CHAPTER 13

THE USE OF COMPUTERS AND COMPUTERIZED TECHNOLOGY IN VISUAL, PERCEPTUAL, AND COGNITIVE RETRAINING

Computers

The application of computer technology to health care has increased rapidly in recent years. Its use in rehabilitation has become established in the United States, Canada, Great Britain, Australia, and other developed countries.[1] Probably the most recent use of computers in health care has been in direct client treatment. Such use can range from prevocational applications, to environmental control, to visual, perceptual, or cognitive retraining.[2-5] Computer programs have been designed and used to assess reaction time, visual scanning, attention, speed of information processing, memory, and problem solving.[4,6-9] The concept of using the computer as an adaptive or prosthetic device has also gained popularity.[10-12] As computers become more portable, and powerful, their use with people with disabilities continues to expand.[13] It is only natural that occupational therapists have shown an increased interest in computers and technology as a whole.[14]

Computer advocates believe computers to be the ultimate in flexibility and readily modifiable.[15] In addition, it is believed computer use saves therapists time, provides an objective measure of performance, and provides immediate feedback to the client.[16] Computer programs can control stimulus exposure time and level of difficulty, which can be systematically altered to meet the client's individual needs.[16] Small and affordable computers and general availability of hard or fixed discs have expanded the potential for computer use in visual, perceptual, or cognitive retraining.[15] In addition to these advances in hardware, new software is available that can modify keyboard use and that is specifically designed for the restoration of cognitive deficits.[2,15,17,18]

Despite its apparent advantages and increased use, the effectiveness of computer use in visual, perceptual, and cognitive retraining remains controversial. Microcomputer-based assessment and treatment of visual processing has been examined in a number of empirical studies.[1,19,20] Robertson et al report improvement of visual scanning with verbal cuing using computer mediated tasks.[19] These gains also generalized to a degree to reading and dialing a telephone. These same authors also report improvement in other visuospatial skills after computer training.

Computer retraining has also been effective with the restoration of visual neglect.[8,19] Some authors caution, however, that although there have been indications that computers can assist in the