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# Supporting Non-Verbal Visual Communication in Online Group Art Therapy

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**Abstract**

Art therapy provides therapeutic benefit to people suffering from chronic pain, and recent work has explored supporting art therapy through online tools such as chat forums and discussion boards. These tools give people the benefit of engaging in art therapy without the burden of having to leave one's home (when transportation may be a challenge), and allowing people to reveal their identities through dialogue and activity rather than through one's appearance. However, these tools also do not provide much opportunity for collaboration and shared art making. Because group members are not aware of each other's actions and non-verbal cues in a chat room, they cannot collaborate with each other easily. We discuss the design and development of tools that promote enhanced awareness of non-verbal cues and shared creative experiences in online group art therapy.

**Author Keywords**

Art therapy; online therapy; telehealth; art making; collaboration; user awareness; user embodiment

**ACM Classification Keywords**

H.5.3 [Group and Organization Interfaces]:  
Computer-supported cooperative work.

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## Introduction

Art therapy is a form of therapy that uses the process of art-making (e.g., painting and sculpting) to help people express and explore deep thoughts and emotions [6]. Cancer patients often use art therapy to help with healing or to cope with symptoms [6]. The main benefit of this form of intervention is that it does not involve the use of drugs, while still having many physical and psychological benefits, including reduced distress [7], enhanced self-awareness [7], reduced pain [6], and improved quality of life [9].

Art therapy is often done in groups that meet up in multiple sessions conducted by a therapist over the course of several weeks. In a typical group art therapy session, the therapist gives the group a directive—a set of instructions to follow when creating an art piece, including the theme of the activity, the art materials to use, and the purpose of the activity. The group members then work on that art activity, either individually or collaboratively (depending on the directive). Afterwards, the group and the art therapist discuss the artifacts that come out of the activity and each person's personal process in creating the artifacts.

Recent clinical research has explored the use of the Internet to deliver art therapy services to groups that are not collocated. There is a growing need for remote art therapy services, because although the benefits are well established, many who would benefit do not have access to art therapy groups, especially those not living in large cities. Some early work in the human-computer interaction community has begun to address basic challenges in the online art therapy space. For instance, Collie et al. [1] employed a participatory design team to design an online group art therapy drawing system. This team, consisting

of people with expertise in counselling, psychotherapy, distance delivery of support services, and art, actively evaluated this system throughout the design process and provided feedback that contributed to the evolution of a shared drawing system connecting users across a network of computers. While the system was crude compared to today's standards, the major conclusion was that the general approach was feasible, even if the prototype and technology still exhibited certain problems.

Recent work by the second and third authors has begun to explore supporting online art therapy through chat rooms and discussion boards. The problem with these tools, though, is that it is difficult to observe the non-verbal behaviour of others in the group, and thus it is difficult for group members to collaborate on artwork. In collocated groups, for instance, group members can observe one another's body posture, breathing patterns, how the art tools are being handled, gestures, and so forth. In contrast, conventional drawing tools and chat forums do not provide any means of allowing group members to watch each other's actions or observe each other's non-verbal cues. This means the social experience of online art therapy groups is fundamentally impoverished.

Just as collaborative work online is made better by enhancing awareness of non-verbal cues [4], our hypothesis is that there may be benefit to seeing someone else's body language and bodily feedback in an online art therapy setting. Our research question is therefore: can the experience of online group art therapy be improved by making non-verbal behaviour more visible? If so, what is the best way to represent non-verbal behaviour?

To address this question, we ran a pilot online art therapy group facilitated through a discussion board and a text-only chat forum (current state-of-the-art practice),

and interviewed participants to understand their experiences with both online and face-to-face art therapy. Based on these responses, we derived a set of design goals and designed several remote art therapy prototypes, including a “stick figure art therapy” design, which we describe below. Based on these designs, we will run further art therapy trial groups to understand whether our designs address our goals. We expect that this work will lead the way for the design and development of future remote art therapy technologies that promote meaningful therapeutic experiences and more opportunities for collaboration and emotional bonding between group members. It may also lead the way for the development of technologies and practices for other forms of expressive and creative therapies online.

### **Investigation**

Online art therapy is still in its infancy, but to understand its current state, we took the following approach: (1) the second and third authors facilitated a pilot online art therapy group using discussion boards and text-only chat rooms on CancerChatCanada, an established program of online support groups for Canadians affected by cancer (no cancer patients were involved at this stage); (2) the first author participated in the group as a participant; and (3) we interviewed the other participants about their experiences. Taking this three-pronged approach allowed us to develop insight into art therapy, both as facilitators and participants, as well as from the perspective of designers. Our interviews with participants lasted no more than an hour, and was comprised of questions of the following nature:

- Describe a moment when you felt very connected to the rest of the group.

- Describe some moments when you were very much aware that you were apart from your fellow group members.
- Was text a suitable way to communicate with other group members?

### *Key Observations*

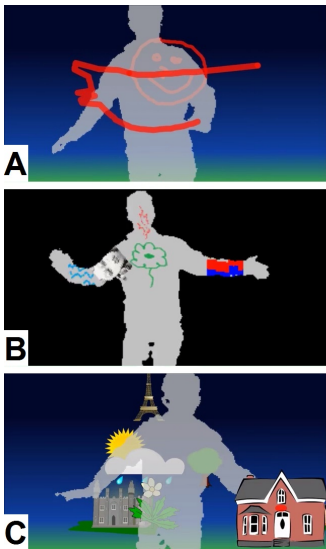
Through our information gathering, we made three observations: first, that the tools in use are inadequate to support deep shared experiences; second, that the support for feelings of connectedness are lacking; and the last—specific to this domain, perhaps—that the conventional approach of video teleconferencing is inappropriate, as it reveals “too much” about group members.

State-of-the-art online group art therapy is facilitated through discussion boards and text-only chat rooms; consequently, they do not support meaningful shared collaborative experiences. Most activities are done individually, and there is very little opportunity to engage in collaborative art making. In face-to-face sessions, group members can collaborate and share art-making experiences together because they can share each other’s tools and interact with each other during the art-making process.

Furthermore, the kinds of tools that are available emphasize explicit conversation, rather than the both overt and subtle non-verbal cues and communication that occur in face-to-face interaction. For example, one cannot observe someone else’s body language, hand gestures, or breathing patterns. Some of the participants in the pilot groups mentioned that they find value in being able to observe some of these non-verbal cues. This could be one reason why it is hard to facilitate collaborative activities



**Figure 1:** An art therapy drawing tool for tablets.



**Figure 2:** A series of tools utilizing a depth camera.

online—because awareness of others is necessary for users to work together successfully on an artifact.

The third observation was that although there might be some benefit to introducing awareness of non-verbal cues, there is concern for the privacy of the group members. Cancer patients participating in online art therapy groups find value in keeping their identities private [2]. One participant in our pilot study said that she “definitely felt aware of being apart from the group, but that it did not necessarily bother [her].” She said that she “felt shielded, but at the same time still felt like a group member.” Simply introducing live webcam images of the group members may improve awareness of others’ actions, but members of therapy groups often feel vulnerable and can gain greater benefit when they are shielded from view. Cancer patients participating in text-only online support groups through CancerChatCanada have said that being shielded from view helps them open up and makes it easier to discuss difficult topics, especially if they are at home [8].

## Goals

Based on our observations, we derived a set of four goals to address in designing remote art therapy tools:

1. Promote shared creative experiences
2. Promote a sense of connectedness between individuals
3. Allow for meaningful interaction through non-verbal communication
4. Allow group members to be aware of each other without actually seeing each other

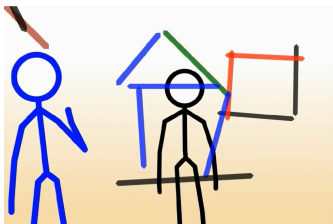
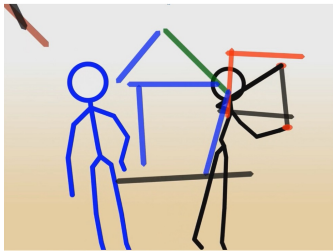
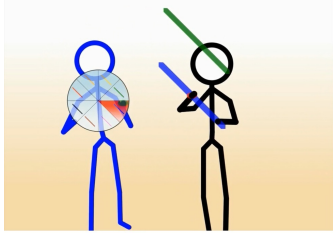
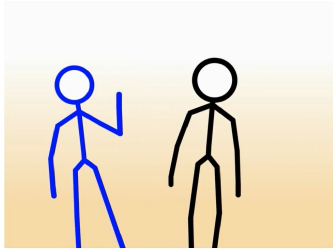
## Design and Prototyping

Based on our design goals, we developed several ideas. Describing each of these is beyond the scope of this paper; however, we highlight some of the more interesting explorations here.

*Enhancing feedthrough of drawing activity.* Building on Collie et al. [1], we began with a simple painting environment, but added support for collaborative drawing and representation of non-verbal communication information such as pen pressure, finger contact width, and cursor trails (Figure 1). By exposing this information, users can be aware of not only where in the workspace another user is drawing, but also from where the user is coming from, whether the user is drawing with a pen or a finger, how much pressure the user is applying, and how much of the user’s finger is touching the canvas.

*Painting the environment and interacting with the environment.* To facilitate more explicit non-verbal communication, we then considered a full-body painting environment where people were represented as silhouettes rather than as video images of themselves. Using this tool, shown in Figure 2(a), users can draw strokes and interact with their environment. This tool utilizes a depth camera. Users’ strokes are drawn in 3D, and users can walk behind and in front of their strokes. Users can also engage in playful interactions with each other.

*Bodyspace painting.* Inspired by the body outline art therapy activity described by Luzzatto et al. [5], we explored giving people the ability to paint on their own bodies, and then using those drawings as part of their identities. Users can use their body outline drawings as avatars in a remote collaboration space (Figure 2(b)).



**Figure 3:** A tool that allows users to create artifacts together using sticks.

*Exploration of painting primitives.* We also explored different kinds of basic grammars for creative experiences. Rather than focusing on drawing lines, our exploration in Figure 2(c) illustrates the use of clip art-like elements. The objective was to allow people to create collages (perhaps from found images), or to allow them to play as if in a sandbox—akin to its role in play therapy.

### Stick Figure Art Therapy

Our iterations resulted in our current “stick figure art therapy” design (Figure 3), which addresses many of our design goals. The tool brings people from multiple remote locations together into a virtual space where each is represented by a stick figure.

*Using the tool.* To use this tool, a user steps in front of the depth camera, where he is then placed (as a stick figure) in the scene. To grab a stick, the user reaches his hand out to the stick and clenches his fist. If the user grabs a stick with one hand, he can move the stick around. If the user grabs a stick with two hands, he can stretch and rotate the stick. If two users grab a stick with one hand each, both users can stretch and rotate the stick together. The user can move forward and backward with the stick in his hand to move the stick along the z-coordinate in the 3-dimensional space. To grab new sticks, the user can clap his hands to reveal a radial menu where he can select from different colour sticks.

*Stick figure representations.* The stick figure representation captures the essence of bodily movement while still allowing for meaningful bodily gestures; at the same time, it provides people with even more ability to shield themselves from unwanted attention to their actual appearance. In contrast, the silhouette approach still perhaps revealed too much about undesirable weight gain

or loss (common in cancer patients). The rationale behind this was that it is often easier for people to express deep thoughts and emotions and participate fully in group therapy activities when they are doing so as someone else (or something else) [3]. This is why puppetry is a popular exercise for children in play therapy and other expressive therapies [3].

*Artistic freedom through abstract tools.* We also wanted to create something that would give users more artistic freedom. We believed that abstract shapes like sticks would provide the user with more artistic freedom than a limited set of objects in a 3-dimensional sandbox. Another motivator behind this was that a tool like this frees people from their drawing skills. Often in art therapy groups, the group members start out nervous because they are inexperienced or they feel like others might be better than them at drawing or painting. An activity like this gives everyone an equal playing ground. It helps people feel like they have the same skill sets and the same potential as everyone else in the group. Instead of creating art by drawing or painting, they create art by moving sticks around to form objects like houses or trees. It could be comparable to creating art out of driftwood.

### Conclusions and Future Work

In this paper, we explored a set of ideas for improving collaboration in online group art therapy. We realized that in order to improve collaboration, we had to improve non-verbal communication. First, we explored the idea of enhancing feedthrough of drawing activity. Next, we explored the idea of painting the environment and interacting with the environment. We then explored the idea of “bodyspace painting.” Afterwards, we explored new painting primitives, such as the use of clip art

stamps. Our iterations then resulted in our current “stick figure art therapy” design.

Our main objective is to create a tool that can be used for collaborative remote art therapy. Our four goals in creating this tool are to promote shared creative experiences, promote a sense of connectedness between individuals, allow for meaningful interaction through non-verbal communication, and allow members of an online art therapy group to be aware of each other without actually seeing each other.

We will be conducting further art therapy trials with these designs to see if they make remote collaboration on art easy, and understand whether they are suitable for use in art therapy. We will look to see if they address the four design goals that we derived. To do this, we will have groups of participants try out the tools and give their feedback. For each session, we will tell participants what the group’s art activity will be (and what tool they will be using), and we will have each participant work in a different room. We will then observe if the group can complete the activity successfully and with ease. We will also ask each participant to report on how emotionally connected they felt towards other group members and how easily they were able to collaborate with other group members.

## References

- [1] Collie, K., Cubranic, D., and Booth, K. S. Participatory design of a system for computer-supported distance art therapy. In *Proc. PDC 1998, CPSR (1998)*, 29–36.
- [2] Collie, K., Cubranic, D., and Long, B. C. Audiographic communication for distance counselling: a feasibility study. *British Journal of Guidance and Counselling* 30, 3 (2002), 269–284.
- [3] Ginott, H. G. *Group Psychotherapy with Children: The Theory and Practice of Play Therapy*. McGraw-Hill Book Company, New York, NY, USA, 1961.
- [4] Gutwin, C., and Greenberg, S. A Descriptive Framework of Workspace Awareness for Real-Time Groupware. *Computer Supported Cooperative Work (CSCW)* 11, 3-4 (2002), 411–446.
- [5] Luzzatto, P., Sereno, V., and Capps, R. A communication tool for cancer patients with pain: The art therapy technique of the Body Outline. *Palliative and Supportive Care*, 2 (2003), 135–142.
- [6] Nainis, N., Paice, J. A., Ratner, J., Wirth, J. H., Lai, J., and Shott, S. Relieving Symptoms in Cancer: Innovative Use of Art Therapy. *Journal of Pain and Symptom Management* 31, 2 (2006), 162–169.
- [7] Puig, A., Lee, S. M., Goodwin, L., and Sherrard, P. A. D. The efficacy of creative arts therapies to enhance emotional expression, spirituality, and psychological well-being of newly diagnosed Stage I and Stage II breast cancer patients: A preliminary study. *The Arts in Psychotherapy* 33, 3 (2006), 218–228.
- [8] Stephen, J., Collie, K., McLeod, D., Rojubally, A., Fergus, K., Specca, M., Turner, J., Taylor-Brown, J., Sellick, S., Burrus, K., and Elramly, M. Talking with Text: Communication in Therapist-led, Live Chat Cancer Support Groups. *Social Science & Medicine* (2013).
- [9] Svensk, A. C., Oster, I., Thyme, K. E., Magnusson, E., Sjodin, M., Eisemann, M., Astrom, S., and Lindh, J. Art therapy improves experienced quality of life among women undergoing treatment for breast cancer: a randomized controlled study. *European Journal of Cancer Care* 18, 1 (2009), 69–77.