Chapter 13
Attitudes toward Computer Synthesized Speech

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ABSTRACT
This chapter reviews an emerging area of research that focuses on the attitudes and social perceptions that people have toward users of computer synthesized speech (CSS). General attitudes toward people with speech impairments and AAC users are briefly discussed. Recent research on people’s attitudes toward speaking computers is reviewed, with the emphasis on the similarity in the way that people treat computers and humans. The research on attitudes toward CSS and whether persuasive appeals conveyed through CSS indicates that, in general, people view CSS less favorably than natural human speech. However, this tendency is reversed when people know that the user is speech impaired. It also appears that people’s attitudes are modified by the situation which CSS is used for. Overall, the findings present an intriguing perspective on attitudes toward people with speech impairments who use CSS and will serve to stimulate further research in this area.

INTRODUCTION
Over the years, attitudes in society regarding individuals possessing severe communication impairments have shifted from financially reimbursing people for loss of function to attempts to re-establish normal speech to attempts at using communication alternatives (Beukelman, 1991). In recent years, communication alternatives have benefited greatly from technological advancements in the area of alternative and augmentative communication (AAC). These advancements have provided encouraging news for those suffering from hearing loss, stuttering, speech impairments, language disorders and autistic spectrum disorders. A variety of different techniques have been developed to assist adults and children, with unaided communication techniques (consisting of manual signs and gestures) and aided communication techniques (consisting of external devices) both proving useful (Mirenda, 2003). The
goal of using AAC techniques is to develop and enhance communicative competence (Beukelman, 1991; Light, 1996). As Light (1996) puts it, “Communication is the essence of human life” (p. 61). We communicate to express needs and wants, to establish and maintain our social relationships with friends and family, to share information with each other and to fulfill the normative conventions of social interaction (Light, 1996). The inability to communicate can be potentially devastating to an individual. In terms of AAC being able to assist individuals with communication disorders, as Beukelman (1991) puts it, “For someone who is unable to speak to ‘talk’ and someone who is unable to write to place words on paper or computer screen… it is magical” (p. 2).

In the present chapter, our focus is on speech impaired individuals and the use of AAC devices designed to provide them with spoken voice output. In the research literature, these devices are called voice output communication aids (VOCAs) or speech generating devices (SGDs). VOCAs are portable electronic devices that produce synthetic or digitized speech output (Mirenda, 2003, p. 210). In the research reviewed below, we focus specifically on VOCAs that produce computer synthesized speech (CSS). CSS is often bundled together in text-to-speech systems, which are systems that take typed text and convert it into synthesized speech output. The famed astrophysicist Stephen Hawking, who suffers from amyotrophic lateral sclerosis (ALS), has been using a text-to-speech system for years to communicate with others and deliver his lectures. In fact, at one point Dr. Hawking became so attached to his American accented synthetic voice that he refused to switch to a newer system with a British accent.

Our concern is with how other people view a speech impaired individual who is using CSS as a speaking aid. Much of the cognitive psychological research on CSS has focused on intelligibility of CSS compared to natural speech (e.g., Fucci, Reynolds, Bettagere, & Gonzales, 1995; Kouli & Allen, 1993; Logan, Greene, & Pisoni, 1989; Mirenda & Beukelman, 1987, 1990), the attentional requirements of processing CSS (Luce, Feustel, & Pisoni, 1983), and the degree to which comprehension of CSS is affected by its impoverished quality (Duffy & Pisoni, 1992; Ralston, Pisoni & Mullennix, 1995). In general, the increased cognitive processing demands of perceiving and comprehending CSS, in comparison to natural human speech, are well documented. However, one area of research on the use of CSS that has been neglected is how social psychological factors affect people’s reactions to speech coming from a CSS user. When considering the effect that a speaker has on a listener, we know that there is a close relationship between language, perceptions held about the speaker and social influence (Stern, 2008). Research on a speaker’s influence on the listener has typically focused on issues of credibility, trustworthiness and attractiveness, as well as issues related to the content of the message (Stern, 2008). There are a whole host of issues related to how the listener views a speech impaired CSS user that may be just as important as determining the intelligibility and comprehensibility of CSS. Does the listener believe that the CSS user is competent and trustworthy? Does the listener believe that the message from the CSS user is accurate? Does the listener have any negative attitudes toward the CSS user? If the CSS user is attempting to persuade or influence the listener, are they effective or ineffective? These issues are very important in terms of practical applications for a speech impaired user of CSS. In this chapter, we attempt to review some research that addresses some of these issues.

ATTITUDES TOWARD SPEECH DISABILITY

As with physical disabilities, there is evidence that people with speech disabilities are stigmatized (Weitzel, 2000). Interestingly, there is evidence that people with speech disabilities are less ac-