

From: BRI, CEREBRAL DOMINANCE, Conference Report #34
University of California, Los Angeles,
February, 1974

LATERALIZATION IN THE CASE OF GENIE

Stephen D. Krashen
Susan Curtiss
Victoria Fromkin
David Rigler
Marilyn Rigler

The case of Genie, a 13-year-old girl who was diagnosed as suffering from malnutrition and profound developmental retardation due to extreme environmental deprivation, was presented. For at least the preceding ten years Genie had been kept in a small closed room, with minimal physical care and little opportunity to witness or engage in social discourse.

Since her hospitalization she has learned to walk, run, and jump; whereas previously she had been unable to stand erect and did not know how to chew even semi-solid foods. Her language ability has progressed from simple words to two-word sentences and four-word morphemes. Her understanding of concepts and cognitive relations has shown remarkable advances. On the basis of this progress, it was hypothesized that Genie is a normal child suffering from severe deprivation, and was not retarded at birth as her father claimed.

The purpose of administering dichotic listening tests to Genie was to investigate the developmental course and nature of language lateralization. For normal children, Krashen and Harshman have argued that the development of lateralization is complete by five years of age and goes hand-in-hand with language acquisition. If lateralization and language acquisition are linked, this hypothesis would predict that Genie would show a greater right-ear advantage in verbal dichotic listening tests as she progressed with language.

Although Genie is right-handed (which usually implies left-hemisphere dominance for speech), she showed extreme right dominance for speech in the verbal dichotic listening test. Her right ear performed at chance level, but scored 100% in monaural testing. This performance is found only in split-brain and hemispherectomized subjects. Genie performed normally in response to environmental stimuli (theoretically right hemisphere processed), showing a normal left-ear advantage. She is quite proficient in what are considered right-hemisphere functions. Her performance on the Street test, administered by Dr. J. Bogen, is evidence of this. She scored seven and nine, out of twelve, on two occasions, an unusual performance in view of the fact that the mean for adults is about seven and the test is fairly culture-bound.

These findings appear to be pertinent to Kimura's hypothesis that, during dichotic listening, the contralateral pathways suppress the ipsilateral. The left primary auditory area therefore receives only stimuli presented to the right ear, and vice versa. Since the left primary auditory area is "closer" to the language areas in the left hemisphere, stimuli to the right ear are perceived better. In the split-brain and hemispherectomized subjects, therefore, there is no input to the language area from the right hemisphere. The authors proposed the tentative hypothesis that Genie had begun to develop as a "normal" right-handed, left-dominant speaker. The confinement and resulting lack of linguistic stimulation prevented the language areas from developing further. In learning language now, she is utilizing her more developed right hemisphere. The undeveloped language areas of the left hemisphere prevent the flow of language messages from the left to the right hemispheres.