



AOTA Evidence Briefs

Stroke

**A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

S #20

Training in cognitive and perceptual processing may enhance perceptual abilities in stroke clients with left hemiplegia

Young, G. C., Collins, D., & Hren, M. (1983). Effect of pairing scanning training with block design training in the remediation of perceptual problems in left hemiplegics. *Journal of Clinical Neuropsychology*, 5, 201–212.

Level IIC2b

Nonrandomized comparison of two or more groups or treatments in a quasi-experiment without randomization to group, condition, or sequence; less than 20 participants per condition or group; moderate internal validity; moderate external validity

Why research this topic?

A study in the 1970s demonstrated that, after training on a visual-scanning task and a cancellation task, stroke patients with perceptual problems improved their scanning behavior more than stroke patients who received routine occupational therapy procedures. (Visual scanning means following a target with the eyes. Cancellation involves drawing a line through a particular letter, number, word, or shape scattered among many other letters, numbers, words, or shapes in several lines.) Such patients also improved after training on block-design tasks. (Block design means constructing shapes from blocks to match two-dimensional patterns.) Further, the improvements generalized to attention span, reading, body awareness, some activities of daily living (ADL), some visuomotor tasks, and eating behavior. But the nature of the occupational therapy procedures followed in the study was not clear. Neither was the relationship between the underlying skills called for in the training and the behaviors that demonstrated transfer.

What did the researchers do?

Young and colleagues (1983), of Riverdale Hospital (Toronto), examined the effects of pairing cancellation and visual-scanning training with block-design training on perceptual performance. There were 27 participants (gender not reported) in the study, and their average age was 64.2 years. They were included if they had experienced a stroke on the right side of the brain, were between 45 and 80 years old, and had significant left neglect or visual-scanning deficits. Left neglect is usually called unilateral neglect, the major defining characteristic of which is “consistent inattention to stimuli on the affected side”— in this case, the left one (Anderson, Anderson, & Glanze, 1998, p. 1676).

The participants were assigned to one of three groups, matched for age, education, time since onset of stroke, and degree of deficit. An occupational therapist delivered training to each group for 1 hour a day for 20 successive days. Group 1 was trained for the whole hour in ADL and perceptual tasks. Group 2 received 20 minutes of training in routine occupational therapy (as in Group 1), 20 minutes of training in cancellation, and 20 minutes of training in visual scanning. Group 3 received 20 minutes of training in cancellation, 20 minutes of training in visual scanning, and 20 minutes of training in block design.

The researchers were interested in the following outcome areas: *cognitive performance* (as measured by the Digit Symbol, Picture Completion, Block Design, Picture Arrangement, and Object Assembly subtests of the Wechsler Adult Intelligence Scale) and *perceptual processing* (as measured by a letter-cancellation task, the Reading subtest of the Wide Range Achievement Test, ability to copy an address, and ability to count faces).

What did the researchers find?

Groups 2 and 3 improved **significantly** (see *Glossary*) more on measures of visual scanning, reading, and writing than Group 1 did. Moreover, Group 3 improved significantly more on the same measures than Group 2.

What do the findings mean?

For therapists and other providers, the findings suggest the use of training in cancellation, visual scanning, and block design to enhance perceptual abilities in stroke clients with left neglect.

What are the study's limitations?

First, the therapists may have known the hypothesis and unintentionally influenced the results. Second, the process used to assign the participants to groups may have influenced the results; that is, the researchers did not randomly assign them.

Reference

Anderson, K. N., Anderson, L. E., & Glanze, W. D. (Eds.). (1998). *Mosby's medical, nursing, and allied health dictionary* (5th ed.). St. Louis: Mosby.

Glossary

significance (or significant)—A statistical term, this refers to the probability that the results obtained in the study are not due to chance, but to some other factor (such as the treatment of interest). A significant result is one that is likely to be generalizable to populations outside the study.

Significance should not be confused with clinical effect. A study can be statistically significant without having a very large clinical effect on the sample. For example, a study that examines the effect of a treatment on a client's ability to walk, may report that the participants in the treatment group were able to walk significantly longer distances than the control. However, if you read the study you may find that the treatment group was able to walk , on average, six feet, while the control group was able to walk, on average, five feet. While the outcome may be statistically significant, a clinician may not feel that a one foot increase will make his or her client functional.

■ Terminology used in this document is based on two systems of classification current at the time the evidence-based literature reviews were completed: *Uniform Terminology for Occupational Therapy Practice—Third Edition* (AOTA, 1994) and *International Classification of Functioning, Disability and Health (ICIDH-2)* (World Health Organization [WHO], 1999). More recently, the *Uniform Terminology* document was replaced by *Occupational Therapy Practice Framework: Domain and Process* (AOTA, 2002), and modifications to *ICIDH-2* were finalized in the *International Classification of Functioning, Disability and Health* (WHO, 2001).

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For more information about the Evidence-Based Literature Review Project, contact the Practice Department at the American Occupational Therapy Association, 301-652-6611, x 2040.



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