

Articles

Redefining the Tools of Art Therapy

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Abstract

The premise of this paper is that computer-generated art is a valid therapeutic modality for empowering clients and fostering the therapeutic alliance. The author presents traditional art making methods (drawing, painting, photography, collage, and sculpture) combined or enhanced with photopaint programs and 3D computer modeling and animation software such as Adobe Photoshop, Flying Colors, and People Putty. Case studies and therapeutic interventions which utilize computer art therapy are provided to illustrate how to incorporate these methods into the art therapy setting. By comparing the unique tools of various visual graphics and virtual sculpture programs to those of more traditional methods of art making, the author concludes that computer art making has become an integral part of the process of making art and is a valid medium for individual self-expression and art therapy.

Introduction

Today, the question is no longer, “Is it art?” The true question is, “Is it therapeutic?” Professionals in art education and art therapy have been studying the possibilities of the computer as it has evolved into a new and expressive art medium. Nonetheless, over the past 20 years few authors have explored the depth of digital media. Of those who have, art educators and therapists alike find computer art to be beneficial in their respective fields. Freedman’s (1989; 1991) findings of four forms of collaboration, Canter’s (1987; 1989) results of positive behavioral changes, and Hartwich and Brandecker’s (1997) illustration of the computer’s ability to support a fragile ego need not be further analyzed here. What has yet to be discussed is how to utilize computer art as a beneficial tool in art therapy. Although not needing to be an expert, “only an art therapist who can assist a patient in the use of a medium is legitimately entitled to offer it” (Rubin, 1984, p. 12).

Like many art therapists, I was formally trained in traditional art making. However, unlike most art therapists, my undergraduate work was in computer art with an addi-

tional concentration in art therapy. Through these studies, I have become well versed in many forms of digital imaging and am aware of their creative possibilities. At the hospital where I interned, I was given the opportunity to help establish a computer art program in conjunction with the child life and art therapy staff. In initiating the program, I had no expectations; I truly just wanted to see how the children would respond to this new medium. After two years, I concluded that children who were experienced in traditional art making were able to demonstrate the same level of creativity with the computer. This is not to say that all the children preferred making digital art over using traditional methods. However, many were able to find a comfortable way of working with both. Additionally, through various computer applications and tools, I was able to reach patients who were much more defended against traditional art expressions. My work in other clinical settings found similar results. Regardless of the population, my thorough knowledge of computer tools furthered my function as a therapist and extension of the ego by becoming the child’s ally through his or her creative journey.

In order to take art therapy into future generations, we must be open to new areas of image making and new creative tools. The computer is a prominent art medium in U.S. society today. Many school systems, after-school programs, and hospitals have incorporated computers into their creative spaces. Children and adolescents in particular are learning to express themselves through the digital medium. Yet in the field of art therapy there still seems to be a bit of resistance. As art therapists, we cannot ignore the computer as an art making and creative tool, but neither should we expect the work to be therapeutic simply by introducing a client to the computer’s creativity software. Parker-Bell (1999) explained, “No art tool—including the computer—suits all needs or situations, but most can be used well in a therapeutic context if the therapist knows the properties and potentials they hold” (p. 184).

Rubin (1984) emphasized the importance of recognizing the “personalities” of different media and tools. She closely related the cognitive and emotional responses one might have in the process of working with these materials to their physical and kinesthetic qualities. As with conventional materials, we must explore computer art’s possible characteristics and develop a repertoire of imaging and ani-

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mation programs. These will enable the therapist to offer “adaptive solutions to a patient’s problems in the actualization of his creative intentions” (Rubin, 1984, p. 9). As early as 1989, Canter addressed the need to understand the computer’s therapeutic uses and suggested that “sometimes it takes a modern tool like the computer to stimulate clients today” (p. 314).

The specific programs used in the following discussion of software tools are Adobe’s Photoshop, Magic Mouse’s Flying Colors, and Haptik’s People Putty. I have found that these three programs are the most functional and appropriate for all ages. Flying Colors’ dynamic moving colored images and sound effects engage even the youngest children; its tools have three levels of functionality that cater to small children, users with basic computer knowledge, and advanced users. Adobe Photoshop is a professional graphics program that typically covers the spectrum from high school students to working graphic designers, photographers, and digital artists. People Putty combines the sound effects of Flying Colors with the professional look of Photoshop to enable clients to develop their own realistic digital characters, which are capable of emotion and speech.

Over the last four years, I have been able to incorporate these programs and the creation of digital art into pre-existing art therapy spaces. The cases that follow are from art therapy conducted in these spaces.

Drawing

A common definition of drawing is the representation of forms or objects on a surface by means of lines or marks often using a pen, pencil, or marker. On the computer, drawings can be made by manipulating a mouse or stylus. Combined with Adobe Photoshop’s pencil tool, the hard-edged, freehand lines that define drawing can be accurately reproduced. With the addition of a stylus and graphic tablet, the process of drawing, erasing, and even shading can be replicated. A stylus can be programmed such that one end acts as the point of a pencil and the other as an eraser. Artists can draw in the same manner as they would with a pencil, minus the kinesthetic feel of the grit of the paper. In many paint programs, the pressure used while drawing with the stylus is also reflected on the screen. Settings such as the opacity of the pencil line and additional tools that smudge and blur allow the stylus to switch from pencil to fingertip and back again to get the desired look and feel. Especially when working with artistically talented clients, it is important that the therapist knows how to generate with computer tools the kinds of images that match the clients’ pre-existing artistic styles.

Case Example: “Angry Frankie”

One such artist was Frank (pseudonym), an adolescent who was admitted to the hospital for pain in his right knee. Due to an accident when he was a young child, Frank had undergone multiple surgeries and physical therapy. With this admission Frank was scheduled to have joint removal surgery.

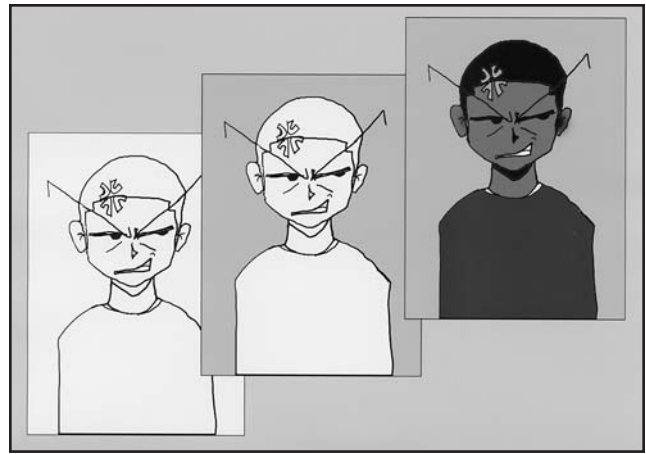


Figure 1 Frank’s sketch, color work, and final image entitled “Angry Frankie”

Frank was a very polite child who was not known to complain about his hospitalization. Over his two-month stay in the hospital, the hospital staff learned that Frank was very fond of Japanese anime (a popular form of animation) and that he drew stories in pencil about a character he named Frankie. Tapping into these interests, Frank was persuaded to come to the Teen Room for a change in scenery and to learn the techniques used by some professional anime illustrators. Frank’s eyes lit up when the art therapists introduced Frank to the idea of drawing and coloring his anime-style character on the computer.

As would be the case for anyone just beginning to draw on the computer, it was important first to familiarize Frank with the space and to demonstrate techniques of working digitally. Because the computer screen is one fixed size, in order to help Frank recreate the careful detailing of his pencil drawings, I demonstrated methods of enlarging the workspace by zooming in and out of the digital canvas. Frank learned how to find and select the different drawing tools as well as some keyboard shortcuts that allowed for quicker transitions between these artistic tools.

Because Frank’s pencil work was primarily line drawings and sketches, he was encouraged to become accustomed to drawing with a mouse. It was important for Frank to have a strong sense of how his gestures would be interpreted onto the computer screen. Frank utilized all the tools I gave him. He varied his line by selecting different brush diameters and altered how he moved the cursor around the screen. He zoomed in close to draw the small details of his character’s face and zoomed out to full screen to reorient himself. When Frank was unsatisfied with any mark he made, he was able to undo it or erase it and try again.

Throughout his drawing process, Frank drew with a black pencil on a single layer. Each layer in the Adobe Photoshop program is like a sheet of transparency; it is the sum of the various layers that creates the image displayed on the screen. The artist can create an unlimited number of layers, control how each layer blends with its adjacent layers, and delete unwanted or redundant layers. The technique of using layers is similar to the process of cell anima-



Figure 2 Frank's sketch, color work, and final image entitled "Frankie Had a Bad Day"

tion. The very bottom layer holds the background color, and on each subsequent layer the artist can draw many images as the middle ground or foreground.

When Frank finished drawing his character's outlines, he was ready to color his drawing. Using a Photoshop tool called the "magic wand," Frank was able to choose from a spectrum of colors and fill the background area using the paint bucket tool. Occasionally color bleeding would occur, creating a watercolor effect. With water-based paints, any wetness on the paper allows the pigment to spill into different areas of the image. In Frank's computer drawing, the black outlines acted as the boundary. If there was a gap in the line, bleeding would occur. In these instances, I aided Frank in undoing the last fill command, zooming into the problem area, finding and closing the hole in the line, and filling the area again.

Frank hung the completed image in his hospital room and titled it "Angry Frankie" (Figure 1). As Frank explained the meaning behind his title, it became apparent that he was, in fact, experiencing difficulty with his hospitalization. Frank's subsequent digital images further communicated his pain, anxiety, and anger about the numerous hospital procedures that he had to endure (Figure 2).

Supporting Frank and helping him find solutions to the technical difficulties of the computer art medium was crucial in building therapeutic rapport and trust. Allowing Frank the time and space to explore the drawing tools demonstrated the care the therapist was willing to take in supporting the client's creative process. For Frank, who was unable to verbalize his feelings about his hospitalization, creating captivating images and displaying them in his hospital room exemplified how important it was that his visual voice be heard. As the doctors, nurses, guests, and other patients commented and inquired about his work, Frank was able to further communicate his distress and to learn to advocate for himself during his hospitalization.

Painting

Painters use a number of materials to produce the effects they desire. These include the materials of the sur-

face, the pigments, and the medium in which the color is mixed. Utilizing the same input devices and Adobe Photoshop, the painting surface is the computer screen, the pigments are virtual but infinite, and the digital paintbrush allows the artist to mimic the painting process by creating soft strokes of color with a press of the mouse or gesture of the stylus. With a variety of preset brushes to fill a wide range of uses and the ability to create custom brushes using the Brushes palette, one can apply colors gradually or quickly, with soft edges and transitions.

Case Example: "Send Me Flowers"

Ba Dee (pseudonym), an 18-year-old female, was admitted to the inpatient pediatric unit of the hospital with facial swelling, muscle pain, weakness, and fatigue upon exertion. A very bright person, Ba Dee began keeping a journal that answered her doctors' relentless questions about her ailments. Handwriting the details of every procedure and test became cumbersome, so Ba Dee requested to remain in her room and to type her entries on the laptop provided by the child life department.

Although Ba Dee was uninterested in the art activities offered in the hospital playroom, in the privacy of her own room she sketched a picture of flowers in a vase. She explained that she drew it hoping that one of her visitors would bring her flowers. Acknowledging Ba Dee's familiarity with computers, my supervisor offered Ba Dee the option of scanning the floral image into the computer and painting it digitally.

As a young adult and first year college student, Ba Dee had a clear idea of what she wanted her image to look like. Because she had never used Adobe Photoshop before, I familiarized her with the interface and some of its features before scanning her image into the computer. These tools included the paintbrush, the eraser, the type tool, the undo functions, and the color palette. Typically, when using drawing applications to enhance traditionally made images, the first obstacle to overcome is maintaining the quality of the original while adding depth, color, or pattern. As with Frank, I showed Ba Dee how to create multiple layers with which she could differentiate color from line. For Ba Dee's painting, simply layering paint on top of her drawing would hide her delicate pencil lines. But by utilizing Photoshop's blending modes and changing the setting from "normal" to "overlay," Ba Dee's paintbrush could be rich in color while maintaining a degree of opacity that allowed the pencil lines to show through.

As Ba Dee painted, she found it difficult to control the brush strokes produced by the mouse. I demonstrated how to zoom into a section of the image to allow her hand a greater range of motion. I also showed Ba Dee the many brush sizes she could choose from and how to switch between a brush with a large diameter to one with a small diameter. Kramer (1986) described this type of intervention as one where the art therapist uses a "third hand"; that is, the hand of a therapist which "helps the creative process along without being intrusive, without distorting meaning or imposing pictorial ideas or preferences alien to the



Figure 3 Details of Ba Dee's completed digital watercolor painting

client" (p. 71). Since the process of painting with a digital brush is the same as traditional painting, it can be a very time-consuming process depending on the detail one wants to produce. Ba Dee was concerned with this at first but after exploring some time-saving options such as the paint bucket, she opted for the most accurate results which come from the slower process of hand painting. As with any medium, it is important to explain the different art making techniques so the clients can command the "third hand" and decide for themselves when detail is more important than speed and vice versa.

A valid criticism of computer art arose during one of Ba Dee's sessions. Ba Dee felt that because she painted with a mouse she could not control color density and line quality by varying her brush pressure and, therefore, she could not be expressive. I redirected Ba Dee's attention to the advanced brush options which allowed her to specify paint opacity, flow, and strength. With a stylus, the harder one presses on the graphic tablet, the darker, thicker, and stronger the line. With a mouse, the artist can set the transparency of the paint and how long a brush stroke should be before the color lightens and the line fades. Ba Dee learned that for transparent paint or a weak effect, she could specify a low percentage value and for paint that was more opaque and had a bolder effect, she could use a high value.

The first part of Ba Dee's process was experimenting with and trying out the different ways to accomplish what she envisioned. While she painted, Ba Dee was impressed with the tools available to her and later commented that she did not know she would be able to do such things on the computer. In the end, she perfected her use of the paintbrush to create her desired watercolor effect. Her results were beautiful and she eagerly awaited her next visit to the playroom. By relating Ba Dee's knowledge of and talent with traditional art materials to the computer, I was able to help her overcome her questions about the digital medium and draw her out of the solitude of her journal writing. Ba Dee taped her printed painting onto the door of her hospital room to announce, "You have reached Ba Dee's room! Send Me Flowers!" (Figures 3 and 4).

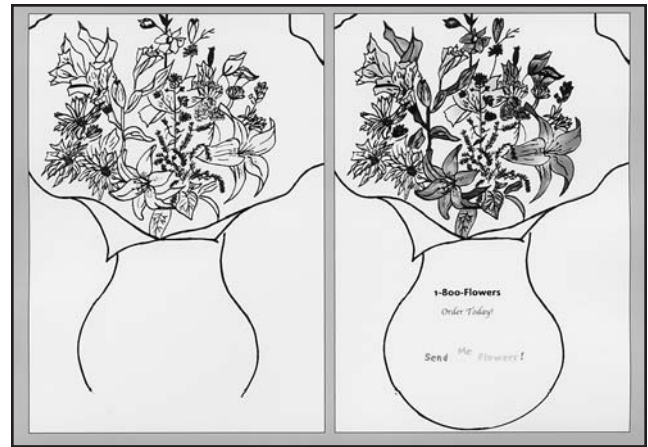


Figure 4 Ba Dee's original pencil sketch and completed digital painting

Photography

Photography is defined historically as the art of seeing and painting with light. Film or a computer chip is exposed to light in order to generate an image. With the invention of digital cameras, scanners, and the like, photo manipulation and development has moved from the darkroom to the personal computer. Along with the drawing and painting tools already discussed, when Adobe Photoshop is used in combination with a computer scanner or digital camera, it is also capable of executing darkroom functions. Negatives, slides, and photographs can be imported into the computer to be edited and enhanced. As in the darkroom, Photoshop offers adjustment tools and techniques to saturate, desaturate, or otherwise alter colors. One benefit of these functions over traditional photo development is the ability to maintain the integrity of the original image. The artist is free to test out infinite effects, knowing that he or she can always return to an earlier image state or the original photograph by using the undo function and/or history palette.

Beyond photo developing, Photoshop is capable of creating seamless photomontages or single images made up of several photographs. These images often are so well put together that it is difficult to tell that the photograph was ever altered. Creatively, this allows the artist to explore scenarios not possible within the physical restrictions of their daily lives.

Case Example: "Florida"

Dan (pseudonym), a 15-year-old adolescent male, was admitted to the hospital for a stress-induced sickle cell crisis. His care involved taking regular doses of medication and receiving weekly blood transfusions. Although Dan refused counseling, he expressed feelings of anger about his condition and occasionally skipped doses of medication.

During his hospital stay, the child life staff found Dan to be polite but often very quiet. They offered Dan the opportunity to explore the Teen Room where one afternoon he became interested in creating a computer image similar to those he saw displayed in the room. I introduced



Figure 5 Dan's layers, layer mask, and final digitally edited photograph entitled "Florida"

Dan to Flying Colors and allowed him to explore the different backgrounds and stamps. He was not enthusiastic about this program and said that he was interested in one that utilized a greater variety of photographic backgrounds. I gave Dan the opportunity to look through the photo library of images stored on the computer to find an image that struck his interest. He chose an image of a suburban street with palm trees that reminded him of Florida.

At the time of his admission, Dan's parents were separated. He lived with his grandmother and two siblings in New York, while his mother resided in Florida and his father settled in New Jersey. As Dan studied the photograph he had selected, he explained that he might be moving to Florida and felt that he would prefer living there to living in New York City. Noticing his wistful verbal cues, I asked Dan if he would like to place himself into the tropical photograph. Intrigued by my suggestion, he agreed.

Using the digital camera and a sheet of butcher paper as a backdrop, I photographed Dan. A clean background was necessary to place Dan's images seamlessly into the scene. I demonstrated how to import his photographs into the computer and, using Adobe Photoshop, explained a variety of ways to delete the pre-existing background. When given the choice between using the eraser or a layer mask, Dan chose the mask. The benefit of the mask over simple erasing is that the mask can be painted using the accuracy of the paintbrush or pencil, and allows for editing that is separate from the original image of his portrait. Using a black brush, Dan could hide the background; using a white brush, he could bring back elements that he wanted to show.

Once Dan finished hiding the background, he was able to copy and paste his self-portrait image onto the background stock image of the tropical scene. Because Dan's digital photo was taken at a higher resolution than his background image, when he pasted his photograph into the scene it was disproportionately larger than the surrounding buildings. I explained that he could shrink or scale the image down to a size that matched the environment. As Dan did this, he placed himself leaning against a palm tree. He wondered how he could make his shadow

fall on the tree he was leaning against. Utilizing Photoshop's toning tools, I explained the concepts of burning or increasing exposure on a photograph. Using the burn tool like a paintbrush, Dan was gradually able to cast a believable shadow onto the palm tree.

After carefully working all afternoon on his image, Dan was happy with the results. He explained how fond memories of spending time with his family in Florida came back to him while he worked and whenever he looked at the image he created. Within the sometimes intrusive and lonely hospital setting, Dan was able to locate and represent a place where he felt comfortable, warm, and safe (Figure 5).

Collage

Known as the technique of creating a pictorial composition in two dimensions or very low relief by gluing items onto each other, collage traditionally incorporates a variety of natural, manufactured, colored, or textured materials. By superimposing these items, artists incorporate actual fragments of the real world into their compositions. Collages created on the computer achieve the same goal without having to work with different adhesives to achieve these effects. Although some may miss the tactile quality of conventional collage, other artists prefer cleaner methods.

The preparation required for composing a digital collage is the same as it is with tactile materials. Magazine images can be chosen and scanned or can be found on stock image CD libraries. Patterns, designs, and personal photographs can be taken with a digital camera or scanned in as well.

Case Example: "Super Julian"

Julian (pseudonym), a 9-year-old boy, was admitted to the hospital for injuries from playing basketball. Despite painful surgical procedures, Julian maintained high spirits during his hospitalization. He enjoyed coming to the playroom to play doctor and to make art with his visitors or the child life staff. His courage and energy were reflected in the computer art he created.

Julian used Flying Colors to create a variety of collages. Featuring over 30 art and type tools and an array of over 3,100 stamps, Flying Colors is equipped for creating digital collages. In addition, the ability to copy and paste personal photographs onto the collage as stamps or backgrounds adds flexibility and customization. Unlike traditional stickers or stamps, Flying Colors' digital stamps can be rotated, scaled, distorted, and colorized. The process is similar to Xerox copying magazine images in different sizes and colors to add variety. However, with Flying Colors, this process is incorporated into the art making, is completed in a fraction of the time, and makes an uninterrupted or seamless image possible.

While playing and experimenting with the computer, Julian brought up the topic of superheroes. Although commonly utilized in the hospital setting to help empower the children, Julian's spontaneous association with the meta-



Figure 6 Julian's digital collages: "Super Julian" and "Exploring"

phor demonstrated his readiness and need to feel some control over his hospitalization. I told Julian that we could create a superhero from his photograph and then make up a visual story about it. I retrieved the digital camera and he willingly posed like a superhero as I took his photograph. Because Julian was eager to begin to create a scene for his character, I quickly removed the hospital background from these photos in Adobe Photoshop to prepare for Julian's work in Flying Colors.

Julian first searched through the background images in the stock image computer library, finally settling on a photograph of a skyscraper. From the various pictures we took together, he chose to incorporate the pose with his arms outstretched in flight into this scene. I showed him how to copy the picture from Photoshop and paste it into Flying Colors as a stamp. Stamps are images that can be used to fill shapes or simply added to a composition. Julian carefully scaled down his photo and stamped himself standing on the ground. Next, he used the same image, rotated it, and placed himself flying above the building. He described how "Super-Julian" flew off "like Superman." Julian was so excited by the resulting image that he wanted to invent more adventures (Figure 6).

In another collage, Julian placed himself in the foreground between two trees and covered his legs with stamps of foliage. He explained that he wanted to look as though he was hiding behind the plants. To get the desired effect, I showed him how to go back to the first image by using the undo function and then apply the stencil tool to lock or protect certain colors of the background image so that he could "pop up" behind the plants. With the eyedropper tool, Julian selected and locked the green leafy bushes. Liking the effect, Julian stamped his photo into the image and finished the collage.

Sculpture

Defined as the art of making three-dimensional forms, sculpture is conventionally created by chiseling, carving, modeling, or casting. Today, modeling is also an essential aspect of computer 3D animation. Although many of the

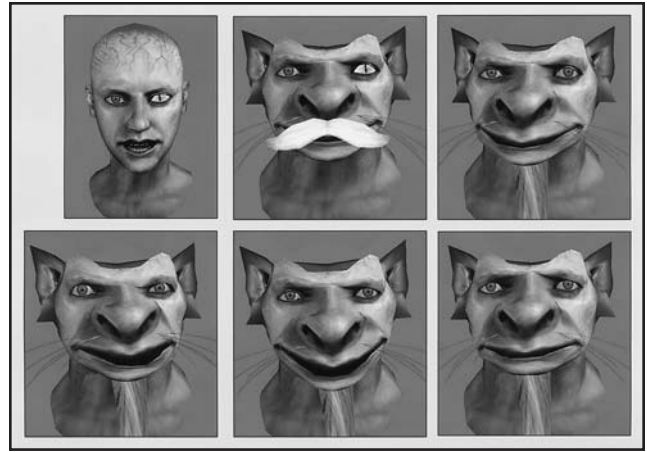


Figure 7 The stages of Jun's 3D character

programs designed for the 3D industry are difficult to utilize in the art therapy session, Hapteck has developed what it describes as a "totally cool tool." This program allows the artist to build personalized interactive 3D character busts using dozens of built-in shapes, skins, and accessories. In addition, the creator can give his characters life-like emotions or enable them to lip sync to recorded audio tracks.

Case Example: "Dragon"

Jun (pseudonym), an adolescent in the eighth grade, began receiving art therapy services in his middle school to address behavioral problems and inconsistencies in his work habits and affect. To foster the development of the therapeutic alliance, I helped Jun explore a variety of different media. After he exhausted all the materials available in the art therapy room, he spent one session investigating People Putty. When the program was opened, Jun was introduced to Kate, People Putty's default character. Jun quickly began transforming "Kate" into a character of his own by choosing a corpse-like, green, veiny texture from one of the 23 available skin tones. He added vampire teeth and two dissimilar eyes: one red and bloodshot, the other cat-like. Each one of the pre-made animal, human, and object shapes could be exaggerated, minimized, or combined to further personalize the character. Jun simply chose an animal shape that he decided was a dragon and added facial hair from the accessories menu. Finally, he used the expression feature to determine his dragon's temperament, which was a combination of anger, sadness, and happiness (Figure 7). Although Jun experimented with the default character expressions of "psycho" and "eater of bugs," he was unsatisfied with these preset choices and reverted to his earlier combination of affective states (Figure 8).

In school, Jun displayed both compliant and aggressive behaviors. In our art therapy sessions, he was always calm and his traditionally executed artwork reflected his sensitivity. Yet his teachers reported that Jun shifted daily from being in a pleasant mood and concentrated to becoming easily frustrated, angry, and disruptive. Jun's work in People Putty clearly revisited this duality. His 3D computer mod-



Figure 8 Jun's final 3D character: "Dragon"

eling revealed the angry side of Jun that was not visible within the art therapy room. Although he was not ready at that time to face his anger and explore it further, the digital sculpting medium provided the space where it could be safely revealed and reviewed.

Conclusion

Basic knowledge of art therapy confirms that, typically, drawing facilitates storytelling, painting with color evokes emotion, and sculpture stimulates integration and a presence of mind. From my experience, computer art's ability to encompass all three of the aforementioned mediums has the potential to present an abbreviated version of the whole psyche. Depending on which computer tools are utilized to evoke distinct aspects of the client, the completed computer image can contain combinations of parts of the self or a summary of the whole.

Computer art shares many characteristics with traditional art making tools. Items like graphic tablets and touch screens aid in bridging the kinesthetic qualities of these distinct artistic genres. By defining some of the various hardware and software tools, I introduced in this article the inherent "personality" of the digital medium and alluded to how these traits influenced the individual client's creative process. Going deeper into computer art's therapeutic qualities, I illustrated how digital art can be used as a therapeutic intervention with children and adolescents. A large part of these interventions involved empowering the clients through choice. Whether it was the option of a new medium or the selection of elements within the computer software, their ability to make decisions fostered the therapeutic alliance and strengthened their egos. Likewise, when interpreting digital art, the artistic choices of the client are more important than the final image.

Although I believe that the tools and interventions described here can be applied to all populations and formats (group and individual), I understand that time, space,

and fiscal restrictions may be obstacles. However, these limitations are the same with any other art-based medium. Whether the ambition is a kiln for ceramics, shelves and miniatures for a sand tray, easels and canvas for painting, or laptops for computer art, there needs to be an investment in appropriate materials and the incorporation of the new medium into the program must be made a priority when possible. As art therapists, often having to scramble for space and materials, if we have learned nothing else, we have learned to always "find a way"!

It is clear that computer art has been embraced by the artistic community. Galleries, museums, and art schools exhibit digital art and award the medium with artistic merit. "For art therapists, the creative process that is involved in the making of art is healing and life enhancing" and can be used to "help people to resolve conflicts and problems...reduce stress, increase self-esteem and self-awareness, and achieve insight" (American Art Therapy Association, n.d.). Based on the cases illustrated throughout this article, the expressive potential of computer art is unmistakably therapeutic.

References

- American Art Therapy Association. (n.d.) About art therapy. Retrieved May 11, 2007, from www.arttherapy.org/about/html.
- Canter, D. S. (1987). The therapeutic effects of combining Apple Macintosh computers and creativity software in art therapy sessions. *Art Therapy: Journal of the American Art Therapy Association*, 4(1), 17-26.
- Canter, D. S. (1989). Art therapy and computers. In H. Wadeson, J. Durkin, & D. Perach (Eds.), *Advances in art therapy* (pp. 296-316). New York: Wiley.
- Freedman, K. (1989). Microcomputers and the dynamics of image making and social life in three art classrooms. *Journal of Research on Computing in Education*, 21(3), 290-298.
- Freedman, K. (1991). Possibilities of interactive computer graphics for art instruction: A summary of research. *Art Education*, 44(3), 41-47.
- Hartwich, P., & Brandecker, R. (1997). Computer-based art therapy with inpatients: Acute and chronic schizophrenics and borderline cases. *The Arts in Psychotherapy*, 24(4), 367-373.
- Kramer, E. (1986). The art therapist's third hand: Reflections on art, art therapy, and society at large. *American Journal of Art Therapy*, 24(3), 71-86.
- Parker-Bell, B. (1999). Embracing a future with computers and art therapy. *Art Therapy: Journal of the American Art Therapy Association*, 16(4), 180-185.
- Rubin, J. A. (1984). *The art of art therapy*. New York: Brunner/Mazel.