

# Chapter 1

## iPods and iPads as AAC Devices for Children with Developmental Disorders

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### ABSTRACT

*The Apple iPod Touch™ and iPad™ are increasingly used as augmentative and alternative communication (AAC) devices. This chapter discusses the use of iPods™/iPads™ loaded with software applications that enable speech output and thereby transform them into speech-generating devices (SGD). While a popular mode of communication for children with developmental disorders (DD) who have little or no spoken language, assessment of the effectiveness of such new technology to enhance communicative functioning is necessary. Research on the use of iPods™/iPads™ was evaluated to assess whether they are (a) effective as AAC devices, (b) at least as effective as other AAC interventions, and (c) effective at the individual level of implementation. Findings suggested that the use of iPods™/iPads™ as AAC devices is promising, also in comparison to other AAC systems. Children typically preferred using iPods™/iPads™. Selection of an AAC system based on the child's preference coupled with appropriate instructional strategies may lead to the enhancement of communicative functioning for children with DD.*

### INTRODUCTION

A defining feature of developmental disorders (DD) is a delay and/or impairment in the development of speech, language, and communication skills (Centers for Disease Control and Prevention, 2011; Odom, Horner, Snell, & Blacher, 2007). Since communication can involve both speech and language, as well as other components, this broader term will be used to describe speech, language, and communication impairments. Such communication impairments are heterogeneous across children with different DD. For example, at least 25% of individuals with autism spectrum disorder (ASD) do not develop any spoken language (Osterling, Dawson, & McPartland, 2001), while others exhibit only subtle difficulties in the use of spoken language. For children who do not develop speech or have failed to develop sufficient

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speech to meet their everyday communication needs, non-oral communication systems (e.g., picture boards and manual signs) might be utilized. These modes of communication are often referred to as types of augmentative and alternative communication (AAC; Beukelman & Mirenda, 2013).

This chapter will provide a brief overview of AAC, narrowing to the use of speech-generating devices (SGD). The chapter will then discuss the introduction of general purpose hardware, such as the iPod Touch™ and iPad™ produced by Apple Corporation (<http://www.apple.com/ipod/>; <http://www.apple.com/ipad/>) loaded with software applications, such as Proloquo2Go™ produced by Assistiveware (<http://www.assistiveware.com/product/Proloquo2Go/>) to serve as SGD. The use of iPods™/iPads™ as SGD is seemingly leading to a paradigm shift in AAC interventions towards the use of low cost, easy to obtain and transport, readily available, and socially acceptable devices (Shane et al., 2012).

Despite these potential benefits of general purpose hardware devices, there remain a number of significant challenges in the adoption of these new technologies (McNaughton & Light, 2013). The mere provision of the new technology is not enough to enhance the communication skills of children with DD. The focus must remain on appropriate assessment and intervention to support a wide variety of communicative functions. Since there is a risk of adopting new technologies without evaluating the evidence of their effectiveness, three criteria of evidence (Detrich, 2013) will be used to assess the research base on implementing iPods™/iPads™ as AAC devices for children with DD. These criteria include evaluating whether the new technologies (iPods™/iPads™) are (a) effective as AAC devices, (b) at least as effective when compared to other AAC interventions (e.g., picture exchange systems), and (c) effective at the individual level of implementation.

## **BACKGROUND**

### **Augmentative and Alternative Communication**

AAC is an area of research and clinical practice that focuses on supplementing (augmentative) or replacing (alternative) natural speech and/or handwriting. It is typically considered for individuals who have failed to acquire, or who have temporarily impaired speech or handwriting such that their everyday communication needs are not met (Beukelman & Mirenda, 2013). AAC systems have been classified as either unaided or aided. Unaided AAC does not rely on external equipment, instead utilizing the individual's own body as the mode of communication. It generally comprises the use of body movements or sequences of coordinated body movements to represent an object, idea, action, or relationship. Examples include eye gaze, pointing, physically leading a communication partner's hand to an object, conventional body language (e.g., head nodding), gestures, finger spelling, and manual signing (MS). MS comprises the use of natural sign language (e.g., American Sign Language) to the production of manual signs as a code for a spoken language (Blischak, Lloyd, & Fuller, 1997).

Aided AAC involves the use of external equipment to communicate messages. This includes the use of graphics (traditional orthography/printed words, photographs, line drawings, or other pictographic symbols) ranging from low-tech nonelectronic picture communication boards and picture exchange (PE) systems to high-tech portable electronic devices with speech output. The use of portable electronic SGD, otherwise referred to as voice-output communication aids (VOCA; Schlosser, 2003a; Schlosser & Blischak, 2001), are becoming increasingly widespread. The screen of the device is displayed with graphic symbols that represent a word or phrase. Touching or pressing the symbols activates the word or phrase, which results in speech output.

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