

Temporal Processing Deficits of Language-Learning Impaired Children Ameliorated by Training

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Science, Vol. 271, 5 January 1996

Children with language-based learning impairments (LLIs) have major deficits in their recognition of some rapidly successive phonetic elements and nonspeech sound stimuli. In the current study, LLI children were engaged in adaptive training exercises mounted as computer "games" designed to drive improvements in their "temporal processing" skills. With 8 to 16 hours of training during a 20-day period, LLI children improved markedly in their abilities to recognize brief and fast sequences of nonspeech and speech stimuli.

Experiments conducted in human and monkey neurological models of perceptual learning have demonstrated that the capacity for segmentation of successive events in sensory input streams can be sharpened, apparently throughout life, by practice. Electrophysiological studies of learning-induced plasticity conducted in the neocortices of monkeys have provided a growing body of evidence about the neural processes that underlie practice-based improvements in both temporal segmentation and spectral (spatial) discrimination performances.

These studies have shown that the ability of an adult animal to make fine distinctions about the temporal or spectral features of complex inputs can be sharply improved, or degraded, by a period of intensive behavioral training.