

## Epilinguistics Inside Epigenetics

Luisella Magnani and Massimo Agosti

**Abstract:** This article addresses the importance of the words we choose, especially when working with expectant and new mothers and their babies. Science is beginning to discover that the way we choose our words can improve the neural functioning of the brain and have the power to influence the expression of genes that regulate physical and emotional stress.

**Keywords:** pre- and perinatal psychology, epigenetics, human development

*Childhood cancer is the greatest fear in our world. It is born by the corruption of cells, by their self-destructiveness. It is born by the fragility of cells which seem to reject the miraculous balance on which they have been generated.* (Jancovik & Vitellino, 2018)

If the way we choose our words can improve the neural functioning of the brain and a single word has the power to influence the expression of genes that regulate physical and emotional stress, as Andrew Newberg and Mark Robert Waldman postulated (2014), it is urgent that we seriously consider such a statement: We must deeply take in the meaning of it, live it, and breathe it as the air we breathe. Ferdinand de Saussure (2005) taught that postmeditation-reflexion, (the act of reflecting upon one's experience in meditation following the act of meditation) is representative

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of the active life of language. Every active word or symbol has a value, which is understood through the combination of words and/or symbols that are present or absent in the moment. As the number and aspect of these words and symbols change moment-to-moment in an endless way, the result of this activity cannot be measured. This act of reflecting upon one's experience with the activity of language is called by Tullio De Mauro (2012) epilinguistic reflexivity, or thinking about language. Luigi-Luca Cavalli-Sforza (2000) combined genetics with linguistics. He saw very early on that genes and languages have many things in common; they pass from one generation to the next and suffer mutations that change them over time. He wrote that investigating correspondences between genetics and linguistic diversity casts light both on the demographic shifts that shaped our genome and on the effects that these shifts may have had on the distribution of modern languages.

In 1968, the French linguist Antoine Culioli (Vyt, Bloch, & Bornstein, 2013) wrote that focusing on the expression “a perpetual epilinguistic activity,” invites the reader to reflect on this definition regarding the value of language (p. 230). Epilinguistics, or thinking or speaking about language, encourages an “adjustment” in response to this contemplation. In connection with linguistic expressions that imply motion, change, or morphogenesis, this thinking about language is an important component of the theory of enunciative operations, the principles of which Culioli (Vyt, Bloch, & Bornstein, 2013, p. 230) attempts to elucidate. This level, long considered unknowable, is now very important, especially when we recall Andrew Newberg's words, “A single word has the power to influence the expression of genes that regulate physical and emotional stress” (Newberg & Waldman, 2014, p. 26). A single word has this power. Epigenetic processes that regulate gene expression without changing DNA sequences may offer a strong, although parsimonious, contribution to the convergence of genetic variation in the genesis of adaptive and maladaptive development. In the same way, the word-meaning can change in infinite measure without changing the original input. That is what Tullio De Mauro (2008) called *conception*, and contributing to intellectual elaboration. We know that experiences and environmental exposures act on genes like a dimmer switch to increase or decrease gene expression and the amount of gene product that is produced in response to a given environment. This regulates the neurodevelopment that underlies learning and behavior, as well as mental and physical health, because individual differences in epigenetic susceptibility may well be the explanation behind the various responses to environments (Sokolowski & Boyce, 2017). Michael S. Kobor (Boyce & Kobor, 2014) wrote similarly in 2014, “... epigenetic processes constitute a promising and illuminating point of connection—a ‘synapse’—between genes and environments” (p. 5).

If we study the etymology of the word synapse, we learn that its origin is from Greek, late 19<sup>th</sup> century, “sunapsis” from sun (“together”) and “hapsis” (“joining”).

As Thomas Verny (2014) wrote:

All cells, be they nerve cells or somatic cells, respond to environmental signals by producing proteins that form memories. These proteins are stored at synapses of neurons throughout the brain, but also in the cellular membrane and intracellular space of all cells. Cells act as microcomputers and, although they are tiny, they are capable of amassing vast amounts of memory. (p. 27-28)

In the wide variety of environments, there is the language environment, wherein a word is a basic element and provides an atmosphere, a felt time, and a felt space. A spoken word, as well as a written word is “the articulation of a bodily presence” (Böhme, 2017). We have to stop and reflect on such words, including these from neuroscientist, D.G. Amen: “Every cell in your body is affected by every thought you have” (1988, p. 22).

When we speak about thought, it is as if we speak of words and actions, because thought gives birth to words, and words to actions. Imagine that it is possible to create an epilinguistic environment to relieve pediatric pain. Leora Kuttner (2010) in her work, *A Child in Pain*, focused her attention on language that helps pain to go away, stating:

As you actively attend to a child’s language and behavior, that focus is felt by the child. Your tuning-in is often mirrored by more accurate responses to the child’s messages. During this exchange your language and tone also convey your attitude. What you say and how you say it, reflects what you think, as well as what you believe, what you teach, what you expect, and even, at times, what is likely to happen. (p. 246)

Every word we think, seek, or express may become an action of speaking and living. It is our language, our presence, and our awareness in the use of words that builds expectations in the other—the one listening to us. That other may then feel secure, perceiving the concreteness of our being present, our being congruent with the words we have spoken. Choosing the right words is facilitated by our being alert to the situation, and being fully present. Susan Highsmith (2016) spoke of the power of choosing the right words when she said, “Change the childbirth language you use and change the world of childbirth” (p. 62).

What influences our choice of a word, before the word is spoken, or within the process of speaking, is called Epilinguistics. A researcher from the University of Oslo, Norway, terms it “epilinguistic control, metalinguistic awareness, and morphological awareness” (Diamanti et al., 2017). In other words, he is speaking of thinking before one speaks, being aware of the potential impact of our words, and being aware of the construction of the words we use into sentences to convey meaning. Diamanti further states:

Beyond implicit language use, which demonstrates basic language competence, the term morphological awareness denotes the individual’s ability to reflect upon and consciously operate on—and—for morphemes, as well as the ability to apply word formation rules. Speaking comprehension cannot succeed unless the listener appreciates morphological word formation, that is, how differences in word forms relate to differences in meaning. (p. 552)

These words are reflected by Tullio De Mauro’s (2012) statement, herein translated as “Epilinguistics is the fullness of reflection and the fullness of thought before becoming word [because] language is an activity that itself supposes a perpetual epilinguistic activity.” Epilinguistics is a part of Epigenetics because it is an influence upon gene expression. It is an aspect of the environment surrounding the baby in the womb and his mother. Science tells us that the interactions between genes and environment shape human development. Research (Center on the Developing Child Harvard University, 2018) shows that early experiences determine how genes are turned on and off—and even whether some are expressed at all. The healthy development of all organs, including the brain, depends on how much and when certain genes are activated to do certain tasks. According to the Harvard Center on the Developing Child (2018):

Experiences leave a chemical ‘signature’ on genes that determines whether and how the genes are expressed. Collectively, those signatures are called the epigenome. ... Epigenetic ‘markers’ control where and how much protein is made by a gene, effectively turning the gene ‘on’ or ‘off.’ Such epigenetic modification typically occurs in cells that comprise organ systems, thereby influencing how these structures develop and function. Therefore, experiences that change the epigenome in prenatal life and early in life can have a powerful impact on physical and mental health for a lifetime (p. 1).

We can understand more about this process in an interesting metaphor written by Thomas Verny (2014), wherein the relations of the visual and verbal are interconnected:

... the cells in our bodies function very much like the musicians in an orchestra. ... The musicians sit in sections according to the instruments they play such as string, percussion, wind, etc. They all play together though, occasionally, one musician may have a solo part. Together they produce a complex alchemy of musical notes, which reaches the ears of the audience as one unified sound. I postulate that all our organs such as the heart, gut, skin, etc. and also, regions of the brain, function as repositories of specific memories = sections in the orchestra. Each cell = musician contributes its bit of information to the memory that emerges either consciously or unconsciously as a result of some trigger from the environment or from the brain = conductor. This is exactly how neurons and all the cells in our bodies work, namely in close cooperation with each other. In neurology we speak of neuronal assemblies, neural circuits and feedback loops. It's all about being part in an orchestra made up of 37 trillion musicians (p. 27)

The environment which influences genes is also language the mother absorbs and it reaches the baby who feels. As stated by the psychiatrist R.D. Laing (1976):

The environment is registered from the very beginning of my life, by the first one cell of me. What happens to the first one or two of my cells may reverberate throughout all subsequent generations of our first cellular parents. All our experience in our life cycle from cell one is absorbed and stored from the beginning perhaps especially in the beginning. How that may happen I do not know. How can one cell generate the billions and billions of cells I now am? We are impossible, but for the fact that we are. (p. 30-31)

These words invite deep reflection and application in our daily life. When this author speaks to babies' mothers in different pediatric hospitals, I ask them such questions as: How did you feel during pre-conception, conception, and the nine months of pregnancy with your baby in the womb? What were your interactions, communications, contact, and relationship with your baby? How did you respect and perceive the differentiation between your baby and you, the differentiation between his perceptions and yours? In which measure did you think of that? How did you protect your baby's mind and body? Did you know that prenatal

memories are the most influential memories in a baby's lifespan? Unfortunately, most of their answers express solitude, fear, emptiness, anguish. They have said to me, "If I had only known, but I did not know this was possible."

If voice is an articulation of bodily presence (Böhme, 2017), let us imagine its value and virtue in speaking to babies in the womb and to their mothers. Each voice has a character through its intonation, which is the very fullness of communication—the heart of communication. Voice is already environment, ambience, and atmosphere. Voice is a paradigm of epilinguistics, which becomes part of epigenetics, as an impact of environment. Roland Barthes (1985) coined the expression, *grain of the voice*, and the grain is the body in the voice, the bodily presence when it expresses vocal expressions molded by the body from which it emanates. This then creates positive or negative environments, environments which can be heard, listened to, appreciated, estimated, lived, and loved, or unheard, unlistened to, disgusted, underestimated, neglected, and rejected. Voices modify our own bodily presence in space, and the womb is space. A space of grace.

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