A LOOK INTO THE FUTURE OF PSYCHOTHERAPY: THE POSSIBLE ROLE OF COMPUTER TECHNOLOGY

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FACT SHEET: ILLUSTRATIVE FINDINGS

THE CHALLENGE

Approximately 70% of individuals in need of psychological services do not receive them.

80 million Americans live in areas of the country where there is a shortage of mental health professionals.

Only 10% of those who meet criteria for substance abuse receive treatment.

Where mental health providers are available a variety of barriers may interfere with help-seeking including transportation difficulties, costs, time, child care issues, concerns about stigma and the like.

CAN COMPUTER TECHNOLOGY HELP ADDRESS THESE MENTAL HEALTH CHALLENGES?

(See Kazdin & Blase, 2011 for a discussion of ways to “reboot” psychotherapy and Maheu et al. 2000, 20005; Perle et al. 2011)

Consider that:

70% of all American adults use the Internet with more than half surfing more than an hour each day.

More than 50% of Americans have some form of high speed Internet access. 60% report that they first consult online resources when seeking solutions to health problems, including mental health problems such as depression.

90% of young people in the U.S. use the Internet and 61% access it daily; 75% of 12-17 year olds now own cell phones in the U.S. 25% of young people use the Internet as a source of mental health information.

In January, 2012 there were over 500,000 APPS for the IPhone and over 10 billion downloads worldwide, according to Apple.

Munoz (2010) discusses ways that evidence-based Internet interventions can be used to reduce health disparities worldwide.

ILLUSTRATIVE APPLICATIONS COMPUTER TECHNOLOGY TO ADDRESS MENTAL HEALTH NEEDS

1. Computers have been used in the form of mental health APPS, email communication and instant messaging with clients, online chat rooms, social networking, self-help interventions, video conferencing to train therapists and provide supervision, online
therapy websites, Internet therapy of direct treatment services to clients and contact with patients in between treatment sessions and aftercare.

2. Development of APPS that can be used with iPhones, iPads, Androids and other mobile devices. These are available through iTunes. There are APPS for anxiety disorders (social anxiety, panic disorders, obsessive compulsive disorders, and PTSD); depressive disorders and suicidality. For example, there is an APP whereby depressed, suicidal patients can create a personalized HOPE CHEST where the individual can include reminders of Reasons to Live or ways to increase Happiness (“A buddy who prompts you to maintain positive activities”, Novotney, 2011a, b). Mohr (as reported by Clay; 2012) has developed smartphone sensors that track where users are and what they are doing and how it meets their behavioural treatment goals. It can also send congratulatory notes.

There are APPS that provide Ways to relax, Control anger, Moderate substance abuse, 12 Step Stop Smoking, Engage in weight loss, and over-all well being. In the areas of childhood disorders, there are APPS for social anxiety, antisocial behavior and necropsies, ways to cope with divorce and handle parental military deployment (Leis-Newman, 2011).

Another trial examined a website aimed at educating parents about prevention and early intervention (Dietz et al., 2009). The Website had information about anxiety disorders, depression, treatment options, what parents can do, and the links to other resources. The Website was found to improve knowledge and self-efficacy in handling mental health issues.

CAVAET - - there is a need to critically evaluate the efficacy of these many APPS, as there was concerns about evaluating the many self-help books that are on the market.

3. Mobile devices are also being used to assess, diagnose, treat and prevent health problems such as insomnia, smoking, diabetes, prenatal care, falls among the elderly, safe sex, physical activity, chronic disease, breast cancer and treatment adherence (Clough & Casey, 2011; Ritterand & Tate, 2009).

For example, Dimeff et al. (2011) report that in the near future there will be easily digestible smart pills with tiny transmitters and antenna that tracks medication adherence when swallowed and wearable body sensors that monitor health-related behaviors like smoking. For instance, a person quitting smoking might receive the following message from his or her “lungs”:

“Don’t even think about smoking. It’s been 4 hours since your last cigarette. Carbon monoxide in your blood has already dropped by half and I’m pinker already.”

4. APPS have been developed to help individuals track and share daily changes in their moods (www.mood247.com) and to receive via text messages suggestions on ways to alter their moods and cope with stressors. Dimeff et al. (2011) have developed a DBT coach (Dialectical Behavior Therapy helper). The DBT coach assesses an individual’s
emotional intensity and cravings to use drugs on a 1 to 10 scale. The DBT coach then uses an Interactive format to help the individual cope more effectively. A cautionary note that some APPS that provide individuals with ways to self-monitor mood changes are sponsored by pharmaceutical companies as a means to promote the needs to use their antidepressant medication.

5. The Comprehensive Soldier Fitness program that is designed to enhance resilience in service members uses a Soldier Fitness Tracker System to provide ongoing assessment, (Fravell et al. 2011). See Meichenbaum (2012) Roadmap to resilience Guidebook for a list of supportive Websites, self-help interventions available to returning service members.

6. Computer technology has also been used with clients in the form of Electronic Questionnaires. For example, see the following illustrative Websites www.drinkerscheckup.com and www.rethinkingdrinking.niaa.nih.gov designed to access and provide normative comparison information for substance abuse, or http://cust.cfiapa.org/ptgi/inlax/cfm to assess Post traumatic growth.

7. Mobile phones have been used to provide real-time in vivo feedback to the patient and his/her psychotherapist.

Such a form of patient feedback has been developed by Lambert, Miller, Duncan and their colleagues. Psychotherapists can track patient progress and identify patient’s at risk for deterioration or drop out using the Electronic Outcome Questionnaire (OQ45) that compares the patient’s progress to recovery curves. The OQ45 provides patient feedback in terms of psychological disturbance, interpersonal problems, societal role functioning and quality of life. This information can be sent directly to the therapist so he or she can alter intervention strategies accordingly. (See Lambert et al., 2005).

8. Use of computer technology to reduce treatment drop-out. Consider that the modal number of visits in independent practice settings is one and the rate of treatment drop-out varies around 47% across different settings. (Barrett et al. 2008). Given that 11 to 13 sessions of evidence-based interventions are required for 50%-60% of clients to be considered recovered (Hansen et al. 2002; Lambert, 2007), any computer-based interventions that can mitigate such drop-outs would enhance treatment effectiveness. One way to encourage help-seeking behavior and reduce drop-out from therapy is to use modeling films, in the form of client ‘story-telling’. For example, see three projects that I have been involved with (www.warfighterdiaries.com; www.MakeTheConnection.net/stories-of-connection for returning service members) and www.reachout.com for adolescents. In each instance, a Constructive Narrative treatment perspective has guided the development of these Websites (see Meichenbaum, 2012).

9. Computer technology has been used to enhance client adherence to therapy and to conduct aftercare interventions. (Clough & Casey, 2011).
10. Use of Internet therapy with a post disaster population (Benight et al. 2008; Ruggiero et al. 2006; Taylor & Luce, 2003) and with patients experiencing PTSD (Lange et al. 2003; Litz et al. 2007; Tuerk et al. 2010) and complicated grief (Wagner and Maeraker, 2007). For example, Wagner and Maeraker conducted a randomized controlled trial of the effectiveness of a five-week Internet-based cognitive-behavioral treatment program for complicated grief. The patient improvement was evident at a 1.5 year follow-up. Mohr (2012) has developed an Internet intervention for depression (see www.apc.org/monitor/digital/mohr.aspx). See Clarke et al. (2008) for a description of a self-help skills program to overcome depression and Derry-Palumbo and Zeine (2005) for examples of online therapy procedures.

Christensen et al., (2002, 2004, 2006) have conducted controlled trials using the Internet to prevent depression. The trial compared a website giving information about depression and its treatment (Blue Pages: www.bluepages.anu.edu.au) with a website providing cognitive-behavior therapy (Moodgym: www.moodgym.anu.edu.au) and an attention-placebo control intervention. The information website was found to increase the participants’ understanding of treatments for depression relative to other interventions, although it did not improve professional help seeking. The information website reduced depressive symptoms and produced effects equivalent to those of the cognitive behavior therapy website. These therapeutic benefits were found to be maintained over 12 months. Roberts (2011) has edited the December Issue of Professional Psychology on various telehealth interventions.

11. For individuals with Substance abuse disorders, Carroll et al. (2008) have developed a social network system of (CBT4CBT) and has on-line training for therapists. Schumacher et al. (2011) have demonstrated how to train therapists in Motivational Interviewing procedures using computer technology. King et al. (2011) has developed Internet addiction treatment. See Williams et al. (2009) for a description of a web-based alcohol intervention program.

Cell phones have been built with a GPS system in them, so when an individuals who have substance abuse problems get near their favorite “watering hole” (an area where they imbibe alcohol or use drugs), the individual’s cell phone will ring and provide a variety of coping strategies.

12. Psychotherapists have treated patients via video teleconferencing serving those who live in rural areas. They provide psychological services remotely via telephone, Email or videoconferencing. Improve access to care for people who have mobility problems or for those who avoid treatment due to stigma concerns, or other barriers.

13. Use Computer Technology to Train Psychotherapists and Provide Supervision (See Barnett et al. 2011 and June Issue Vol. 48 Psychotherapy)
Illustrative training Websites
Cognitive-behavioral trauma-focused therapy
www.musc.edu/tfcbt
Cognitive Processing Therapy
www.musc.edu/cpt
Cognitive-behavioral approach for treating cocaine addiction
http://www.drugabuse.gov/txmanuals/cbt/cbt1.html
Training in Motivational Interviewing
http://www.motivationalinterview.org

Discussion of Internet and Video Technology in Psychotherapy Supervision and Training
see Barnett (2011) and June Issue Psychotherapy (vol. 48, No 2).

14. There are also computerized therapy Rating Scales that can be downloaded and used to
improve Therapeutic Alliance in individual, couple, and family treatment approaches
(See Escudero et al. 2011; McCullough et al. 2011 - www.softa-soatif.net and
www.4TOStrainer.com). Therapists can also access APPS that provide information of how to assess and treat
individuals with Traumatic Brain Injuries, PTSD and other psychiatric disorders
(Richardson et al. 2009).

15. Another form of computer technology use has been the development of immersive virtual
reality psychotherapy where people don goggles and headphones and are transported into
a three dimensional world that can include realistic sights, sounds and even smells that
are computer-generated and controlled. For instance, one can create war-related scenes,
substance abuse relapse prevention scenes, phobia-avoidant situations, each individually
tailored to the needs of the client. In this way, exposure-based interventions, refusal
skills, social interactive skills can be practiced by clients. A form of Second Life scenario
using Avatars has also been used for training purposes (See DeAngelis, 2012 for a listing
of companies that provide training on ways to use Virtual Reality Tools). The relative
effectiveness of this technology needs to be established.

16. Use of computer technology as adjunctive tools to psychotherapy, especially with
children and adolescents. For example, video games such as “Treasure Hunt” and
“Personal Investigator” have been used with children (see www.secondlife.com). Khanna and Kendall (2010) have developed a computerized Camp-Cope-A-Lot for
children who are socially anxious. For adolescents who are depressed, there are Avatar-based Beat-The-Blues Websites. See www.melissainstitute.com website for a listing of
such computer based interventions (Meichenbaum, 2010 - Adolescent depression
conference). Also, see companion Website www.teachsafeschools.org for ways to
address issues of bullying and cyber bullying.

17. Finally, psychotherapists have used computer and Skype technology to provide
individualized psychotherapy. The use of such direct service video-based treatments has
raised a number of issues of computer-based versus face-to-face treatment approaches,
and concerns about safety, privacy, legal, ethical and practical issues.
ISSUES IN USING TELEMENTAL HEALTH INTERVENTIONS

(See Division 29 Report from the Task Force in Telepsychotherapy, Judge et al., 2011)

1. Issue of Effectiveness. Several meta-analytic studies have been conducted that compare Internet-based therapy versus face-to-face treatment (Barack et al., 2008; King et al., 2011; Perle et al., 2011). Also see Journal of Technology in Human Services, 26, No. 2; Clinical Psychology: Science and Practice, 2009, 16, Vol. 3. There were no statistically significant differences between Internet-based and face-to-face interventions. Video conferencing designed to deliver patient interventions showed high patient and therapist satisfaction and yielded positive treatment outcomes. Moreover, the therapeutic alliance scores in online therapy were found to be equal to face-to-face sessions. Clients tend to disclose more information about themselves to the computer, and over the Internet when compared to face-to-face interactions. Online therapies encourage self-disclosure and reflection. Online assessments have been found to be as effective as live assessments (See Perle et al. 2011 for specific references).

Drop out rates from web-based interventions were low relative to other types of self help and face-to-face interventions.

2. Issues of Safety. When conducting Internet-based psychotherapy the issues of assessment of suicidality and crisis management are important concerns. Fenichel et al. (2002) report that computer-based measures were better predictors of suicidal feelings than face-to-face clinical interviews. There is a need to ensure accessibility to psychotherapists and emergency resources in the patient’s locale when therapy is being conducted over a distance.

3. Privacy Issues and Security Concerns. Psychotherapists need to check the server to ensure for encrypted programs and protected passwords. There is a need to warn clients about the limits of confidentiality and the need for informed consent (Maheu et al. 2005; Reed et al. 2000). Ensure that HIPPA compliance rules are followed.

4. Set limits with patients. For example, do not befriend clients through FACEBOOK and limit therapist self-disclosure.

5. Check Licensure and Jurisdictional concerns across state lines. See www.apapracticecentral.org/advocacy/state/telehealth-slides for a 50-state review of telehealth laws, as well as the Association of State and Provincial Psychology Boards Website www.asppb.net. They created a credential called the Interjurisdictional Practice Certificate that facilitates temporary practice in other jurisdictions.

6. Issues of Reimbursement using telemental health interventions, insurance coverage. Should psychotherapist charge the same amount as when doing face-to-face treatment, when there are no overhead charges?
7. When is telepsychotherapy contra-indicated? Issue of patient online literacy and attitude toward computer. Use Computer Self-efficacy Scale (Manring et al., 2011). Question use of telepsychotherapy with delusional patient or with patients with Internet addiction.

8. Telepsychotherapy may be particularly helpful with socially anxious clients, or with clients who are concerned about stigma like military personnel. For instance, Tripler Army Medical Center in Honolulu have provided Internet counselling to distant service members.

9. Psychotherapists need training and familiarity using telehealth technology. How to use Skype, Google Talk, how to use eye contact. Concerns raised when psychotherapist turns away from the camera to take notes. This may be misinterpreted by the patient. Psychotherapist needs to check volume, clarity, position and other logistics. (See Abbass et al. 2011 and Manring et al 2011 for detailed directions on how to use Webcam technology.

10. For additional discussion of issues of Informed Consent, Malpractice Insurance Protection, Confidentiality, Billing, Technical and Ethical Issues and training see the following Websites.
   APA Practice Central
   apapracticecentral.org/advocacy/state/telehealth-slides.pdf

   National Register
   www.nationalregister.org

   State Licensure
   http://www.asppbinet/14a/pages/index.cfm?pageid=345

   Ohio Psychological Association
   www.ohpsych.org/resources/1/files/Comm%20Tech%20Committee/OPATelepsychology
guidelines41710.pdf

   Canadian Psychological Association
   www.cpa.ca/aboutcpa/committees/ethics/psychserviceselectronically/

EXAMPLES OF COMPUTER-BASED PROGRAMS I HAVE BEEN INVOLVED IN

1. Work with National Guard - - Train treatment staff and create IPOD technology for returning service members and ways to reduce suicide rates.
2. Create Melissa Institute Websites www.melissainstitute.org and www.teachsafeschools.org. These have had over 2 million HITS worldwide. Project target reading instruction as a means to reduce antisocial behavior and the development of a Principal Checklist.


REFERENCES


Barnett, J.E. (2011). Utilizing technological innovations to enhance psychotherapy supervision, training and outcomes. Psychotherapy, 48, 103-108. (See the entire issue No.2 on Internet and Videotechnology).


Judge, A.B., Abeles, N., et al. (2011). Report from the task force in telepsychotherapy Division


**Additional Resources**

American Telemedicine Association Telemental Health Special Interest Groups ([www.americantelemed.org](http://www.americantelemed.org)). Evidence-based telehealth interventions


Australian Web Portal that evaluates and rates Internet and Mobile Interventions based on level of evidence.

[http://www.beacon.anu.edu.au](http://www.beacon.anu.edu.au)

Ohio Psychological Board Telepsychology Guidelines.
[www.ohpsych.org/professionalissues.aspx](http://www.ohpsych.org/professionalissues.aspx)

Department of Defense National Center for Telehealth and Technology (T2)
Understanding the role technology plays in the classrooms and workplaces among other areas is of vital importance. Staying competitive in the 21st-century dictates the need for technological finesse. However, one of the biggest problems facing the radical change in the centuries-old pedagogical methods used in education is that no parent wants their children to be the initial case study.

Another revolutionary piece of technology that has managed to find its way into the modern classroom is the tablet. A tablet is a handheld computer that is fitted with a touchscreen. With technology, teachers play the role of a facilitator; providing resources, guidelines and setting project goals.

Problems Facing Efficient Use Of Technology In Classrooms. Technology has long played a crucial part in medicine. Whether it's the development of the microscope back in the 17th-century or the development of any number of surgical tools, the health industry wouldn't be what it is today without constant innovations in the field. Developments today promise to take things an exciting step further. Here are some of the most fascinating examples of health technology that may well shape the medical industry of the future.

1. Virtual patients and video games. Developing technologies aimed at curing patients is incredibly important, but so is the need for a healthy population. Today computer technology has become the most advanced technology as compared to any other technology. We could have an internet facility just because of computer technology, and we all know the advantages of the internet and how it has changed and improved our life. We can see the use of computer technology everywhere around us. If we are globally advanced today, it could happen just because of computer technology.

As we can see the role and contribution of computer technology in every field of our lives. It helps us in many ways. It minimises our effort and saves time. Based on this, we can predict the future of computer technology, and we can say the future of computer technology is very high. Today everything is getting advanced and digitalised. Here, we will take a deeper, more technical look on where science stands regarding brain-computer interfaces. If you want to know what this article series is all about, check out: “The future of perception: brain-computer interfaces” introduction. When science fiction becomes scientific reality.

In a nutshell: A brain-computer interface is any technology which will allow humans to communicate/control or interact with a computer/electronic device via thought. In the first part of this series, we covered why our brain is so special and how it can be understood scientifically. Here, we will take a look at what is already done and will hit the markets inevitably, before we dive into what these technologies might mean for our future.