

**ENVIRONMENTAL INFLUENCES ON NEURAL PLASTICITY, EMOTIONAL DEVELOPMENT AND ATTACHMENT: A REVIEW**

**A. Cid**

*Department of Pediatrics, Health Center, Bilbao, Spain*

*[acfoix@terra.es](mailto:acfoix@terra.es)*

Experience directly shapes the circuits responsible for such processes as memory, emotion, and self-awareness. The study of effects of early environmental influences on neural plasticity requires consideration, among others, of the following aspects:

- 1) Within the brain itself, complex functions emerge from the coordination of neural activity in a range of circuits. The limbic regions and associational circuits, especially the prefrontal areas such as the orbitofrontal cortex, serve such a coordinating function. Neural integration is fundamental to self-organization, and indeed to the capacity of the brain to create a sense of self.
- 2) The expression of hereditary influences require transactions with the environment. The relationships between parents and child enables the child's brain to develop the circuits responsible for healthy emotion regulation, these events are indelibly imprinted into the structures that are maturing in the first years of life. Genes contain the information for the general organization of the brain's structure, but experience determines which genes become expressed, how, and when.
- 3) The communication of emotion may be the primary means by which these attachment experiences shape the developing mind. Human emotions constitute the fundamental value system the brain uses to help organize its functioning.
- 4) The proposal being made here is that interpersonal relationships can provide attachment experiences that can allow similar neurophysiological changes to occur throughout life. In extreme cases of trauma, such a neglect or abuse, the deeper structures of the brain may be impaired to such a degree that improvement may be difficult to achieve.

