On the other hand, lateral anatomical asymmetries have been found at birth, and several functional asymmetries are also present from a very early age, including some related to speech perception. Certain dichotic listening advantages to be established long before puberty—some studies suggest this may even be as early as the third year. Cerebral anatomical asymmetries have been found at birth, and several functional asymmetries have been noted in infants (e.g. a preference for rightward turning and right-hand grasping). Certain dichotic listening advantages are also present from a very early age, including some related to speech perception.

The argument in favour of a critical period was based largely on claims about the patterns of recovery in brain damaged adults and children. If adults with left-hemisphere damage failed to recover language within a few months, it was argued, they would never do so. Children, however, showed an ability to recover over a longer period — and could make a complete recovery if they were very young at the time of the damage. In such cases, even total removal of the left hemisphere did not preclude the reacquisition of language.

Controversial evidence

The critical-period hypothesis has been controversial. The pathological evidence is mixed, because comparisons of adult and child cases are extremely difficult to make, and paths of recovery have not been studied in a detailed linguistic way. It may be that aspects of child recovery are helped by the involvement of the right hemisphere; but there are also cases of left-hemisphere damage producing severe and long-lasting aphasia in children.

A CRITICAL PERIOD LANGUAGE?

The notion of a ‘critical period’ was first used by ethologists studying the origin of species-specific behaviour. It was found that with certain species (e.g. rats, goslings) there were periods in which a particular kind of stimulus had to be present if the baby was to develop normal behaviour.

There were extensive attempts to recover children who had not developed language within a critical period — and could make a complete recovery if they were very young at the time of the damage. In such cases, even total removal of the left hemisphere did not preclude the reacquisition of language.

The evidence of normal language acquisition (Part VII) is also mixed. Aspects of phonological and grammatical acquisition do continue until around puberty; however, most of these skills are well established before the age of 5, and some linguistic skills (in semantics and pragmatics) are still developing in teenage children and young adults.

The neuropsychological evidence generally fails to support the Lenneberg hypothesis, showing lateralization to be established long before puberty—some studies suggest this may even be as early as the third year. Cerebral anatomical asymmetries have been found at birth, and several functional asymmetries have been noted in infants (e.g. a preference for rightward turning and right-hand grasping). Certain dichotic listening advantages (p. 261) are also present from a very early age, including some related to speech perception.

On the other hand, lateralization plainly takes some years before it is firmly established, and this overlaps the main period of language acquisition in a way that is not yet understood. The relationship between lateralization and language is thus an extremely complex one, and presents a continuing research challenge in developmental neuropsychology and neurolinguistics.