

Participatory Design of a System for Computer-supported Distance Art Therapy

Kate Collie

Department of Counselling Psychology
University of British Columbia
2125 Main Mall
Vancouver, BC Canada V6T 1Z4
+1 604 822 5259
kcollie@unixg.ubc.ca

Davor Cubranic¹ and Kellogg S. Booth²

Department of Computer Science
University of British Columbia
201-2366 Main Mall
Vancouver, BC Canada V6T 1Z4
+1 604 822 8193

¹cubranic@cs.ubc.ca, ²ksbooth@cs.ubc.ca

ABSTRACT

Rapid expansion of the Internet has resulted in the emergence of electronic counselling and psychotherapy services. These services show great potential to make therapy accessible to a wider range of people, for example people whose mobility is limited by disability or illness. Research is needed to assess the possibilities and pitfalls of this new form of mental health care. In this paper we describe a participatory design process during which we developed a system to support distance art therapy and simultaneously identified key issues to consider for research and practice in this rapidly evolving field. We present the design rationale, the context, and a description of our interaction with the participatory design team. The process significantly changed perceptions of the usefulness of distance art therapy on the part of the research team, and yielded both a workable computer system and a list of advantages and potential problems of online mental health services.

Keywords

Health care applications, shared workspaces, telepresence, accessibility, online mental health

INTRODUCTION

Recent developments in the computer industry and telecommunication infrastructure that have resulted in the rapid expansion of the Internet have made distance mental health care an increasingly viable option. In the United States, online psychotherapy is being promoted by the federal Medicare agency under the rubric of "telehealth", with federal funding through the Federal Communications Commission. The American Psychological Association is promoting telehealth services too, and several states have passed legislation mandating third-party payment for both physical and mental health services provided via the Internet.

It is estimated that there are already hundreds, if not thousands, of counselling and psychotherapy sites on the Internet [17,21]. However, there has been virtually no systematic exploration of using computers for online therapy. We used participatory design to develop an innovative computer system for distance therapy and to identify advantages and hazards of using the Internet for distance mental health care. The first author (KC) is a graduate student in Counselling Psychology who is also a professional artist. The other two are a graduate student (DC) and a faculty member (KB) in Computer Science who are working in human-computer interaction (HCI) and computer graphics. The computer system is designed to address the needs of people with mobility limitations, such as people with disabilities or long-term illnesses, but has application for online art therapy or creativity training with a variety of populations.

In the remainder of this paper, we first set the context of the project by giving background information on distance psychotherapy and discussing pertinent work in the areas of computer-supported cooperative work (CSCW), group awareness, and telepresence. We then describe the participatory design process, relevant issues that were identified, and the development and implementation of the system for distance art therapy via computers. Lastly, we summarize our findings and indicate directions for future research.

ART THERAPY

The main attraction of distance mental health care is the potential to reach people who otherwise would not have access to counselling or therapy – not only people with disabilities or illnesses, but also people in remote locations, and people with young children or older parents at home. Other advantages of distance mental health care include the ability to maintain a therapeutic relationship after relocation of either client or therapist, and an increased sense of privacy.

The primary problems mentioned in published opinions about using the Internet for mental health care include: protecting privacy and confidentiality, compensating for the lack of direct human contact, accommodating different

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laws in different locations, and dealing with technical failure [18].

Currently most distance counselling and therapy sessions are conducted asynchronously by e-mail. Everything said is translated into text as clients and counsellor type on keyboards, and the directness of face-to-face therapeutic encounters is lost. The computer system described in this paper allows a much closer approximation of face-to-face sessions than does e-mail and does so without the additional expense and bandwidth required for video conferencing. The system supports art therapy, a type of therapy in which clients express themselves by drawing or painting as well as by talking. The system allows speech communication and the transmission of hand-drawn images. Communication is direct, with less risk of meanings being distorted as a result of translation into another medium. The therapist sees the images created by the client as they are being made, and the client and therapist can speak to each other as if they were using speakerphones. The presence of the art images provides some compensation for the lack of a visual dimension to the therapeutic relationship, thus making the interaction feel more concrete than it would using a purely verbal system.

Art therapy has the same applications as verbal therapy, i.e. helping people find new ways of dealing with, solving, or transcending their problem situations. One of the foundations of art therapy is the idea that the creative process is therapeutic in itself. Another is that art making brings forward transferable creative resources. In art therapy, the images made by the clients provide a medium for releasing emotions, integrating painful feelings, and imagining solutions to problems. It is an interactive therapeutic process that is especially useful for trauma survivors, people with life-threatening illnesses, and children. The longstanding use of art therapy to help people with severe physical illnesses suggests a niche for distance art therapy for people whose mobility is limited for medical reasons [1].

Computers are used in face-to-face art therapy, mainly to meet the needs of people with disabilities [24]. Existing studies of face-to-face art therapy using computers have found several advantages over traditional materials [7,14], including ease of use (especially for people with disabilities) and improved self-esteem from controlling the computer.

There are many types of art therapy, corresponding to the major types of verbal therapy. We shaped the system to accommodate the therapeutic methods of a social constructionist form of art therapy based on Narrative Therapy [26]. What follows is a brief explanation of this therapeutic approach, to give a context for specific decisions we made during the development process.

Narrative Therapy holds that we are all subject to the dominant cultural "narratives", or interpretive stories, that

are used to define power relations within our society. These narratives perpetuate the viewpoints of those in power and disallow alternative viewpoints, generally working against the freedom and functionality of individuals. Oppressive narratives are understood to operate at the level of families as well as on the level of society at large, and are so strong that people accept them even if they are suffering within them. The underlying purpose of Narrative Therapy is to re-establish individual freedom by deconstructing oppressive narratives.

The process of Narrative Therapy begins with naming the problem, placing it in a position external to the person, attributing oppressive intentions to the problem, and mapping its effect on the client's life. The next step is to identify exceptional times when the client overpowered the problem, and to use these examples to highlight the client's own resources. With these resources clearly in sight, the client can construct a new narrative trajectory, by imagining it and planning what action to take. The final step is to identify significant people in the client's life who will witness the changes and the unfolding of the new narrative. To summarize, the four key ingredients of the Narrative approach are: externalization of the problem, identification of the client's personal resources, construction of a more liberating narrative, and witnessing.

In art therapy, externalization is aided by the fact that problems are expressed as images that are external to the person. Art making brings the personal resource of creativity clearly into the foreground. Art images can be used for imagining and symbolically creating new narratives. Art is meant to be looked at, and therapeutic change represented symbolically in an art image can be witnessed easily.

CSCW AND TELEPRESENCE

The use of computers and computer networks as a communication medium in distance art therapy brings us into the domain of CSCW and groupware. CSCW, or computer-supported cooperative work, is "computer-assisted coordinated activity carried out by groups of collaborating individuals," while groupware is the multiuser software that supports such activities [2]. This has been an area of active research in the last decade or so, and there are numerous systems that have been implemented during that time, as well as a body of research on social and psychological aspects.

Current CSCW applications used in distance counselling and psychotherapy span both synchronous and asynchronous categories of Johansen's [13] taxonomy of CSCW technologies, from e-mail to chat systems. The graphics component of our system clearly draws on the existing work in shared drawing spaces [12]. For group therapy the idea of telepresence, a way of giving distributed participants a feeling that they are located together [6], is no less important. While telepresence is generally associated with full motion video, there has been

work suggesting that this may not be necessary and that lower-bandwidth mediums may be appropriate [9, 23].

A goal of the project was to develop a system that would support distance art therapy, with special attention given to the principles of Narrative Therapy and the requirements for group art therapy. These objectives were balanced against more general issues of human-computer interaction and usability.

THE PARTICIPATORY DESIGN PROCESS

Participatory design was used at two stages during the iterative development of the system. The project was created from the very beginning in a participatory fashion, with each of the authors bringing in expertise from his or her area. The design process involved considerable mutual learning as each of the authors learned about the possibilities and constraints of the other's discipline during the initial steps of the project definition [10]. After a working prototype was implemented, we began the second stage of participatory design as we widened our design group by introducing another tier of participants – mainly therapists and people involved in providing support for people with disabilities or long-term illnesses.

There have been previous cases of participatory design in health care systems [3], although primarily in the area of information systems. Our case deals with the use of computers in the client-therapist interaction. Therefore, we had two groups of future users to think about – art therapists and clients. Since cooperation with the ultimate users of the design is at the foundation of participatory design [10] and because we needed our future users to experience actual art therapy sessions on our system, our challenge was how to involve potential future users (clients and therapists) without posing any risk of emotional harm.

It would have been unethical to involve actual art therapy clients in a study of a new system and an as-yet unproven therapeutic modality. (This is one of the very first studies of computer-mediated distance psychotherapy, and the first we know of specifically about distance art therapy.) Our solution was to invite a group of people with expertise or personal experience relevant to the topic to experience the system as clients. The group of ten included practicing therapists (some experts in art therapy, some in online counselling), educators, and people working in counselling and support centres, some of whom have disabilities or chronic illnesses themselves. By using this format and including therapists and counsellors on the research team, the team could comment on the system from the point of view of both therapist and client. Given that therapists and counsellors are trained to protect themselves against emotional harm in educational and research settings, and are trained to see through the eyes of others, this was both an ethical and efficient solution.

Initial design phase

In the first stage of development, the authors made plans for developing a system that would mimic face-to-face

group art therapy. As our starting point we chose a type of art therapy that Kate is familiar with and that she had been using with people with life-threatening illnesses at the time this project began. We chose group art therapy instead of one-on-one art therapy because the primary target population of future clients is people who are isolated. We wanted to create a system that would address the need for group support as well as the need for therapeutic help from a particular art therapist. The decision to use a group therapy format was made in light of the recognized benefits of group support during recovery from long-term illnesses [11, 22], and the growing popularity of Internet support groups for people with medical difficulties [25].

By using a type of group art therapy that Kate is familiar with, rather than a hypothetical format designed especially for computer-mediated distance therapy, we had access to tacit knowledge about group art therapy situations [5]. This also enabled us to make clearer comparisons between face-to-face and distance art therapy experiences.

The face-to-face situation we mimicked with our system is one in which a group of about six art therapy clients sits around a table with an art therapist. Easy-to-use art materials – such as pastels, markers, crayons, and watercolour paints – are in the middle of the table within easy reach of all the clients. Each person has a piece of paper to start with, and more paper is on hand. The group might meet for two hours a week for six weeks. The first session includes an introduction period and is devoted mainly to group-building activities, such as the “pass-the-painting” exercise, a lively activity that is useful for dissolving inhibitions and helping people to feel comfortable with one another. In this exercise, each person starts making some kind of image on a piece of paper, and after a minute or so passes that paper to the next person at the table, who adds to the image, and so on until each person in the group has done something on each piece of paper. The art therapist can participate in the activity, to help decrease the sense of power imbalance between clients and therapist.

In subsequent sessions, the usual format is for the art therapist to sit at the table with the clients, guiding them through art therapy activities that are done individually. At the end of each ten- or fifteen-minute activity the clients look at what the others have done, by standing up and walking around the table. When it is time for the group to discuss the art images together, the images are either put up on a wall or laid out on the floor in sequence.

Davor had an opportunity to personally experience something very similar to this group art therapy format during a creativity workshop offered by Kate shortly before we began the project. So, in addition to Kate's detailed description of the requirements, Davor had some knowledge of the situation to guide him as he began designing the system.

The stated requirements of the system were:

- Support for drawing, speaking with the rest of the group, and showing images to the rest of the group (the “witnessing” component of Narrative Therapy).
- Ease of use and a maximally simplified user interface: the program should be easy to learn; clients should never feel overwhelmed or frustrated by the program; everything should be immediately accessible; and only what clients will be using should be visible to them (e.g., no extraneous menus).
- Inclusion of natural-feeling tools: we decided that brushes and other tools should feel similar to real ones, with soft strokes and edges, to increase familiarity and ease adaptation to the system, and to give as much of a sense of physical art materials as possible.
- Elimination of automated operations common in paint programs: it is important that the client have a sense of control during the session instead of feeling that the computer does everything for him or her; the client’s own personal style of expression needs to show in hand-drawn marks rather than computer-made marks.

In keeping with the principles of Narrative Therapy, we gave special attention to features that could maximize the sense of personal agency and control, and that would facilitate looking at other people’s images.

The authors worked together closely for the first two months of the project, meeting once or twice a week to try the system, share information, and make decisions together. The system and the requirements were adjusted in an iterative process.

Pilot usability study

When the system was working to our satisfaction, we invited small groups of volunteers to test its ability to handle group communication. These volunteers were mostly graduate students; they had some familiarity with computers, but little or no experience with computer paint programs. We simulated geographical separation by using networked computers in different rooms. People in the group could speak to each other using microphones and headsets, and they could see each other’s images on their monitors. During these tests we worked on the usability aspects of the system and received our first feedback from users. It took eight of these tests over a period of five months before we were ready to bring in the therapists and counselors for actual art therapy sessions with our prototype.

After each session, based on our observations (both visual and from program logs) and user responses, we went back to the design phase to fix the problems that came up. For example, when in one of our first sessions we observed a participant constantly using the Undo operation in a way that prevented him from freeing up and getting past the blank canvas, we decided to remove that feature from the

program (there is still the eraser tool, but it does not seem to cause such behaviour). Also, upon user requests, the toolbox was reorganized to put the most often used tools at the top, where they are most visible. Some tools were added along the way, for example, a colour picker to select a colour from within an image when users complained that it was difficult to go back to the exact shade of colour used earlier (the system uses 24-bit colour).

These usability studies also allowed us to test our methods of using the system and helped us decide how to make the best use of our time with the therapists and counsellors.

Phase two: working with the full PD team

While these tests were happening, we were recruiting people with relevant personal or professional experience to use the system for actual art therapy sessions. We wanted a variety of people with experience in the areas of art therapy, distance counselling or psychotherapy, and support services for people with illnesses or disabilities. We recruited using a “snowball” technique: asking people to suggest other people, and so on. We wanted people interested in being actively involved in the participatory design process. In keeping with focus group theory we did not include people who had strong pre-set opinions either for or against the idea of distance therapy [16]. We ended up with a team of ten people who came to the computer lab in two groups of five.

We were fortunate to find people whose backgrounds spanned two or more of the relevant areas, and that several had experience in art and computer science as well. It was through bringing together people with a range of types of experience and knowledge that we hoped to uncover advantages and disadvantages of online mental health services not previously identified. Our idea was that by having people share an experience and talk about it together, ideas would emerge that would not emerge through talking with people individually. (See Table 1 for a list of the areas of relevant expertise or personal experience of each of the participants.) The level of computer experience ranged from novice to expert. Only three people had used computer paint programs previously.

We treated the ten members of the participatory design team as equal collaborators with us, and gave them the title of “co-researcher”. Two had practiced distance therapy (e-mail counselling in one case and distance art therapy in the other). These two people were involved from the very beginning of the project, before the system had been created. At that early stage they both gave us background literature that was crucial to our decision-making process during the initial stage of development. The other eight people were invited to join the team later, when we had a clearer idea of how we wanted them to be involved.

This stage of the participatory design process was structured to maximize collaboration, hands-on involvement, and creative thinking. The co-researchers

<p>Group one</p> <ul style="list-style-type: none"> • counselling and psychotherapy, career counselling, counselling people in remote areas, counselling people with disabilities. • art therapy, counselling sexual abuse survivors, distance art therapy using modems, computer art • computer science, long-term illness, art therapy, support services for people with life-threatening illness • art therapy, art therapy for people who cannot get to a therapist's office, art therapy for people with special needs • counselling and psychotherapy, living with a mobility-limiting disability
<p>Group two</p> <ul style="list-style-type: none"> • counselling people with disabilities, living with a mobility-limiting disability • support services to people with life-threatening illnesses, art therapy • support services for people with life-threatening illnesses, computers, art • e-mail counselling, ethics of Internet counselling • art therapy, special education, art

Table 1. Co-researchers' areas of expertise

were brought in to help us generate two types of information: suggestions for improving the system, and key issues and problems relating to distance art therapy and distance mental health services in general. The first is along the lines of what happens in traditional user-centred design; the second required the more in-depth involvement characteristic of participatory design. We wanted to be sure that each member of the team benefited from the process [5]. We chose people as participants who said they would benefit professionally and/or personally from learning about our system. This reciprocity was a third dimension of the participatory design process.

The three dimensions:

- collaborative design of a computer system for distance art therapy
- identification of key issues and problems to consider for online mental health care research and practice
- reciprocal information sharing

Each session with the participatory design team began with a hands-on experience of the distance art therapy system using computers in different rooms to simulate multiple sites, and finished with a round-table discussion. The art therapy activities were led by Kate, with Davor providing technical assistance to the co-researchers. The round-table discussions included both Kate and Davor, and what little facilitation was necessary was done by Kate. A paid assistant was present during the sessions to help with logistics and to record what was said during the discussions.

The first session with each group included an interactive introduction, a demonstration of the system, and the "pass-the-painting" exercise, in order for people to get to know each other while simultaneously getting to know the system. Between each session we continued the process we had begun during our test sessions, of incorporating suggestions and fixing problems.

There was an emphasis on group involvement and collective decision-making. During the hands-on part of each session, the co-researchers used their imaginations and their creativity. They interacted actively with the computers and with each other.

We wanted as many ideas as possible to come forward during the round-table discussions. At the end, when we were able to assess what had been said during the discussions, we were struck by the breadth and depth of thinking. Ideas emerged not only about how to improve the system and our method of using it, but also about wider issues of distance communication, telepresence, accessibility of mental health care, human-computer interaction, and shifting paradigms in therapy and counselling.

The ideas raised during the discussions fell into four categories: suggestions for improvement, advantages, problems, and implications for the field of mental health care. It is beyond the scope of this paper to present a detailed account of the issues pertaining to online mental health (this is the subject of Kate's masters thesis), beyond reporting that the research team sees great potential for using this type of system to help not only people who are isolated because of disability or illness, but also clients experiencing shame, and younger clients (especially adolescents) who are used to using computers to communicate; and that the degree of group awareness provided by the system was considered important. There needed to be enough awareness of the others to allow a feeling of connectedness with the group, but not so much as to negate the increased sense of privacy.

For most of the potential problems discussed, solutions were also offered. Exceptions were the danger of technical failure and the difficulty of providing appropriate technical support to people in isolated settings. There was great concern about therapy sessions being compromised and clients being harmed by computer connections getting broken mid-session. It was proposed that a distance art therapy client would need to have someone on hand (a nurse or a friend, perhaps) who could provide support if the client experienced an emotional crisis during a session or was disconnected in a moment of pain or vulnerability. This person could also assist in referring a client to sources of local support.

By this point in the participatory design process, most of the suggestions for improvement concerned protocols for using the system rather than changes to the system itself.

The most emphatically stated suggestion was that we establish procedures for what to do in the event of technical failure during a distance therapy session, and rehearse these procedures with clients individually in advance. This would be part of the initial orientation to the system which people felt should be done face-to-face if possible. The initial face-to-face contact would also be beneficial for the development of trust, as shown by Rocco [20]. Interesting suggestions for how to speak within the group emerged organically as the four sessions proceeded: identify yourself before speaking; don't be surprised by silences during group interactions; speak to maintain connectedness with the group; provide information about your surroundings as you talk with the group; let the group know if anyone else is present with you; provide information about how you are feeling and what is going on for you. A protocol for looking at other people's images also emerged, which included: only look with permission to look, say that you are looking, and use "active looking" when looking at other people's images (i.e., have your pointer present and activated in the image you are looking at, use it to track your gaze, and to point to the parts of an image you are talking about). An important suggestion relating to accessibility was that we provide a choice of input devices to accommodate a wider range of disabilities.

The co-researchers were generally enthusiastic about their experiences during the study. They reported that the computer was not getting in their way and that they felt in full control. Everybody learned how to use the system in less than fifteen minutes, even those with little computer experience. Another common theme in co-researchers' comments was how quickly they lost their inhibitions. While this has already been observed in previous studies of using computers in counseling, there was another, unintended, aspect of our setup that may have facilitated it: using a mouse as the input device. Several co-researchers said that because they knew they cannot control the mouse as well as pen on paper, it was easier to relax and draw without being self-conscious about the artistic quality. Related to the loss of inhibitions in drawing, they also reported a break of habit in the type of pictures they would usually make. We believe this was not only the result of a feeling of discovery in interacting with a computer [7], but also because participants felt that it was easy and, more importantly, "OK" to experiment with the computer, that there is less judgment involved. We were surprised that instead of finding working with the computer to be cold and mechanical, they found the system enjoyable and cooperative. It was always difficult for the participants to stop drawing, and a frequent comment was "This is so much fun!"

IMPLEMENTATION

Our system had to support two modes of communication: verbal and visual. Distance verbal communication in our case required a conference-like audio connection between the participants. While this could be done by telephone, the

workstations were networked in order to transmit visual information, so it made sense to use the network to transport the audio as well. There are numerous programs that have network audio conferencing capability, and we decided to use Silicon Graphics' InPerson, which was pre-installed on our development platform and offered everything we needed.

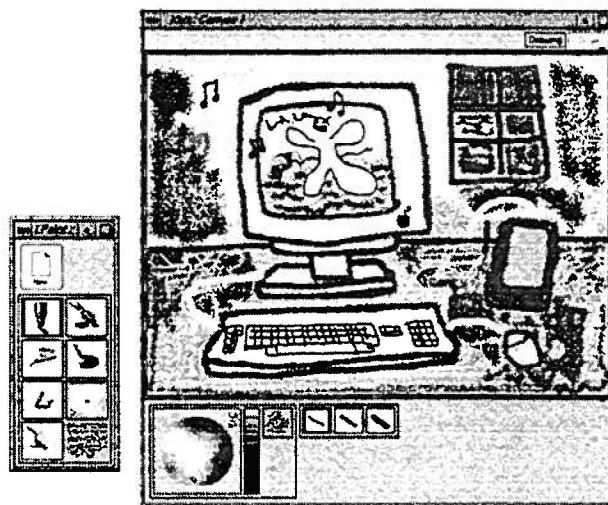


Figure 1. Screenshot of a "pass-the-painting" session

Visual communication at the minimum required some sort of drawing surfaces that could be viewed by all the participants. Shared whiteboard programs are quite common groupware applications; however, despite several such programs being available both for free and commercially (including a component of InPerson), none of them quite suited our needs or the requirements of art therapy. Therefore, we decided to have Davor write a new group paint program. He based it on XPaint [15], a publicly available single-user paint program for UNIX and the X Window System platform.

The program was implemented as a fully replicated architecture with participant processes running on each workstation. While our prototype used 10 Mbps Ethernet as its communication medium, the bandwidth requirements are small enough for those with only dial-in access to the Internet. Although the program uses full 24-bit graphics, only mouse-events are transmitted between workstations. Thus the bandwidth requirements are extremely low, perhaps not much more than for a text-based chat system for the paint component. The audio component requires more bandwidth, but this could be replaced by conventional telephone-based voice conferencing if bandwidth is a really critical constraint.

Many existing group painting programs [4,12] are conceptual equivalents of a shared whiteboard where users most often work together on a single drawing. In group art therapy situations each participant draws on his or her own piece of paper (canvas), and it becomes a piece of work

with which they strongly identify. For this reason, we did not implement simultaneous painters in a single canvas, and while everybody may look and point at a canvas at any time, there is only one "owner" who may paint in it. However, control of a canvas can be passed to somebody else, to accommodate the "pass-the-painting" exercises.

Each canvas is displayed in a separate window on each participant's screen. X events taking place in the canvas owner's window that will result in a change to the image are broadcast to everybody else. Existing groupware systems sometimes present a miniature view of other participants' windows to maintain a sense of workspace awareness. In our case, because the activity consists of longer periods of individual work followed by group discussion, we found that constantly seeing other's work in the background was distracting. We sought a way to maintain the sense of group activity, but minimize distraction, and found that having the canvases opened by others lined as icons along the top of the screen, together with the spoken dialogue, was sufficient for this purpose.

We eventually decided not to add video to our system for several reasons. First, the increased bandwidth requirement might be too high for users with only dial-in modem access. Second, we were not convinced that video images would significantly strengthen the sense of connection between group members. We were influenced by user studies of telephone counselling services that show high rates of satisfaction [21]. It is important to note that not all "non-verbals" are visual cues — client's utterances and art images also contain non-verbal communication information. Lastly, being invisible gives a sense of safety and privacy that can be beneficial to the therapeutic process. People with disabilities or illnesses often suffer a profound loss of privacy, sometimes coupled with sudden changes in physical appearance that they do not find flattering. For these people protection from the gaze of others could be a plus.

CONCLUSIONS AND FUTURE WORK

By organizing our study in several stages and generating results through group interaction, we were able to maximize the effectiveness of participatory sessions involving people with busy schedules. Over the course of a few months we were able to generate a large amount of information about distance therapy. Participants' perceptions of distance art therapy changed over the course of the study, as did our own. Initial reservations gave way to interest in the possibility of using relatively simple and easily available equipment and software to increase access to mental health care.

The participatory design process validated our ideas about low-cost systems for distance therapy and advanced our thinking about how to proceed with our work. The members of the participatory design team expressed gratitude for their involvement and described to us what they gained from the experience. We are satisfied that the

reciprocal exchange of information was successful. We have several hypotheses about why our interactions with the participatory design team yielded such a rich array of new ideas. Clearly, having people with a variety of backgrounds widened the scope of the discussions. The level of engagement and involvement with the ideas being discussed was remarkable, perhaps because we made it clear that we viewed all members of the participatory design team as equal co-researchers with us. It also seems likely that the sequence of art-making first, followed by group discussions strengthened the process. Everyone had been using their imagination and their creativity during the art making, and this creative thinking could carry over into the discussions.

Although many applications of our system were suggested, it became clear that people with disabilities could probably benefit the most from this form of distance therapy. The process is physically easier than traditional art therapy, there are many devices available to make it possible for people with disabilities to use computers, and no travel is required. Also, using computers can be empowering and can help increase a client's sense of control.

The participatory design process pointed to possible directions for future research in distance mental health care, human-computer interaction, and participatory design. In the domain of mental health care, what stood out the most was the rich potential for helping people with disabilities. A limitation of this study was that although the research team included people with mobility and motor disabilities, we had no one with cognitive or sensory impairment. At this point we cannot fully evaluate the accessibility of the system. The next logical step would be a participatory design project in which we would work closely with people with a wider range of disabilities. Now that we have a clearer idea of the risks involved in online art therapy and have developed a set of protocols to protect against those risks, we could move to a research approach based on client responses.

People's perceptions of the computer as an agent in distance communication is an aspect of human-computer interaction that has a direct bearing on distance mental health services and needs to be examined more closely. Regarding participatory design, we see potential in a further exploration of the benefits of deliberately activating creativity to enhance a collaborative design process.

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