

# The Science of Prenatal Education

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**Abstract:** Prenatal Education considers the human being in his development from the time before conception, right through to his complete formation in the womb. The aims of prenatal education are to remove everything that would hamper the latent potential of the baby to be born. In so doing we allow the baby to form himself and to grow and develop in a balanced and harmonious environment. The background experience within Prenatal Education has evolved through a significant relationship between parents and the child. The appropriate stimulation of the unborn child has made us aware of the numerous benefits that aid the process of growth of the baby and the involvement of the family itself. New aspects and new views have appeared on the horizon regarding the nuclear family, the role of the parents and in general the way in which society relates to every day human life and how it relates to childhood. This is still something that is little understood and is considered of little value.

**Zusammenfassung:** *Die Wissenschaft der pränatalen Erziehung.* Vorgeburtliche Erziehung bezieht sich auf die Entwicklung des Menschen von der Zeit vor der Konzeption an und durch die ganze Zeit im Mutterleib. Die Ziele der vorgeburtlichen Erziehung bestehen darin, alles aus dem Weg zu räumen, was die latenten Potentiale des zur Welt kommenden Kindes behindern könnte. Dadurch ermöglichen wir dem Kind, sich selbst zu bilden und in einer balancierten und harmonischen Umgebung zu wachsen und sich zu entwickeln. Die Hintergrunderfahrung bei der pränatalen Erziehung entwickelt sich durch die bedeutsame Beziehung zwischen den Eltern und dem Kind. Die angemessene Anregung des ungeborenen Kindes hat uns für die vielfältigen Unterstützungsmöglichkeiten sensibel gemacht, die den Prozeß des Wachstums des Kindes und die Entwicklung der Familie selbst fördern. Dabei sind neue Aspekte und neue Gesichtspunkte aufgetaucht – zur Kernfamilie, zur Rolle der Eltern und zur gesellschaftlichen Prägung unseres täglichen Lebens und unserer Kindheit. Dies alles ist noch wenig verstanden und wird in seiner Bedeutung unterschätzt.

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One of the final goals of Prenatal Education is that of helping to discover the deeper significance of the word “education”, which should not be confused with mere “schooling”, i.e. those useful skills and notions that help us adapt to social and cultural life.

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Education is a dynamic process which requires an active role on the part of the interested parties; it considers human beings in their development from before their conception, when they were still in the mind and heart of their parents. We must also take into consideration the constructive globality: this being made up of the genetic code inherited from the parents, their own life plans and purposes unique and original as well as their physical, emotional and existential experiences due to the continuous interaction with the surrounding environment.

Through education we can remove all impediments, everything that gets in the way of allowing the latent potential of the unborn child to be awakened and brought to light. Thus letting the baby form itself and be formed in a balanced and harmonious way.

The meaning of the word "education" ranges from the concept of "to bring out" to its complementary "to bring up" (Bertin 1994, p. 28). The "bringing up" emphasises the fundamental role of the environment and particularly the fundamental role of a mother and father's love during the growth and formation of the child. The "bringing out" considers the needs of the baby i.e. "bringing out" all that exists within himself becoming all he can be, taking the leading role in his own life. As a matter of fact the act of educating in itself requires the direct involvement of the child. The child being endowed with a sort of decisional freedom to decide if he may accept or reject any possible suggestion and manifest some of his own, according to the dynamic capacities the human system has for self-regulation, self-change and self-development. (Mercurio 1995, p. 16)

We know that, at a biogenetic level, the psychogenetical structure plays an extremely important role in determining the development of a human being: since that psychogenetical structure conditions any possible choices, in a set environment, and in which the direction is precisely orientated.

I have used the word 'psychogenetic' on purpose to emphasise the fact that it is not possible to separate the mind from the body, not even at the prenatal stage.

And it is just this unity of mind and body that has made us aware of the importance of the prenatal phase, not only in the development of the organism but also for the development of the individual personality; that individual personality from a hereditary individual and social environmental point of view was formed right from the very start (Soldera 1995, p. 49-62).

When a child is born, he brings with him nine months of experience and shows a well defined individuality as well as signs on his hands and body which make him different and therefore distinguish him from any other human being. Thanks to science in this century, even if somewhat limited, has given us the possibility to see for ourselves prenatal life and the possibility to know more. This being achieved through biomedical and laboratory instruments such as the ultrasound registration techniques and other more inquiring methodology ever increasing in sophistication. We now know that:

1) The unborn child has a complex and an unforeseeable intrauterine life and a specific individuality that remains unchanged in time.

In the wake of the important diagnostic activity which began with the introduction of the ultrasound, in the sphere of clinical inquiry; research made through echographic observation of fetal behaviour following the inquiry method made

by Ester Bick; we now have begun to understand what happens in the fascinating and varied world of prenatal life.

It has been discovered that twins show from the early stages of pregnancy, temperamental and behavioural differences as well as a characteristic and lasting interactive communication modality. Max and Marco, twins who in the womb had shown themselves to be very quarrelsome, at the age of about six continued to hit each other everytime they got together (Piontelli 1992a, p. 116).

Luca and Alice were temperamentally different before being born. They caressed each other delicately through the membrane that separated them in the womb, exactly as they would do when they were one year old, only this time they would be separated by a curtain (Piontelli 1992b, p. 235). Furthermore, starting from the first week of pregnancy, and even more from the 16<sup>th</sup> and 17<sup>th</sup> week, the babies to be born showed some preferences, reactions and some well defined behaviour models. The same models that could also be seen after their birth.

A research made by Prof. Hepper of Queen's University, Belfast showed that the preference towards the use of the right or the left hand begins during the first 15 weeks of pregnancy. This preference remains unchanged even later on.

The inquiries I myself made in the sphere of psychology of pregnant women, showed that in a great number of cases, the changes that happen in the inner life of mothers during pregnancy are mostly due to the presence of the child and to his particular psychophysical characteristics (Soldera 1995, p. 107–130).

Carla, a 34-year-old mother of two boys, writes: "I am in my third month of pregnancy and I have observed changes in myself on a physical as well as on a psychological level. As for my behaviour, I have changed in various ways. Firstly I was more orientated towards the inner world. I was fond of painting and of Art in general. Now, on the contrary, I have become more interested in the external world (news, world events) and I am more intolerant of injustice (social and bureaucratic) and the abuse of power. Now I find it difficult to paint, and the pastel colours I once preferred have changed to vivacious, bright and strong colours. I like to know new things and I would like to deepen and enrich my cultural knowledge. I am particularly interested in history as the evolution of other ethnic groups. Now I like simple music, with classical instruments such as the organ, the harp, the triangle and the xylophone. I am attracted to mystic music with ancient sounds, for instance Celtic music. The funny thing is that I have changed my driving style. Once I used to drive very carefully and attentively at a moderate speed; now on the contrary I drive with more confidence and sometimes I am more daring." – Then she adds a final observation: – "These and other changes have not only been noticed by myself, but my husband and children have noticed them too."

The same lady told me, that from the beginning of the pregnancy she thought that the child was a male. As a matter of fact, it was. According to the research of Dr. Noia of the Prenatal Diagnosis Centre of the "Policlinico Gemelli" of Rome, 84,7% of expectant mothers are in a position to 'feel' if their child to be born will be male or female. All this is not something new. Back in 1700 the Swiss Theologian and writer J. K. Lavater (1776–1818) declared the following: "If a woman could describe in detail all the imagination states her soul goes through during pregnancy, she could partially foresee the philosophical, moral, intellectual and physiognomic destiny of her child to be" (Janus 1997, p. 22).

2) The baby to be born has precocious sensory abilities and neuropsychical competence: the sensory systems are ready to function a long time before having reached their structural maturity. The tactile receptors are present in the mouth region from the 7<sup>th</sup> gestation week, from the 11<sup>th</sup> week on the skin of the face and from the 15<sup>th</sup> week they appear on all parts of the body. The cutaneous sensibility arrives progressively allowing the baby to explore the uterine walls and the placenta with his hands and feet and so to have his first tactile experience. According to studies made, the manual stimulations of the human foetus practiced at the end of gestation through the abdominal tissues, cause different heart reactions (Wolker 1973, p. 351–354). The structure of the taste apparatus is relatively definite from the 13<sup>th</sup> week of gestation, with the receptors located on the tip of the tongue, hind edges and on the hind V part of the tongue, allowing the baby to distinguish the various tastes: bitter, sweet, salty, acid. The neuroreceptors of the main olfactory organ are just sketched at the 6<sup>th</sup>–7<sup>th</sup> week of gestation; afterwards they show themselves to be particularly sensitive to certain gaseous molecules. After the birth, the child is able to distinguish the smell of the mother from the smell of other people (Montagner 1993, p. 2). The amniotic liquid, according to the food the mother has taken, offers gustative and olfactory stimuli to the child who participates indirectly in this way in his mother's eating habits and is indirectly sensitized to those habits and uses (Hepper 1995). Starting from the 7<sup>th</sup> week of gestation, the optic nerve is formed, followed by the retine cells. If a cold light source is introduced to the womb during an amnioscopy, it causes the acceleration of the cardiac rythm (Smyth 1965, p. 920). Considerable changes of the heart-beat were recorded according to the kind of light that was directed to the mother's abdomen. It was observed that children who had a more intensive foetal reaction to the external light were stronger at birth (Ludington-Hoe 1998, p. 27).

Starting from the 8<sup>th</sup> week of gestation, the middle ear starts its anatomic and functional maturation. The cochlea, auditory organ of the internal ear, completes its morphogenesis at the 10<sup>th</sup> week of gestation, it reaches its definitive size at 5 months pregnancy and at 8 months its definitive maturation, with the development of the external ciliated cells and of the synaptic afferent-efferent organization. (Lecanuet, Granier-Deferre, Schaal 1992, p. 48)

Many researchers support the idea that the prenatal hearing is more tactile: the sound seems to be propagated through the stimulation and the vibration of the amniotic liquid.

At the 28<sup>th</sup> and in certain cases also at the 22<sup>nd</sup> to 24<sup>th</sup> gestation week, the auditory apparatus is in position to react to strong noises and successively it succeeds also in discerning between different sounds and syllables, such as "babi" and "biba" (Lecanuet et al. 1987, p. 161–164).

The unborn child is a sensitive and intelligent being, capable of a sensorial and cognitive learning, equipped with an affective prelogical and prerational conscience based on instinct and intuition.

During prenatal life, children learn from television songs and musical motifs after repeated exposure in the maternal womb (Pannenton 1985). They recognize the different tapes and, once born, they suck at the necessary speed that lets them listen to the story they knew before. They do not behave in the same way with

other stories, even if written by the same author (DeCasper, Spencer 1982, p. 133–150).

Thanks to tests based on a non-nutritional situation, DeCasper and his followers have demonstrated that a baby aged 2–3 days prefers to hear a voice rather than silence, a female voice rather than a male voice and mother's voice, even if recorded, rather than the voice of another woman (Busnel 1994, p. 39).

Finally, we can examine the cognitive meaning of dreams. Suitable sound-graphic studies show that the REM sleep (Rapid Eye Movement), which shows the beginning of an oniric activity, begins at the 23<sup>rd</sup> week of gestation, fostering an active action of integration and of mental development processes (Mancia 1995). These data let us suppose that children learn in prenatal life a complex range of sensorial data, operate with an open mind and manifest a strong tendency towards emotional experiences, in order to be able to build gradually a solid bonding with their mother and the surrounding world.

3) The child to be born is subject to the environmental influences with which he is in continuous and constant interaction. For the child nested in the mother's womb, the mother – as Marie-Andree Bertin says – is physically and psychologically his “living raw matter”, the mediator between the baby and the world (Bertin 1994, p. 3), and at a time a biological, emotional and cultural bonding. She answers for his existence protecting him from external aggressions and guiding him to conquer his autonomy through a gradual separation.

“Everything the mother goes through, the child goes through it with her” – says an ANEP-slogan – and this experience has been repeatedly pointed out by various research begun in 1940 (Verny, Kelly 1982, p. 46) on maternal stress and on the global living condition of the mother during pregnancy (Rottmann 1987), in which specific consequences on the state of health and on the vitality of the child have been recorded. These data are confirmed in the sphere of clinical psychology and verification in some particular enquiries intended to find a significant correlation between the experiences of pregnancy and the marks left on the body.

Dr. Levine, a British dental surgeon, noted signs of prenatal traumas in the morphological structure of the milk-teeth (Bertin 1993, p. 67), while Dr. Vincenzo Di Spazio found some in the iris of the eyes (Di Spazio 1997) of the child. The psychiatrist Federica Mormando has singled out a significative correlation between the shape of some dermatoglyphs of the right hand and the intense and lasting rejection of the child by the mother (Mormando 1994). (Lack of affection towards the child.)

The attitude of the group of relatives, the condition of the small family and the situation of the couple have a big influence on the life of the baby to be born. Very few experiences have such a rending outcome in the mother, and consequently on the child, as worries caused by a husband who neglects and mistreats her. Children born from unhappy families have been shown to be more fearful than other children (Stott 1977). Many mothers are aware of the effects caused by the external environment. They noticed a continuous movement of the child they were carrying in their womb, until they went to a more silent and quieter place.

In 1927, Prof. Forbes of the Rochester University recorded foetal reaction to music played at a certain distance, and reported some interesting cases of preg-

nant women who, during a symphony concert, were forced to leave the hall as they could not stand the continuous kicks of the foetus. A research made at the Badeloque Hospital in Paris on 600 women, starting from the 6<sup>th</sup> week of gestation, according to the number of decibels emanated by a sound source, a different heart and motory reaction of the foetus (Soldera 1994, p. 18) was recorded.

All this is opening up new views concerning the child and the way to approach and to go through pregnancy. During intrauterine life, the child begins not to be considered as an undifferent being anymore, incapable and incompetent, lacking in any psychic faculties, endowed with a body and not with a soul, but as a sensitive and competent human being, endowed at the embryonic stage with all human potential. Only by taking the appropriate steps can this potential be discovered by the parents.

In the proper surroundings it can bring numerous advantages and remarkable benefits to the unborn child and his family. From all sides it is unanimously agreed that any suitable peripheral stimulus reaching the child during the gestation period determines a good part of his qualities (Relier, p. 68).

The results of the enquiries conducted by Thomas R. Van De Carr in the United States (Van De Carr 1995, p. 6–15), Beatriz Manrique in Venezuela (Manrique et al. 1993, p. 153–186), and Chairat Panthuraamphorn in Thailand (Panturaamphorn 1993, p. 187–220), and many less systematic studies as those made in France (Fiscon 1993, p. 38–42) with music, in Spain and in Germany with haptonomy (Dolto-Tolitch 1991, p. 37) and in Italy in Parma with Prenatal Education (Ferrari 1996) have pointed out in general the advantages that can be obtained through stimulation and prenatal bonding.

The parents strengthen their own union and the bonding with the child, they determine in a clearer way their role, the anxiety and level of fear is lowered as they make themselves more ready to modify their life style for the benefit of the child. The delivery and breastfeeding become easier and, at the same time, they notice less the passage from 'before' to 'after' birth, between the endo- and the esogestation, with a noted lessening of post-partum depression. As for the child, it becomes easier for him to grow and develop, acquiring sensorial and relational competence with increasing personal awareness: in general, the child seems calmer and more secure, and probably this helps him face the natural breast-feeding experience and, more in general, the relationship between the members of the family, making him more able to adapt to his new surroundings.

At the same time there are some unresolved 'knots', some big contradictions and awkward areas but these first experiences have also opened up new horizons and have been given importance. First of all the relationship between men and women (Riponti, Soldera 1995, p. 205f.).

The equality of women achieved on a formal plane did not bring yet any substantial improvement in the intimate relationship between partners. This is also due to the tendency of our society to privilege the masculine values of force and power to the detriment of the female values of cordiality, solidarity and love. Most of the time couple and family relationships are still based on a negative and not a positive opinion of one another. They tend to be 'vertical' i.e. based upon the domination of one upon the other, and not 'horizontal' (Pacifico, Marletta 1981),

i.e. based on mutual respect and equality, beyond any other possible sexual or generational diversity.

The 'horizontal' relationship, if well balanced, is the only one that allows the full expression of love and open-mindedness, not going against each other but finding some agreement on goals to be achieved, in order to achieve them together. We are now only beginning to understand how important it is to go beyond the traditional roles of father and mother (Bonomi 1995, p. 36–44) as they have been up to now; that each parent has to face up to the give-and-take of the relationship, each one giving reciprocal help; that there isn't just one person in the limelight and the other in the shade. Each partner pushing beyond his own limits and in all this discovering each others potential. Freely flowing in one's own light and beauty.

It's time for parents' true nature to come out filling family life with new energies and with a new vitality, giving to their children secure guidance founded on comprehension, free from prejudice.

As the ANEP-slogan says: "Everything the mother goes through, the child goes through with her"; but we could also say: "Everything the parents go through, the child goes through with them". As a matter of fact, the child needs both parents in various ways, not by the mere fact that he possesses 50% of the genetic qualities of each of them. During pregnancy it can be seen that the natural psychophysical change of the mother brings a sort of stability in the father.

Another question to consider is that of the reflection of the inner world on the mother to be, something still given little consideration or appreciation in our practical everyday life; on the contrary we know that pregnancy confirms this inner world – that life has its origin within us, expressing itself externally through feelings and emotions. Still, these are things that are kept rather hidden or played down, just as if one could neutralize life by denying the possibility expressing itself through the primary language of the body and of the emotions. Furthermore, there is the stream of expressing emotions and thoughts into gesture and words, to achieve, as Veldman says: "The tone of representation" (Veldman 1994, p. 3–18).

The prenatal experience of the psychotactile communication has widely demonstrated that it is possible to communicate with the child to be born through this channel. Moreover, the marsupium-therapy has shown what human warmth can do for the survival and the health of the premature babies (Martinez 1996, p.130) Even a simple massage practiced on the child has been shown to be a precious source of well-being (de Røiste et al. 1995, p. 295–315).

Finally, we cannot neglect the fact that in general little attention is given to the child (Chamberlain 1994, p. 188). The problem of sexual abuse and work exploitation is a clear example of this. Many parents do not realize a child's potential and neglect his very existence, not rightly considering his needs and wants during the prenatal phase.

In addition, at this first stage of life, the child needs to be accepted, loved and considered as a human being and as an active person. The teachings of Milani Comparetti (Milani Comparetti 1981, p. 89) highlight the fact that only the true recognition of another person – in this case that person being the baby – in his globality and entirety; only this recognition can give the go-ahead to a real exchange of communication between both parents. The communication is a dynamic creative

process which, in our case, allows children to grow up and become adults, and from adults to grow as persons in their own right.

The Prenatal Education confirms directly that a child is much more than what one generally thinks him to be. He is the purest expression of life's energies and the bearer of a message of hope and trust for all humanity. Some cultures have understood this, though, deciding to ring a bell not only when somebody dies but also when a child is born, announcing the happy news to the community. Many parents in difficulty who, during pregnancy, asked their unborn children for help, were able to draw closer to them and draw from their precious energy support and comfort.

An interesting contribution in that direction comes from Pietro Ferrucci (Ferrucci 1997). In his book "Children teach us" he puts forward the evidence of how important it is to listen and observe, so that parents can grasp entirely the reality of the child and to discover in him the source of life's values, such as spontaneity, simplicity, openness and joy, absolutely necessary for awakening in themselves the eagerness to grow and to accompany him to become a valid world citizen.

Another big question concerns the meaning of the existential plan and purpose of the child to be born.

The entire education system of today is based on the connection between nature and culture. As in the case of the adult person – it means to say that culture tries to teach the child and to make him understand the rules of life – nature which does not know them yet, uses all other means of persuasion: because "nature has no reason".

On the other hand, we know that the psychogenetic structure, defined after conception, contains in itself the life blueprint of the individual; this does not only concern the building of the physical organism, but also the existence itself of the individual, his properties and potential and his life purpose.

Therefore, to avoid being partial and limiting and to let 'space' only do the instruction, education needs to keep in mind that, besides culture and nature itself, there is also the purely subjective aspect, and therefore the existential life plan of the child. This depends on his own tendencies, his choices and of his own experience in his future. The opposite and contrasting action to all this can only have a devastating effect in time.

If this new collocation of the child were accepted in the actual school system, and be particularly attentive in taking care of the question of the school programs, translating itself into more engagement and consideration towards the pupil, his inner life, his real personal needs and his educative and formative needs. In that case, we would probably have less school failures and lack of motivation in learning, in favour of a healthy engagement towards study and the school experience, and in the future towards work and society.

To conclude, let us now imagine together for a moment what would happen if the knowledge acquired in the sphere of the Prenatal Education could be brought to all women, all men and all the professionals in the world.

We go on hoping that this may soon happen through making the whole population aware of the importance of the prenatal period in man's life, together with a capillary action done by all those involved in this particular field, spreading and practicing the message of Prenatal Education, supported by all elements coming



from the researchers, in order to be able to concretely contribute to better the quality of man's life, to reduce the state of suffering and of illness and to increase the degree of children's and of the new generation's well-being.

We also believe that this new science is, among many others, a precious and effective way to awaken man's conscience, enriching his heart with new feelings and his mind with more knowledge, contributing to the realization of a new civilization: a civilization of love.

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