

INTRODUCTION

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Assistive Technologies (AT) show great promise in supporting people with diverse abilities and expertise, including people with Autism Spectrum Disorder (ASD) and Intellectual Disability (ID). Intuitive, inclusive design and proper implementation of AT can foster confidence and self-sufficiency to truly empower and socially include individuals across the ASD and ID spectra.

A project that seeks to address these concerns is the **a-STEP**¹ COST action (19104), which aims to “build an interdisciplinary, intersectoral ... network which will enhance social inclusion and empowerment of individuals with Autism Spectrum Disorder (ASD) and/or Intellectual Disability (ID)” (Leader, 2020). Within a-STEP, Working Group 2 (WG2) called “Collaboration Evaluation”, seeks to “identify and evaluate existing Assistive Technologies (AT) ... for enhancing social inclusion of individuals with Autism Spectrum Disorder and/or Intellectual Disability” (Leader, 2020). The work of COST a-STEP WG2 is highly relevant to the present manuscript, and the leaders of WG2 are also serve as the editors of the book: Carla Sousa (leader of WG2), and Alan H. Tkaczyk (co-leader of WG2).

The second half of this book is entitled “**Part II: Assistive Technologies, Empowerment, and Inclusion**” The goal is to delve into a broad range of assistive technologies at the nexus of empowerment and inclusion.

1 <https://www.a-step-action.eu/>



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In the first chapter on “The Role of Social Robots as Assistive Technologies in the Treatment of Autism Spectrum Disorder and Other Neurodevelopmental Disorders: Possible Interactive Play Scenarios”, **Paulina Tsvetkova** examines how social robots can support the treatment of children and adolescents with ASD and other neurodevelopmental disorders. Specifically, the potential of Socially-Assistive Robots (SARs) is explored in therapeutic and interactive play sessions. Finally, the chapter presents some approaches on how SARs can make therapy more friendly and effective.

In the second chapter, **May Agius** examines “Augmentative and Alternative Communication Assessment: Considerations for Autistic Children Who Are Beginning Communicators”. The chapter explains what augmentative and alternative communication (AAC) is and why it is important for autistic children who are just starting to communicate. The chapter also provides some suggestions on how to assess AAC and improve AAC protocols for autistic children.

The third chapter investigates how Virtual Reality (VR) technologies can help autistic adults find and keep jobs. It is called “Virtual Reality: Unlocking Employment Opportunities for Autistic Adults?” and is written by **Sally Whelan** and **Geraldine Leader**. The chapter covers topics such as: VR systems for vocational training, research on their use and effectiveness, good design practices, and future research directions.

“Gaming, Assistive Technologies, and Neurodiversity” is the fourth chapter in the book and is written by **Carla Sousa**. The main goal of this chapter is to analyse Assistive Technologies (AT) that can make gaming more accessible and enjoyable for people who are neurodivergent, especially

those with Autism Spectrum Disorder (ASD). The chapter aims to start a discussion on how gaming and AT can empower autistic people, promote social inclusion, and support self-expression.

The fifth chapter is “Technological Innovations for Assessing Motor Impairments in Autism Spectrum Disorder” and is written by **Aditi Gandotra** and **Renata Cserjesi**. This chapter explains how technology can help in the early detection of ASD by using wearable devices, video analysis, and sophisticated algorithms. These technologies can provide objective measurements, support early intervention, and empower people with ASD. These findings show the potential to change the way ASD is diagnosed and treated, and to improve the quality of life for affected individuals.

Isabel Trancoso and **Soraia M. Alarcão** have written the sixth chapter on “Assistive Technologies in Psychomotricity Sessions with Children Diagnosed with Autism Spectrum Disorder”. This chapter describes how Psychomotricity implemented via Assistive Technologies (AT) can help children with ASD. A case study is presented: a seven-year-old girl had trouble making friends and controlling her emotions including aggressiveness. After implementing Psychomotricity, the girl’s communication skills were gradually enhanced and she was able to improve her interactions with peers and family, her academic performance, and her ability to join group activities.

Saime Arslan has written the seventh chapter on “A Study on the Use of Virtual Reality in Teaching Independent Living Skills to Individuals with Autism Spectrum Disorder”. VR can make learning easier for people with ASD because of its features such as a high level of interaction and immersion, controlling distracting stimuli from the environment, and allowing students to learn while having fun. In the study, people with ASD are taught skills such as driving, fire and hurricane safety, and job interview skills through VR.

In the eighth chapter, **Cátia Casimiro** has written about “Enhancing Participatory Research with Neurodiverse Individuals: The Potential Role of Assistive Technologies in Facilitating Informed Consent”. The chapter discusses how assistive technologies (AT) can help in recruiting

neurodiverse individuals to study their self-determination and accessibility. AT can improve the communication between the researchers, the consultants, and the participants, and also help in facilitating informed consent.

“Implementing Intervention Studies with Autistic People and Digital Technologies in Natural Settings: a Guide to Best Practice” is the ninth chapter and is written by **Patricia Pérez-Fuster** and **Gerardo Herrera**. The chapter presents a ten-step guide to implement intervention studies that use digital technologies to improve skills in autistic persons. The guide covers important aspects such as choosing the right technology and applying the best research design.

The tenth and final chapter by **Gerda Sula** is entitled “Building an Inclusive Future: Empowering Through Assistive Technologies”. This chapter examines how assistive technologies can promote empowerment and inclusion for people with disabilities. The chapter highlights key best practices, such as user-centered design, accessibility standards, continuous improvement, training and support, and fostering collaborations among stakeholders.

The aforementioned chapters can be useful to a broad range of stakeholders in the AT, ASD, and ID areas. In particular, these materials could be used collaboratively by subject matter experts as well as individuals lacking formal training. The long-term goal is to empower individuals with disabilities and give them the opportunity to contribute meaningfully to their communities.

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