Age and Input: Which is More Important in Language Learning?

The acquisition of language is affected by many factors, a couple of which are the age of the learner and the consistency of the input received. Based on previous research, one would guess that language is learned best at a younger age and when the learner receives appropriate input on which to model his production. But what happens when one of these conditions and not the other is met? This paper will look at two case studies that differ in regard to these variables. One will examine the case of a child not exposed to language until she was well past the so-called Critical Period; the other will focus on a child whose only language input was highly inconsistent and unreliable. This double dissociation will allow the effects of these two variables to be contrasted, and one will be able to deduce which has a more profound impact on language acquisition.

Many linguists and psychologists have studied the Critical Period of language acquisition, in learning both a first language and any subsequent ones. As would be expected, it is hard to reach a consensus for the age at which this period ends. Lenneberg believes that "language acquisition is precluded at puberty when the lateralization of cerebral function is complete" (Curtiss 542). Krashen, meanwhile, states that the development of lateralization is complete well before puberty, so the critical period ends much sooner (Curtiss 542-3). Francis' (1999) study finds a disparity between those who acquired ASL between ages 3 and 7 and those who first learned it between ages 8 and 10 (431). His research supports the belief that "age 6 or 7 represents a maturational milestone after which access to UG [Universal Grammar] begins to diminish" (Francis 441).

The case of Genie, an isolated child who was not exposed to language until she was almost 14 years old (in 1970), provides much evidence supporting the Critical Period hypothesis, though she cannot confirm the end of this time span, being beyond it by anyone's estimate. Before she was sent to the hospital for rehabilitation, her only auditory input consisted of her father and older brother barking at her like dogs (Curtiss 529). Her father was intolerant of noise and punished her if she made any sound, not even keeping a television or radio in the house (Curtiss 529). It seemed that what she learned during isolation was to prevent sound production rather than produce sounds (Curtiss 532). Additionally, she was only fed infant foods, so she had little control over her mouth and jaw muscles (Curtiss 530). It took five months of hospitalization before she uttered her first words (Curtiss 534).

During observation and research, many have noticed a definite difference between Genie's acquisition of vocabulary (semantic information) and grammar (syntactic information). Genie could learn new words rapidly and add them to her long-term memory for later retrieval (Curtiss 540). Her first words consisted of names for colors and the numbers 1 through 5: much more complex concepts than those normally spoken immediately by first-language learners (Curtiss 535). She did not overgeneralize abstract ideas but extended them when appropriate (Curtiss 540). When she moved into the telegraphic stage, she already had a vocabulary of 200 words; normal first-language learners have only 50 available words at this point (Curtiss 535). Furthermore, she remained in this stage for four years, lengthening most of her sentences by adding additional strings of content words rather than syntactic content (Jones 264, 267).

The rapid acquisition of vocabulary contrasted sharply with a slow gaining of grammar. In fact, Jones (1995) states that "the principle scientific conclusion drawn from the case is that Genie could not learn English morphology and syntax" (261). He quotes opinions on both sides

of this issue, many of which come from Curtiss, the principal researcher of Genie's linguistic habits. On one hand, Curtiss states, "Genie's utterances…follow strict word order…There are exceptions to S-V-O order, but as with data on normal children…such order reversals are rare" (Jones 275). On the other, in a later paper she asserts, "Soon after normal children begin using structures…deleted elements decrease in number, and more and more of the basic constituents of the sentence appear on the surface. Not so with Genie. Throughout the period of observation, Genie has continued to delete subjects, verbs, objects, whether redundant or recoverable" (Jones 276). By all accounts, Genie never came close to mastering the grammar of spoken English.

Still, Jones believes that Genie was capable of understanding more than she produced, as well as producing longer and more complex strings than she used (263, 266). Indeed, Curtiss believed that she could never discover Genie's true potential: "Most of Genie's rules are optional; sometimes they apply, sometimes they do not. This variability in rule application, coupled with the preponderance of reduction and deletion, produces a surface syntax that often masks the underlying grammar" (Jones 276). In any case, her total progress and potential for linguistic development remains unknown. Genie has had no contact with researchers since 1978, when her mother placed her in a group home (Jones 278).

Children born deaf face an isolation similar to abused or "feral" children. Less than 10% of the deaf community is made up of native signers, that is, children of deaf parents who were exposed to sign language (in this case ASL) from birth (Singleton 376). Most deaf children are born to hearing parents who encourage their children to speak, which is nearly impossible. Because of this, many deaf children are not exposed to ASL until they enter school, at which point they are nearing the (commonly-accepted) end of the Critical Period, and they will probably never attain a "native-like language ability" (Francis 431).

Conversely, some deaf children are exposed to sign language from birth, but often this happens in less than ideal circumstances. Many hearing parents learn some sign language to teach to their deaf children, but in this case they are learning along with the child, providing a very small amount of input. Similarly, some deaf parents of deaf children are not native signers themselves and thus do not have high proficiency in the language. Such is the case of Simon. His parents received their first exposure to ASL as teenagers (ages 15 and 16) and, despite having used the language for 20 years, have never mastered the morphology (Singleton 377). The inconsistent input they have provided to Simon was his only exposure to ASL until he entered school, and even then he was taught in a modified sign system based on English (Singleton 381-2).

Singleton (2004) compared Simon's verb morphology, a particularly complicated part of ASL, to that of children with native-ASL parents in order to test if this inconsistent and error-filled input negatively impacted Simon's signing performance (382). She discovered that, on his motion and location scores (some aspects of the morphology), Simon falls well within the range of competence for children of native signers (Singleton 388). Furthermore, in these areas, he exceeds his parents' accuracy by almost 20% in each category (Singleton 388). On the other hand, his handshape accuracy is lower than children of native signers, though it is still better than that of his parents, who have especially low proficiency in this area (Singleton 388-9).

Simon's language acquisition almost seems impossible to believe: how can a child acquire a grammar that is closer to the target language than that which he used as a model? Singleton has attributed his success to a phenomenon called "frequency boosting," wherein a child takes the most frequently-presented forms in his inconsistent input and uses them himself, in a consistent way (390). In this process, he learns information and then reshapes what he

acquires, changing "a probabilistic set of competing forms into a rule system" (Singleton 401, 403). Frequency boosting bears some similarity to overregularization of morphology, except that it both overregularizes virtually every morpheme and is permanently modifying the language, whereas those using overregularization would later return to their input to make changes (Singleton 402).

Most of the time the option with the highest frequency turns out to be the "correct" form, leading a learner in a direction closer to the standard. However, when an incorrect form is used the most frequently, a child tends to adopt it; this leads to a diversion from the standard and the adoption of errors (Singleton 395). This logically explains Simon's trouble with handshapes: his parents use nonstandard forms, so he boosts their frequency (Singleton 395). At the same time, however, Simon is often correct on part of the (standard) handshape, suggesting that he is "in the process of surpassing his input," even in this area (Singleton 397-8). This mixture of correct and incorrect parts implies that he is at a lower level of target language development than other children his age; he may be displaying a longer learning process for handshape because of the extremely degraded input (Singleton 398).

In a way, Genie and Simon had nearly opposite language-learning experiences. Simon received inconsistent input and created comprehensible output. Genie, in contrast, received grammatical input and was unable to create consistent output. The only thing that can explain the gross difference between these results is the age of acquisition. Though some observers believed that Genie was still acquiring language when she was cut off from research, others say that her language development "stabilized at a level far short of native-like competence" (Francis 428). Meanwhile Simon was still improving at age 7; in fact, some aspects of ASL continue to be acquired "later" even by normal learners (Singleton 399-400).

As is obvious from the studies presented here, age of acquisition plays a much larger role in the ultimate language result than does consistency or accuracy of input. Children's innate language-learning mechanisms are able to analyze even the most unreliable input and create rules out of it, forming a language that (usually at least) moves them closer to the target language, establishing a disparity between their own language and that of the input-providers. The unimportance of perfect input should remove fears that student learners will acquire each others' mistakes through interaction, providing even more incentive for communicative teaching methods. In addition, all the research on the Critical Period has encouraged language-teaching to begin at a younger age, since children have more access to UG and are better able to acquire syntax and morphology.

References

Curtiss, Susan, Victoria Fromkin, Stephen Krashen, David Rigler, and Marilyn Rigler. "The linguistic development of Genie." *Language* 50.3 (1974): 528-554.

Francis, Norbert. "Maturational constraints in language one and language two: A second look at the research on critical periods." *Bilingual Research Journal* 23.4 (1999): 423-449.

Jones, Peter E. "Contradictions and unanswered questions in the Genie case: A fresh look at the linguistic evidence." *Language & Communication* 15.3 (1995): 261-280.

Singleton, Jenny L., and Elissa L. Newport. "When learners surpass their models: The acquisition of American Sign Language from inconsistent input." *Cognitive Psychology* 49 (2004): 370-407.