

Chapter 1

Assistive Technologies for Children and Adolescents With Autism Spectrum Disorders

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ABSTRACT

The purpose of this chapter is to provide readers with an overview of the latest research on assistive technologies, especially as related to children and adolescents with autism spectrum disorders (ASDs). While introducing and describing the general perspective of the chapter as specifically focusing on objectives in terms of children and adolescents with ASDs, background that summarizes the content of this chapter as also consisting of significant results with regard to young and older adults as well as references to other connected conditions will be included. Issues, problems, and challenges in this regard are presented, together with possible solutions and recommendations, future research directions, and concluding remarks.

INTRODUCTION

In terms of clearly stating what this chapter describes and is about, the purpose is to provide readers with an overview of the latest research on assistive technologies, especially as related to children and adolescents with Autism Spectrum Disorders (ASDs). While introducing and describing the general perspective of the chapter as specifically focusing on objectives in terms of children and adolescents with ASDs, background that summarizes the content of this chapter as also consisting of significant results with regard to young and older adults, as well as references to other connected conditions, will be included.

“Autism remains a fascinating condition, perhaps the most prolifically researched of all child psychiatric disorders” (Wolff, 2004, p. 201). The history of autism yields many lessons, but early accounts of possible cases of autism were mostly unclear, with the greatest contributions to understanding having come from the original paper by Asperger (1944) that “wished to stress that these were not just weird

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children,” who are frequently “socially isolated and relatively egocentric” (Mira, 1992, p. 14). Persons with neurological disorders, such as ASDs, may experience significant **problems**, like often being passive with few opportunities for “positive and constructive interaction with the outside world” (Stasolla, Boccasini, Perilli, Damiani, & Albano, 2015a, p. 1). They regularly need to rely on their caregivers’ and families’ assistance, with corresponding negative outcomes on their quality of life. As also quoted by O’Brocháin and Gordijn (2018, p. 4), organizations like Autism Speaks Inc. (2021) are “dedicated to promoting **solutions**, across the spectrum and throughout the lifespan, for the needs of individuals with autism and their families through advocacy and support”.

However, individuals with such a disability also have the potential to contribute, but since they may not be able to learn through conventional means, they are entitled to ways of overcoming these **issues** through the implementation of assistive technology-based interventions. When De Pace and Stasolla (2014, p. 285) talk about Assistive Technologies (ATs) and computer access for e.g. **motor disabilities**, they refer to all technological **solutions**, which allow people with multiple disabilities and/or severe/profound cognitive disabilities “to overcome their isolation and passivity” towards moving around the environment, by promoting environmental control, social interaction, leisure engagement and **academic performance**.

Stasolla, Boccasini and Perilli (2017) provided a literature overview on assistive technology-based programs to support the adaptive behaviors by children with autism spectrum disorders, which are broadly conceived and designed to fill the gap between human/individual capacities and/or skills and environmental **requests**. Specifically, AT builds a link to enable persons with ASDs towards independence and self-determination. By using an AT setup, people with ASDs could be capable of attaining an active role, positive participation, favorable occupation, and/or to achieve functional daily activities. Furthermore, they could be enabled towards improved social image, desirability and an enhanced status, with a reduction in families’ and caregivers’ burdens. Concisely, persons with ASDs would positively cope with their environment. At least two functional purposes may be pursued through an AT-based intervention, namely (a) **assessment**, and (b) recovery. In the case of autism, El Kaliouby and Robinson (2007, p. 3) indicated that assistive technologies could “be divided into two broad categories”, i.e. therapeutic and prosthetic, with therapeutic technologies aimed at helping individuals to deal with impairments or particular deficiencies through teaching and intervention programs.

The **objectives** of studies, like the one by Fteiha (2017), often include investigating the effectiveness of assistive technologies in enhancing the language skills and improving the **communication skills** of children and adolescents with autism. Moreover, **physical activities** may also be fostered. A satisfactory independent role for persons with ASDs may be reached with purposeful behavior. Consequently, **challenging behaviors** may be significantly reduced. **Request and choice behaviors**, as well as opportunities for these, may be enhanced. Finally, **Virtual Reality** (VR) and/or **augmented reality** setups may be viewed as valid ecological environments, ensuring methodological control, and behavioral tracking for both **assessment** and rehabilitation purposes.

Target Audience

Similar to that of the book as a whole, scholars, researchers, families of individuals with ASDs, teachers, occupational, speech, and physiotherapists, practitioners, psychologists, educators, students, caregivers, and neurologists as interdisciplinary target audience may benefit from what is presented in this chapter.

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