

Grammar skills best learned when young

Increasingly, scientists are recognizing that the human brain develops in stages. In their first 15 years, children go through many "critical periods" during which certain nerve cells, if exposed to the right stimuli, develop or lose connections that affect how the brain functions, says Helen J. Neville, a cognitive neuroscientist at the Salk Institute in La Jolla, Calif.

She and her colleagues have studied electrical activity in the brains of people born deaf and people with normal hearing who were either bilingual immigrants or monolingual U.S. natives. Wearing a special monitor over their heads, study participants were asked to judge whether English sentences that sometimes contained the wrong words or incorrect grammatical structure made sense.

Neville's group has determined that everyone can learn to use nouns and verbs correctly throughout childhood. But the critical period for learning grammar — the correct use of articles, conjunctions, and prepositions — seems to be much shorter, says Neville. If exposed to English during this critical period, the left brain develops a separate system for processing grammatical information, the researchers concluded. They saw this electrical activity in the brains of monolingual participants and people who immigrated before age 3.

The brains of the deaf, who usually do not learn grammar until they begin reading in elementary school, and those of people who immigrated at older ages do not show activity in this part of the brain in response to grammatical information in English, says Neville.

"If we leave language learning too late, then these systems will not develop normally," she concludes. She suggests that exposure to a second language needs to occur before age 11 if a

person is to become truly fluent. Also, for deaf babies, learning American Sign Language early will facilitate the learning of English later, she adds.

Blame Elvis for Japan's competitiveness

Although many experts have focused on the past 15 years as the period of Japan's rise in technological prowess, one archaeologist has found earlier roots by digging deeper into the 20th century. Michael Brian Schiffer of the University of Arizona in Tucson has concluded that Japanese consumer electronics products — beginning with portable radios — actually made their first big inroads into U.S. markets during the late 1950s. Their success stems, in part, from the rock-and-roll revolution, not from a superior ability to commercialize technological breakthroughs or to recognize the potential of new products, Schiffer says.

Schiffer came to this conclusion by studying objects from that period, much the same way his colleagues examine artifacts from ancient times, he says. He analyzed industry newsletters, technical journal articles, and service bulletins. He also examined the insides of 200 radios and read material about the role of radio in U.S. culture.

By 1955, a U.S. company had tried and failed to make money with portable transistor radios. Japanese companies marketed shirt-pocket radios three years later. "In that short space [of time], the U.S. underwent a musical revolution," says Schiffer. So Japanese companies sold millions of these tinny-sounding sets, many of which went to teenagers tuning into new rock-only radio stations. "Quite simply, the Japanese had lucked out," he concludes.

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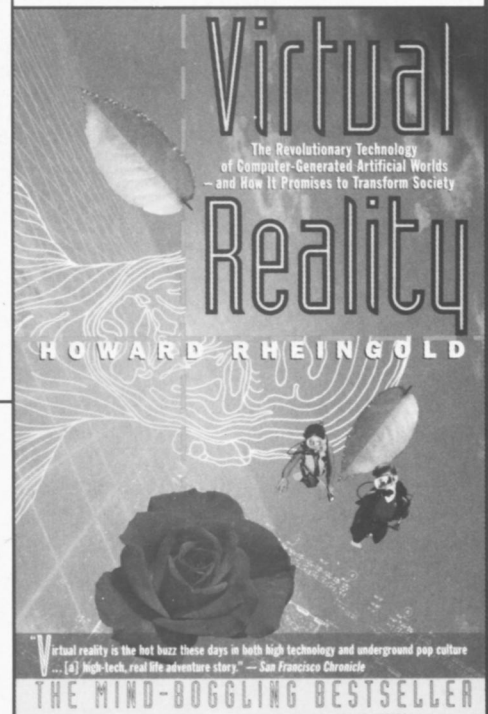
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