGY FOR THE INTEGRATION OF THE TRADITIONAL CLINICAL TREATMENTS

GIANLUCA CASTELNUOVO, ANDREA GAGGIOLI,
FABRIZIA MANTOVANI, AND GIUSEPPE RIVA

Istituto Auxologico Italiano

The proliferation of computer-mediated communication has led to the experimentation of these tools in psychotherapy. This article examines the possible integration between traditional and new tools in psychotherapy, showing pros and cons of the use of technology. In particular, the article focuses on the concept of e-therapy and the technology it requires. An analysis of the most functional tools and software now available is also presented, with a particular focus on shared hypermedia, new Internet tools in which different users who are simultaneously browsing the Web can communicate and surf together.

Psychotherapy does not typically use technology. It is based on face-to-face interactions without any technological mediation that could inhibit

Gianluca Castelnuovo, Andrea Gaggioli, Fabrizia Mantovani, and Giuseppe Riva, Applied Technology for Neuropsychology Lab, Istituto Auxologico Italiano, Milan, Italy.

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Correspondence regarding this article should be addressed to Gianluca Castelnuovo, PhD, Segreteria Scientifica, Istituto Auxologico Italiano, Via Spagnoletto 3, 20149 Milan, Italy. E-mail: gianluca.castelnuovo@auxologico.it

the spontaneous interaction between therapist and patient. However, the development of the Internet and new communication technologies is influencing the practice of psychotherapy, and psychotherapists will increasingly rely on communication tools such as the telephone, videophone, and e-mail in their clinical practices (Norcross, Hedges, & Prochaska, 2002). Moreover, the demand for health information online is increasing. In the United States, hundreds of millions of individuals in 2001 (Taylor & Leitman, 2001) sought such information.

New words have been coined to name the integration of technology and mental health: *Telehealth* can be defined as the use of telecommunications and information technologies to provide access to health information, assessment, diagnosis, intervention, consultation, supervision, education, and follow-up programs across geographical distance (Glueckauf, Pickett, Ketterson, Loomis, & Rozensky, 2003; Glueckauf, Whitton, & Nickelson, 2002; Liss, Glueckauf, & Ecklund-Johnson, 2002; Nickelson, 1998). Jerome and Zaylor (2000) noted that

emerging technology will perpetually alter the health care environment, continuously changing the tools and options that are available to therapists. It is thus important to study the impact of these changes as they occur, and it is imperative that new technological competencies be developed as clinicians integrate these technologies into their research and practice. (p. 478)

To help psychologists and other professionals master these new competencies, guidelines and training programs are currently available (Glueckauf et al., 2003).

Among the other new words used in the telehealth field, Grohol (1999) defined *e-therapy* as "a new modality of helping people resolve life

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and relationship issues. It utilizes the power and convenience of the Internet to allow simultaneous (synchronous) and time-delayed (asynchronous) communication between an individual and a professional" (p. 1). However, the same author also emphasized that e-therapy is not a substitute or an alternative therapy but is instead a resource that can be added to the traditional treatments (Grol, 1999; Maheu & Gordon, 2000).

A recent survey on a sample of 1,000 psychologists selected from the American Psychological Association (APA) showed that only 2% of the respondents had used Internet-based technologies to deliver health care (VandenBos & Williams, 2000). Although the integration of "techno" and "psycho" may still be far, more and more psychologists are expected to use these technologies in their practice and research (Norcross et al., 2002).

However, there is poor information about existing and emerging technologies^{tools} that are used to provide remote delivery of mental health services. The lack of information on costs and benefits of these tools poses problems for current and future practitioners of this technology, who will need such data to assist their decisions.

The major aim of this article is both to review the new possibilities provided by Internet and related media in the field of psychotherapy and to discuss the implications of these changes for the clinical practice. The first section of this article summarizes the main benefits and drawbacks associated to the use of e-therapy tools in mental health care. The second and third sections analyze traditional e-therapy instruments and applications. The fourth and fifth sections describe the impact that the new generation of Internet-based tools—what we call *shared hypermedia*—may have on the development of a virtual therapeutic environment. Moreover, they provide an assessment framework for evaluating the effectiveness of shared hypermedia in supporting telemental health applications.

A Framework for the Use of E-Therapy in Mental Health Care

One of the most critical challenges in this converging space between technology and psychology is how to define the role played by e-tools in the therapeutic relationship. Could these technological media represent the basis of a new approach or a new paradigm in psychotherapy, or

are these tools simply instruments to integrate into current clinical practice without changing basic principles? To what extent can the innovative hypermedia tools influence, block, exceed, support, impede, or enhance the old and functional techniques and protocols of psychotherapy?

We contend that the use of technology does not require changes in basic clinical principles and practices: E-therapy does not modify theories, techniques, and methods typical of each approach (psychoanalytic, systemic, cognitive, behavioral, interpersonal, strategic, etc.) but could affect the level of communication and thus the possible relationship and alliance between the therapist and the patient.

A psychotherapist, regardless of theoretical orientation, can move from the traditional face-to-face setting to an environment based on Internet tools. Basic techniques, such as cognitive reframing or discussion about particular feelings and emotions, can be used in this new medium, which differs from the old only in terms of novelty. Old (and functional) practices can be used through new (and promising) media. Therefore, in e-therapy, the focus of the treatment does not shift into technology but remains on the traditional process of psychotherapy. The traditional setting could move into a virtual or synthetic environment without affecting the basic principles and phases of treatment.

According to the previous considerations, why should psychotherapists use Internet-based tools? Which could add any real value? Glueckauf et al. (2003) indicated four main reasons that could motivate the use of technological tools in clinical practice, and these reasons are as follows.

The first reason is the potential to provide health information and services across geographical distance for underserved population. The Internet may be the only resource to allow the provision of appropriate health assistance in remote areas where specialized staff and facilities are not widespread: The AKAMAI Telemedicine Program, in the case of Hawaii, and the Alaska Telemedicine Program, in the case of Alaska, are two examples (Stamm, 1998). Glueckauf et al. (2003) noted that "a wide array of telehealth services is currently offered across diverse settings, including hospitals, community mental health centers, long-term care facilities, schools, prisons, and rural health centers" (p. 160).

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The second reason is the potential to enhance the quality of health information and services in particular areas or for specific populations. Ensuring health services online could reduce gaps of quality in treatments between different demographic groups (Shortliffe, 2000) that have limited access to health care organizations. There are considerable differences in the access to psychological services in the world. However, opponents of e-therapy, as noted by Manhal-Baugus (2001, p. 559), state that "it is limited to clients who are reasonably educated writers and readers" and "this leads to the issue of elitism. The use of literally techniques to conduct therapy may be relegated to a select group of educated, middle to upper class individuals;" but, "real-life psychotherapy is usually based on average intellectual abilities and skills and more costly than online therapies."

The third reason is the potential to ensure continuous medical and psychological service overall for chronic disabilities, reducing the cost of an extended traditional assistance. Evidence for the cost effectiveness of telehealth programs is limited. Its greatest financial and social benefits will likely emerge from replacing physical visits with Internet-based consultations. Such consultations may be most appropriate for follow-up therapeutic sessions or brief consultations with patients in more advanced stages of psychotherapy.

Finally, the fourth reason is the growing trend of patients' preferring to use home-based computer system for psychotherapy. The status of "being online" is becoming the norm, and more individuals are carrying on daily life activities in the Web, including online psychological treatments. Another potential benefit of e-tools in mental health care is increased collaboration among members of the treatment team. Until now, the telephone played a central role. Because of its synchronous nature and despite the use of pagers, this process is time consuming and laborious, forcing people to wait for and repeat calls. Moreover, when more serious or difficult cases occur, the ability to discuss and evaluate aspects of the problem together with colleagues becomes even more crucial. E-tools support communication, problem solving, and clinical decision-making processes by providing therapists with the possibility to share different records, information, and clinical materials.

The Use of E-Therapy in Mental Health Care: The Traditional Internet-Based Tools

Stamm (1998) observed that

psychologists do not have to become technology specialists to be competent providers of telehealth services . . . However, to best know when and how to use technology to support healing . . . psychologists will need more technology proficiency, particularly with computers, than has been the norm. This is particularly true for those who will be establishing their practices in the coming decades. (pp. 536-537)

Psychologists do not typically use information technology in treatment. In a survey of 213 California psychologists, only a fraction of psychologists used computers for anything other than simple word processing (Rosen & Weil, 1996). Even though 52% of the sample used their computers to maintain client financial records, only 1 in 4 who kept computerized client records were using office management systems designed for mental or medical health professionals. The remainder were using general spreadsheets or word-processing programs that did not have the capability to perform all functions required by a mental health practice.

In our analysis of the Internet-based tools, we have not included the traditional telephone because, according to VandenBos and Williams (2000),

although the telephone technically meets the essential elements in most definitions of telehealth, it is probably best not to include the telephone when the frequency of use of modern telehealth initiatives is being considered, because the inclusion of the telephone so dramatically skews the data at this moment in time. (p. 492)

E-tools offer a variety of different ways of interacting with the computer, each with its own advantages and disadvantages. These different types of computer-mediated communications (CMC) are categorized as synchronous and asynchronous (Riva, 1998; Riva & Galimberti, 1998). Synchronous CMC occurs when two or more users communicate simultaneously, as in any normal telephonic or face-to-face conversation. In synchronous communication, the client and therapist are sitting at their computers at the same time, interacting with each other at that moment. Asynchronous CMC occurs when communication is not simultaneous, that is, when there is a stretching of the time frame in which interactions occur. The most common form of asynchronous CMC is e-mail, in which a sender leaves a message in a receiver's electronic mailbox, which the

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receiver must open before he or she can read the message. Another, more sophisticated type of asynchronous CMC is electronic notice boards, on which users post messages referring to a specific topic or area of interest. Users read the messages by opening the notice board, and then they send their responses. As with e-mail, there is no real-time link between the computers of the interacting subjects. Unlike asynchronous CMC, the most important feature of synchronous CMC is that it does provide a real-time link between users' computers (Riva & Galimberti, 1998).

Although videoconferencing is the most frequently cited example of synchronous communication, the most widespread system is the Internet-relay-chat or IRC. IRC is a form of synchronous CMC in which a group of users exchange written messages and interact with each other by sending a message either to a specified user or to all members of the chat.

Suler (2000) analyzed the pros and cons of synchronous and asynchronous communication in telepsychotherapy. Results of this evaluation are reported in Table 1.

E-Mail

E-mail, or electronic mail, is the most frequently used method of electronic communications between patients and health care providers. Its cost effectiveness most likely will be due to increased monitoring of a patient's status and eliminating the need for office visits. Psychologists are already incorporating the use of e-mail into their professional activities. A 1997 survey of California psychologists indicated that 36% used e-mail, a 50% increase since 1995 (Maheu & Gordon, 2000). By using e-mail, various types of data, for example, text, psychological tests, photographs, and so forth, can be stored in a computer and forwarded to another user. Equipment needs are minimal: A moderately fast computer and a connection to a network are adequate. In e-mail therapy, though, participants can use only the verbal channel because it is not possible to communicate with paraverbal or nonverbal elements. Emotions can be simulated, to some extent, by using symbolic or graphics expressions, that is, the emoticons.

TABLE 1. Pros and Cons of Different Types of Computer-Mediated Communication (CMC) According to Suler (2000)

Type of CMC	Pros	Cons
Synchronous	<ul style="list-style-type: none"> The ability to schedule sessions defined by a specific, limited period of time A feeling of presence created by being with a person in real time Interaction may be more spontaneous, resulting in more revealing, uncensored disclosures by the client Making the effort to be with the person for a specific appointment may be interpreted as a sign of commitment and dedication Pauses in the conversation, coming late to a session, and no shows are not lost as psychologically significant cues 	<ul style="list-style-type: none"> The difficulties and inconvenience in having to schedule a session at a particular time, especially if the client and therapist are in very different time zones There is less "zone for reflection"—the time between exchanges to think and compose a reply—with the possible exception of lag, which offers a small zone for reflection In the mind of the client, "therapy" may be associated specifically with the appointment and be less perceived as an ongoing daily process
Asynchronous	<ul style="list-style-type: none"> There are no difficulties in having to schedule a specific appointment time; different time zones are not a problem There is the simple convenience of replying when you are ready and able to reply There is an enhanced "zone for reflection" that allows the therapist and client to think and compose a reply 	<ul style="list-style-type: none"> The professional boundaries of a specific, time-limited appointment are lost There is a reduced feeling of presence because the client and therapist are not together in the moment Some of the spontaneity of interacting "in the moment" is lost, along with what spontaneous actions can reveal about a person There may be some loss of the sense of commitment that "meeting with me right now" can create Pauses in the conversation, coming late to a session, and no shows are lost as psychologically significant cues (although pacing and length of replies in asynchronous communication may serve as cues)

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According to Yager (2001), there are several reasons that e-mail is a positive adjunct in psychotherapy. First, e-mail increases the frequency and duration of contacts with patients. Feedback several times per week between sessions lets the patient know that the clinician is present, listening, and thinking about the patient. Second, the emotional value of e-mail is relevant because patients can initiate contacts when they feel the greatest need for contact with their clinicians. Third, regular and frequent e-mail reports require patients to constantly monitor their behaviors. Finally, e-mail can reduce the emotional burden of patients by encouraging and enabling them to say whatever they care to say. However, the use of e-mail as an adjunct in psychotherapy can have drawbacks. These include unwanted disclosures resulting from lack of privacy for receiving e-mail messages, clinician failure to respond in a timely and adequate fashion, clinician failure to recognize urgent and troubled communications meriting phone and/or face-to-face contact, and inappropriate or excessive use of electronic messages.

Maheu and Gordon (2000) noted that current findings regarding the use of e-mail by physicians suggest increasing utilization rates, although there is much debate about its clinical efficacy. For example, a recent study revealed that 69% of medical consultation requests by e-mail were limited to answering simple questions about particular symptoms, diagnostic tests, and therapeutic interventions (Borowitz & Wyatt, 1988).

IRC

The most widespread tool in psychotherapy for written synchronous communication is IRC. IRC allows more frequent patient-therapist communications, facilitating the tracking of a patient's progress and nearly eliminating the need for an office visit (Maheu & Gordon, 2000). IRC enables a group of users to exchange written messages and interact by sending a message either to a specified user or to all members of the chat. IRC has been successfully used by self-help organizations.

The principle of the self-help group is that members are encouraged to share experiences and exchange emotional support to alleviate a sense of isolation and solve common problems. These groups are an alternative and valuable

adjunct to the traditional psychotherapy, decreasing a sense of dependency on the therapist. By far, the largest segment of these groups deal with substance abuse problems (i.e., Alcoholics Anonymous).

Video Teleconferencing

Video teleconferencing (VTC) is considered by many as synonymous with telehealth (Jerome & Zaylor, 2000). Simply stated, video teleconferencing allows participants to conduct visually interactive electronic meetings between one or more distant locations using video cameras, monitors, and communications. VTC can be a possible solution to limited rural mental health services (Jerome & Zaylor, 2000). Especially in remote areas, patients tend to be undertreated, receiving mental health services only in emergencies. Moreover, VTC can provide opportunities for clinical consultation, assessment, diagnosis, supervision, home health care, medication management, continuing education, and administrative review.

Patient acceptance of VTC is high, even when individuals are acutely or chronically psychotic or agitated (Jerome & Zaylor, 2000). This result is confirmed by Ghosh, McLaren, and Watson (1997), who found no differences in the therapeutic alliance when they compared 10 psychotherapy sessions conducted by videoconference with 10 sessions conducted face to face. Unlike conventional telephone communications, where parties are limited to only hearing each other, video teleconferencing uses both audio and video communications, enabling participants to see and hear each other as if they were in the same room. VTC operates with a camera, a monitor, and a computer processor.

Stamm (1998) noted that

a good measure of the quality of the unit is frames per second (fps): the faster the speed, the better the quality but, concomitantly, the higher the cost. The target is 30 fps (broadcast quality), but to keep costs down many units have a maximum of 15-20 fps, which allows fairly clear resolution as long as there is little movement. (p. 539)

The speed and relative price of the bandwidth should be influenced by technological and clinical demands on the system (Hill, Allman, & Ditzler, 2001). For example, if the visual channel and, in particular, the perception of the movement is important for a successful communication, as might be appropriate for seeing hearing-impaired

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patients who communicate by signing, higher frame rates are the standard to ensure a more functional interaction. However, in an underserved rural clinic, slower frame rates represent an acceptable solution above all if high-quality images are not necessary to provide clinical information (Stamm, 1998).

The Use of E-Therapy in Mental Health Care: An Overview of the Present Applications

Psychology is now discovering the great opportunities inherent in the Internet. A number of psychological resources are already available for professionals and common users (Jerome & Zaylor, 2000; Riva, 2001). In the past years, mental health professionals worldwide are pioneering new psychotherapy services over the Web. There are two main psychotherapy areas in which the Internet has been applied: individual therapy and self-help therapy.

Individual Telepsychotherapy

Telepsychotherapy is the provision of individual psychotherapy and consultation over the Internet. Remote psychological consultation provides greater access to skilled mental health professionals, regardless of geographical proximity. Although effectiveness of remote consultation in psychotherapy has not been fully assessed, initial studies show promising results.

Klein and Richards (2001) investigated the effectiveness of an Internet-based intervention for panic disorders. Participants meeting criteria for panic disorders were randomly assigned to either the intervention or a self-monitoring control condition. The treatment condition was associated with significant reductions in measures of panic, body vigilance, and self-efficacy in managing panic.

Murdoch and Connor-Greene (2000) reported two clinical cases in which e-mail was used as an adjunctive therapy to enhance patients' involvement in treatment. In both cases, patients' reports suggest that therapeutic alliance and therapeutic impact improved with the use of e-mail homework reporting. The authors suggested that the improvement might be due to some patients being less inhibited discussing personal issues using e-mail than in a face-to-face setting. The disinhibiting effect of e-mail may

enhance self-disclosure independent of the therapist's responsiveness.

Yager (2001) used e-mail as a therapeutic adjunct in the outpatient treatment of anorexia nervosa. Results of this study showed a clinical improvement for all patients in the experimental group. Furthermore, patients accepted the rationale of using e-mail as therapeutic adjunct, and they considered it helpful.

Bouchard et al. (2000) used videoconference to deliver cognitive-behavior therapy (CBT) to patients suffering from panic disorders with agoraphobia. Participants received several sessions of CBT by trained therapists according to a standardized treatment manual. According to the authors, e-therapy demonstrated statistically and clinically significant improvements in the target symptoms of frequency of panic attacks, panic apprehension, severity of panic disorder, and perceived self-efficacy and general improvement in measures of global functioning, such as trait anxiety. Furthermore, a very good therapeutic alliance was established after only the first session.

Self-Help Therapy

Self-help material can be defined as any medium whose content is, in whole or in part, a treatment program that is self-administered by patients with or without a therapist's guidance (Botella, Banos, Villa, Perpina, & Garcia-Palacios, 2000). The utility of self-help procedures has been acknowledged for a wide variety of psychological problems, including phobias, obesity, sexual dysfunctions, and tobacco addiction.

Scogin, Bynum, Stevens, and Calhoun (1990) performed a meta-analytic review of 40 well-designed outcome studies of self-help treatments. The focus was on written or audiotaped material used by persons with problems such as antisocial behaviors, fears, depression, or poor skills, who did not have regular contact with a therapist. The authors concluded that self-help is clearly more effective than no treatment at all and just as effective in most cases as treatment administered by a therapist.

Nonetheless, there is a need for more research in this area to avoid indiscriminate use of self-help material that might worsen a problem (Prasad & Owens, 2001). An individual who self-administers an inadequate treatment may worsen their symptoms or problems rather than alleviate

them. As noted by Botella et al. (2000), this risk depends on whether information is taken haphazardly without taking precautions regarding whether the process is followed in the prescribed manner.

Useful self-help information can be found in books and on the Internet. Of course, the 50,000 self-help books published over the last 50 years contain much more information than the current Internet, but the gap is narrowing (Tucker-Ladd, 2000). Indeed, the Internet is growing rapidly, with more and more people getting access to free advice within seconds or minutes.

Online Self-Help Groups

Online self-help groups refer to bulletin boards, chat rooms, and news and discussion groups operated within health-related Web pages, electronic mailing lists (i.e., groups in which each individual message is copied and e-mailed to all subscribers), and other electronic forums focused on the sharing and solving of psychological disturbances (Humphreys, Winzelberg, & Klaw, 2000). These may be unstructured discussion groups or may be led by an individual, usually a nonprofessional, who shares the problem that the group addresses. The last few decades have seen an enormous growth of self-help groups. The principle at the core of this approach is the sharing of experiences, strengths, and hopes between members to solve their common problem. These groups are alternatives and adjuncts to traditional psychotherapy. A summary of what online self-help groups offer their members is provided by Madara (1990). The author explained that social support, practical information, shared experiences, positive role models, helper therapy, empowerment, professional support, and advocacy efforts are all factors that operate online, just as they do in face-to-face groups.

The asynchronous nature of e-mail online support groups provides the additional advantages of 24-hr availability, selective participation in entering and responding to messages, anonymity and privacy, immediate and/or delayed responding, and recording of transmissions. Members can save notes for later review, decide which subtopics to engage in, and know that other group members are not judging them on the basis of physical appearance (King & Moreggi, 1998). According to Hsiung (2000), the best option for online support is an online self-help group hosted by a men-

tal health professional. In this way, the mental health professional focuses on maintaining the supportive milieu and the members of the group focus on providing the support for each other.

The efficacy and effectiveness of online self-help groups has been supported in studies of eating disorders (Celio et al., 2000; Zabinski et al., 2001), depression (Dyer & Thompson, 2000), and headaches (Stroem, Pettersson, & Andersson, 2000).

Emerging Tools for E-Therapy: Shared Hypermedia

Hypermedia can be described as an "on-line setting where networks of multimedia nodes connected by links are used to present information and manage retrieval" (Federico, 1999, p. 653). Whereas a hypertext consists primarily of textual information, hypermedia includes multiple information formats, such as visual, musical, and animation elements. When hypermedia are used as communication tools, they are called shared hypermedia (SH) tools (Riva, 2001).

The real added value of SH, in comparison with traditional Internet-based tools previously analyzed, is that this medium further enhances the user's experience by the integration of different forms of CMC (e-mail, IRC, etc.) into one fully integrated interface. SHs integrate the communication potential offered by the Internet with the richness of multimedia contents. SHs can go further than the traditional Internet-based tools because SHs create a new setting (a psychotherapist's virtual office) in which devices such as the whiteboard could allow open communication (using verbal and nonverbal languages) and the exchange of information (video files, documents, etc.) through an open channel between client and caregiver. In a hypothetical continuum between complete absence and presence of communication in the interaction between a therapist and a patient, SHs could move closer and closer to face-to-face situations that still remain the ideal situation for psychotherapy. E-mail, chat, and VTC seem to affect the communication between two users but cannot recreate the clinical setting across distance.

Different users, who are simultaneously browsing the same Web site, can communicate with each other sharing different kinds of files. Usually, an SH allows the user to conduct group and private chats, to exchange information and

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files, and to browse the same Web pages. On any Web site, SH users can see a list of other users and talk with them on group and private levels. Furthermore, each user can obtain a constantly updated list of all the other online users who are visiting the same Web site (Riva, 2001). Table 2 provides a detailed description of the main features of most common SHs.

Taken together, the results of this review suggest that SHs are well suited for a telemedicine application in psychotherapy (Riva, 2000). However, the real effectiveness of such tools depends largely on the ability of therapists to coherently integrate the features of SHs in the clinical procedure.

For this reason, it would be useful to provide the reader with some insights regarding potential ways of using SHs in psychotherapy. The following considerations are not meant to be exhaustive but rather to stimulate the creativity and the curiosity of mental health professionals who are particularly interested in promoting new solutions for using Internet related technologies in clinical practice.

By using SHs, the therapist and the patient are able to share pictures, screenshots, and videos captured by a video camera installed on their workstations and to communicate their ideas and impressions using both the text chat and voice chat features. The application-sharing feature enables the therapist to send to the patient a psychometric questionnaire for assessment purposes and receive the result in real time. Consequently, the therapist is able to provide the patient with feedback in a fraction of the time that this process normally requires. Thus, therapists can carry on parts of the clinical process (e.g., diagnosis, therapeutic sessions, follow-up, and so forth) using these new tools with patients.

The virtual whiteboard is another interesting feature that has promising applications. For example, the therapist can use the whiteboard to enrich his or her explanations with diagrams and drafts, which can be exported to other applications. Finally, the text chat feature allows the therapist to save the content of the dialogue as text file, making it available for future reference.

Less complex SHs, for example, instant messaging (IM), represent a compromise between simplicity of use and richness of communication features. IMs are very intuitive and accessible, which makes it well suited for novice Internet users. Another advantage of most IMs is that the

therapist can initiate contact with a patient by sending a request for a communication session using either the IM feature, if the patient is logged in, or e-mail. Once the session is open, the therapist can then chat privately with the patient. A group can be formed by sending a request to the other patients that are online at that moment. In some IMs, the users can rapidly move from the text chat to the voice chat, which has often a valuable quality. Furthermore, even using simple IM applications, the therapist is able to send the patients files (i.e., assessment questionnaires) and to receive the results even within the same session.

New possibilities about SHs are represented by their integration with the widespread file sharing utilities, such as Kazaa, XoloX, WinMX, BearShare, Morpheus, LimeWire, and so forth (see <http://www.webtechgeek.com/Mp3-File-Sharing-Programs.htm>, for an interesting review). This peer-to-peer software allows one to download and share files with millions of other users through decentralized peer networks. It is possible to share many types of media files or documents, to chat with other users, to browse Web pages, to buy online, and so forth. Because of their diffusion and simplicity to install and use, they could represent a new generation of Internet-based tools that could improve the SHs. Up to now, these peer-to-peer utilities have been used particularly for music (mp3 and video files) or entertainment (games, software, etc.), but in the next future, the peer-to-peer approach could be fruitfully used in psychotherapy and mental health, such as in online therapeutic communities or virtual consulting rooms.

How to Evaluate the Effectiveness of SH as Telemedicine Tools

The clinical effectiveness of telemedicine tools can be measured and compared at the level of treatment process, treatment outcome, or both (Wootton, 1999). Fineberg, Bauman, and Sosman (1977) distinguished several process and outcome dimensions: technical capacity, whether a technology is safe, accurate, and reliable; diagnostic accuracy, whether a technology contributes to a correct diagnosis; diagnostic impact, whether a technology provides diagnostic information that is useful in making a diagnosis (e.g., after the telemedicine consult, is face-to-face consultation still necessary?); therapeutic impact,

TABLE 2. Synoptic Chart of Software Features, System Requirements, and Usability

Software	Features	Usability	System requirements
NetMeeting (http://www.microsoft.com/windows/netmeeting)	Video/audio conferencing Files/programs sharing Whiteboard Text chat	User interface: Easy Learning rate: Fast	Win 95, 98, or ME, Pentium II processor with 128 MB of RAM (recommended), 10 MB of free hard disk space, ISDN or LAN connection. Sound card with microphone and speakers. Video capture card or camera that provides a video for Windows capture driver (required for video support).
Paltalk (http://www.paltalk.com)	Video/audio conferencing Voice mail Text chat Voice chat	User interface: Easy Learning rate: Fast	Win 95, 98, NT 4.0, 2000, or XP, Pentium 120 MHz, 64 MB RAM (recommended 128 MB), Internet Explorer 4.0, ISDN or LAN connection. Sound card with microphone and speakers, USB video camera.
EyeBall chat (http://www.eyeball.com)	Video/audio conferencing Group video conferencing Video mail Text chat	User interface: Easy Learning rate: Fast	Win 98, ME, 2000, or XP; Microsoft DirectX 7.0, Pentium 166 MHz, at least 64 MB RAM (128 MB recommended), Internet Explorer 4.0, ISDN or LAN connection. Sound card with microphone and speakers, USB video camera.
AOL Instant Messenger (http://www.aim.com)	E-mail Text chat Voice chat Telephone over IP	User interface: Easy Learning rate: Fast	Internet Explorer 4.5, Internet connection, Pentium I processor or higher, 16 MB RAM, 5 MB Hard Disk sound card with microphone and speakers, Win 95, 98, NT, or X, Microsoft Virtual Machine.
ICQ (http://www.icq.com)	File sharing E-mail Text chat Contacts list sharing Voice chat Telephone over IP SMS	User interface: Complex Learning rate: Slow	Internet Explorer 4.5, Internet connection, Pentium I processor or higher, 8 MB RAM, sound card with microphone and speakers, Win 95, 98, NT, or XP.
MSN Messenger (http://messenger.msn.com)	File sharing Telephone over IP Voice chat SMS	User interface: Easy Learning rate: Fast	Internet connection, Microsoft Internet Explorer 4.0, Netscape Navigator 4.0, Pentium I processor or higher, full-duplex sound card with microphone, and speakers, 8 MB RAM, 2 MB Hard Disk, Win 95, 98, ME, 2000, NT 4.0, or XP.
Odigo (http://www.odigo.org)	File sharing Text chat Contacts list sharing Voice chat Web cosurf SMS	User interface: Easy Learning rate: Slow	Internet connection, Pentium I processor or higher, full-duplex sound card with microphone and speakers, Win 95, 98, ME, 2000, NT, or XP.
Yahoo Messenger (http://messenger.yahoo.com)	Voice mail Text chat Organizer File sharing	User interface: Easy Learning rate: Fast	Internet connection, Pentium I processor or higher, full-duplex sound card with microphone and speakers, Win 95, 98, ME, 2000, NT, or XP.

Note. Win = Windows; MB = megabytes; RAM = random access memory; ISDN = integrated services digital network; LAN = local area network; USB = universal serial bus; AOL = America Online; ICQ = "I seek you"; IP = Internet protocol; SMS = short message service; MSN = Microsoft Network Messenger.

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whether a technology influences patient management or therapy; and patient outcome, whether a technology improves patients' health and well being. Can the clinical effectiveness of SHs be assessed by using such dimensions? In order to answer this question, a point-to-point analysis is needed.

Technical Capacity

The technical capacity of SHs is well demonstrated. In fact, these software are developed for commercial purposes and are conceived for massive distribution (actually most of them are free-ware or shareware) over the Internet. They are primarily intended to be effective, safe, accurate, and reliable communication tools. Their success—and that of the developer—depend primarily on these aspects, including human-interface and ergonomic issues. Of course, there are some differences concerning the degree to which each particular SH meets these requirements (i.e., not all SHs have a user-friendly interface).

Diagnostic Accuracy and Diagnostic Impact

This issue is strictly dependent on the type of hypermedia that the mental health professional might choose. However, there are boundaries to the accuracy with which SHs can be used for diagnostic purposes. Despite the great range of communication features that characterize most of these programs, they cannot remotely convey the richness of information (verbal and nonverbal) provided by direct, face-to-face interaction. The real challenge for SHs is to allow the remote virtual reconstruction of the clinical setting.

Therapeutic Impact

The therapeutic impact of SHs could be very significant. In fact, such tools have the potential to influence both patient management and therapy. This idea is supported by the observation that simpler Internet-related technologies (i.e., e-mail or text chat) have significantly and positively affected the outcomes of treatment (e-mail in eating disorders, etc.). SHs could enhance the advantages of each basic Internet tool, putting together all these technologies and creating a virtual clinical setting in which a real communication and relationship between therapists and patients could be developed.

Patient Outcome

Up until now, the majority of programs that have applied Internet-related technologies for the treatment of mental disorders have received positive, if not even enthusiastic, reactions by patients. This is not sufficient, of course, to demonstrate whether this technology can really improve patients' health and well being. To our knowledge, the only ongoing project that is currently experimenting with SH-based telemedicine solutions for clinical psychology is the European Union-funded VEPSY Updated (Telemedicine and Portable Virtual Environments for Clinical Psychology) project (<http://www.vepsy.com>).

However, there are several studies in different therapeutic areas that reported significant improvements of patients who were included in Internet-supported therapy programs (Yager, 2001). Thus, although there is still a lack of experimental and clinical outcomes evidencing the effectiveness of SHs in psychotherapy, these preliminary results are encouraging.

Conclusion

The use of the Internet as a means to provide health care is a recent phenomena in psychotherapy. E-therapy could be a useful integration of technological tools and traditional clinical techniques and protocols to improve the effectiveness and efficiency of psychotherapy. The integration of these individual tools in SH is particularly exciting. Through these tools, it is possible to remotely present a wide variety of stimuli and to measure and monitor a wide variety of patient responses. In the near future, psychotherapists and psychologists will probably use not only telephone and e-mail (currently the most widespread telehealth instruments) but also tools that support advanced communicational features, such as real-time video and audio connections, exchange of text and video messages, and so forth (Riva & Gamberini, 2000).

The use of SH has been successful and has become accepted practice in many areas of industry, scientific research, and medicine. E-therapy has been adopted only by few enthusiasts, and it will take a fundamental organizational change in health care to affect the widespread use of e-therapy tools (Birch, Rigby, & Roberts, 2000). In particular, changes in consultations and referral patterns, methods of reimbursement, specialist support for primary health care, and cooperation

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between primary and secondary health care are needed (Olsson & Calltrop, 1999).

Although the main problem for the success of e-therapy is organizational rather than technical (Cardno, 2000), there are technological limitations that need to be considered (Lou, Lin, Lin, & Hoogstrate, 2000), such as insufficient image quality, low framing rate, flickering and delays that make working in front of a video terminal unattractive, and fatigue. However, the quality of technology in this area is increasing while costs are falling down. Prices are declining by about 25% per year (Allen, 1999). New transmission technologies (e.g., digital subscriber line and cable modem) promise to provide relevant increases in dependable bandwidth for a small increment of price. For the success of e-therapy applications, widespread access to the Internet is also required. Many applications currently demand only moderate bandwidth and latency, meaning that standard modem access to the Internet at 28.8–56 kbit/s may suffice.

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