Comparison of Interactive Computer-based and Classroom Training on Human Rights Awareness in Persons with Intellectual Disabilities

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Abstract: We tested the effectiveness of an interactive, video CD-ROM in teaching persons with intellectual disabilities (ID) about their human rights. Thirty-nine participants with ID were trained using both a classroom activity-based version of the training program and the interactive CD-ROM in a counterbalanced presentation. All individuals were pre- and post-tested on their awareness of their rights and strategies to remediate perceived rights restrictions. Exposure to both classroom activity-based and video-based scenarios resulted in significant improvements in participants’ ability to identify human rights restrictions and strategies to address them. The computer-based video testing scenarios played a critical role in assessing the impact of human rights awareness training, and offered some preliminary support for the generalization of human rights awareness to nontrained scenarios. We discuss the development of the CD-ROM and the results of this study in relation to the existing literature on the use of computer-based instruction with individuals with ID.

A considerable body of research has documented the usefulness of conventional behavioral educational strategies, such as modeling, prompting, pictorial and audio materials, positive reinforcement, role playing, and drama, to teach social, occupational, community and other independent living skills to persons with intellectual disabilities (ID) (Bolton, 1979; Feldman, 2004; Feldman & Case, 1997; Herman & Smith, 1988; McClintock, 1984). Recently, there has been a notable expansion of research in the educational and recreational uses of computer-based technology (Holburn, Nguyen, & Vietze, 2004; Weiss, Bialik, & Kizony, 2003), with particular emphasis on the use of multimedia technology for teaching important community living skills to individuals with ID (Davies & Hastings, 2003; Standen, Brown, & Cromby, 2001).

Multimedia instruction continues to proliferate in part because community-based instruction with trained staff is not always feasible and/or remains costly (Davies & Hastings, 2003). The appeal of multimedia formats is further enhanced by the ubiquitous and (relatively) low-cost advances in computer technology (e.g., computation speed and power, graphics and image rendering technology, voice recognition) (Rizzo, 2002). These technologies impinge directly on the quality of the computer-user interface. Finally, current excitement over multimedia instruction is fueled by research findings that continue to demonstrate the promise of this novel instructional approach for students with special needs (for a review see Davies & Hastings; Langone, Clees, Rieber, & Matzko, 2003).

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Multimedia Technology for Persons with ID

Computer-based assessment and interventions have been developed to facilitate the acquisition of various functional and community independent living skills in persons with ID and autistic spectrum disorders (ASD). For example, computer-based strategies have been used to enhance verbal communication and expressive language skills (Lehman, 1999; Heimann, Nelson, Tjus, & Gillberg, 1995; Holzberg, 1995; Parsons & Mitchell, 2002; see Wiswick, 1996, for a review), social skills (Parsons & Mitchell, 2002), independent functioning and adaptive behavior (Davies & Hastings, 2003), and computer skills, such as navigating the Internet (Davies, Stock, & Wehmeyer, 2001). People described as having profound physical and intellectual disabilities have also been taught to manipulate switches independently to change visual images on a computer screen (Holburn et al., 2004). Still other computer-based instructional strategies—some relying on interactive technology (i.e., simulation or virtual environments)—have been used to teach individuals with ID some of the more complex skills and knowledge that they will need to live independently and inclusively in the community. For instance, programs have been designed to teach skills related to grocery shopping (Cromby, Standen, & Brown, 1996; Cromby, Standen, Newman, & Tasker, 1996; Langone et al., 2003; Mechling, Gast, & Langone, 2002), money management (Davies & Stock, 1995; Nicol & Anderson, 1997), communicating career preferences (Stock, Davies, Secor, & Wehmeyer, 2003), virtual reality based independent recreational activities (Weiss et al., 2003), personal safety awareness (Lee, McGee, & Ungar, 1998; 2001), antivictimization awareness (Holzberg, 1994), basic social skills (Margalit, 1995a, 1995b), essential daily living tasks (e.g., using public transport, setting the dinner table) (Brown, Neale, Cobb, & Reynolds, 1999; Mowafi & Pollack, 1995; Rehfeldt, Dahman, Young, Cherry, & Davis, 2003; Rose, Brooks, & Attree, 2002), and vocational tasks (e.g., object construction in an assembly line) (Brooks, Rose, Attree, & Elliot-Square, 2002; Davies & Stock, 1994, 1997, 1999; Furniss et al., 2001; Lancioni, Van den Hof, Boelens, Rocha, & Seedhouse, 1998; Lancioni, Van den Hof, Furniss, O’Reilly, & Cunha, 1999; Mendoza et al., 2000; Morgan & Salzberg, 1992).

Among the suggested and demonstrated benefits of multimedia instruction for persons with physical and intellectual disabilities are increased motivation and a sense of empowerment in the learning process. The use of interactive technology may also play a therapeutic role by promoting choice-making opportunities (Cooper & Browder, 2001; Kearney, Durand, & Mindell, 1995; Kearney & McKnight, 1997; Knight & Kearney, 2001; Standen et al., 2001). Indeed, several studies have demonstrated that interactive multimedia training results in enhanced independence, self-direction, self-determination, and self-esteem in individuals with ID (e.g., Davies & Stock, 1994, 1995, 1997, 1999; Davies et al., 2001; Holzberg, 1994, 1995; Morgan & Salzberg, 1992; Stock et al., 2003). Finally, the use of interactive technology has also been shown to increase opportunities for leisure time among young adults with physical and intellectual disabilities, and this, in turn, is associated with improved coping skills and decreased stress (Weiss et al., 2003).

Standen et al. (2001) highlighted several characteristics of interactive instructional technologies that make them particularly appropriate and very promising for use with persons with ID. First, individuals can learn about, without suffering through, the sometimes humiliating and dangerous consequences of their mistakes. In this way, computer-based, simulated instruction provides individuals with safe access to interactive, functionally relevant and ecologically valid environments that might otherwise not be available to them because of motor, cognitive, psychological and/or practical limitations. Second, computer-based simulated worlds can be easily manipulated and task difficulty can be increased gradually as competence is gained. Third, rules and abstract concepts can be conveyed without language or other symbol systems, which can facilitate learning more complex concepts and skills. Pedagogically interactive, computer-based instructional activities facilitate the student’s active engagement in the learning process (Hawkridge & Vincent, 1992; Standen et al.) and encourage self-determination as individuals must make decisions about
the number of instructional trials to complete and when to increase task difficulty.

*Interactive Technology and Human Rights Awareness*

The success of interactive, computer-based instruction in teaching a variety of skills to individuals with ID underscores the need for research on the potential of this technology to teach more complex conceptual social skills, such as self-advocacy, self-protection, and human rights awareness (Darrow, 1995; Davies & Hastings, 2003; Foxx, Faw, Taylor, Davis, & Fulia, 1993; Griffiths, Feldman, & Tough, 1997; Holzberg, 1994; Miltenberger et al., 1999; Scotti et al., 1997; Sievert, Cuvo, & Davis, 1988). Research that explores the use of interactive technology for teaching more complex conceptual skills of this kind is especially germane as persons with ID represent a vulnerable population—a situation that is likely to persist despite more inclusive community participation.

Presently, our 3Rs (Rights, Respect and Responsibility) research team is exploring the use of interactive technology in teaching adults with ID about their human rights in the context of respect for and responsibility to both oneself and others. Our focus on teaching human rights awareness was originally motivated by the goal of preventing or minimizing abuse to individuals with ID. This population has suffered a long history of abuses, such as unjustified incarceration, overmedication, denial of basic individual and community rights, mass sterilization, euthanasia and the eugenics movement (Griffiths et al., 2003; Radford & Park, 1999; Scheerenburger, 1983; Sossey, 1994; Stratford, 1991; Wolfensberger, 1972). Unfortunately, even today, the rate of abuse among individuals with ID is at least twice as high as that reported among individuals without such disabilities (Davis, 2000; Mazzucchelli, 2001; Sossey).

Besides our own work (Griffiths et al., 2003; Owen et al., 2003), we know of only one published study that focused on human rights training in adults with (mild) learning problems using traditional classroom-based methods (Sievert et al., 1988). Based on the description of participants provided by Sievert et al., it would appear that none had intellectual disabilities. In our own work with adults with mild to moderate ID, we began surveying people with ID (living in community group homes and supported independent living) and their caregivers about the rights restrictions they experienced in their everyday lives (Griffiths et al.). In a partnership between university-based researchers and a local community support service, we developed and tested a systemic Rights, Respect and Responsibility program that included classroom activity-based materials for both individuals with ID (Stoner, Gosse, Vyrostko, Owen, et al., 2002) and their support staff (Stoner, Gosse, Vyrostko, Griffiths, et al., 2002). The partner agency established a Human Rights Facilitation Committee that includes a broad range of community participants to insure that both the people supported by, and the staff of, the agency had an appropriate mechanism to review rights concerns following training (Owen et al.). The effectiveness of our classroom activity-based approach (Owen et al.) led us to the next step of designing an interactive CD-ROM to further improve effectiveness and generalization, and allow for broader dissemination. The goal of this study was to compare the effectiveness of an interactive video-based CD-ROM to traditional, classroom-based training in teaching human rights violation identification and remediation to individuals with ID.

**Method**

**Participants**

Participants included 39 (19 males and 20 females) individuals with ID who were consumers of residential, day, and other support services provided by two community agencies (21 in Agency 1; 18 in Agency 2). Although documentation of participants’ ID was not available, such documentation had been required earlier in order for them to be eligible to receive services and funding reserved for persons with ID. Participation was completely voluntary and informed consent was obtained. Sixteen participants were living in structured group homes (maximum support up to 24 hrs/day), nine were living in semi-independent apartments (minimum staff support, less than 10 hrs/month) and 14 were living in...
family support homes (community-based family home with varying levels of support). Twenty-two participants with ID had no previous human rights training, while 17 participants had received our preliminary classroom training on different human rights topics from those covered in this study. Participants had not received any other type of training in human rights or related issues. Each community agency employed approximately 60 support staff members; support staff typically held a community college diploma and had an average of 5 to 10 years of experience (ranging from < 1 year to > 25 years) working within the community agency.

Design

We used a within-subject cross-over design (with counterbalancing) to compare the effectiveness of two types of human rights awareness training: (a) interactive CD-ROM and (b) our original adult education activity-based classroom program (Owen et al., 2003). Pre-, flip, and post-tests measured participants’ identification of human rights violations and ways in which they could be redressed.

Outcome Measures

Human rights awareness was defined as: the ability to identity (1) rights violations in hypothetical testing scenarios, (2) the specific nature of the rights violation depicted, and (3) possible solutions for resolving hypothetical rights violations—solutions, more specifically, that involved the exercise of rights in the context of respect and responsibility. Human rights awareness was measured immediately after viewing test scenarios on a CD-ROM or hearing scenarios read (see below). For example, one of the scenarios read as follows:

Jane likes to eat only hamburgers and wants to eat them at least once every day. Sue, Jane’s roommate, would like to eat other foods, like chicken and ham, but Jane refuses to let her have them in the house. Jane and Sue eat together for most meals. It is almost dinnertime and Jane once again wants to have hamburgers for dinner, but Sue wants to have something else.

For each scenario, participants were asked the following three questions: (1) “What problem does [protagonist’s name e.g., Sue] have?” (2) “What do you think that [protagonist’s name] should do in this situation?” and (3) “Why do you think that this is the best thing to do?” Participants’ responses to the first and third questions were then assigned one of the following four codes: 0 - unrelated answer e.g., “I don’t know”; 1- related but nondescriptive e.g., “Hamburger”; 2 - discusses one side of the problem e.g., “She only eats hamburgers”; 3 - discusses both sides of the problem e.g., “She wants hamburgers, but her roommate wants something else.” A separate system was developed to code participants’ responses to the second question, with responses assigned one of five codes: 0 - unrelated answer e.g., “I don’t know”; 1- inappropriate suggestion, in which neither the notion of rights, nor that of respect or responsibility, was invoked e.g., “Throw out her food.”; 2 - suggestion involves either some allusion to rights or acting in a manner that shows some minimal signs of respect for and responsibility to self or others e.g., “Just let her eat hamburgers.”; 3 - suggestion that more clearly reflects knowledge of rights or of acting respectfully and responsibly e.g., “Tell her to eat fish because it’s better for you, not as greasy.”; 4 - suggestion contains both an allusion to rights and an awareness of exercising those rights in the context of respect and responsibility e.g., “They can eat what they would like as long as they understand what is healthy for them.”

Participants’ scores were summed across the eight scenarios for each of the pre-, flip-, and post-testing sessions, with total human rights awareness scores at each of these sessions ranging from 0 to 80. Two specially trained, independent raters coded all responses. The level of agreement between raters was 89%.

Testing

Participants were tested at three points. The pretest was given before any training; the flip test was given after they completed one type of training (either interactive CD-ROM or classroom), but before they started the second type of training; the posttest was given after the participant completed both kinds of training. Each test consisted of a series of eight
scenarios that were followed by a series of questions. Two different types of testing stimuli were used, both of which were presented as a video clip on a computer screen. In the dictation test, a research assistant (unknown to the participants) read a description of a human rights scenario.

In the action video test, the video clip depicted actors with ID and research assistants acting out human rights scenarios in a group home setting that resembled events that might naturally occur in the participants’ everyday lives. Both testing condition scenarios were presented on the computer screen, but participants did not interact directly with the computer. Audio cues were used to signal the stimulus questions in both testing conditions. If participants were uncertain about the questions as presented on the computer, a research assistant would read the questions again, once only. Participants responded to the questions orally and the research assistants recorded their responses without telling them if responses were correct or incorrect. To test for generalization, four of the eight scenarios (two action, two dictation) that participants viewed in the testing phases were not taught in training.

Interactive CD-ROM Training

We developed a series of interactive computer-based video scenarios that focused on the exercise of human rights in the context of respect for and responsibility to oneself and others, based on the literature outlining the factors and conditions that would be most likely to promote individuals’ generalization of human rights awareness to similar, real-world situations (Griffiths et al., 1997; Horner & Albin, 1988; Langone et al., 2003; Miltenberger et al., 1999; Neef, Lensbower, Hockersmith, DePalma, & Gray, 1990). The computer-based video training sessions were unstructured and participants could manipulate the program in the manner they chose and for the length of time they wished, for up to 1.5 hours. Participants were given an informal, brief tutorial on the sections of the CD-ROM before beginning the training. If a participant did not fully understand how to use the computer or mouse, then a research assistant was available to help the individual. In 90% of the cases, the instructor launched the program and then relinquished control of the mouse to participants when the program was underway.

The interactive CD-ROM involved participants making independent choices throughout the presentation of the brief human rights. These scenarios depicted events and circumstances that many persons with ID have encountered in their lives. For example, one scenario showed a resident of a group home, Bob, wanting to go to the movies with his friend. He cannot get a ride from his support staff because another individual in the home is sick. In this example, participants were asked to respond to questions such as “What should Bob do next – stay home and let his friend know that he will not be going to the movies (option A) or take the bus to meet his friend at the movies (option B)?” by clicking a mouse. They would then see a videotaped scenario that depicted the likely outcome of the choice they had made. The computer-based training was done individually and a research assistant was always present to provide assistance. Because the video segments involved two valid choices a formal correction procedure was not utilized. However, exploratory feedback was built in the video segments in the form of a research assistant explaining why choice one was good and why choice two was better.

Classroom Training

The classroom activity-based training involved a standard lesson plan consisting of previous class review, games, role-play and discussion, and routinely concluded with a review of the day’s lessons. Classes proceeded through the 3Rs training curriculum by reviewing the interdependent concepts of rights, responsibility, and respect. Using an adult-education orientation, facilitators engaged participants in discussion about issues that had immediate relevance in their daily lives. They were encouraged to give examples of issues that were of concern to them and, through these examples, participants guided the direction of the class content.

Classroom groups consisted of no more than 10 persons with ID who received training in blocks of 8-10 two-hour sessions. Two facil-
itors introduced the key concepts of human rights, respect, and responsibility, and the interconnections among these concepts. Participants then reviewed central elements in the agency’s Statement of Rights and the Human Rights Facilitation Committee. In an effort to have the training materials appeal to individuals with different learning approaches, the sessions involved a broad range of learning activities, such as word-picture association games, discussion and role-playing e.g., mock election to illustrate the right to vote.

**Testing and Training Schedule**

Testing and training sessions were completed in five phases: (1) Pre-test – computer-based video testing (with both dictation and action elements); (2) Training #1 – classroom activity-based or computer-based video training; (3) Flip-test – computer-based video testing (with both dictation and action elements); (4) Training #2 – classroom activity-based or computer-based video training; and (5) Post-test – computer-based video testing (with both dictation and action elements).

The presentation of all testing and training materials was counterbalanced. Specifically, participants received eight classroom activity-based training sessions and four computer-based video training sessions with the order of presentation of the two training and two testing formats (action scenarios and dictated scenarios) counterbalanced across groups. The order of training (interactive CD-ROM or classroom instruction) was randomly determined for each participant. Participants were selected for participation in the training by staff of the community agencies, and accommodation in group assignment was made for transportation and scheduling constraints of group home residents who had to travel together by insuring that they were assigned to different groups that were scheduled at the same time. In addition, staff of the agency made recommendations about group assignment based on interpersonal compatibility. Testing and training phases were completed over the course of 11 weeks.

**Results**

There were no significant pretest differences in the human rights awareness scores of participants with and without previous training in human rights, or from the two different agencies.

Figure 1 shows the training effects (action and dictation tests combined) on the group that had classroom instruction first and then the CD-ROM versus the group that had training in the opposite order. The within-subject cross-over design with counterbalancing of order of training (classroom activity-based versus interactive CD-ROM) revealed that both types of training methods were equally effective in increasing awareness of human rights. A repeated measures ANOVA showed a significant training effect, \( F(1.95) = 18.35, p < .001 \), when the two types of training were combined; the order of training was not significant. Post-hoc analyses revealed a significant increase in human rights awareness scores (action and dictation tests combined) from pre-test (\( M = 33.74, SD = 17.18 \)) to flip-test (\( M = 40.72, SD = 18.13 \)), (\( p < .001 \)) and from pre-test to post-test (\( M = 42.09, SD = 16.94 \)) (\( p < .001 \)). Flip- to post-test change scores were not significant. Independent samples \( t \)-tests directly comparing the order of training (classroom activity-based versus interactive CD-ROM) at each the pre-test, flip-test and post-test did not reveal significant differences in participants’ overall human rights awareness scores (see Figure 1).

Overall gains in human rights awareness scores were compared as a function of exposure to realistically acted (action test) versus dictated (dictation test) test conditions. For both classroom activity- and computer-based video training conditions combined, the results of three separate dependent samples \( t \)-tests revealed that participants had higher scores when they received the action versus dictated test scenarios: pre-test, \( t(38) = 11.40 \); flip-test, \( t(38) = 9.35 \); post-test, \( t(38) = 10.21 \), all \( p < .001 \). The means and standard deviations for the two testing conditions across pre-, flip- and posttests respectively were: action test scenarios, \( M = 22.62 (SD = 8.20) \), \( M = 26.41 (SD = 7.71) \), \( M = 27.95 (SD = 6.83) \); dictated test scenarios, \( M = 11.13 (SD = 10.01) \), \( M = 14.31 (SD = 11.73) \), \( M = 14.74 (SD = 11.38) \).

Two dependent samples \( t \)-tests revealed significant increases in pre- to posttest scores on the generalization questions, using the action test method (pretest, \( M = 13.28, SD = 5.07 \);
Results of our study suggest that individuals with ID can be taught to identify and remediate human rights violations using classroom activity-based or individual interactive CD-ROM training. Participants demonstrated awareness that they should exercise their rights in a context of respect and responsibility toward themselves and others. Moreover, both training modalities resulted in generalization of training to nontrained human rights scenarios.

We also evaluated two different ways of testing for human rights knowledge and we found that participants scored higher on human rights awareness, i.e., recognizing violations and suggesting appropriate corrective actions, when presented with realistically acted video rights scenarios (action test condition, with actors with ID portraying persons with ID whose rights were being violated) than they did when presented with scenarios that were simply read by a research assistant on the video (dictation test condition). Anecdotally, participants showed greater interest in, and engagement with, the action test scenarios than they did with the dictation test scenarios.
This result suggests that traditional dictated tests may underestimate the conceptual and practical knowledge of persons with ID.

Our findings are consistent with that of a meta-analysis showing the overall effect size for interactive video was positive and slightly higher than effect sizes previously reported for computer-assisted instruction without the interactive video enhancements (Neil & Nelson, 1991). In interpreting these meta-analytic findings, the authors highlighted the key difference between interactive and noninteractive computer-based instruction, including the depiction of naturally occurring situations and events with real time opportunities for active engagement and choice making in the interactive mode; this difference also applied when the testing conditions in this study were compared. Consistent with previous research, our work highlighted some additional benefits of the computer-based video approach for successful human rights awareness testing and training (Hawkridge & Vincent, 1992; Langone et al., 2003; Standen et al., 2001). The interactive training components appear to be as effective as activity-based training and the testing components that included realistically acted scenarios appeared to stimulate better responding.

This study yielded several practice and research implications. First, computers that play interactive CD-ROMs are now readily available and relatively easy to disseminate and recycle. The participants in the current study quickly learned how to use the computer-based technology. From that point on, it was simply a matter of participants’ engaging with the technology at their own leisure and pace; they could go over the scenes until they felt that they fully understood the human rights problems and solutions depicted in them. Unlike classroom activity-based training, computer-based training did not require an instructor to direct and assist participants throughout the process. Even so, some participants continued to need support in operating the computer. The interactive technology thus fostered self-directed learning. Future studies should determine if the benefits of this interactive format extend to the enhancement of participants’ self-esteem and self-efficacy. Future research should also examine the interaction of individual characteristics, preferences and learning style and instructional modality. Whereas some participants seemed to be more engaged during the group discussions, others seemed to benefit more from the audiovisual prompts from the computer-based video technology.

**Limitations of Study and Future Research Objectives**

While the results of this study are promising, we acknowledge that our work needs to be replicated with a larger sample and a research design offering long-term follow-up, before any definitive conclusions of the effectiveness of the human rights training can be drawn.

As a group, participants’ post-test scores were in the 40s, compared to the maximum possible score of 80. While these post-test scores give the impression that performance did not reach optimal levels, we now recognize that the response standards we set to receive high scores in testing went considerably beyond what would be required to achieve a pragmatic resolution to a human rights concern. Future training studies should empirically validate criterion scores at a response level that would lead to a functional solution specific to the rights problem presented.

Another limitation of this study is that we did not run *in vivo* probes to test for generalization of rights awareness skills to real life situations (cf., Griffiths et al., 1997). Anecdotally, staff members, family home providers and others who knew the participants remarked on seeing greater awareness of human rights, respect and responsibility by the participants. Finally, future training studies should include a measure of consumer satisfaction regarding the type of training received, particularly as the results of this study found both computer-based and classroom activity-based approaches to human rights training to be equally effective.

**Conclusion**

This study represents one of the first attempts to develop and evaluate an interactive video-based CD-ROM for use in teaching human rights awareness to individuals with ID. Our early results hold promise that interactive
computer-based technology is an effective, efficient, and readily available training strategy for teaching human rights awareness and other complex self-advocacy skills (e.g., health care, legal rights) to persons with ID.

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