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**PARENTS' ROLE, ATTITUDES, AND COLLABORATION IN USING TECHNOLOGY WITH STUDENTS WITH AUTISM**

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**ABSTRACT**

This study aimed at discussing the current research exploring parents' role, attitudes, and involvement about using technologies like portable electronic devices (e.g., tablets, smartphones) at home, school, or in daily life activities as instructional or educational tools to improve students' with ASD skills in various areas (e.g., academic, communication, social). The study reviewed related literature and previous studies to achieve the objectives of the study. The findings showed several effective interventions that can meet the needs of students with autism, such as social stories, video modeling, and picture exchange communication system. Using technologies like portable electronic devices such as tablets and smart phones may also decrease a student's reliance on others and overcome the limitations of computer-based interventions. Finally, parents play a critical role in the interventions for students with ASD. Parents are a critical factor in any intervention using technologies like portable electronic devices with students with ASD.

**Key Words:** Students With Asd, Parents, Technology, Special Education.

**1. INTRODUCTION**

Today, technology is being used in almost every place in the world. Computers and portable electronic devices are a simple example of the technology we use almost daily. As researchers, we use computers to analyze our data and type the descriptions of our studies. Students without special needs are enjoying and getting benefit of various technologies such as portable electronic devices. On the other hand, Edyburn (2013) indicated that students with special needs also share or have the same attraction that students without special needs have toward using technology like portable electronic devices. In fact, Goldsmith and LeBlanc (2004) declared that researchers have noticed the significance of having such technological devices in treatments of students with ASD as a result of reports of parents and clinicians.

Even though there is an increasing number of studies that examine the use and effectiveness of using technology with students with ASD, there are many technologies that have not been studied yet. Moore, Cheng, McGrath, and Powell (2005) pointed out that "the field remains largely unexplored" (p. 231). Students with ASD have many deficits in social, communication, academic, and behavior skills. Technology could possibly help students with ASD in improving their skills. However, many students with ASD cannot use technologies like portable electronic devices without help from others, such as their parents. Thus, parents play an important role in the successful use of technologies by students with ASD. Therefore, this study was designed to investigate parents' attitudes and perceptions toward using technologies, at home, school, and in daily life activities to improve students' with ASD different skills.

## 2. BACKGROUND

In the past few years, autism spectrum disorder (ASD) has received increased attention from physicians, researchers, parents, and educational specialists around the world. One reason for this increase is due to the growing number of individuals who have been diagnosed with ASD. For instance, the Center for Disease Control and Prevention (CDC; 2012) has estimated that an average of 1 in 88 children in the United States has an ASD. ASD is considered a complex developmental disorder because children with ASD struggle with many primary common skill deficits and developmental learning difficulties. For example, these complex characteristics include deficits in communication and language skills. Hetzroni and Tannous (2004) have shown that children with ASD have difficulties in the development of language and communication skills. Deficits in joint attention skills are also common in children with ASD. For instance, many children with ASD cannot make eye contact with others even if they want to ask for something they need (Tsao & Odom, 2006). Moreover, children with ASD have difficulties with many adaptive behaviors, such as the safety, dressing, and using toilets.

In addition to the complex characteristics of children with ASD, Tsao and Odom (2006) noted another primary concern about children with ASD is that they have difficulties making and building social relationships with others. These difficulties in social competence are effects of other deficits or difficulties such language development and joint attention. Bass and Mulick (2007) indicate that the difficulties children with ASD have with social competence and joint attention lead to problems in social play skills. Social play skills are significant in improving children's social and cognitive skills. Deficits in social play skills can impact children's communication skills, imagination, and ongoing social interactions.

The social skills difficulties that children with ASD struggle with may be addressed if they receive early intensive interventions (Strain & Danko, 1995). One type of intervention is technology-based treatment. According to the National Autism Center (2009), technology-based treatment is considered as an established treatment with effective and beneficial effects when used with children with ASD. Technology-based treatment includes computer-based technology, where special software can be used on a computer, laptop, tablet, or smartphone. Teachers are more frequently using computers with students with ASD as an instructional tool or method (Bosseler, & Massaro, 2003).

According to a study conducted by Yaw et al. (2011), computer-based instruction increased motivation and decreased problem behaviors in children with ASD when compared to personal instruction. In fact, assistive technologies may be a promising method to help improve these children's communication and social skills (Reichle, 2011). Additionally, since most of the students with ASD are ambulatory, electronic devices that are lightweight and portable are easier for students to use throughout the day, at home, and in school (Sennott, & Bowker, 2009). Examples of such portable and handheld devices include tablets and smartphones. These portable devices utilize many computer software programs, applications, and designs.

It is critically important when considering any intervention that we involve families and parents in particular. Orsmond and Seltzer (2007) found that families and siblings with a child with ASD encounter greater challenges than families that include a child with another kind of special need. Rao and Beidel (2009) added that the behavior, communication, and social problems of a child with ASD can cause stress on all persons in the family. "In fact, the delayed and/or atypical ways in which young children with autism interact with parents, peers, and

siblings represent one of the defining characteristics of autism” (Strain & Danko, 1995, p. 2). As a result, siblings tend to spend less time with their brother or sister with ASD. According to Orsmond and Seltzer (2007), “past research has shown that siblings of young children with ASD spend less time with and have a less close relationship with their brother or sister than do siblings of children with DS [Down Syndrome]” (p. 693). As can be seen above, parents play important role in helping their children with ASD overcome stress and develop good relationships with their families’ members. This can be done if parents are included or participate in their children’s with ASD interventions or treatments.

This study discusses parents’ roles, and attitudes about using technology with students with ASD and the importance of parents’ involvement in programs and interventions for students with ASD.

### 3. PURPOSE OF THE STUDY

The purpose of this study is:

- 1) To discuss the current research exploring parents’ role, attitudes, and involvement about using technologies like portable electronic devices (e.g., tablets, smartphones) at home, school, or in daily life activities as instructional or educational tools to improve students’ with ASD skills in various areas (e.g., academic, communication, social).

### Technology’s Use with Students with Autism

**Computer-based intervention.** Mechling, (2007) states that the variety and multiple uses of assistive technology (AT) hold promising ways to meet diverse individuals’ needs. Computer-based intervention has been an increasing focus of researchers and is one example of an AT. One example of assistive technology (AT) is any electronic device that can be used to assist a person by providing pictures, text, video, sound, or other technology. Using computers in the instructional process with students with ASD is considered a new area in research in the last few years. Computers act as a motivational factor with students with ASD (Sansosti & Powell-Smith, 2008). Computer-based interventions that use handheld devices, laptops, and computers can work for many students with autism as conditioned reinforcers because the students are very motivated by computers (Goldsmith & LeBlanc, 2004).

Bosseler and Massaro (2003) indicated that computer-based instruction is considered as an emerging popular method to expand the vocabulary of students with special needs. Also, computers have been used in schools as a new approach to teach students with ASD language and vocabulary skills. In fact, computer-controlled applications have the advantage of providing texts with supportive sources such as images and sounds at the same time (Bosseler & Massaro, 2003). Integrating these sources with a written definition improves students’ ability to learn and memorize target vocabulary. The integration of sound and visual supports is an efficient method for facilitating learning and improving language and vocabularies (Bosseler & Massaro, 2003). “The use of computer-based system compared to paper-based systems such as picture cards, photograph albums, and lists, may hold some distinct advantage” (Mechling, 2007, p. 265). In addition, when comparing computer-based interventions to traditional methods, computer-based

interventions show positive effects such as reduction of inappropriate behaviors and an increase in learning, attention, and motivation (Goldsmith & LeBlanc, 2004).

Bosseler and Massaro (2003) found that students with ASD face difficulties in generalizing and applying acquired skills to real world settings. In addition, students with ASD have difficulties when they deal with new settings that include people who did not participate in the initial training. However, intensive training can help students with ASD to overcome those difficulties and be able to generalize acquired skills. Effective intensive training may contain the use of computer-based tools such as portable devices and tablets with other effective interventions such as social stories, video modeling, pictures, and PECS. Hagiwara and Myles (1999) stated that use of a multimedia approach, such as computer-based instruction, visual symbols, and social stories, with students with autism presented possible positive effects.

**Integrating interventions into computer programs.** Social stories have been integrated into computer-based and multimedia formats. For example, Microsoft PowerPoint is being used to teach students with special needs by integrating activity schedules. In fact, research on this kind of integration provided favorable results even though results varied among students with ASD (Goldsmith & LeBlanc, 2004). Sansosti and Powell-Smith (2008) studied the effectiveness of integrating and combining social stories and video modeling intervention via computers. They found that there might be a beneficial method for meeting social skills deficits among students with ASD. The integration of video modeling in portable devices such as iPod, Apple mp3, and video players has also been studied (Cihak, Fahrenkrog, Ayres, & Smith, 2010). In fact, students' independent transitions increased when they used handheld devices (Mechling, 2011). Moreover, three studies have compared results of integrating pictures into a portable device. The Palmtop personal computer, a portable device that has multimedia input and output with a touch screen has been studied and found to be more effective than manually using pictures on cards (Mechling, 2007).

Mechling et al. (2009) pointed out that the "use of electronic self-prompting devices by persons with ASD holds promise as a means for increasing students' independence while decreasing their reliance on prompt delivery by teachers, other adults, or peers" (p. 1420). That is, students with ASD may be able to know when to do a task without relying on others by using those types of electronic self-prompting devices. In fact, a portable computer-based system has many advantages compared to a cassette player. For instance, it (a) provides the chance of repeating steps, (b) offers visual supports to auditory instructions of a task, and (c) has a controlling option over visual and auditory prompts (Mechling, 2007).

Parents play a critical role in the interventions for students with ASD. In fact, parents are a critical factor in any intervention using technology like portable electronic devices with students with ASD. Thus, parents' attitudes, opinions, or perceptions toward using portable devices with their children/adolescents are an important component of this study. All of these topics will be discussed in the following paragraphs.

### **Parents' Role in Interventions for Students with ASD**

Parents are the cornerstone of intervention and education for students with ASD. According to Zager (2005), “a commonly held belief among professionals was that the needs of the child with ASD were so great that parents could not be expected to manage the child without extensive professional intervention” (p. 113). This was one of many misconceptions and assumptions about families and parents of students with ASD. Another misconception is that parents are the cause of their child’s ASD, which there is no evidence of this (Zager, 2005). Actually, parents and families are an essential part of providing services and education to students with disabilities. The Individual with Disabilities Education Act (IDEA) supports the importance of parents of students with disabilities in the education process. In addition, families must be active participants in their students’ Individual Education Plans (IEP).

Currently, families and parents are considered as the best persons who know and can judge their students with disabilities (Zager, 2005). Also, “the best long-term advocate” for students with ASD is family (Zager, 2005, p. 115). A student’s development can be supported and improved effectively if parents have teaching skills and used them with their children at home during daily living activities. Zager (2005) declares that involving parents in their children’s education process is important because students spend the majority time of a given day at home with their parents. Thus, learning opportunities will increase if parents are involved in their child’s program and intervention can then be implemented in real world settings. Parents of students with ASD have participated in many interventions for their children with ASD. For instance, parents are involved in writing Social Stories for their children with ASD, in addition to the stories written by teachers, therapists, and others professionals (Zager, 2005). According to the National Research Council (NRC) (2001), the main form of current interventions for children with ASD are based on education of parents, students, and teachers.

**Parents’ involvement, participation, collaboration, and interaction.** Ozonoff and Cathcart (1998) declared that there were three common features of effective treatments: (a) “the use of structured behavioral and educational approaches, (b) training parents to implement the program at home, and (c) enrollment in the treatment program prior to age 5” (p. 25). According to Ozonoff and Cathcart (1998), several studies have shown that the feelings of stress and depression can be reduced and feelings of competence can be increased after having a home intervention. Parents of children/adolescents with ASD are a significant component of any intervention. They can help maintain the gains of the intervention, such as the reduction of stress and increase of appropriate skills of children/adolescents with ASD (Diggle & McConachie, 2009). In addition, Stahmer et al. (2010) stated that active participation and involvement of parents of students with ASD to insure effective interventions is a recommended and important component. Recently, research on family variables and how they interact with interventions has just begun (Stahmer et al., 2010).

Interactions between parents and education professionals are a significant component in the field of special education. One reason for this is the required involvement of parents in their children’s education by the Individual with Disabilities Education Improvement Act (IDEIA, 2004) (Stoner et al., 2005, Yell, 2012). The collaboration between parents and practitioners is a significant component in any intervention for students with ASD. For example, Stahmer et al.

(2010) indicated that if practitioners and parents collaborate with each other to identify target behaviors and to determine the way that the treatment can be applied they can impact the reduction of problem behaviors for children/adolescents with ASD. Also, this collaboration can increase the confidence of parents after reducing their stress. In fact, there are a few researches that have been done to investigate the interaction between parents and education professional from perspectives of parents (Stoner et al., 2005).

**Parents' attitudes, perceptions, and opinions.** According to Stahmer et al. (2010), there are many factors that may affect the effectiveness and delivery of the treatment, such as parental attitudes and age, level of education and stress and others. Positive expectations and attitudes of parents are important elements when working with children/adolescents with autism. Stahmer et al. (2010) stated that "the practitioner can, and should help a parent to have more positive expectations about what the parent can do to increase child outcome, which can increase their feelings of self-efficacy" (p. 237). Moreover, parents' opinions and satisfaction data are so important because they help in improving current services as well as convincing professionals, policy makers, and administrations about the effectiveness of early interventions. Also, evaluating early intervention programs by assessing the parents' satisfaction and perceptions has been considered as "a widely recommended method" (Kohler, 1999, p. 150). In fact, Kasari and Sigman (1997) indicated that future research should examine parents' perceptions about their children/adolescents' outcomes to improve all interventions. As can be seen from the research, parents' perceptions and opinions toward the effectiveness of a treatment are critical so it is important to study their perceptions about any interventions to be used at home to improve the lives of children and youth with ASD (Green et al., 2005).

#### 4. CONCLUSION

Children and youth with the ASD have various deficits in communication, social, academic, and behavior skills. There are many effective interventions that can meet the needs of students with autism, such as social stories, video modeling, and picture exchange communication system (PECS). Incorporating these effective interventions with computer-based applications and software holds promise for students with ASD. The literature indicated that the field of studying the use of variety technologies with children with autism is still in its initial phase (Moore & et al., 2005). Using technologies like portable electronic devices such as tablets and smartphones may also decrease a student's reliance on others and overcome the limitations of computer-based interventions. Finally, parents play a critical role in the interventions for students with ASD. Parents are a critical factor in any intervention using technologies like portable electronic devices with students with ASD (Stahmer et al., 2010). Thus, parents' attitudes, opinions, or perceptions toward using technologies with their children/adolescents are an important component toward the successful use.

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