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# COMPUTER-MEDIATED PSYCHOTHERAPY ETHICAL ISSUES AND DIFFICULTIES IN IMPLEMENTATION

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*Computer technology has been applied to psychiatry and psychotherapy for four main purposes: as a diagnostic aid, for computer-assisted instruction, to aid cognitive rehabilitation, and for computer-mediated psychotherapy (CMP). The first and second applications have proved highly useful in some psychiatric domains, but CMP is at a preliminary stage and remains controversial because little evaluation data is available. The questions addressed in this paper are: Can psychologic computer software cope with emotional and behavioural dysfunctions? To what extent can the use of computers help the patient recover? The authors review experiences in this area and discuss the dangers, possible drawbacks, major objections and limits of CMP. They also examine the possibility that computer applications may help in the understanding of psychotherapy. Finally, they address some ethical issues in the application of this technique.*

More and more physicians use computers in their offices. Interactive computer software has been applied to psychiatry and psychotherapy in 4 main areas: first, to aid diagnosis, for mental-state assessment and as a therapeutic accessory<sup>1-4</sup> (for which there are more than 15 tentative decision-making expert systems<sup>5,6</sup>); second, for evaluating students' knowledge;<sup>3,7</sup> third, to aid cognitive rehabilitation;<sup>8</sup> and fourth, for computer-mediated psychotherapy (CMP), which has been used to direct changes in patient behaviour.<sup>9-18</sup> Although the first three purposes have proved highly useful in specific domains, CMP is at a preliminary stage and remains controversial and poorly evaluated. Thus, the central questions addressed in this paper are: Can psychologic computer software help individuals with emotional and behavioural dysfunctions? To what extent-can they help? What have been the experiences in this domain? and What are the dangers, drawbacks, objections and limits of CMP? Finally, we discuss the ethical issues that must be addressed before large-scale evaluations are undertaken. Evaluating the efficacy of computer use is straightforward when the task outcome goals are easy to assess; however, when computers are used for psychotherapy, we first must determine what stages and processes are involved.

## Successful Experiments

Experiments with computers as a medium for psychotherapy have been attempted since the 1960s when Weizenbaum<sup>19</sup> designed his ELIZA program.<sup>20</sup> The program is one of the most famous attempted realizations of artificial intelligence: a branch of computer science devoted to the study of artificial reasoning, problem-solving, knowledge representation and automatic knowledge learning. Weizenbaum set out to demonstrate that a computerized model of a psychoanalyst would be no more than a pale reflection of the human it pretended to mimic. Much to his surprise, the program became a prototype for CMP and, more than 18 years after its presentation, an updated version of the program was still in use, and positive results are still being reported.<sup>21</sup> This initial experiment was followed by a series of positive reports on CMP. Biglan and associates<sup>22</sup> successfully treated a volunteer group of 15 test-anxious students by means of behaviourally oriented, computer-administered desensitization. Foree-Gavert and Gavert<sup>23</sup> and Burnett, Taylor and Agras<sup>24</sup> proposed the computer-assisted self-treatment of obesity. Ghosh and Marks<sup>25</sup> devised a computerized behavioural program for the self-exposure treatment of phobias. They compared patients treated by the computer with a group of patients who received conventional treatment by a therapist or through a self-help manual and found that at the end of treatment patients in both groups showed similar, significant improvement in their clinical state. Ford and Vitelli<sup>26</sup> surveyed 72 prison inmates who had participated in both computer assessment and a Computer Adjunct to Psychotherapy (CAP) program. Their preferences were almost equally divided between CAP and human-conducted therapy sessions.

Reitman<sup>27</sup> used microcomputers in self-help sex therapy, and Binik, Servan-Schreiber and coworkers<sup>28,7</sup> developed SXPERT - a rule-based, computer-mediated system for the assessment and treatment of sexual dysfunction in individuals and couples. These last authors<sup>29</sup> stressed the ability of their system to seriously engage couples, to encourage them to discuss their sex lives and relationships with each other and to interact with the system's comments. Computers have been used as an aid to prevent drug abuse. Barber<sup>29</sup> described two computer-assisted learning programs: one for the prevention of relapse in former heroin users and the other for the promotion of controlled drinking in early-stage problem drinkers.

Computer-assisted, short-term psychotherapy is said to be effective in people who have problems in living. In each of five 2-hour sessions the therapist introduces the patient to a concept to be worked on with the computer, and then talks to the patient about the results.<sup>30</sup> Kim and Kim<sup>31</sup> described the development of an expert system for brief psychotherapy, and Neumann<sup>32</sup> used the computer to modify the individual's perceived competence to effectively operate in the everyday environment.

### **Computers as Life Tools**

An important factor in CMP is that the patient attributes certain characteristics to the computer. In clinical settings, subjective assessments after computer use show a high degree of acceptance. Contrary to early fears that computers would have a dehumanizing effect, people view computers as credible sources of information and as reliable tools for decision making.<sup>33</sup> This acceptance of computers in psychiatry mirrors their acceptance in everyday life. After their explosive diffusion in the '80s, computers are now commonplace. Devices such as the Minitel (France-Télécom, Paris) and microcomputers connected by a modem to telephone networks give many people access to a huge pool of databases and services. Computer use now begins in primary school in almost all countries where the standard of living permits.

Consequently, the computer's broad social acceptability should significantly influence the debate about its place in psychotherapy.

Clinicians and researchers in psychiatry and psychotherapy have tried to assess patient acceptance of computer programs for mental-state assessment or treatment.<sup>34</sup> Almost none reported a negative experience. Erdman and collaborators<sup>35</sup> expressed one aspect.

*[We] readily concede that some patients might find a computer terminal a dehumanising medium for dealing with major life issues. But it is equally true that many people find it embarrassing and humiliating to divulge the intimate details of their lives to a stranger, no matter how wrapped in the cloak of professionalism.*

Users report that their relation with the computer is no more dehumanizing than their relation with the automobile or any other commonly used device. Computers are credible sources of information, even for those who might find interaction slow and difficult, such as people suffering from vertigo<sup>33</sup> or obsessional neurosis.<sup>36</sup>

### **Computers and Directive Therapies**

The most successful applications use standard behavioural packages or open-ended nondirective packages that achieve therapeutic effects mainly by stimulating reflection. Could the computer be effective in a more insight-oriented approach, or through the increasingly popular, thought-modifying techniques of cognitive therapy? What qualities are perceived as necessary for psychoanalytic and cognitive therapists? Psychodynamic therapy is a procession of stages requiring a variety of therapist skills. The educational stage involves evaluating, formulating probable diagnoses and providing patients with information on the source of their difficulties. In the empathic-connection stage the therapist forms a therapeutic alliance with the patient, explores deep conflicts and develops transference-countertransference relations, with subsequent projection or projective identification. To interpret, direct and elaborate psychic processes the therapist requires a variety of eclectic techniques. The last stage is the termination and follow-up.

### **Human Emotion**

Qualities required by a therapist are intelligence, patience, listening and observation skills, understanding, self-control, consideration, affability, sociability, the ability to support, protect and interpret, and the Rogerian triad of warmth, empathy and genuineness. In addition, the therapist may become an idealised object or an authority figure. Clinicians already fear that the drive for cost-efficiency is forcing the human therapist to forego these qualities.<sup>37</sup>

Computers cannot provide this range of human emotion, so we must determine to what extent these qualities are necessary to induce change. Perhaps they are necessary only when a human is inducing the change? For example, in the presence of another human, the patient may require immediate reassurance that he or she will not be rejected. Also, the patient probably feels bound to project human qualities onto the therapist. However, these projections may be superfluous to actual change in the patient's thought and emotional processes. The main component of human psychotherapy is the relationship between the therapist and the patient, viz. transference and countertransference.

### **Object-Relations**

We might look at the relationship with a computer from a Kleinian "object-relations" point of view: one that sees personal development as the product of the way the self interacts with objects in the immediate environment. In Freudian theory it is important to consider the objects and the significance of the influence, of those objects on internal psychic development. Infants begin life in a state of objectless primary narcissism and progress in the direction of object libido and attachment. As are many other objects (cars, televisions), the computer is a locus for libido investment. Thus, the computer-relations theory is based in specific object-relations. Computers contain a great deal of information, therefore the human sees interaction with them as a relationship between two knowledge systems. Some psychiatric states (e.g., major depressive disorders) are secondary to the way in which individuals think about themselves and their role in the world. For them, knowledge-based interactions could be useful.

### **Cognitive Therapy**

Cognitive therapy is based on the notion that psychiatric disorders are secondary to stereotyped thoughts that lead to cognitive distortions, errors in thinking and self-defeating behaviour. One of the psychotherapist's tasks is to guide the patient in selecting among possible behaviours and to evoke a kind of "problem-solving" therapy. Success is determined by the patient's computational resources. It is adaptive to have stable, pre-existing solutions to thinking errors. Straightforward interaction between patients and problem-solving software could aid their adaptation. Cognitive therapy is becoming increasingly technical in its approach to modifying the patient's verbal behaviour. Caro<sup>38</sup> produced a linguistic-based cognitive therapy, centered on sentence construction and phraseology, to evaluate irrational sentences. Cognitive exercises such as relabelling, reality testing, reattribution and rational inference can be carried out with current software. In a rule-based system like the Beck-style cognitive therapy,<sup>39</sup> the computer detects and feeds back maladaptive statements.

### **Anticipated Difficulties**

A computer would have difficulty in actively seeking information during evaluation and treatment; for example, without special sensors, a computer could not detect verbal nuances or nonverbal behaviour such as discomfort in the interaction. Computer vocabulary can never reflect the richness of conscious experience. It cannot role-play or give credible reassurance and empathy. However, as mentioned earlier, some human qualities may be complicating rather than cathartic factors. The patient would have fewer emotional attachments with the computer, his or her feelings of mastery would be enhanced and there would be no possibility of exploitation, abuse or boundary violation. Also, because the patient would probably perceive that the computer had a lower status, he or she might find it easier to reveal intimate or compromising information. (The fear of negative evaluation by a high-status professional would be absent.) Slack and associates<sup>40</sup> have shown that in the absence of therapists a computer interview can provoke both anxiety and relaxation responses. This was confirmed by significant changes in heart rate and in anxiety-state scores. In the opinion of these authors the therapist's presence can sometimes inhibit frank disclosure. Computers can help using visual-spatial and auditory modes; human therapists generally operate verbally.

We need to address the technical problems of interaction (particularly with elderly people) in terms of manual-operation posture and visual display and, for a minority of users, the danger of computer dependence.<sup>41</sup> The development of the computer as a cognitive or interpretative therapist depends equally on increased sophistication and acceptance of computers and on precise analysis of therapy components. Computer connectionist modelling has helped us to form the therapeutic process.<sup>42</sup> ("Connectionism" is the study of artificial neural networks of individual processing units with collective properties similar to networks of biologic neurons.) If we can model therapeutic change entirely by information-processing concepts, a computer may replace the traditional psychodynamic stages associated with the human psychotherapist. However, in the near future it is likely that CMP programs will be the most successfully used applications.<sup>42</sup>

### **Limitations of Computer Modelling in Psychotherapy**

Despite the progress of cognitive science in modelling symbolic knowledge and reasoning, neural networks, the brain and human memory, in our attempts to design a model of a whole therapeutic behaviour we run the risk of adopting a restricted view of the human being. Can one expect the computer to be anything more than a powerful information tool or at best, an information-processing device? On this point, Nadelson<sup>43</sup> is sceptical.

*We, as therapists with all of our all-too-human faults, will always be better than the computer at the care of the patient; we need help in the treatment of the disease. There is no real issue of replacement of human therapists by a machine.*

We conclude that any CMP application must be sufficiently structured and delimited to be described in a computer-programming language. In the near future we cannot expect computerized, long-term, intensive, insight-oriented psychotherapy. However, we have successful, computerized, psychotherapeutic self-treatments for such conditions as obesity, test anxiety, phobias, cigarette smoking<sup>44</sup> and some forms of sexual dysfunction. When extended to limited, rule-based, cognitive domains these can provide a valuable resource for structural procedures such as decision making. Undeniably, the computer can replace the therapist for stages of therapy that require straightforward information handling and feedback.<sup>45</sup>

### **Ethical Issues**

The concept of "computer therapist" raises fundamental ethical problems. Do we run the risk that a patient might make an unwarranted psychologic investment in the software and lock him or herself into a relationship with a computer? Will it be necessary for the program to know at which moment the relationship must terminate? Indeed, how would a computer terminate a relationship? Without human intervention we cannot use the computer as a means of avoiding personal interaction or as a compensation for interpersonal inadequacy. To prevent the perverse use of psychologic softwares we must not use CMP without the supervision of a human therapist.

Free access to computerized psychologic assistance can provide advantages to the health care system, because use of the computer would mean a dramatic decrease in the costs of therapy,<sup>35</sup> thereby making it more accessible. Nevertheless, there is a risk of commercial abuse if society does not establish controls. The diffusion of CMP

software in the marketplace should be supervised closely by a committee of health professionals.

Klepsch<sup>36</sup> reported that confidentiality was the major concern among his patients with obsessive disorders who used computers for their therapy. We would be capable of divulging, or opening to public scrutiny or peer review, the information gathered by an artificial intelligence product. The computer would offer no resistance because it acts as a perfectly docile executive. On the other hand, the computer would be of considerable use in research to collect impartial data on a sample of patients without the risk of interview bias.

## **Conclusions**

Research into the development of artificial intelligence and computer-assisted instruction has demonstrated that in certain settings computers may perform as well as humans and books in teaching, reasoning, explaining, demonstrating, questioning and answering. The increased use of computers has made it quite natural for people to strum on the keyboard, click on a mouse, navigate through pop-up menus and "talk" to a computer. This should allay our fears concerning the impersonal and dehumanizing nature of computer interviews.

We are now ready to address the questions raised by the arrival of psychologic software in the marketplace. The growing investment in research and the subsequent development of knowledge-engineering tools, tutoring systems, friendly user-computer interfaces, and increasing facilities to design, build and test interactive computer programs constitute the basic resources of CMP software design.

Nevertheless, these programming facilities are only the building blocks of the CMP software; the development of this software for human interactive use will be the work of an interdisciplinary team of psychotherapists, cognitive psychologists and computer scientists.

Software designed to help individuals eliminate unwanted behaviour, transcend psychologic difficulties or initiate new behaviours cannot be intrinsically malevolent. Its use should be supervised by psychotherapists for two reasons: first, to ensure matching of the software to the patient; and second, to evaluate its long-term use by the patient. One of the main issues raised by the emergence of software programs for CMP is the necessity for qualitative evaluation of the products. The establishment of objective criteria for evaluation will not be easy.

In the same way that some books are more pertinent and useful than others, top-level CMP programs may gain the approval of psychotherapists. If this happens, such acceptance will likely represent the major normative criterion for evaluation.

However, if CMP remains a matter of controversy, it may be because "the intrusion of artificial intelligence ... into a field so quintessentially human . . . brings into focus the more general problems of psychotherapy."<sup>43</sup> Already, there is an interaction between computers and therapists. They play a part in modelling the therapeutic process, they influence other therapies that are becoming increasingly component-based and technique-oriented. As knowledge increases, convergence of the functions of computer and therapist may promote acceptance of computers in therapy.

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