

AUTISM

AND RELATED DEVELOPMENTAL DISABILITIES

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A method to teach varied play to children with ASD using video modeling

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Data described in this document are being submitted for consideration of publication outside of this newsletter.

Video modeling has been used to teach a variety of play skills to children with autism including teaching independent pretend play and reciprocal play with a typically developing peer (D'Ateno, Mangiapanello, & Taylor, 2003; MacDonald, Clark, Garrigan, & Vangala, 2005; MacDonald, Sacramone, Mansfield, Wiltz, & Ahearn, in press). While video modeling has been shown to result in rapid acquisition of scripted play, the emergence of play variations from the script has been limited (D'Ateno et al., 2003; MacDonald et al., 2005). For example, children have not demonstrated generalization of scripted play across other characters or stimuli within play sets.

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Using Avatars and Animation with Students Diagnosed with Autistic Spectrum Disorder

Bruce M. Gale, PhD

One of the biggest challenges facing clinicians and behaviorists who work with individuals diagnosed with ASD involves motivating them to learn, retain, and practice positive behavior strategies. One promising method uses accessible technology to teach greater awareness of prosocial skills and coping strategies. This article will review how to do this.

Today's kids and young adults play individual and multiplayer computer games, they listen to music stored in digital files, enter online chat rooms, and text message or email one another on cell phones. Adnone et al. (2007) discusses how these "digitally-minded students" have infused technology into daily life. They are immersed in more interactive, stimulating mediums. Because of this new "culture," they require different ways of interacting and different kinds of therapeutic environments. Behavioral approaches teaching social skills and perspective-taking using paper, charts, or talking are relying on communication methods that are much more "static."

Various technology-based approaches have been explored for use with individuals with autism (Takahashi et al., 2004). Moore et al. (2005) found that 90% of study sample (N=34) diagnosed with autism accurately identified emotions displayed by avatars. While techniques have been employed to examine factors that make the experience more immersive and realistic (Castelnuovo et al., 2003; Lee, Ahn, et al., 2006), essentially no work has been published describing the use of avatars in treatment with clients with autism (Gale, 2004, Travolta, 2005).

Although the affordability has dropped to bargain basement levels and techniques can be taught in a matter of hours, one major barrier to the implementation of technology-based treatments is clinician reluctance, even avoidance, of considering such approaches (Rizzo et al., 2000). How should we address this?

Suggested Avatar Programs

A viable, inexpensive means for enhancing social skills is through the use of avatars. While different definitions exist, the one we will use for "avatar" is as a caricature or any graphic identity. Computer users substitute their own photos with avatars when interacting with others in cyberspace, such as MySpace or Live Journal, and for multiplayer gaming. Think of the New Orleans Mardi Gras – people in masks and costumes. Avatars simply take this concept to the computer level.

The avatars I use come from two primary sources, currently Logitech and a program called "Hollywood." You can find more detailed information about these technology tools on my web site (www.behaviortech.net, click on "Demos"). With the Logitech avatars (called "Video Effects"), special Logitech cameras containing built-in hardware works with their free software to record avatars. You just point the camera at someone, select from any number of avatar characters (e.g., smiling sun, cat, talking cars, robots) and "click." The image switches from the live video shot to a moving headshot of the animated avatar they selected. When the client speaks or moves, the avatar's mouth and head moves accordingly. This captivates kids, and even adults are intrigued and use them.

The second method uses "Hollywood," a computer animation program where the client chooses one or more characters to be in a story. By typing in what the characters say, combined with music, sound effects, and simple canned actions (e.g., crying, laughing, changing body position), it is possible to have characters interact with each other. The tricky part is getting the final product out of the proprietary program in to a more user accessible version (typically QuickTime, Flash, or Windows Media). We use two programs to accomplish this, one for PC computers (Camtasia from www.techsmith.com) and the other for Mac machines (SnapZ Pro from www.ambrosia.com). Of the two, Camtasia is more powerful and the one we use more, although SnapZ is incredibly simple and more affordable. Both "Hollywood" and Logitech avatars can only be used on Windows machines or Intel Macs running Windows.

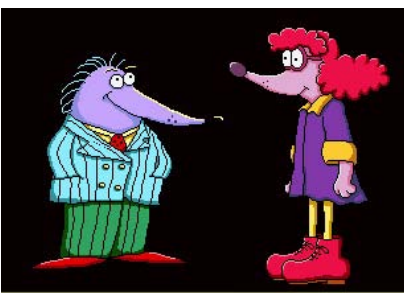


Figure 1 - From "Hollywood"

I use avatars and digital animation to: 1) Motivate students to track positive and interfering target behaviors as part of their own web-based interventions; 2) Develop and review coping strategies for increasing positive behaviors at home and school;

and 3) Create a treatment environment where they look forward to "next-generation" role-playing, behavioral rehearsal, combine this with web-based homework assignments. In the rest of this article, I will describe the clinical procedures involved.

Motivating Students

Before a client comes to my office, I speak with their parents or others involved in their treatment to explain the process. This step is critical in order to create an inviting treatment environment that results in the client feeling interested in the session time. With the cooperation of others, initial assessment can proceed.

The process begins in my waiting room, where there are plenty of gaming and computer magazines along with traditional subscriptions. Usually, I find clients with their heads buried in one of these magazines. It then becomes a natural progression to ask if they have a computer at home and whether they like to play games. (Think of a car salesman who asks you if you are looking to buy a car... behavioral momentum at its best!) While it helps to be somewhat knowledgeable about technology, the key is being comfortable letting them tell you about technology. Simply saying to a student, "I don't know too much about computers and the Internet, but I'd like to find out what you use it for," is usually enough to get them talking.

Using Avatars in Treatment

Having established that things are not about to proceed normally, we move into my "technology room," a spacious room with tables, computers, a projector and a large movie screen... and a flip chart. This setup further captures their interest. Nothing about this belies the fact that I am primarily interested in identifying target behaviors. It stays "under their radar," yet makes them a full participant in the process. Incorporating technology gives them a means to express themselves to a therapist, more than just verbally. The process helps create an alliance, albeit between the therapist, student, and computer, which moves the process forward.

A comment on how the setup works: We often introduce some computer animation samples from prior clients and explain the kinds of behaviors they have worked on. These behaviors are entered into one of our tracking programs, a PowerPoint, or on a flip chart (we often color code different behaviors). Using the "low-tech" flip chart can be a nice way to carry over our discussions to a second meeting and it is more personal than the PowerPoint.

Dowrick (1991) wrote about the process of video "feed-forward."

The clinician videotapes clients engaged in positive behaviors, then edits out any unwanted elements. For example, if I wanted a client to give a detailed interview about himself and his interests, but he tended to speak in incomplete sentences with little eye contact, I might interview the client as an avatar character, instructing him to look right at the camera (or the avatar on the screen), listen to my questions and then pause for a moment, followed by a reply. If he makes a mistake, no problem, because we can do a "retake." Now, having asked four to eight questions and prompted responses based on my knowledge of him, we edit the video and remove all of my questions. This occurs on a video "time line." The prompts below, which are in parentheses, are removed.

("Say your name") **"My name is Dave** ("Say, 'and'") **and** ("Say, 'how long you have been attending Longmeadow High'") **I have been going to Longmeadow High for four years.** ("Say, 'some of

my favorite activities are”) **Some of my favorite activities are** (“Say, “computer club”) **computer club,** (“Say, “chess”) **chess,** (“Say, “and playing computer games with my friend”) **and playing computer games with my friend.** This is a highly visual process because the client sees the clinician’s voice pattern on a “sound graph” produced by the editing program, as well as their own. The final product has the clinician’s portion removed. It also gives the client visual feedback as to whether they are speaking loudly, softly, or at a normal rate.

Now, the client has a movie of himself introducing himself independently. Dozens of these “movies” can be made, highlighting various social skills. You can even set up situations where clients have conversations with others in a group via avatars or with themselves playing the role of two different characters. They can use computerized voices, their own voice, or even change their voices by using specialized software. (The program “Audacity,” available for PCs and Macs is a good one).

Why use avatars and animation instead of live video? Here are just some of the reasons:

- 1) Students and clients find avatars motivating. Its fun to pick characters and figure out what facial gestures (e.g., raising eyebrows) make different parts of the avatar’s head move.
- 2) It is obvious when “scene cuts” are made using live video because the expression “jumps” or changes from scene to scene. Not so with avatars. The “cuts” are nearly seamless.
- 3) You can create several avatars with different clients and put them up on a website where everyone can view each others’ animations. Because of confidentiality concerns, this would be much harder to accomplish with live video.
- 4) With live video, clients often focus excessively on “how” they look, sometimes making negative comments. Even individuals who are fairly self-conscious relax and usually like the idea that they cannot be identified when using avatars.

Using Avatars in Treatment: A Case Example Combining Avatars and Animation in a Multi-Model Data-Based Approach

“Michael” was a 25 year old male diagnosed with high-functioning autism. Extremely verbal, he was also legally blind, although he could navigate about his community and use public transportation without difficulty. He was independent in daily living skills. In fact, he excelled in his culinary preparation skills. His interfering behaviors, however, were numerous. Michael was fascinated by the colors “red” and “black,” and gravitated to obtaining notebook folders, shirts, and caps having those colors. In its more extreme form, he had collected nearly 100 security signs, stealing them from neighbors’ lawns. He was also obsessed with collecting license plates, as well as airline equipment and serving pieces.

At the start of treatment, a typical day might involve going to a car dealer, asking them if he could have empty license plate frames. If they agreed to give them to him, he would load up with as many as he could manage. However, if they refused, he would either become belligerent or insistent, usually with the outcome of jeopardizing any future visits

to that dealership. Sometimes this activity would last the entire day. Michael also refused to eat with his family, remaining in his bedroom with his six airline carts and only eating from airline china he had purchased on eBay or taken from flights. He would engage in verbally threatening statements if his parents insisted on having him join them at the dinner table. He would also become upset if items of his were moved or rearranged.

Therapy initially targeted his more extreme behaviors in an attempt to help him see how his irrationally-based anxiety was tied to his actions. However, Michael was obsessed with talking about airline china and seemed to have little understanding how excessive his collection of airline paraphernalia, license plate frames and security signs had become. He seemed to retain little insight or understanding from one session to the next. After about six sessions producing little gains, the focus was shifted.

We began photographing the items he brought into the therapy session (his bag initially weighed approximately twenty-five pounds) by spreading out pictures on a large conference table (however it could have been done on the floor). Michael found this distressing but tolerated the process. Sometimes he took a picture or two with him and other time we just looked at and discussed them during sessions. We followed up by creating an online tracking form (Progress Communicator) which he used to report his behavioral successes, problems, and to access coping strategies developed during therapy sessions.

This combined intervention produced an immediate reduction, but it seemed that Michael was reacting to the aversive experience of seeing his things disordered. Fearing habituation, I was concerned this would not maintain lasting gains. Michael’s comments during sessions that the pictures bothered him “less” supported this concern. It was at this point avatar interviews were included and combined with computer animated stories depicting characters becoming upset at having their “stuff” rearranged or moved, but learning to cope and recognize that the “awfulness” of the experience could be handled. Michael developed greater awareness of how excessive his behavior had become and the degree to which it interfered with other activities. He often repeated his animated dialogue from the “avatar interviews” and “computer stories” and asked to watch them repeatedly in sessions.

Eventually, we added photos to the Progress Communicator program so he could click on them and review them. Michael later described that these “experiments” (as he termed it) caused him to see his behavior as others might and be “shocked” (again his term) by his own behavior. The data in graphs below depict Michael’s behavior once he had begun using Progress Communicator.

Continued sessions were held biweekly and included additional exposure-based activities, such as having him tolerate his signs being placed at angles, rather than being lined up, and continuing conversations. We took additional pictures and assigned home-based exposure sessions where he recorded how much anxiety he experienced when he viewed the pictures which had been printed out or were available online. Other interventions included walking with him in his neighborhood and helping him develop alternate coping strategies when he passed home which contained the signs he wanted to steal. Finally, avatar technology was used throughout to capture interviews where he discussed, then subsequently listened to his own audio/video recordings.

The results showed a complete cessation in his visits to car dealerships, reduced aggression, greater awareness of the potential health consequences of carrying around a large bag of security signs, and greater understanding of how it might cause others to feel at having their signs stolen. Graphs showing how many license plate frames he reported carrying with him and the number of car dealers visited appears below. The avatar interviews seemed to be most helpful once he had made initial treatment gains, as Michael vividly recalled what he had said as an avatar or what the animated characters had said. Some of this could have been accomplished with live video as well, but the avatars seem to be friendlier for clients to watch. Besides, if editing cuts need to be made, this is a seamless process using avatars, but with live video, faces and expressions “jump” -- making the final product less viewable. To view a QuickTime movie of “Michael,” please visit www.behaviortech.net under “demos.”

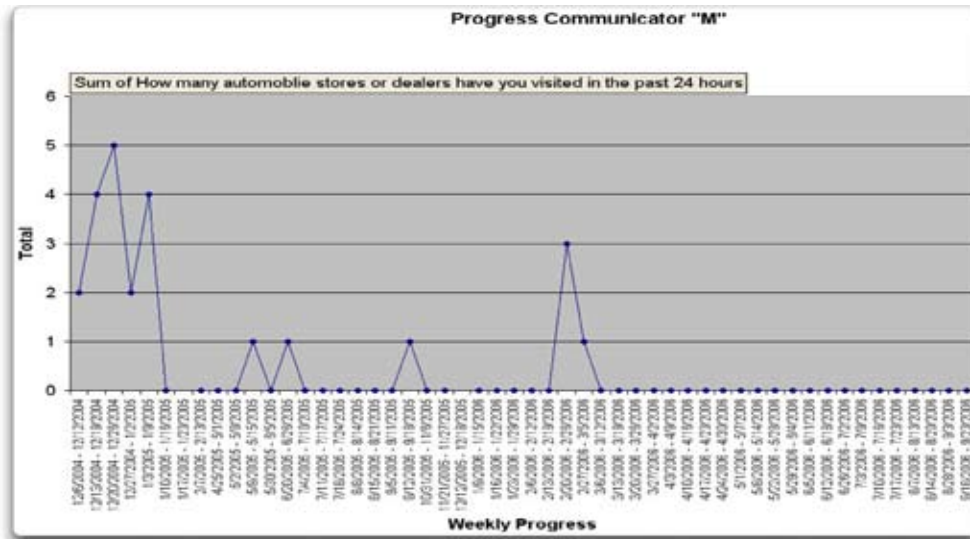


Figure 3 - Car Dealers visits by client

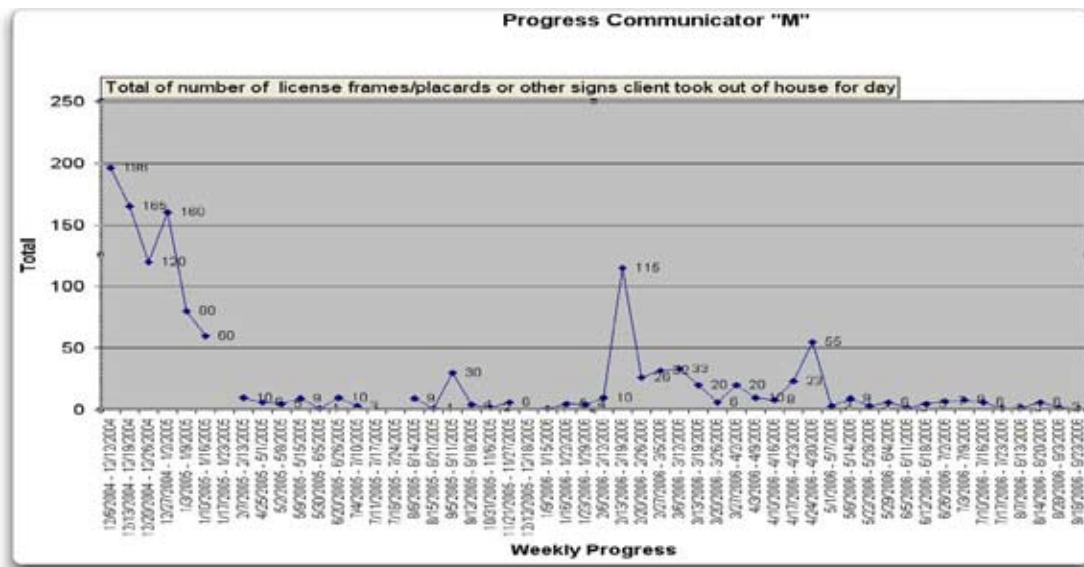


Figure 4 - License plates carried by client

Conclusions

Last night, a fourth grade student came to my office as part of my Functional Behavior Assessment. It had been my plan to interview him to get a better sense of potential reinforcers, and, separately, to interview his parents to follow up on how they used behavioral techniques at home. I had already observed him at school on three occasions. However, when I attempted to speak to him, he responded by speaking in a “baby voice,” shrugging his shoulders and avoiding any eye contact. He was a verbal child, diagnosed with autism, and I was having trouble developing any meaningful alliance in order to obtain information. After ten minutes of little useful interchange, I fired up my laptop.

The moment he heard the “Hollywood” theme song, his eyes locked onto the screen. He came over and sat to my left (forming our “triangle” as I showed him characters, scenes, and produced small amounts of initial dialogue. The expressions he chose for his characters (happy, angry, silly) and, ultimately, his entire story, made little sense. But he was now engaging in considerable eye contact, effective body orientation, as he explained how he liked basketball, what he did to play with his younger brother, and how it was hard to get up in the morning for school. After the session, he directed his younger brother to clean up the waiting room, now filled with toys and shook my hand when he left. This is the effect that technology can have, especially on children and pre-teens. While anecdotal, the “story” he created gave me a sense as to how difficult it was for him to thread together social interchange and conversations. It was consistent with what I had been reading in his records and observing at school, and provided me with a bit of a “probe-like” analog situation for evaluating his behavior.

When I use technology-oriented approaches, the kids and adults who come in don’t complain. They are more proactive participants in their treatment. The ways you can use this and other technologies are really only limited by you and your client’s imagination. It can also be used in groups. Who says you can’t do behavioral work and have fun at the same time?

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RESOURCES

This figure was inadvertently left out of the original publication. Click here to view Figure 2 of an Avatar



ABA SIG NEWS

Message from the ABA Autism SIG President

As you all busily prepare for the annual ABA conference in San Diego, be sure to check out our latest edition of the newsletter. We have several ABA-relevant features, including a listing of autism-relevant content at ABA and a preview of our annual SIG meeting on Saturday evening. I hope to see many of you there.

Our thanks go to the many contributors to this latest issue. The newsletter would not exist without all the contributors who volunteer their time and share their expertise. The focus of this issue is on technology. Sally Roberts, Rebecca MacDonald, and William Ahearn have provided an excellent description on the use of video modeling. An interview with Mark Hammond highlights the utility of augmentative communication systems, and an interview with Mary McDonald highlights how a variety of different technological approaches can be used with individuals with autism. (Thanks to David Celiberti and Ruth Donlin for conducting these interviews.) Thanks also go to our three article reviewers: Melissa Ortega, Jen Buck, and Sarah Land. Bruce Gale and Lori Bechner have provided clinical descriptions which outline how they have used technology to teach individuals with autism. Tamara Bannon has also compiled a list of parent-friendly videos that can be used to learn concepts in ABA. Overall, I think you will find the content interesting and worthwhile.

Again, please consider attending the SIG meeting if you will be in San Diego. We have a full agenda, and we need your input!!

Sincerely,
Mary Jane Weiss
Autism SIG President



Association for Behavior Analysis 2007 Autism Related Events

In the past, we have printed all of the autism and developmental disability events that will be presented at the upcoming conference. However, since the conference is continuing to grow, we have decided to only include information about relevant SIG meetings in the newsletter.

A complete listing of autism related events is available at www.rci.rutgers.edu/~joshmil/. Special thanks to Sarah Land for her help in compiling this list.

Saturday 5/26/07

#115 Business Meeting; 7:30 PM - 8:50 PM; Randle AB

Autism Special Interest Group

Chair: Mary Jane Weiss (Rutgers University)

Purpose: A business meeting will be held to address an array of administrative matters relevant to the SIG, including the revised consumer guidelines, changes to the election process for Autism SIG officers, and guidelines for newsletter submissions. The business meeting will be followed by a panel discussion with representatives from the New Jersey Center for Outreach and Services for the Autism Community (COSAC), the Organization for Autism Research (OAR) and the Association for Science in Autism Treatment (ASAT), regarding the organizations' missions and services for individuals with autism and their families. The meeting will conclude with an update on the BACB's development of the autism specialty credential from Gerald Shook. All interested parties are welcome to attend.

Sunday 5/27/07

#128 Business Meeting; 8:00 AM - 8:50 AM; Emma C

Parent Professional Partnership Special Interest Group

Chair: David A. Celiberti (Private Practice)

Purpose: The discipline of applied behavior analysis owes much to parents who have been staunch advocates for higher quality services for their children. The synergy that can arise from parents and professional working together presents both exciting opportunities and possibilities. A business meeting will be held to provide a forum for networking, to help orient parents to the convention, to outline SIG goals and objectives, and to discuss the SIG Web site. All interested parents and professionals are encouraged to attend.





Call for Posters

Autism and Related Developmental Disabilities SIG Association for Behavioral and Cognitive Therapies

Dear Colleague,

The Autism and Related Developmental Disabilities Special Interest Group (SIG) of the Association for Behavioral and Cognitive Therapies (ABCT) would like to invite you to participate in the 2007 SIG Exposition at the annual convention of ABCT. The focus of the Autism SIG's poster session is "*Works in Progress*", although all autism related submissions are welcome. If you are currently working on a research project or have a student who is working on a research project, I enthusiastically encourage you to consider this invitation. The EXPO provides a wonderful opportunity for professionals and students to meet each other and learn more about the work currently being done in our field.

For those of you unfamiliar with ABCT (formerly Association for the Advancement of Behavior Therapy, AABT), the national convention is held in November each year. At the EXPO, each SIG has a certain number of poster slots allowed and we would like to meet this maximum number this year. We had a very successful outcome last year, and we aim to make it even better this year. We are currently involved in an effort to expand the presence of the Autism SIG and autism related events at ABCT and we would especially like to welcome our colleagues from the Association for Behavior Analysis (ABA) as well as other agencies or universities to join us at ABCT this year. If you would like more information about ABCT, their website is www.aabt.org.

The convention this year will take place in Philadelphia from November 15-18. In order to submit your work, please send the *title of the project, a brief abstract of the project, and the names and affiliations of the authors* to Kate Fiske, the Autism SIG Co-Chair by Friday August 24, 2007. You can email your submission to Ms. Fiske at kfiske@eden.rutgers.edu or fax a copy to (732) 932-4509. You will receive a response from the SIG about whether your poster was accepted during the first two weeks of September.

If you have any questions regarding the SIG or the Expo please email or call Ms. Fiske at (732) 932-3017. Additionally, if you wish to stay informed about other upcoming ABCT Autism SIG events, please email Ms. Fiske.

We hope you will join us at ABCT this upcoming November!

Jan S. Handleman, Ed.D.
ABCT SIG Chair

Kate Fiske, M.S.
ABCT Autism SIG Co-Chair

Please send your suggestions of topic ideas for possible inclusion in an upcoming issue of the SIG newsletter to:

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