2.1.2 Isolated children

Another population which may help us to examine language/nonlanguage dependencies is the population of children who have intentionally been raised in social isolation. Such cases enable us to test hypotheses about the necessary and sufficient conditions for linguistic and nonlinguistic growth. Only certain cases of such children provide revealing data for the issue of the task-specificity of language, however. These are cases where the language/nonlanguage profile is uneven and remains so even after several years. Cases such as these help to illuminate the separability and domain-specificity of different mental abilities.

There are three cases that meet this description. The first is Kaspar Hauser; the second, Genie; the third, Chelsea.

There is considerable disagreement as to the validity of the case of Kaspar Hauser, several writings asserting that he was an imposter and not a socially isolated child at all. There are over 2,000 documents regarding this case, however; and the vast majority of them substantiate the validity of this case and provide interesting and detailed information about Kaspar Hauser’s post-isolation progress. The key sources of infor-
mation on this case were highly regarded professionals in their time with undisputed credentials (von Feuerbach, 1832; Daumer, 1832; Pietler-Ley, 1927). Additional careful research and examination of this case has been conducted (e.g. Heyer, 1964; Pies, 1966). (The reader is referred to the above sources for more information and detail.) Thus there seems to be little reason not to seriously consider these publications and the data they provide.

Kaspar Hauser was apparently isolated from the age of three or four until he was a teenager, about fifteen or sixteen years of age. He had been kept in a small room, totally isolated, supplied with food and otherwise cared for while he was asleep (or, perhaps, drugged). The size of the room prohibited him from standing erect or lying flat, and during his imprisonment he neither stood nor walked. During these years he also never spoke or was spoken to.

Upon his release and subsequent discovery in 1828, the remarkable capacity of this young man began to be revealed (and documented and described in numerous writings). He made strikingly rapid progress in almost every area. Within months of his discovery he displayed remarkable ability in drawing, memory and reasoning capacity. He lived only five years after he was found, but during that time was noted for his astonishing intellect. He was consistently reputed to philosophize about all he was learning, about life in general and about his own past. Within that short five-year period after his discovery, he learned to read and write (but see below) and became competent in mathematics and several other academic areas.

His linguistic progress, although rapid and impressive in certain respects, reportedly stood alone as the single area of mental function which remained problematic. Semantic aspects of language (German) were apparently readily mastered. Upon entering society he immediately began learning words, acquired a sizable vocabulary within a very short time (a few months) and began combining words into short ‘sentences’ also within a remarkably short time (again, a few months). The vocabulary he mastered and the logical wellformedness and complexity of the propositions he evidently comprehended and produced were sufficiently sophisticated to allow him to participate actively in philosophical and intellectual discussions as time went on. Yet, in contrast he displayed consistent and persistent difficulties with the grammar of German.

to the astonishment of all . . . he . . . very soon learned to speak, sufficiently, at least, in some degree to express his thoughts. Yet, his attempts to speak remained for a long time a mere chopping of words, so miserably defective . . . that it was seldom possible to ascertain . . . what he meant to express by the fragments of speech which he jumbled together.
[From a later description] His enunciation of words which he knew, was plain and determinate, without hesitating or stammering. [But] in all that he said, the conjunctions, participles, and adverbs were still almost entirely wanting; his conjugation embraced little more than the infinitive; and he was most of all deficient in respect to his syntax, which was in a state of miserable confusion.

The pronoun I occurred very rarely; he . . . spoke of himself in the third person, calling himself Caspar.

(von Feuerbach, 1832, translated by Simpkin and Marshall)

He reportedly never mastered German syntax or morphology, evidencing a selective grammatical deficit which stood in marked contrast with his impressive intellectual abilities in all other areas, including conceptual aspects of language (here being encapsulated as ‘semantics’). It is testimony to his remarkable cognitive gifts that he could communicate so effectively and at such a high level, given his linguistic deficiencies.

The second relevant case is Genie. There have been a number of published reports on the case (Curtiss et al., 1974; Fromkin et al., 1974; Curtiss, Fromkin and Krashen, 1978; Curtiss, 1977, 1979) and the reader is referred to these for more information. Although certain details about Genie’s early life remain unknown, there is considerable information on both the case history and her life subsequent to her discovery.

Genie was isolated for a period of twelve years, from the age of twenty months to thirteen years, seven months. Her life prior to her isolation involved physical restraint and most probably malnutrition and neglect. She was born at the 50th percentile in height and weight but fell beneath the 16th percentile by her first birthday. During that same first year, she wore a physically restraining Frejka splint for seven months to correct for a congenital hip dislocation.

Beginning at the age of 20 months, however, Genie was both physically restrained and isolated. She was confined to a small bedroom in the back of the family home where she was tied to an infant potty seat by means of a harness. Left in this room for over twelve years, she was fed only infant food and received practically no visual, tactile or auditory stimulation of any kind, including little linguistic input. There was no television or radio in the home, and because of the father’s extreme intolerance for noise, all speech in the home was kept to a nearly inaudible volume. Genie’s brother and father were her primary caretakers, and by design, neither spoke to her.

When Genie was thirteen and a half years of age, her mother managed to escape, with Genie, from the home. Shortly afterwards Genie was discovered. She could barely walk, couldn’t chew or bite, and neither understood nor spoke language.
From the time of her discovery on, Genie avidly explored her surroundings and began to show clear conceptual and intellectual progress. She quickly began organizing and classifying her environment (evidenced by her play activities and, a little later, by her language), and followed a course of steady growth and development. Her mental age (MA) (as measured by standard psychological measures of IQ, e.g., the Leiter International Performance Scale, the Wechsler Intelligence Scale for Children and the Raven’s Progressive Matrices) increased one year for each year post-discovery. Within four years of her discovery, she had clearly attained most aspects of concrete operational intelligence including both operational and figurative thought (e.g., reversibility, decentralism, spatial rotation).

In contrast to Kaspar Hauser, Genie’s mental profile was far more uneven. She demonstrated remarkable and fully developed abilities in the domain of visual–spatial function (e.g., Gestalt and part/whole abilities, spatial rotation, spatial location, conservation of spatial features and knowledge about visual–spatial features, such as size, shape and colour); but demonstrated impaired verbal short-term memory and linguistic function. Like Kasper Hauser, however, she showed a discrepancy between her acquisition of semantics, on the one hand, and her acquisition of grammatical rules, on the other.

Within a few months after her discovery in 1970, Genie began to produce single words and then acquired vocabulary rapidly. Within three to four months of her first words, she had acquired an expressive vocabulary of 100–200 words and began to combine two words at a time. Even her early vocabulary included words for colour concepts, numbers, emotional states and all levels of category membership (superordinate, basic, subordinate), including subtle distinctions (e.g., pen, marker; jumper, dress). Her acquisition of lexicon and the expression of meaning relations, including multipropositionality, steadily progressed and increased. (See Curtiss, 1977, 1981a, 1982, for more details.)

In contrast, her utterances remained largely agrammatic and hierarchically flat. Her ability to produce ‘sentences’ developed only in so far as she was able to produce increasingly longer strings and strings that increased in propositional complexity. Her speech, even after eight years, remained essentially devoid of ‘closed-class’ morphology and of most syntactic devices and operations. This dissociation between ‘semantics’ and syntax seen in Kasper Hauser’s case, then, was a hallmark of Genie’s language, too.

Genie’s linguistic limitations extended to the use of language for effective interactive purposes. Her utterances were consistently well formed with regard to their presuppositional and implicative structure and generally adhered to Grice’s conversational postulates (Grice, 1975). That is, Genie was sensitive to the information needs of her listener, and she was
generally truthful, relevant, (always) brief and on topic. However, her means of initiating, participating in and controlling or regulating verbal interaction were greatly restricted. She possessed an impoverished set of linguistic–pragmatic devices and relied heavily on simple statements of the proposition or on repetition (of her own or others’ statements of the proposition) to perform a variety of pragmatic functions – introducing topics, continuing topics, acknowledging and responding to comments, requests and questions, making comments and requests and asking questions. Moreover, she failed to use social rituals, (e.g., Hi, How are you?) or conversational operators (e.g., Well, OK) – the trappings that help to make a conversation sound normal. Thus, those aspects of effective communication depending on her appreciation of conversational content and the communicative intent and needs of her listener were least impaired, while those aspects of effective communicative interaction depending on socially conditioned skills of conversational participation were sorely deficient.

A third case involves a hearing-impaired adult, Chelsea, who is attempting first language acquisition in her thirties. Although no systematic investigation of Chelsea’s language development has yet been carried out, preliminary and anecdotal data reveal a linguistic profile characterized by marked scatter in abilities (P. Glusker, C. O’Connor, V. Yancy and J. Watters, personal communication, and Curtiss, unpublished data), parallel in many respects to those seen in Kaspar Hauser and Genie. There is a striking disparity between Chelsea’s lexical abilities and her ability to combine vocabulary into appropriate and grammatical utterances. Her lexical abilities have steadily progressed and are quite substantial at the time of writing. For example, in March 1984 Chelsea scored above the twelfth grade level on the Producing Word Association’s subtest of the CELF, the highest norms for the test. In contrast, her multiword utterances are, almost without exception, unacceptable grammatically and quite often propositionally unclear or ill formed as well. Thus, her lexical knowledge seems limited to (denotative) definitional cores and does not appear to encompass either subcategorization information or logical structure constraints (in contrast to Genie). Likewise, her expressive language appears, at its best, limited to the production of combinations of semantically relevant substantives.

Chelsea’s discourse skills appear at least superficially to be almost the flip side of Genie’s. Chelsea’s topic-related skills are limited, but these limitations appear to reflect her comprehension difficulties coupled with her propositional limitations. Other discourse abilities seem remarkably developed (e.g., speech-act range, use of social rituals, use of conversational operators.)

The cases of Kaspar Hauser, Genie and Chelsea, then, suggest that there may be a critical difference between conceptual (semantic) aspects
of language, on the one hand, and rules of grammar (here syntax and morphology), on the other. This critical difference has two potential (related) bases. First, the learning capacity they displayed and utilized for other intellectual domains was insufficient and/or inappropriate for learning grammar. In Kaspar Hauser's case, even extraordinary intellect was not sufficient. Second, the learning principle(s) which can learn grammar were either selectively impaired from birth, or, by the time they were discovered, Chelsea, Genie and Kaspar Hauser had passed the age at which they were still functional. In Genie's case, she is reported to have begun talking before she was isolated, suggesting that, in her case at least, language learning was proceeding normally before it was interrupted. In any event, both of these explanations for the selective linguistic deficits these cases displayed point to a task-specific grammar acquisition ability. Their cases further suggest, however, that not all aspects of language may require task-specific abilities. In Genie's and Kaspar's cases, lexical and propositional semantics developed with apparent ease, reportedly reaching a higher level in Kaspar Hauser's case than in Genie's. This area of language at least, then, appears to be accessible to other learning strategies or developmental principles. The rate and level of mastery of lexical and propositional semantics may furthermore reflect or be tied to nonlinguistic conceptual and intellectual ability. This possibility, however, leaves unexplained Chelsea's problems with propositional form, suggesting that lexical semantics and propositional semantics may be differentially vulnerable to age at acquisition, with lexical semantics the more resilient of the two.

The effective use of language for communicative purposes is a less clear matter. Genie's case suggests that those parameters of communication tied to the needs and intentions of the listener may depend for their development on the cognitive abilities of the child; whereas those parameters of verbal communication which reflect culture-specific phrases and routines (topic introducers, request forms, forms of acknowledgements, etc.) are tied to the social development of the individual.

An additional aspect of Genie's and Chelsea's cases may relate to the task-specificity issue. A series of experiments has been run on both cases to determine cerebral dominance for language. Chelsea and Genie are both right-handed, thus the 'normal' or expected results would have shown left-hemisphere specialization for language. In Genie's case, these experiments used dichotic listening and event-related potential (ERP) paradigms (Kimura, 1967; Shankweiler and Studdert-Kennedy, 1967; McAdam and Whitaker, 1971; Wood, Goff and Day, 1971). (See Curtiss, 1977, for a description of the experiments and details of the results.) The results were dramatic. In each case (seven experiments in all) the results indicated that Genie's right hemisphere was dominant for language pro-
cessing to a degree that paralleled those individuals who have only one hemisphere or whose hemispheres have been surgically disconnected (Zaidel, 1973, 1974).

In Chelsea’s case initial ERP testing in 1983 revealed a marked right-hemisphere advantage for verbal material; one year later no hemispheric asymmetries were revealed (H. Neville, personal communication).

These results raise the possibility that language- (grammar-) specific learning mechanisms may be tied to the left hemisphere in (right-handed) normals (see Curtiss, 1981b, 1985, for a discussion of this issue). Evidence supporting this possibility comes from the next group of children with selective linguistic impairments to be discussed; hemiplegics and hemidecorticates.