CHAPTER 5

HUMAN FACTORS IN THE EVALUATION AND USE OF ASSISTIVE TECHNOLOGY

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INTRODUCTION

Definition

Human beings rely on a vast array of devices to assist in the performance of a multitude of daily activities. The study of factors that influence human performance is recognized as human factors science, and its practical application is known by a few names such as human factors engineering, ergonomics, and engineering psychology. Human factors engineering appears to be preferred terminology for North America and is the terminology that is used in this chapter.

Importance

Consider the following scenario: An average American consumer sits down in his favorite easy chair, points his remote at the television, and then suddenly breaks out into a barrage of cursing. He is cursing because the “channel remove” button on his remote is in proximity to the button for
changing channels and he accidentally deleted a number of channels while channel surfing.

For the above consumer, the poorly designed remote, albeit an inconvenience for the full enjoyment of television viewing, is of little consequence for the performance of common everyday activities (e.g., communication, eating, dressing, movement) essential for living life to its fullest. Although product designers and fabricators, including television manufacturers, need to consider factors that optimize the use of their product, the essential nature of augmentative and alternative communication (AAC) and assistive technology (AT) devices requires the consideration of all possible factors influencing their daily use and the appropriate incorporation of these factors into their design. This chapter details environmental, cultural, psychological, and sensory/motor factors that are critical to consider when designing, modifying, or selecting AAC devices and/or AT.

ENVIRONMENTAL/SOCIAL/CULTURAL FACTORS

Over the past decade, emphasis has shifted from the disability as a limiting factor to social, environmental, and cultural issues that inhibit an individual from fully participating in all aspects of society (Brooks, 1998; Pope & Brandt, 1997). Four major contexts including setting, societal values and expectations, culture, and physical composition of the environment are critical for the practitioner to consider to maximize human factors engineering. These contexts form a milieu within which Cook and Hussey’s HAAT model operates (Cook & Polgar, 2008). In this model, AT functions as an interface that enables a human (H) to perform an activity (A). The contexts, which are described below, can either facilitate or inhibit the performance of the activity.

Setting

An important context to consider is the setting(s) in which the AAC/AT device will be used. Settings encompass environments in and outside of the home. Home settings include the following: (1) individual homes or apartments, (2) group homes, and (3) institutional facilities. Settings outside the home include: (1) employment, (2) school, and (3) community (i.e., those places where recreational, leisure, shopping, and similar activities take place).

It is important to consider physical aspects of each setting that may inhibit or facilitate task performance. Because a group home serves many