As diagnoses of autism continue to rise exponentially, dedicated research, established fundraising arms and fascinating volumes that describe ever more amazing “miracle cures” continue to proliferate; still, autism’s mysterious cause and its complex effects on the brain elude our grasp.

Families and school districts are impoverished by their desperate attempts to mitigate the always baffling and often challenging behaviors that the condition wreaks. Even though the parents of these children have exhausted every conceivable therapy modality, often the child remains alone, locked inside his unfathomable world that appears to torment him despite every attempt to break through.

Until the advent of the iPad and related technology. For several years now, children who have no spoken language and whose mental processes are inscrutable have taken note of these colorful mobile devices and have actually taken them in hand. To the amazement of family members and caregivers, they appear to understand, almost intuitively, how to find programs that look or sound pleasing to them. They enjoy manipulating the devices on a cozy corner of a sofa, crouched under a table, or stretched out on the carpet of an unoccupied room. Clearly, these devices are small miracles in instances when nothing else works to calm, interest, or stimulate such a child. According to recent reports in books and online, using an iPad, some fortunate children have actually begun to write out their thoughts and offer us a glimpse into their mysterious world.

Knowing full well that the latest technology has taken our world by storm, informing every nuance of our lives, most of the contributors to this fine collection of research papers have watched with fascination at how these small mobile devices captivate heretofore unreachable children. Some of the devices discussed here are larger than iPads or iPhones but are still eminently mobile, so that they can move easily from classroom to home and back. Why, these researchers have asked, using the latest technology, can we not socialize, educate, and help these children become more comfortable in our world? They have explored this area thoroughly, evaluating the efficacy of assistive technology to enhance academic, behavioral, and social outcomes for children on the Autism Spectrum, exploring augmentative and alternative communication, improving emotion recognition, developing virtual reality technologies, and even providing help to those non-techies who would like to learn to create their own apps. Most of the chapters are directed at enhancing the life experiences of children on the Autistic Spectrum. However, my Realabilities program capitalizes on the fine use of various modern technologies to address bullying behavior and to raise typical children’s consciousness and acceptance of their peers with special needs.

The collection opens with Andersen, Levenson, and Blumberg’s “The Promise and Limitations of Assistive Technology Use among Children with Autism.” This piece seeks to enlarge the heretofore limited research on the true efficacy of assistive technology as a remediation tool. Does that efficacy hinge on the nature of the child’s presenting symptoms and the severity of his/her impairments? The
authors, who have worked with children with autism, write from a deep desire to alleviate some of the significant difficulties they have observed. They strive to gain a deeper understanding of children with autism and of possible intervention techniques.

Myles and Rogers address the possibility of enhancing executive function in the brain through assistive technology. Fully aware that executive function underlies the complexity of everything we do on a daily basis and greatly impacts the quality of our lives, the researchers believe that individuals with autism might have unlimited potential when assistive technology is carefully designed and selected to offer them a unique support system—all the while being supremely cost effective.

“Incorporating Mobile Technology into Evidence-Based Practices for Students with Autism” comprehensively describes multiple uses of mobile technology and their advantages. Authors Strndova, Cumming, and Draper show how students with autism can utilize these devices to learn and practice social skills through video modeling and electronic social stories. Employing case studies, they demonstrate how access to curriculum can be improved through mobile technology applications that provide students with visual schedules, electronic text, academic games, and audio text. The real beauty of these possible solutions lies in their mobility. They can move easily from a school setting to home and community.

In their fine chapter, “The Use of Computer-Based Technologies to Increase the Academic, Behavioral and Social Outcomes of Students with Autism Spectrum Disorders in Schools: Considerations for Best Approaches in Educational Practice,” researchers Sansosti, Mizenko, and Krupko present additional key points concerning the advantages of Assistive Technology. They hone in on powerful reasons that students thrive when they are trained with the help of these devices: computer-based technologies emerge as an ideal method of educating students with ASD because they provide a predictable environment, increase student concentration, and render students free from anxiety-provoking demands. These technologies allow support and learning to occur at all times of the day, whether at home or at school; they also permit self-management and self-instruction. A stunningly great feature of these devices is the fact that they are now so commonplace in our society that they can provide a less stigmatizing method for supporting and teaching students with disabilities. The authors list at least two priorities: 1) that computers be infused into a daily curriculum rather than solely for reward or recreation and 2) that current and future educators be carefully trained in the application of computer-based innovations for teaching students with ASD.

Nkabinde (“Information and Computer Technology for Individuals with Autism”) has been fascinated with the challenge of autism since growing up in South Africa with a brother who had a severe form of the condition. Her family knew nothing about this condition, and only when she arrived in America could she name the affliction. In this chapter, Nkabinde delves into types of computer technology that are suitable for individuals with autism and some of the limitations that may be encountered. She is especially sensitive to the needs of the parents of these special children and offers them ways to understand the use of computer technology with a special emphasis on the now ubiquitous iPad.

In the chapter titled “Augmentative and Alternative Communication for Learners with Autism Spectrum Disorders,” by Pirtle and West, readers will learn the differences between low tech and high tech AAC options and begin to understand the SETT framework and rationale for considering the student, the environment, and the tasks required for active participation. They will deliberate over these options before selecting suitable tools to address specific tasks and encounter systems of support that help meet the challenge of improving the independent life functioning and meaningful relationships for learners with ASD. Pirtle has two nephews with autism, both of whom use AAC options designed for learners with ASD throughout the day.
Before he worked as a psychological researcher at the Yale Child Study Center, Ben-Avie taught students with ASDs and other developmental disorders to work independently at jobs in the community. At the time, research showed which parts of the brain lit up when these students engaged in various tasks. Since that time, Ben-Avie has attempted to translate these research findings into instructional practice. In “Using Handheld Applications to Improve the Transitions of Students with Autism Spectrum Disorders,” Ben-Avie, Newton, and Reichow demonstrate how the use of high-tech devices may ease students’ transitions from school to home to community. While they are in the community, the use of iPhones is far less stigmatizing than conventional methods of visual supports. The trio acknowledges that, although professionals very much want to utilize this technology, there are barriers such as the lack of teacher follow up, the level of training needed, and assistive technology specialists who are spread too thin.

The impetus for “Improving Socialization and Emotion Recognition for Children with Autism Using a Smartphone App” was the result of a recent collaboration between the United Cerebral Palsy Center for Greater Birmingham and two academic departments at the University of Alabama (Autism Spectrum Disorders Clinic and Department of Computer Science). Here, researchers, students, and clinical professionals united to investigate benefits accruing from smartphone technologies as a context for new educational training ideas. The students’ interest in working with young children mixed with their knowledge of app development led to a survey of apps already available for children with ASD. The survey, however, identified a gap in the area of emotion recognition among young children diagnosed with ASD. This observation provided the researchers and students with a target context for deeper investigation and led to the creation of the app described as a case study in this contribution. Here, authors Lamm, Lambert, Wolfe, Gray, Barber, and Edwards offer an overview of Autism Spectrum Disorders (ASD) research and educational opportunities through mobile app technologies and survey-related literature and existing state-of-the-art apps that address various age groups and challenges for those with ASD. Finally, the authors offer a case study that demonstrates how an app can be designed and implemented for either potential clinical usage or as a research instrument. Happily, the authors believe that new software development tools are making it easier for those without a computer science background to develop apps for their own purposes and needs; thus, another objective of the contribution is to encourage those who are not computer scientists to explore app creation for their own clinical or research needs.

As an interior designer whose research interest is how the design of the real world environment could support children with ASD, Irish became intrigued by research into how a virtual world could support children with ASD. With the increasing use of computer-aided design, Irish is sure that more relationships could be explored between the real and the virtual world. In “A Viable Option? Single-User Virtual Environments to Teach Social Skills to Children with ASD,” Irish considers recent research about SVEs (Single Virtual Environments); a “viability matrix” provides a visual impression of the viability of SVEs and interesting examples of future research directions.

Tan’s chapter, “A Task Assistant for Individuals with Autism,” evolved as a result of an opportunity to help a graduate student’s sibling work more independently at his place of employment. That experience morphed into an opportunity to assist children with Autism Spectrum Disorder from a young age. This chapter posits that Web application (Webapp) offers a mobile training environment that can enhance learning and provides a consistent setting that produces immediate results. Additionally, the Webapp helps to reduce the amount of supervision necessary for a person with mid-level autism spectrum disorder to complete simple tasks, and it may be used to help children of all ages with learning or training.
Senland (“Robots and Autism Spectrum Disorder: Clinical and Educational Applications”) has become interested in conducting research with individuals with ASD as a PhD student in Applied Developmental Psychology at Fordham University. Even though robots were and are an intriguing, exciting, and promising technological approach toward treating, socializing, and educating children with ASD, their efficacy has not yet been sufficiently tested. This chapter is an effort to learn more about integrating robots into educational settings for children with ASD and to examine the efficacy of robots in educating children with ASD. Still, additional larger studies are necessary to evaluate the efficacy of this approach and to determine for whom and under what circumstances these robots are most effective. Senland also introduces NAO, a humanoid robot for children with ASD.

As a speech language pathologist, Mehl noticed that children of various ages with ASD displayed a significant interest in video games for enjoyment and leisure. The notion that children with ASD could be helped in terms of improving social competence skills for effective communication using this modality seemed a good possibility. Mehl and Steinmetz in “Video Games for Children with Autism Spectrum Disorders” include a number of up-to-date research articles (including recent presentations at conferences) to highlight how video games are inherently exciting for most children and might continue to be stimulating when used therapeutically. They discuss whether a skill learned from a video game might generalize or carry over to everyday life.

Children on the Spectrum need realistic models of expected behaviors and social skills. Christine Ogilvie of “Video Modeling for Individuals with Autism Spectrum Disorders” was a middle school teacher of students on the Spectrum. Inspired by Temple Grandin, who said that just telling someone on the Autism Spectrum to “be nice” is not as meaningful as providing concrete examples, she began videoing appropriate, pro-social behaviors to show her students in the classroom and then proceeded to translate this experience into her dissertation research. Here Ogilvie and Whitby explain the origin and research behind video modeling and offer step-by-step directions for creating video models and applications for both the general and special education classroom.

Newbutt proceeds from a deep-seated belief that communication is a fundamental right we all have. In “The Development of Virtual Reality Technologies for People on the Autism Spectrum,” the author echoes the findings of other contributors in this collection that the evidence base, while growing, still needs longer and more substantial studies that classroom-based and at-home technology (outside lab-based contexts) needs to be better established to help develop Virtual Reality Technology (VRT) for individuals with autism. Finally, he states that teachers, parents, and caregivers are all vital stakeholders in these developments.

We end this collection of fine chapters with a project that helps children with autism and other special needs from a very different vantage point. After conducting a research study at Sesame Street Workshop and follow-up interviews with parents of children with disabilities, I learned that they were not only interested in a video medium to teach their children cognitive or social-emotional skills (as many of the aforementioned technological tools do) but were yearning for a video medium to teach typical children how to be more sensitive to and socially interested in their special children. Fully aware of the minimal, neutral, or even harmful impact of previous video interventions at enhancing the behaviors and attitudes of typical children towards children with special needs, my research assistants, Senada Arucevic, Rebecca Ruchlin, Vanessa Norkus, and I created Realabilities, an animated children’s television show and graphic novel series aimed at reversing these negative outcomes. Realabilities features five characters with disabilities who harness their special strengths to save their school from bullies. While we allude to each of the character’s impairments in our show, our video-based medium focuses on the strengths
and unique abilities of these special children. Even though few video mediums have been successful at improving the attitudes and behaviors of typical children towards their peers with disabilities, Realabilities has already shown marked success at promoting sensitivity and at changing the perceptions of over 300 typical children, who were tested via pilot studies and in their elementary schools. This chapter reminds us that the potential of technological tools is vast and can be incredibly creative and instrumental in not only directly aiding individuals with disabilities but in changing the perceptions and expectancies of those who populate the special child’s environment.

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