

Our Future Mind: Epochal Developments of Perinatal Clinical Psychology

Antonio Imbasciati*

Professor Emeritus in Clinical Psychology, University of Brescia, Viale Europa 11, 25123, Brescia, Italy

Abstract: This paper clarifies the meaning of Perinatal Clinical Psychology by removing the prejudice and the stereotypes that unfortunately pervade children health care facilities still nowadays. The author goes over the basic principles that neuroscience has recently demonstrated in the development of the brain from the fetus to the infant, the child and the adult. The brain is self-generating through experience and not on the basis of genome. Epigenetics accounts for it. The brain needs to learn so as to be able to develop. Nobody has a brain that is the same as anybody else's and therefore nobody has a mind that is the same as anybody else's. The brain generates the mind and, in turn, the mind regenerates the brain in a ceaseless feedback. The experience that generates and renews the brain continuously comes from interpersonal relationships. The greatest incidence of this kind of development comes from the relationships with the parents and the caregivers and depends on the emotional moment of the relationship. This opens up transgenerational perspectives. The quality of the mind (and the brain) of the parents and caregivers produces the quality of the mind of the children. The latter, in turn, become adults, condition the mind of their children in cascade effect from one generation to the following. This transmission can produce an improvement but also a worsening for the future generations. As a consequence, Perinatal Clinical Psychology becomes important for prevention and psychological support to the children and the families at risk.

Keywords: Perinatalmind parentsmind brain'slearning, Childrenatrisk transgenerationality.

1. "CLINICAL" AND CLINICAL PSYCHOLOGY

Most "health professionals" as well as most ordinary people equate "clinical" with "healing". Thus, "clinical psychology" is understood as the application of psychological knowledge to treat people who are psychically or physically ill. In my professional life I have always come across this conception that reduces different psychological sciences to one single "psychology in general", different from General Psychology as it is officially and scientifically codified, and the clinical method to amateurish treating techniques [1-6].

In spite of my work within Italian psychology as well as the work of other authors [7], the Statute of the "College of Italian Professors and Researchers in Clinical Psychology" and the Ministry's nomenclature of the Scientific-disciplinary Sectors, the medical meaning of "clinical" seems to pervade general culture and prevail over psychological culture still nowadays.

Clinical Psychology is not the intervention of a more or less specialized psychologist to "heal" (=cure) a difficulty and/or psychic and physical pain, that is, to obviate an anomaly that has shown up – this can be one application of this discipline –, but it is primarily a science that enquires, with its specific method, what

the human psyche or rather the human mind is about, how it originates and works: in its optimal conditions or in forms and in terms of statistic standards, rather than within the anomaly in its covert or overt manifestations. This primary aim, if pursued, does not consist only in treating but preventing. Prevention should always be a priority over treatment: this is even more so since all psychological science and neuroscience have shown that any psychic pain, when it is manifested, is very remotely embedded in the origin of the structure of the mind. Today the unconscious, inferred one hundred years ago by psychoanalysis, has found new formulations in the evidence identified by cognitive science and neuroscience.

However, if Clinical Psychology tackles with the dawn of the individual in his perinatal stage, does it make any sense to look for even deeper roots?

This is the very context where the progress of the above-mentioned science has made important discoveries in the last fifty years. The mind starts to develop in the fetus [5]. But also: what is formed in a fetus at the beginning depends on the mind and the existential conditions of the parents. So, prevention in the psychic field needs to start from the perinatal environment. In fact, it needs to go back through generations. This should be the perspective informing Mental Health, where a clear distinction between "health" and "sanity" should be made.

Unfortunately, the notions regarding the concepts I have just hinted at here are not present enough in the

*Address correspondence to this author at the Professor Emeritus in Clinical Psychology, University of Brescia, Viale Europa 11, 25123, Brescia, Italy;
Tel: 030.3717220; Fax: 030.3717207;
E-mail: info@imbasciati.it, antonio@imbasciati.it

training of the professionals working in the different services in charge of Health and therefore prevention. This is even more so as far as perinatality is concerned. As an introduction to this paper, it is indispensable to mention the general and key notions that have not yet been fully assimilated by our welfare culture.

I shall start with a question that may unfortunately sound as a simple one to some people: What is a psychic illness? Those who see it as a naive question will certainly have a ready answer in terms of a given idea of illness – something that has upset or impaired the normal psychic development. Nothing is wronger than that. It is just the halo effect of an ingrained medicalist stereotype that is still lasting nowadays, in spite of having been disproved by neuroscience. We cannot apply medicalist models to the mind (the psyche, but what is the psyche in relation to the “mind”?) or to the brain, except in case of concussion. But with this exception, how much of psychopathology do we come across and how severe would it be? Then, if we do not consider what is evident at a first look (according to what the person says), the severity is marked. The answer to the above question is wrong because one has a wrong idea about how such an illness originates. To answer to the question you need to have the right answer to another question, that is: “How does a psychic illness originate?”

The ingrained wrong stereotype assumes that the mind needs to have a so-called normal development, as it depends on the brain that is supposed to have a normal development by nature – that is to say, a development dictated by the genome, unless some cause has upset this natural development. Others, without considering the brain, think that the mind (even more so, if they believe that the “psyche” means something different) can develop in a natural, “normal” way unless particular educational or life events occur and alter its natural development. Both hypotheses are confuted by neuroscience.

First of all, what is pathological and what is part of the so-called normality? The “norm” is a purely statistic concept and its boundary with abnormality is a conventional one. Between a perfect normality and the most evident pathology there is a continuum. This is even truer as far as the psychic is concerned: Where shall we place the character anomalies that do not seem either “normal” or pathological?

But the problem of these two mistakes is that in the general culture the fundamental notions about mind

and brain have not yet been incorporated. Such notions come from the discoveries made in neuroscience in the last twenty years. I shall try to sum them up here, though in a necessarily simplified way.

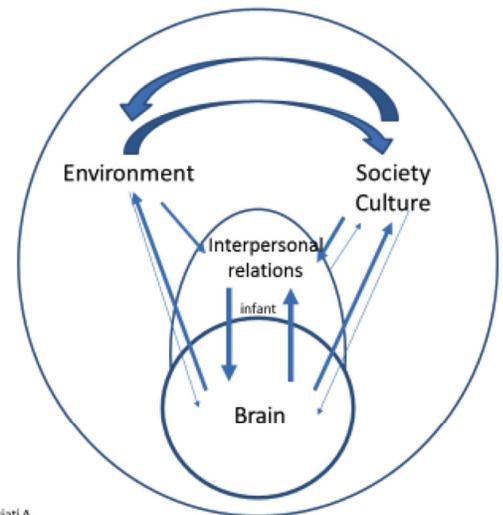
2. MIND AND BRAIN

- 1) The brain is not like all the other organs in our body. Strictly speaking it is not an “organ”. All the “organs” perform their specific function, the same in all the individuals, except some small variations. The brain, by contrast, does not perform its own pre-determined functions, except the general function of regulating, well or badly, all the body organs. What may seem to be “mental functions” – commonly classified as memory, thought, language, affectivity, etc. – do not fit any distinctive functional areas of the brain. The obstinate fifty-year attempt to locate these and other functions in some areas of the brain proved vain. The brain is working through the forming connections among its billion neurons that create complex neural networks which include most brain areas. The functions that are more properly concerning intelligent behaviour cannot be reduced to those that common sense would identify and are not produced by functional areas of the brain that can be clearly identified, as it happens for the individual functions of the other organs. In fact, some – often very numerous – neural networks are involved and continuously fired. Some nuclei of the brain are essential to get certain effects, but they cannot produce these effects by themselves. Neural networks are not pre-formed. They develop by synapses ensuing an experience. The latter creates their interconnections. In other words, the brain needs to learn: its actual functions – not the effect that appears to the common sense – are performed to the extent and in the ways that the brain has learned.
- 2) The development of the brain, that is the neural networks, is not regulated by the genome. In other words, there is not a “normal” brain by nature but by experience. It is through experience, or rather some kinds of experience, that synaptic connections are formed. The brain receives a ceaseless diversified and huge quantity of information from the body: from all the sensory apparatuses (retina, cochlea, vestibule, and the tactile, pressure, thermic, pain,

gustatory, holfactory receptors), both external and internal (ostheo-tendinous-muscular proprioception, enteroception from the visceri, haematic and other chemoreceptors). All this information is “processed”: the brain is a computer (the French call it “elaborateur”) that assembles, transforms, organises all these “afferents” ceaselessly and in a variety of ways. Every kind of organisation implies new synaptic connections that give rise to new neural networks, many of which give rise to memories.

- 3) These memories are not to be understood, as in common sense, like images of objects or perceptive configurations of something as it is perceived by an adult. They are new neural connections that constitute new functional capacities, that is to say, processing abilities of that specific brain. That is how the brain learns: learning is actually formed of new connections that are its memory; the brain gradually learns new processing, that is, new functional capacities; it learns how to develop. Every new neural networks that is formed after the processing of new combinations of afferents constitutes memory: the memory of functions.
- 4) As a consequence, since afferents reaching the brain of a person are never the same ones that reach the brain of another person (every individual is immersed in an environment-source of information that is never the same), every brain is made in its own unique way. Every brain has learned to work in its own way. Nobody has a brain that is the same as anybody’s else brain.
- 5) We are faced with the controversial question whether the mind is produced by the brain. That question has been solved by epigenetics. The brain produces the mind and at the same time the mind – that is, the functional whole that processes information – generates new neural networks in its ceaseless experiencing and therefore it generates brain capacities. Thus, the brain is built on the basis of the mind’s experience. There is a continuous, circular feedback between the mind and the brain [8, 9]: see Figure 1.
- 6) Western philosophical and theological tradition has accustomed us to think that affects are different from “mental” processes, that is,

cognition, intentionality, consciousness. Many terms – such as “psyche”, “character”, “temperament”, “mood”, motivations, drives and other ones – have been coined to differentiate what is visible in the behaviour of human beings. All these differentiations are apparent, or rather merely descriptive of what appears.



By Cena L., Imbasciati A.

Brain/mind and transgenerationality

Figure 1:

Neuroscience has shown how whatever appears to be differentiable to the ordinary observer, no matter how we label it, is always the product of the mind-brain. And it does not fit any area of the brain, but the combined function of neural networks that always involve the entire brain, each one in various ways. A noteworthy example of how these useless distinctions have been coined, is the term “psyche”, that in fact does not correspond to anything different from what we can call the “mind”, except the artificial differentiations derived from the prejudices of our tradition [10, 11].

From the concepts that we have briefly outlined here we can deduce that the “mind” does not fit at all what the person realizes, feels and knows about himself, and about his thoughts, intentions and actions. This concerns only his awareness. Psychoanalysis discovered the unconscious one hundred years ago. In the last thirty years cognitive science and neuroscience have shown that most mind’s activity takes place beyond the consciousness of the subject. Consciousness, or rather the consciousness capacity of every individual at any given time [12, 13] is just a subjective, always partial and sometimes deceitful epiphenomenon, operated by some neural network, among the billion networks ceaselessly operating in

that individual without him being aware of it [8, 11]. Paradoxically, we could maintain that the mind is not at all what we seem to “have in mind”.

From what I have said, you can understand why, when referring to the mind (and the brain), it is wrong to think of an illness due to a cause that altered an otherwise natural development. There is no development by nature but only by experience and depending on the experience. Thus, we cannot think of a psychopathology according to the usual model in medicine. The human genome produces only the macromorphology of the brain of all the human beings, with its billion neurons, but it is the experience – starting from the fetal experience through all the different afferents that reach him through his sensory receptors (which are informed by the genome) – that constitutes the brain and therefore the mind.

So, when we talk of psychic illness, in order not to slip into oversimplifications and old prejudices, we need to always keep in mind “how it originated”, that is, not in the quest for a cause that altered its nature, but because that mind and that brain have been formed in that way. So, we need to think about the origin of the mind in the progressive formation of the brain along the individual experience.

3. THE EXPERIENCE OF THE BRAIN

Let us move on to specify better what this “experience” is about, so as to understand why every person has his own brain, although it has been experienced in the same environment, even in the same family, of another person. What psychological sciences mean by “experience” does not refer neither to the person’s external environment nor to the set of information that sensory receptors send to the brain. In fact, it is rather the outcome that the brain makes of it, by transforming it into functional memory, this is to say, what the mind learns from experience. Experience does not consist of external events that are passively impressed in the brain: the mind is not a video-sound-reproducing device that keeps the registration of inputs, but a much more complex, active and selective apparatus continuously operating (and ever changing its structure and therefore its own functioning), performing thousands transformations of very different combinations and organisations that are ceaselessly coming to it, mixing and integrating them with all the previous mnemonic traces [8, 14, 15]. These traces too are not to be understood as images (or codes of images) of some object or event, but traces of acquired (and acquiring) functions.

At this point we can explain better what determines what the mind learns. While I mention more specific books about the topic – such as the ones above –, I can summarize here the two major factors in charge of what the mind and the brain learn. The first is the structure already operating when any given mind learns; the second is the relationship between the mind and the essentially interhuman environment at any given moment, an environment that interacts with the structure of that person. The “kind of relationship” depends on the neuro-mental structures of the people who are interacting in that moment and on how those structures are functioning in that contingent moment [16-18].

With this indispensable theoretical overview on what we currently know about the mind, its origin and its functioning, and free of all erroneous conception about how we need to understand the term “psychic illness”, let us move to the “child”, the infant, which is the core of this paper about Perinatal Clinical Psychology.

Child psychoanalysis with its most recent developments (newborn-with-parents), Attachment Theory with its psychotherapeutic developments, epigenetics and Neuroscience have enabled us to observe the progressive acquisition of capacities in the newborn and the infant – ranging from his perceptive capacities to an increasing understanding and recognition of the environment, interpersonal contact and what has approximately been called affective communication and is now acknowledged as the early capacity for some cognition about the world, the others and the self. In these observational and experimental studies the above-mentioned sciences agree in emphasizing the basic importance of the first months of life – both in the fetal and neonatal periods – in determining what functional structure is formed in the brain, and the mind, and in conditioning its future development. We have just briefly described the former factor that affects the individual’s neuro-mental development: It is the learning structure that determines what the person learn from the experience he encounters and in the experience he goes through. What is operating at the very beginning? What can initiate an experience that builds the functional structure which will then be operating? We do not know anything or very little about the making of the early core of the functional structure which will open the way to “experience” and therefore develop structures capable of further processing. At what point of the fetal life? Elsewhere [14] I made an hypothesis about this “zero point” of the development of the mind. We do not know

to what extent this is to be referred to genetics rather than epigenetics – that is, the biology inscribed in the genoma – or is caused by a contact with the environment that changes the genic expression. In other words, does the genoma is in charge only of the macromorphology of the brain and the number of neurons or is it also making some (functional) neural networks and regulates the capacity to process an early experience?

What determines the importance of the early phases of life is that the structure formed during those phases will condition the following ones with a ripple effect: to the extent that the basic structure is not optimal, it will negatively condition every ensuing learning and every ensuing function. Then, we have children at risk of psychopathology.

The second factor that we have mentioned in determining the quality of the “future” mind and brain is the neuro-mental structure of the adults that can get in contact with the fetus/the infant. The pregnant woman, the mother, birth professional, and the caregivers at birth and later. If these people have good quality structures and the physical and social possibility to take care of the infant, they will be able to establish a good relationship with the child that will determine qualitatively good learnings for his ensuing development and therefore a good basic neuro-mental structure for all future development of that person. If the structures of the caregivers have smaller or bigger deficiencies, there will not be the possibility for a relationship with the child where the quality will ensure a good development of his basic neuro-mental structure that, in turn, will allow for a further good development.

That having been said, it should be easy to deduce how wrong and harmful can be the ingrained idea that infant development is determined by nature (or the genoma) or needs to be understood as being automatic. We are used to saying “neurological maturation”, “cerebral maturation”, but the verb “mature” is misleading. The brain does not mature in the proper sense of the English word. The brain is constituted from relational experience, it is constructed well or badly depending on the quality of the relationships it happens to experience.

Neuroscience has shown that the quality of relatedness, in a ceaseless communication occurring beyond words and intentions, creates synaptic connections and new neural networks that are the memory of what has been learned and of the capacity for learning:

a good relationship produces connections and neural networks that are functionally more effective in order to learn and perform reality-oriented functions. On the other hand, asyntonic intrusive relationships produce new though dysfunctional connections and their corresponding memories that are not so apt to generate a mental development that ensures an optimal mind. They can cause what we mean by psychopathology. These effects are regulated by different biochemistry. This means that it has been demonstrated, even biochemically, how the quality of relatedness produces different functional “qualitites” of the brain.

What we have described so far has been explored in greater detail in some of our previous books [8, 19-24] also with several illustrative figures. Here we just mention two of them, where one can deduce how Perinatal Clinical Psychology needs to be developed. The first one (Figure 2) illustrates how the neuromental structure of the infant is the final outcome processed by using different orders of experience (“composing” different orders of information), including those of the neuro-mental structure of the parents (or the caregivers) that, in turn, carry the processing of the experiences they have gone through (and are going through in having a child, see “A path towards filiation”) themselves, as well as the elements that their parents, that is, the grand-parents, have handed down to them when they were children. The second one (Figure 3) shows the intricate web of the different sources of messages that are received and processed. Here the parental skills – given by the parents’ structure – stand out (double circled ellipse). That is where we need to intervene. Perinatal Clinical Psychology needs to operate mostly on the parental couple, if we want to remedy or improve a negative transgenerational circle.

4. ILLUSIONS AND CONFUSIONS OF CONSCIENCE

As we can deduce from the previous figures, the communication that conveys the information going from the neuro-mental structure of the caregivers to the nascent structuring mind of the infant is essentially a non-verbal communication: in the first months of life what the child’s brain learns comes from the caregivers is not conveyed through words. Affects are conveyed, but this is a vague way to indicate the elements from which the brain is actually learning. It depends on the fact that messages are given outside awareness and cannot be translated into words: they are “ineffable”, and yet for this very quality they have a structuring effect on the mind of the child. The elements that come

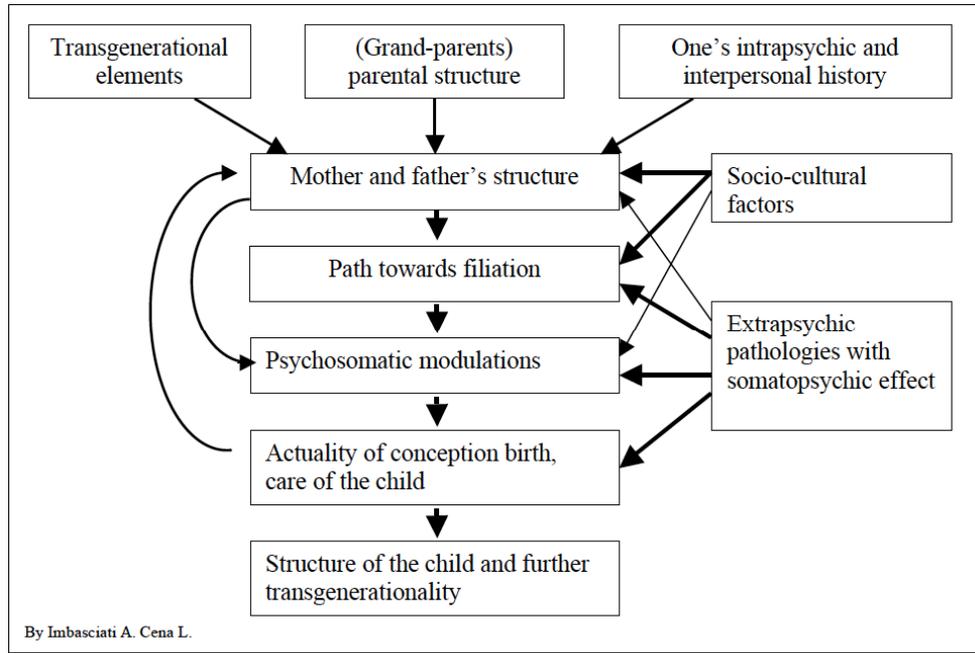


Figure 2:

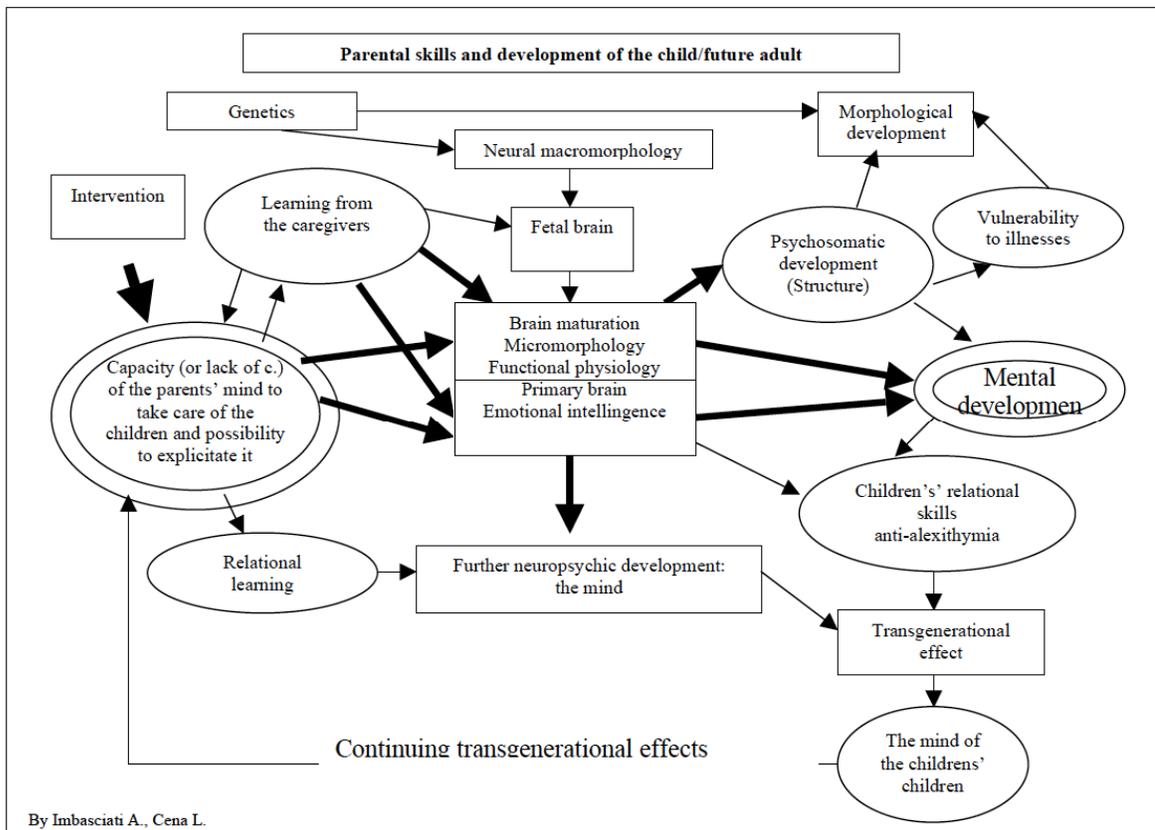


Figure 3:

across and structure the mind are a direct expression of the transmitting structures – the structure (without awareness) of the child and the structure of the caregivers, that are supposed to be the basis for the

child's structure. Psychoanalysis is right when it talks about mutual communication between two unconscious. Schore (2003a,b) [16, 17] describes the experiments of neuroimaging of the mother/child's

brains when they are in syntony, that is, in communication rather than in an asyntonic, potentially pathogenic communication.

Hinting at a domain of communication which is not controlled by awareness gives me the chance to clarify a question I am often asked: Is it possible to change one's own character? I think that an understanding of what I have said so far carries the answer.

What has been labeled as character is an aspect of mental activity that is based on implicit memories essentially regarding relational styles with the others and with oneself. By oneself I mean as one really is and not as one believes or feels to be. These are "things" beyond all conscious intention and beyond the so-called will, oftentimes even outside consciousness. I say "things" because we are now dealing with the ineffable – sub-symbolic and asymbolic implicit memory. Off course, the character can change and is in fact changing throughout life all the time, but not by will power. We are not the master of our character, just as we are not the master of our mind. The so-called will, currently very much debated among neuroscientists, seems to concern only a very small part of the mental activity: most of the authors think that will power can inhibit what the mind has decided but it cannot decide itself [25]. Consciousness – that is, what we believe we are thinking, doing and being – is a mirror of illusions that we take as being the reality. Among the illusions there is the obstinate ingrained idea, in spite of its confutation by science, that psychic troubles can be effectively tackled as they manifest themselves and it is not worth looking for them before their onset.

These considerations let us think about the importance of preventing the risk of any deficiency, psychic illness or anomaly, including being "bad tempered": a prevention that, given the remote roots upon which the structure of the mind is structured, needs to address the perinatal phase.

We have emphasized that in the perinatal phase the positive or negative effect of the relationship between the caregivers and the child depends on their mental structure. While this has its roots in their childhood, it has evolved during their life: particularly when the couple formed and even more so when they decided to have a baby or to keep the child. This has a greater value for the woman, when the perception of her own bodily changes has strong psychic effects (whether they are conscious or not) and when the fetal phase makes her the only arbiter of the communication with

the child. The effects of the relational quality within the parent/child context are strongly affected by whatever has happened to the mother before the child's birth, in her relationship with the child's father and in the mind of the father. There is a rich literature about the "parental project", that is, what can be observed occurring in the minds of the future parents that will undoubtedly affect how their minds will function when they will have to deal with their real and alive child and that will condition the relationship after the delivery, in fact a relationship that is already developing when the child is still in the womb.

Perinatal Clinical Psychology focuses much more on the parents than on the infant. To parents at risk, which I have already mentioned, the child may "appear" perfectly "normal", maybe with some difficulty in breastfeeding, some sleeping troubles, that are usually neglected, whereas greater difficulties and pathologies show up much later, in primary socialization, at school, in adolescence and later in adulthood. And the parents are involved more or less directly in this genesis. A supporting and helping work, psychotherapy in early childhood needs to necessarily be addressed to the parents. Later also they will have to be somehow engaged.

The support of Perinatal Clinical Psychology becomes binding when during pregnancy, delivery and puerperium appear some complications or in case of severe social conditions of the parents. However, it is a priority to emphasize a proper training of birth professionals aiming at preventive care given to all the couples, including a specific screening, carried out by competent psychologists, to identify the "couples at risk": couples at risk of a child at risk. There can be parents who look and are perfectly normal in their family, social, marital lives, that is, they can seem to be good parents but do not have the qualities of an internal structure that would allow them to have a good relationship with their child and a (non-verbal) dialogue enabling the development of a good enough structure in the child's brain for his future life.

This structure of the children will enable their capacity to become good parents to bud. We need to keep the transgenerational effect in mind [24]: a deficit of "parental skills" – even in parents that would be absolutely normal as persons – does not only produce children at risk of psychopathology but also and more frequently children that, once they will be adult, will be lacking enough parental skills for their own children. A pathogenic transgenerational circle can set off, and we

need to keep it in mind in assessing the need for a Perinatal Clinical Psychology care with a preventive function.

Moreover such care services can also support “fairly good” or “good” parents by enhancing their parental skills, so that they can raise their children as better children and the latter will become better persons. In this way, an improving rather than worsening transgenerational circle can be triggered.

So, an equipped Perinatal Clinical Psychology is able to carry out an important task for the future of the human kind. The neonatal staff, though with differentiated competences, need to be integrated so that each and everyone knows some essential principles of the competence belonging to the other professionals. In this case, I am thinking of the knowledge about the remote genesis of all psychic (and psychosomatic) dysfunctions and the need for an adequate prevention because of their transgenerational importance.

Likewise, psychologists need to know about the medical and social vicissitudes that can occur, affect and complicate psychic development.

This paper, originating from a training programme for a variety of birth professionals aims at a necessary interdisciplinary integration for the preservation of the future generations. The development of Perinatal Clinical Psychology may be epochal.

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