RESEARCH ARTICLE   **OPEN ACCESS**

THE IMPACT OF EDUCATIONAL MEDIA VERSUS TRADITIONAL INSTRUCTION ON INDEPENDENT SKILLS AMONG AUTISTIC CHILDREN

Todd Eller, PhD, Elizabeth Thrower, PhD and John Lee, PhD

12215 Victory Boulevard North Hollywood, CA 91606, United States

ARTICLE INFO

ABSTRACT

One of the areas that remain unexplored in education psychology is the effect of educational apps on independent skills among autistic children. Educational media can be highly effective in helping autistic children learn academic concepts (Moore and Taylor, 2000). The setting was the homes of autistic children with an average of 9.1 years of age. Thirty children (22 males, 8 females) participated in the study. All of the children were pretested on sequencing skills before instruction began. Children were then randomly assigned to either a traditional worksheet instructional group or an app educational group. Both groups of parents and children received a single one week instruction by certified instructors via the web and parents were guided by behaviorists on how to train their children using the materials.

INTRODUCTION

Independent skills are lacking among autistic children which include the ability to eat, get dressed, clean their rooms, converse and conduct academic activities with minimal assistance (Bas et al, 2015). Nowadays, aside from watching television, the Internet, interactive videos, and DVDs are widely used by most people to access information and look for fresh source of entertainment thanks to the advance media technology. The question is how can media positively impact children? Parents face the enormous task of fostering their kids to grow up in a safe, happy, and educational environment where they can learn and develop the skills needed to prepare them in school and life, in general. According to the American Academy of Pediatrics (2001), "Children are influenced by media–they learn by observing, imitating, and making behaviors their own" (p. 1223). With the new and emerging media such as video games, cell phones, the internet, iPods, etc., now more than ever, parents have to be proactive in dealing with their children's exposure to media. In Children Now's published Conference Report, *The Future of Children's Media: Advertising* (2007), it states "American companies currently spend $15 billion a year on marketing and advertising to children under the age of 12—twice the amount they spent just 10 years ago. Annually, children influence $500 billion in spending on fast food, junk food, toys and other advertised products, and the average child sees thousands of ads on television alone"

(Children Now, 2007). This shows how huge the market is for children annually. In a study conducted by Rideout et al., (2003) for the Kaiser Family Foundation (KFF) and the Children's Digital Media Centers (CDMC), *Zero to Six: Electronic Media in the Lives of Infants, Toddlers and Preschoolers*, it states that children six and under spend an average of two hours a day using screen media - television, DVDs or videos. It is almost the same amount of time they spend outside playing, while they spend fewer amounts of time reading – thirty nine minutes a day. The use of computer, video games and other electronic media aside from watching television has become a routine in the daily lives of children (Rideout, Vandewater, & Wartella, 2003). The Media has been increasingly an integral part in every young child's life. In today's media-saturated world, sales and marketing campaigns are continuously developing and promoting media products (videos, computer software) especially for infants, toddlers, and preschoolers. Television programming (E/I- Educational and Informative) dedicated to children also has growing market. Studies have shown how the early childhood television (E/I) programming plays an important role in promoting the academic, social, and critical thinking skills of children – its positive impact on children's readiness to start school and perform well (Kirkorian, Wartella, & Anderson 2008; Wright & Huston, 1995; Anderson et al., 2001; Rice, Huston, Truglio& Wright, 1990; Esty et al., 1990).

Academic Learning Achievement: According to Kirkorian, Wartella, & Anderson (2008) in *Media and Young Children's Learning* article, children exposed early in age-appropriate educational programs aid in the enhancement of their cognitive and academic achievement. To maximize the benefits and positive impact of educational media, parents should choose age-appropriate programs and watch these programs with their children. Below are the list of Television Programs and DVD Series from Media and Young Children's Learning by Heather Kirkorian, Ellen Wartella, & Daniel Anderson (2008). Educational and Informational (E/I) programming for children may enhance academic achievement since children can learn a variety of academic content – recognition of numbers and letters from television. In a study conducted by Wright & Huston (1995*), Effects of Educational TV Viewing in Lower Income Preschoolers on Academic Skills, School Readiness, and School Adjustment One to Three Years Later: A Report to Children's Television Workshop*, the authors concluded that the E/I programming viewed by preschool children from low-income families performed better on pre-reading, vocabulary and math tests than non-viewers, three years later. The finding was that children who viewed more educational programming dedicate more time to reading and other activities when not watching television. They also participate in the classroom more as compared to the less frequent viewers (Wright & Huston, 1995).

In Anderson and colleagues' study, *Early Childhood Television Viewing and Adolescent Behavior: The Recontact Study*, it states the correlation between Sesame Street viewing at age five and high school GPA (overall) – academic success after ten to fourteen years. Children who watched Educational Television programs such as Sesame Street had higher grades and read more books in high school, the educational benefits years later after viewing (Anderson, Huston, Schmitt, Linebarger, & Wright, 2001). Furthermore, according to Linebarger & Walker, watching educational programs like Dora the Explorer, Blue's Clues, Arthur, Dragon Tales, or Clifford between the age of six and thirty months was associated with higher language growth – greater vocabularies and higher expressive language scores (Linebarger & Walker, in press). In *Words from "Sesame Street": Learning Vocabulary While Viewing* (1990), children who spent more time watching Sesame Street attained higher scores on a picture test of vocabulary, regardless of child gender, parental education, family size, and parental attitudes. Watching Sesame Street promotes the development of children's vocabulary (Rice, Huston, Truglio& Wright, 1990).

In Esty et al., (1990) *Study of the Effects of SQUARE ONE TV on Children's Problem Solving and Some Connections with NCTM's "Standards,"* it assessed the effects of the series on the attitude of children toward mathematics. The findings showed that viewers had better conception of what mathematics is than non-viewers, and they enthusiastically discussed about mathematics and the problem-solving activities (when interviewed) as compared to the non-viewers. Square One TV is a television series about mathematics produced by Children's Television Workshop (Esty, Hall, & Fisch, 1990). The various studies prove the positive impact of media (educational television) on children. According to Pecora, Murray, &Wartella (2007) in *Children and Television: Fifty Years of Research*, "When television programs are designed with a researched-based knowledge of how children use and understand television, and when they are designed to incorporate systematic academic or social curricula, children benefit. When they are designed merely to entertain through action and violence, children suffer" (p. 79). Aside from the benefits children get from watching educational television, there are some studies that show how the Interactive Media – video/computer games, mobile applications, electronic stuffed toys, and computer-based software applications can positively impact children. A research conducted by Gee (2003) on how the computer games provide opportunities for children to think and practice problem-solving skills has shown the positive effect of media on children. In his book, *What Video Games Have to Teach Us About Learning and Literacy* (2003), Gee stated how "Games often do a better job at getting themselves learned than schools do in getting things like science learned" (Gee,

2003). Additionally, in Squire's *Video Games in Education* (2003), he discussed how the educational video games (edutainment) have been popular in education. It has been used by educators in schools because they can be incorporated easily with instructional design (Squire, 2003). The use of edutainment games in schools promotes education - children learn through game play. In the book, *Media Effects: Advances in Theory and Research* by Bryant & Oliver (2008), it shares the effect of interactive media on children. "The educational value of some forms of interactive media seems almost self-evident. For example, word processing software certainly has the potential to facilitate children's writing, just as a pencil and paper might. Emergent online platforms such as blogs (i.e. online diaries) and video sites such as YouTube offer new opportunities to stimulate literacy and disseminate the products of children's creativity" (p. 419). Videos and DVDs also have positive influence on children. It is time to discuss how videos and DVDs designed for young children contribute to their academic learning achievement. According to the background report prepared for the Kaiser Family Foundation by Garrison & Christakis (2005), *A Teacher in the Living Room? Educational Media for Babies, Toddlers and Preschoolers*, "Children's videos are a large and growing business in the United States. The children's video and DVD market was estimated at $4.8 billion in 2004 and projected to continue increasing through 2010. The market for "developmental" videos and DVDs produced specifically for infants and toddlers is increasing steadily, with one report estimating that sales had reached $100 million in the United States in 2004. Sales of videos and DVDs specifically targeted toward preschool-aged children reached nearly $500 million in 2004, with many of those titles having associated educational claims" (Garrison & Christakis, 2005).

The rapidly growing sales of DVDs and videos for preschool-aged children prove how much parents purchase these products for their children. So one might ask, what benefits do young children get from watching these DVDs and videos with their parents? In the American Academy of Pediatrics' *Media Education Policy Statement* (1999), it has written, "research on early brain development shows that babies and toddlers have a critical need for direct interactions with parents and other significant care givers (e.g., childcare providers) for healthy brain growth and the development of appropriate social, emotional, and cognitive skills" (AAP Pediatrics, 1999). The interaction between parents and their children improves learning. There are a lot of commercially available educational media products for babies, toddlers and preschoolers. In connection to this, the background report conducted by Garrison & Christakis (2005) for Kaiser Family Foundation will be discussed. In the report, the authors claimed that a number of DVDs and videos (e.g., Brainy Baby: Left Brain, Baby Einstein Language Nursery, Dora the Explorer: Map Adventure) examined encouraged parent-child interaction as a way of improving their educational value. "The Baby Einstein products feature an interview with the company's founder in which she discusses the benefits of parents and children watching together, and the Nick Jr. Let's Go to the Farm DVD has an optional voice-over that notes opportunities for parent-child interactions during viewing" (Garrison & Christakis, 2005). The computer use also benefits children in terms of academic performance. In Rocheleau (1995) study, *Computer Use by School-Age Children: Trends, Patterns, and Predictors*, it was found that the students with computers at home had better grades in Math and English and had higher overall grades than those students without home computers. The longitudinal study tracked a group of students (American Youth) from seventh and tenth grade for five consecutive years. The computer use of students at home is associated with the enhancement in their general academic performance (Rocheleau, 1995). According to Subrahmanyam, Kraut, Greenfield, & Gross (2000) article, *The Impact of Home Computer Use on Children's Activities and Development,* it writes, "Today, children and teens frequently use home computers and the Internet for their schoolwork, and parents generally believe that computers are an important educational resource" (p. 128). The rapid evolution of the computers has become a useful tool for children in promoting their academic skills such as in Science and Mathematics.

The Internet is a powerful new means of getting information and innovative way to communicate. According to the report, *Internet Use Triples in Decade* by the U.S. Census Bureau released on June 3, 2009, 64% of individuals 18 and over used the Internet from any location (home, work or public access) in 2007. Only 22% was reported a decade earlier. Also, in the report, it showed that among children 3 to 17, 56% accessed the Internet. Thom File, a statistician with the Census Bureau Housing and Household Economic Statistics Division, stated, "As access to high speed connections have become more prevalent, so too have the number of people that connect to the Internet at home" (U.S. Census Bureau News, 2009). The recent U.S. Census Bureau report on the Internet use proves how many people (age ranges from 3 to 65 years), access the Internet. Students who have computers at home or have access to the Internet benefit from it when used to gain knowledge to enhance their academic skills. In a study by Jackson and colleagues, *Does Home Internet Use Influence the Academic Performance of Low-Income Children? (2006)*, the findings indicated that "Children who used the Internet more had higher GPAs after 1 year and higher scores on standardized tests of reading achievement after 6 months than did children who used it less. Moreover, the benefits of Internet use on academic performance continued throughout the project period. Children who used the Internet more during the last 4 months of the project had higher GPAs and standardized test scores in reading than did children who used it less." The participants were 140 children from low-income families who had no internet access at home. The ages ranged between 10 and 18 years (Jackson, von Eye, Biocca, Barbatsis, Zhao & Fitzgerald, 2006).

Further proof of how vastly important the effect of the Internet in children's education was shown on the Report of the Web-Based Education Commission to the President and the Congress of the United States(2000) chaired by Senator Bob Kerrey entitled, *The Power of the Internet for Learning: Moving from Promise to Practice*. In the Executive Summary, it states, "The Internet enables education to occur in places where there is none, extends resources where there are few, expands the learning day, and opens the learning place. We experienced how it connects people, communities, and resources to support learning. We witnessed how it adds graphics, sound, video, and interaction to give teachers and students multiple paths for understanding. We learned that the Web is a medium today's kids expect to use for expression and communication-the world into which they were born." The findings were based on the course of their work with educators, Internet pioneers, policymakers, education researchers, and ordinary individuals (citizens) who showed the promise of the Internet (WBEC, 2000). Based on the studies made by child development experts, the Media positively impact children's academic learning achievement when parents ensure that they expose their children to age-appropriate educational television programs and watch it with them; view the videos or DVDs that can promote academic learning but also allow parent-child interactions. The interaction between parents and their child enables them to have a lasting bond and help support the growth of their child's brain and the development of their social skills and critical thinking skills. Also, the use of computer and Internet benefits the children's academic skills. The important thing that parents should remember, according to the experts is the content of the Media they allow their children to watch and how much time their children are exposed to Media. Parents should also take into consideration that Media, aside from its positive impact also have negative influence on children. According to AAP, the American Academy of Pediatrics (2001), "Research has associated exposure to media violence with a variety of physical and mental health problems for children andadolescents, including aggressive behavior, desensitization toviolence, fear, depression, nightmares, and sleep disturbances." Parents are encouraged to stick to AAP Media recommendations. "Makethoughtful media choices and co-viewing with children, limitingscreen time (including television, videos, computer and videogames) to 1 to 2 hours per day, using the v-chip, avoiding violentvideo games in homes where they may be observed or played by youngchildren, and keeping children's bedrooms media free" (AAP, 2001).

The next chapter is the Media's positive impact on children's social learning. The media not only influence the child's academic learning achievement but also help in the improvement of their social learning. So how do Media positively influence children's social learning? Do Media impact children's social learning negatively? Findings from various studies made by the experts will be discussed.

THE POSTIVE IMPACT OF MEDIA ON CHILDREN: Playing prosocial video games such as Chibi Robo and Super Mario Sunshine can have positive effect. In Gentile et al., (2009) *The Effects of Prosocial Video Games on Prosocial Behaviors: International Evidence From Correlational, Longitudinal, and Experimental Studies*, fifth grade to college-aged students from three countries (Singapore, Japan, and United States) participated in prosocial video games. The finding was students (across different ages and cultures) who played more prosocial games behaved more prosocially. (Gentile et al., 2009).

Prosocial Media: According to Gentile, & Gentile (2008), "Video games are not inherently good or bad. It can have both positive and negative effects. Content matters, and games are excellent teachers" (Gentile, & Gentile, 2008). Gentile and colleagues stressed that violent content in video games can cause aggressive behavior from people. On the other hand, video games with prosocial content can lead people to behave in a helpful and more cooperative manner (Gentile et al., 2009). In Bryant & Oliver's *Media Effects: Advances in Theory and Research* (2008), it writes how computer games help promote children's social skills. "Since kids usually play games with friends and family, computer games might help children to develop social skills as well." Also, it states that playing computer games can improve retention, cognitive skills, and spatial skills of players. (p. 561).

Media can help develop the Critical Thinking Skills of children. How?: A pioneering study by Hodge & Tripp, *Children and Television: A Semiotic Approach* (1986) discuss how cartoons create children's worldview-children's understanding of the world around them. The authors analyzed how the children interpret the messages shown on television and cartoons. In the introduction to the book:

Television sends out messages, which are interpreted and acted on by social agents responsible for their actions. Television communicates meaning. …If television affects behaviour, it can only do so very indirectly via meanings, beliefs, values" (p. 2). There is no question that children's exposure to media can both have a negative and positive effect on their social learning. To focus on the positive impact of Media on children in regards to their social learning, parents are encouraged to provide their children with the age-appropriate electronic media that promotes prosocial behavior; view with them the educational television programming or DVDs and videos that will enhance interaction with their children; and ensure that they follow the AAP's recommendation of how much time should children be exposed to media (television, videos, computer and video games) to 1 to 2 hours per day (AAP, 2001).

iCAN APP

First Media developed an App whereby children with the assistance of their parents can learn sequencing events. First Media states that the mission of iCAN is:

To empower children with special learning differences and their families by facilitating an independent learning process in a safe & self-stimulatory space. We believe in developing cognitive, social, and life skills in a FUN way, providing a large variety of educational games, books, and videos, created by top educational experts. We envision a future in an inclusive society where there are a place and adequate learning tools for all kids!

Autistic children have positively responded to using such Apps and programs according *The Journal of Action Research* (2016). The results indicated that such programs improved children's abilities in

life readiness skills. However, iCAN is the first App to specifically address sequence of events skills. The following is a study on the effectiveness of this program.

METHODS

The setting were the homes of autistic children with an average age of 6.1 years ranging from 5.8 years to 17 years. Thirty children (22 males, 8 females) participated in the study. The children were previously diagnosed with ASD by a California Regional Center, pediatrician or licensed psychologist. The non-profit organization *Best Practices,* a state licensed vendor for behavioral training, assisted in the study. This organization has treated hundreds of special needs children and individuals over the last twenty years. Parents and/or guardian gave written permission for their children to participate in the study. Children were randomly assigned to a traditional instruction group or an educational media group. All testing and training took place in the homes of the children with parents and/or guardians. Behaviorists from *Best Practices* trained and guided the parents and/or guardians in their home setting. All participants and researchers were tested and vaccinated for COVID-19. Children in both the treatment and the educational media group were pretested on independence before instruction began.Independent samples t-tests indicated no significant differences in either the traditional group or app group ($p > 0.05$). Children were then randomly assigned to either a traditional instruction group or the iCAN group. Both groups of parents received two hours of instruction on how to use the app or worksheetsby a certified behaviorist via online. The App group used the iCAN App developed by *First Media*. The traditional group used worksheets. The children were randomly divided into two groups including traditional instruction and app instructions. The parents were taught how to use the iCAN app. This section of the app included three stages. First, the app showed a short video with narration and images demonstrating steps of a task. For instance, in the *Walking the Dog* steps, the video images and narration are demonstrated in Figure One.
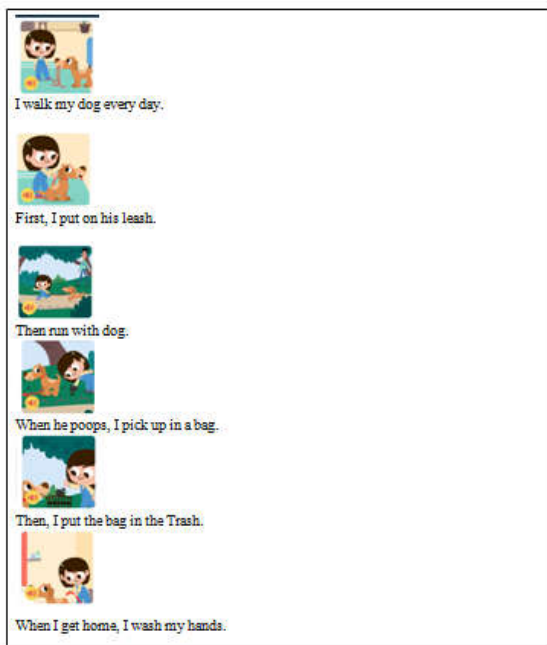
After the video is shown, the user or child is asked to move the images with their finger to appropriate box. If the user drags the incorrect image, then a light buzzer sounds and the image goes back to the original placement. Only the correct image will be placed in the orange box. Figure 2 below illustrates the images in the original placement and after all images are placed in the correct sequence. When the childcompletes the full correct sequence of images, stars appear and the narrator gives a positive statement.
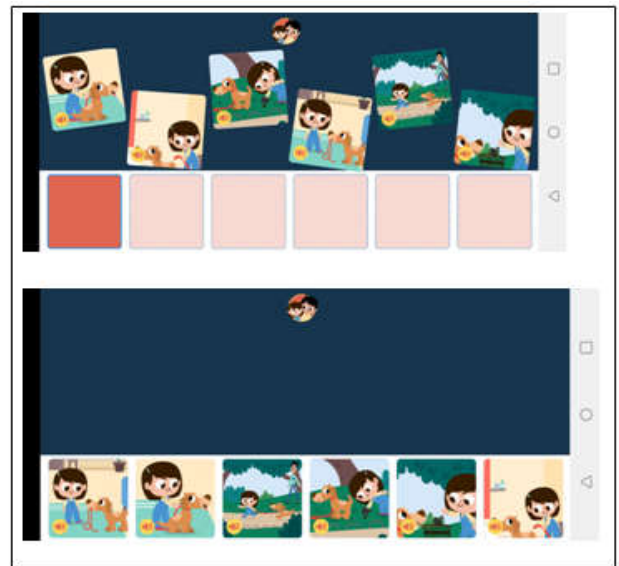
With the above story, the positive statement includes: *GOOD JOB! You walked your dog.*

For the traditional instruction group, the parents were asked to print out Figure One of a sequencing story and tell the story to their child. The children were then given six different print outs of the images and asked to place them one by one in correct order. This worksheet type of instruction is quite common as a teaching tool for parents and teachers including websites like *TheAllKidsNetwork.com* and *Education.com*. Both the traditional group and app group had the same stories to demonstrate or tell their children: *Time to Potty, Walking the Dog,* and *Cleaning Up after Dinner.* The app also has the following stories: *Going with to go Camping, Playing with Babysitter,Taking a Bath on Your Own, Getting Dressed for a Rainy Day, Going with Dad to Library, Cleaning Up Your Room, Let's Go Swimming, Fixing Breakfast, Let's Go Garden*and*Time to Brush Teeth.* For the purposes of uniformity and measurement, only the three stories mentioned were used. Parents in both groups would have their children go through the same three stories per day and complete sequencing challenge. Parents were also instructed to spend no more than 15 minutes per day with the app or printed out materials. All parents were also asked to instruct their child on a completely new and separate sequencing behavior that included simply pointing to six objects in the home in order that has been chosen by the parent or guardian. The objects could include specific toys, furniture, clothing or objects in the kitchen. However, the following rules applied:

- All objects had to be in the same room.
- Only two of the objects could be right next to each other.
- The pattern had to be same daily.
- The parent would verbally and physically prompt their child to point or touch the objects in order. For instance, chair, TV, table, computer, toy train and couch.
- The parents would prompt their child to do for four trials per day.
- After four trials, the parent would ask the child to point out the six objects on their own.
- The parents were instructed to spend more 10 minutes training their child on the task before asking them to complete the sequencing event independently. This training and task completion lasted for only one day after the one week of app or traditional instruction.

Measuring Independence: The Autism Awareness Centre (2021) recommends baby steps and using a timer to foster and measure independence among this population. Parents were trained to first go through the written or iCAN materials with their children for four 15 minute sessions on four different days. After the fourth day, the parents where then instructed to then verbally encourage their child to use the materials on their own for no longer than 2 minutes at the beginning of each session.

These subsequent "independent sessions" were done on 2 different days over a four week period or twice per week. Measurements on both correct responses and time on task were taken.

RESULTS

Pre and post-tests were given to both the traditional Group and the app Group. Both groups were given one attempt to complete the traditional paper task or app task before the week of instruction began. Each child was scored on a scale from zero to six. The child was given one point for each object he or she pointed or touched in the correct order. It is important to note that each group for this task was prompted by the app or the parent/guardian when a mistake was made to try again. Therefore, the measurement was on how many mistakes were made before 100% completion of the task. No significant difference was found between the two groups with t-test results ($p > 0.7328$). Pre and post-tests were also given on time on task for the particular task. The researchers decided to use whole measurements for time by 30 second intervals. For instance, 48 seconds was counted as a unit of 1, and 23 seconds was counted as a unit of 0.5. No significant difference was found between the two groups with t-test results($p > 0.6904$). Both the traditional paper worksheet group and the app group had significant improvement; however, when the groups were compared to each other, the app group had significantly higher scores according to t-test results ($p > .0321$).

Group	Traditional Group	App Group
Mean of Mistakes	11.4	7.13
SD	5.41	4.94
SEM	1.4	1.28
N	15	15

Time on task or independence was significantly different between the groups with the iCAN participants longer periods of time with the app ($p > .0088$).

Group	Group One	Group Two
Mean	2.2	3.167
SD	0.561	1.205
SEM	0.145	0.311
N	15	15

DISCUSSION

Both the traditional education and app group showed significant improvement, but the children who received app training had significantly higher scores and more time on task than the students who received traditional worksheets. The parents and behaviorists also reported an interesting finding which included that the traditional group had only 47.7%of the participants complete the task. The remaining walked away. However, 73.3% of the iCAN group completed the task. Previous research has shown that autistic children enjoy interactive academic technology according to the *Autistic Spectrum Disorder Association* (2021). Autistic children traditionally have a more difficult time engaging with other human beings and are uncomfortable following verbal directions.

The iCAN app allows a buffer or a tool that autistic children can control which helps them calm down their anxiety. Also, having all the educational materials in one place which allows the instructor to not waste time gathering more paper and materials is an advantage. Also, it was easier for a child to simply hit a space bar or return key to give responses. Autistic children often prefer computers and other media over traditional methods. The research above discussed how children find technology enjoyable and can grab their attention. The iCANalso has music playing periodically throughout the lesson. Due to perhaps the break-up of monotony and the display of animals on the video, these images and sounds made it much easier for the instructors to keep the children on task. Also, there has been discussion of how some children may feel pressure to perform as a result of adults giving orders. However, educational media perhaps relieves some of the pressure of this stress. It is hypothesized that the main variable for the significant result is that iCANwas able to keep the attention of infants better than traditional instruction. Future studies would benefit from participants outside the home including teachers or other providers as a comparison to parental instruction. Future efforts may also prioritize collection of direct observational and coding measures to objectively assess treatment outcomes and skills mastery in other settings.

REFERENCES

Anderson, Huston, Schmitt, Linebarger, & Wright (2001). Early childhood television viewing and adolescent behavior: The Recontact Study. American Psychological Association.

American Academy of Pediatrics (1999). Media Education.

American Academy of Pediatrics (2001). Children, Adolescents and the Media.

Autistic Spectrum Disorder Association (2021). *Why the iPad Is Such a Helpful Learning Tool for Children With Autism.*

Bal, V.H., Kim, So-Hyun, Cheong, D & Lord, Catherine (2015). *Daily living skills in individuals with autism spectrum disorder from 2 to 21 years of age*. Autism, Oct; 19(7): 774–784.

Campos, David (2015). Jump Start Health. Teachers College Press.

Garrison, M., & Christakis, D. A. (2005). A teacher in the living room: Educational media for babies, toddlers, and preschoolers. Menlo Park, CA: The Henry J. Kaiser Family Foundation.

Hall, E.R., Esty, E.T., & Fisch, S.M. (1990). Television and children's problem-solving behavior: A synopsis of an evaluation of the effects of Square One TV. Journal of Mathematical Behavior, 9, 161-174.

Kirkorian, H., Wartella, E., & Anderson, D. (2008). *Media and young children's learning*. National Library of Medicine.

Moore, D. and Taylor, J., (2000). *Interactive Multimedia Systems for Students with Autism*. Journal of Educational Media. Vol. 25.

Squire, K. (2003). Video games in education. International Journal of Intelligent Simulations and Gaming, 2(1), 49-62.

Walter Gantz, Ph.D., Nancy Schwartz, Ph.D., James R. Angelini, M.A., Victoria Rideout, M.A., March 2007. A Kaiser Family Foundation Report Food for Thought: Television Food Advertising to Children in the United States

Wright, H.C., &Huston, J.C. (1995). *Television and the Informational and Educational Needs of Children*. The ANNALS of the American Academy of Political and Social Science.

****