

# Is there Psychological and Emotional Life from before Birth? The Prenatal Ego States

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**Keywords:** bonding, affective synchronization, mother-fetus relationship

**Abstract:** From the observation of the bonding behavior that the newborn shows even during the first hours of life, the high degree synchronization and transaction that he shows during interaction with his mother, and the capability that many mothers have of immediately establishing a relationship with him, we may conclude: bonding after birth, described by many authors as a separate entity, is really the continuation of the intrauterine contact. The Affective Synchronization between mother and child is a continuation of the Affective Synchronization between mother and fetus. One of the most surprising and interesting aspects of the mother-fetus relationship is the bond of emotional dialogue that will take place between the two of them. Through analysis of i) Fetal Heart Rate; ii) Maternal Heart Rate (before delivery); iii) Fetal Movements; iv) Movements of the Newborn; vi) Newborn Heart Rate (for a total of 15 aspectant mother), we evaluated the symbiotic relationship between the emotional state of the mother and that of the fetus. That is, if the emotional state of the mother (Activated vs Relaxed) [visually induced with the “International Affective Picture System: slide catalogue”, Lang, Ohmann, Vaitl, 1988] might influence that of the fetus, and if there is a limb between the fetal and the newborn conditions, when in this latter state intrauterine emotional stimuli and situations are represented in the cradle. And what type of behavior does the newborn have when, he is made to listen to the heart beat of a different mother (control group). From the analysis of the results it is possible to conclude that: 1) The newborn is more capable of recognizing his emotional state which regards to his own mother when compared to an experience with different mother; 2) It is a through when presented with another mother’s heart beat, he only responds to the rhythm of a noise he heard in the past nine months, where as with that of his mother he not only responds (reacting or relaxing) but also is capable of recognizing it and giving more “creative” responses; 3) It could be hypothesized that in the intrauterine environment different “Prenatal Ego States” that make the newborn capable of distinguishing between different emotional states of his mother (from birth).

**Zusammenfassung:** *Gibt es ein psychisches und gefühlsmäßiges Leben vor der Geburt? Vorgeburtliche Ich-Zustände.* Aus der Beobachtung des Bindungsverhaltens des Neugeborenen

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in den ersten Stunden seines Lebens, der hohen Synchronisation von Wechselseitigkeit in der Interaktion mit seiner Mutter und der Fähigkeit vieler Mütter zu einer unmittelbaren Beziehung mit ihm, kommen wir zu dem folgenden Schluß: Die Bindung nach der Geburt, wie sie von vielen Autoren als ein eigenes Geschehen beschrieben wurde, ist in Wirklichkeit die Fortsetzung des intrauterinen Kontaktes, der lange vorher begann. Die affektive Abstimmung zwischen Mutter und Kind ist eine Fortsetzung der affektiven Abstimmung zwischen Mutter und Fötus. Einer der überraschendsten und interessantesten Aspekte der Mutter-Fötus-Beziehung ist der emotionale Dialog, der zwischen beiden stattfindet. Die Analyse der fötalen Herzfrequenz, der mütterlichen Herzfrequenz, der fötalen Bewegungen, der Bewegungen des Neugeborenen und der Herzfrequenz des Neugeborenen bei 15 Müttern und Kindern diente der Bewertung der engen Bezogenheit der emotionalen Zustände bei der Mutter und beim Fötus und sollte klären, ob diese enge Bezogenheit auch nach der Geburt andauert. Das bedeutet, daß die emotionale Zuständigkeit der Mutter (Aktivierung versus Relaxation – visuell angeregt durch das “affectiv picture system” von P.J. Lang), die emotionale Zuständigkeit des Fötus beeinflußt, und das bedeutet dann, wenn es eine Verbindung zwischen dem Befinden des Fötus und des Neugeborenen gibt, daß im letzteren intrauterine emotionale Zustände und Situationen auch noch lebendig sind, wenn er in der Wiege liegt. Dies wird verglichen mit den Reaktionen auf den Herzschlag einer anderen Mutter (Kontrollgruppe). Aus der Analyse des Ergebnisses kann man schließen, daß der Neugeborene seine emotionale Befindlichkeit besser in der Beziehung mit der eigenen Mutter als mit der fremden Mutter erleben kann. Es wird deutlich, daß er bei der fremden Mutter nur auf ein Geräusch reagiert, dessen Rhythmus ihm vertraut ist, während er beim Herzschlag seiner eigenen Mutter nicht nur reagiert, sondern innerlich wahrnimmt und mehr “kreative” Reaktionen zeigt. Es kann geschlußfolgert werden, daß es in der Uterinzeit verschiedene “vorgeburtliche Ich-Zustände” gibt, die es dem Neugeborenen ermöglichen zwischen verschiedenen emotionalen Zuständen seiner Mutter zu unterscheiden.

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## Introduction

From the observation of the bonding behavior that the newborn shows even during the first hours of life, the high degree synchronization and transaction that it shows during interaction with his mother, and the capability that many mothers have of immediately establishing a relationship with it, we can arrive at a conclusion: the bonding after birth, described by many authors as a separate entity (Stern 1987; Bowlby 1989), is really the continuation of the intrauterine contact that began long before (Van den Bergh 1990). The Affective Synchronization between mother and child is a continuum of the Affective Synchronization between mother and fetus. One of the most interesting aspect of the mother-fetus relationship is the bond of emotional dialogue that will take place between the two of them (Verny and Kelly 1981; Nathanielsz 1994; Righetti 1995a, 1995b).

The hypotheses and the questions of this research are:

- a) Might the emotional state of the mother (Activated vs Relaxed) might influence that of the fetus?
- b) Is there is a limb between the fetal and the newborn conditions, when in this latter state intrauterine emotional stimuli and situations are represented in the cradle?

- c) How do Fetal Heart Rate and the Fetus's Movements change when the Maternal Heart Rate varies in activated and in relaxed state?
- d) What type of behavior does the newborn have when he is made to listen to the heart beat of his mother? And a different mother (control group situation)?
- e) Is there emotional life from before birth?
- f) Is it possible to suppose that in the intrauterine life there exist some Prenatal Ego States [Righetti, 1996a] that make the newborn capable of distinguishing between her mother's different emotional states (from birth)?

### **Methodology**

According to the literature (Ianniruberto, Iaccarino, and Tajani 1978; Ianniruberto and Tajani 1980, 1981; Righetti 1996a) the physiological analysis includes Maternal Heart Rate (MHR), Fetal Heart Rate (FHR), Fetal Movement (FM) (Murooka 1974; De Casper and Sigafos 1983), Neonatal Heart Rate (NHR) and Neonatal Movement. The study has been divided in two principal phases (Phase 1 "Prenatal", and Phase 2 "Neonatal").

#### *Phase 1 "Prenatal"*

Activation vs Relaxation mother's emotional states are induced with 12 slides of "International Affective Picture System: Slide Catalogue" (Lang, Ohmann, and Vaitl 1988).

International Affective Picture System: Slide Catalogue (Lang, Ohmann, and Vaitl 1988)

This deals with a set of 12 slides, used for the stimulation of emotional states in pregnant women. They include 6 "activating" slides and 6 relaxing slides. These standardised slides of psychophysical reactions (whose content takes account of the pregnant state of the subjects) are based on Lang's tests in that they induce a state of activation or relaxation. This leads to an increase or decrease in HR and in other psychophysical values. Each subject upon seeing these slides has an emotional and psychophysical reaction of activation (agitation) or relaxation. The 6 activating slides are separated from the 6 relaxing slides by a pause of 2 minutes in order to allow the subject to return to their initial state. The duration of exposure of 20 sec.

Slide 1/Act.: a man with a knife who is trying to cut the throat of another;

Slide 2/Act.: a bandit with a pistol that is threatening a person;

Slide 3/Act.: the muzzle of a dog with an open mouth showing sharp ferocious teeth;

Slide 4/Act.: the open mouth of a snake raised up as if to strike;

Slide 5/Act.: a man and a woman having sex;

Slide 6/Act.: a man and a woman in an erotic position;

Slide 1/Rel.: a flower in a lawn;

Slide 2/Rel.: aerial view of lawns;

Slide 3/Rel.: green wood taken from above;

Slide 4/Rel.: bird resting on a rack;

Slide 5/Rel.: a deer drinking at a lake;

Slide 6/Rel.: rhinoceros coming out of the water.

The duration of the stimulus has been divided in this way:

- 15 min. inchoate of adaptation: connected subject to the unities of mapping, without canning, without incitement;
- 15 sec. of base line: connected subject to the unities of mapping, with canning, without incitement;
- 20 sec. of exposure (slide): connected subject to the unities of mapping, with canning, with incitement (for a total of 240" x 12 slides);
- 120 sec. of break: among the first 6 slides (Activation) and the second 6 slides (Relaxation), connected subject to the unities of mapping, with canning, with incitement, to control the return of base line level.

The physiological analysis includes

- 1) Fetal Heart Rate: registered with cardiocograph;
- 2) Maternal Heart Rate: registered with fonocardiograph;
- 3) Fetal Movements: registered with ecograph (connected to VCR).

#### *Phase 2 "Neonatal"*

The stimulus was the mother heart beat (registered in "Prenatal phase"), and the physiological analysis includes:

- 1) Newborn Movements: registered with videocamera;
- 2) Newborn Heart Rate: registered with neonatal ECG monitor.

The control group situation was obtained by making the newborns hear the heart beat of another mother: in this case it was possible to examine their different characteristics and their abilities to recognize their own mother or a different one.

The analysis of the movement included

- 1) extension movement of the inferiors limbs;
- 2) extension movement of the superiors limbs;
- 3) rotation and movement of the head;
- 4) opening and closing of the mouth;
- 5) hands exploring the uterine and placental surfaces (for the fetus);
- 6) hands exploring the cradle surfaces (for the newborn).

These items have been used like a principal "trace" of reading: in fact the movements have been deliberate according to a maximal value of their frequency: it is worth telling that the tonic-movements in the time of exposure of the stimulus-slide (in prenatal situation) have been counted and also in the time of exposure of the mother and extraneous-mother heart beat stimulus (registered in Prenatal phase).

The movements of the inferior limbs have been peculiarly analyzed (according to the literature). Three different statistical models have been used for the study of the result:

- i) Variance Analysis;

- ii) Co-Variance Analysis;
- iii) Co-Variance Analysis type  $3 \times 2$ .

### *Champion*

The group of subjects includes 15 aspectant mothers at about 30 weeks. An important characteristic of the champion to be monitored is that draws aside healthy subjects, without any type of trouble, that they conduct a pregnancy in the absolute normality.

Years Range:	23 / 34
Type:	primipara
Social level:	medium
Neonatal APGAR:	1° = 8.9   2° = 9.7   3° = 10
Characteristic of the subjects	

### *Qualitative Analysis*

Since has treated of a study that puts the analysis of the emotional fetal experience and the relationship mother-newborn, has seemed opportune to me to develop a further investigation of qualitative type on the behavior of the fetus (before) and the newborn (after). This datum has allowed me to check the contingent relationship between the "mother character" and the "character of the child". In fact, the nurses of the Neonatal Departmen have been asked to attribute a value from 1 to 10 for each child (two days from birth) knowing that 1 is Calm and 10 is Shaken and to report the type of behavior that the newborn has had during the day and it in the report with the mother during the breast-feeding and in the nursery moment.

### **Result: "Own Mother" Situation**

#### *Aspectant Mother Emotional State*

In Fig. 1 it is possible to see that the stimulus has brought a degree of change in the condition of the aspectant mothers: in fact when they see the activation slides their heart rate increases, but when they see the relaxation slides their heart rate decreases.

The variance analysis, the covariance analysis and the different rapport between BL/ACT., BL/REL., ACT/REL., on the MHR have a significance for  $\alpha < .001$ . A result that we expected to date the standardized nature of the "International Affective Picture System: Slide catalogue" (Lang, Ohmann, and Vaitl 1988) where the stimulus-slide has been selected.

#### *Fetal Emotional State*

From Figs. 2 and 3 can be deduced that with the change of the emotional maternal state there is a change of the values of heart rate and fetal movement; in fact these values increase or decrease (respectively from the base line) when the aspectant mother enters into a state of activation or into a state of relaxation. The variance analysis, the covariance analysis and the different relationship between

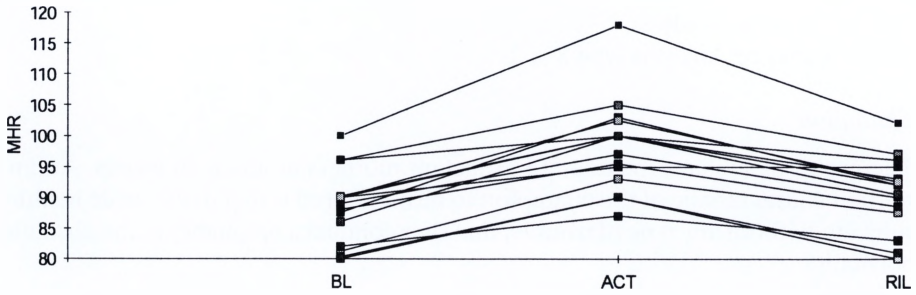


Fig. 1. Level of maternal heart rate (act./rel slide) (BL = base line, ACT = activation, REL = relaxation).

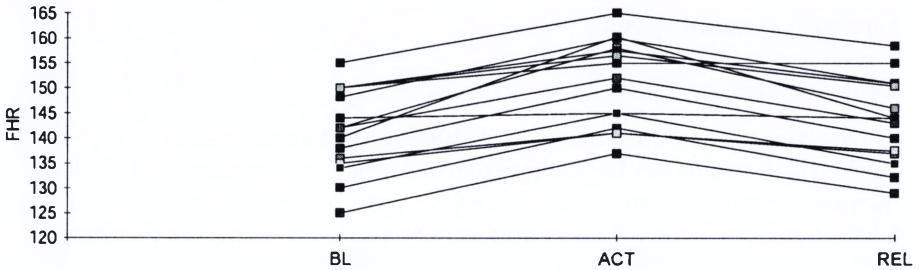


Fig. 2. Level of fetal heart rate (BL = base line, ACT = activation, REL = relaxation).

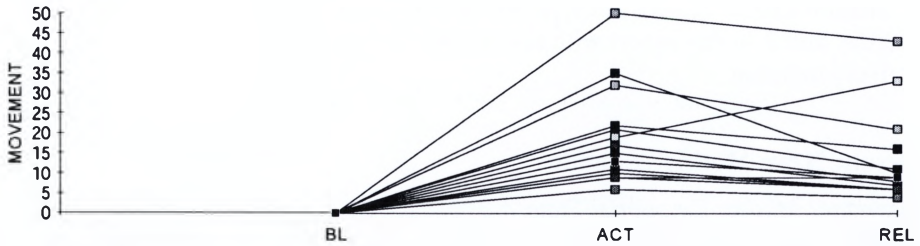


Fig. 3. Number of fetal movement (BL = base line, ACT = activation, REL = relaxation).

BL/ACT, BL/REL., ACT/REL., on the HR and the movement of the fetus have a significance of  $\alpha < .001$ . The induction of an Emotional State in an aspectant mother brings to significant change of the HR and of the fetal movement. The principal result that we can deduce is that the fetus participates in the Mother Emotional State.

### Neonatal Emotional State

Figures 4 and 5 "Neonatal situation": when the newborn feels the audio-registration of the cardiac pulsation of its mother in activation (recorded in Prenatal phase) there is an increase of the HR and of the movement pattern that on the contrary it decreases when he feels the maternal relaxed pulsation. The variance analysis, the covariance analysis and the different rapport between BL/ACT, BL/REL., ACT/REL., on the HR and the movement of the newborn have a sig-

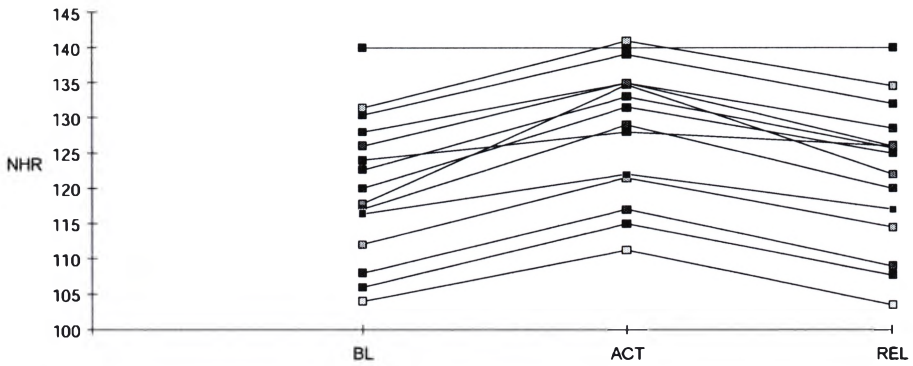


Fig. 4. Level of newborn heart rate (BL = base line, ACT = activation, REL = relaxation).

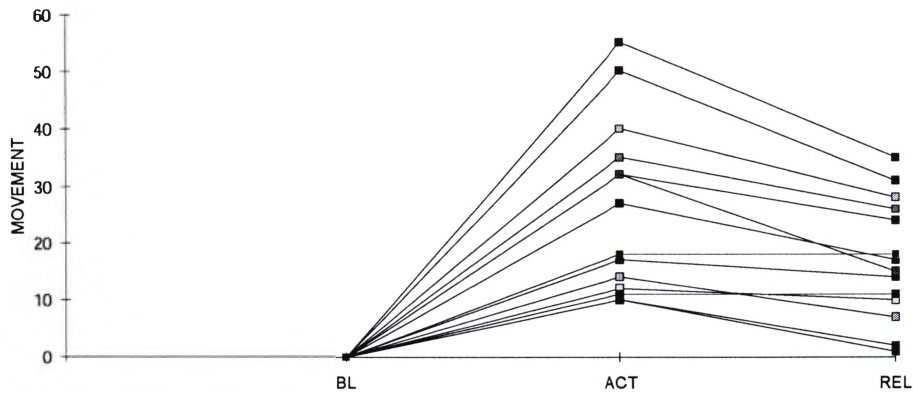


Fig. 5. Number of newborn movement (BL = base line, ACT = activation, REL = relaxation).

nificance of  $\alpha < .001$ . The result reveals the relationship among Mother – Fetus – Newborn emotional state; additionally, to confirm this emotional relationship a variance analysis type  $3 \times 2$  crossing MHR whit FHR, MHR whit NHR has been used: from these cross comparisons some significant results have appeared for  $\alpha < .001$ .

**Result: “Extraneous Mother” Control Situation**

Figures 6 and 7 show the HR and newborn movement values in the situation “another mother”: the situation is linear and flat in fact it is possible to highlight a change only between Base Line and Activation but not between Activation and Relaxation, this could mean that the newborn only answers a “noise” without recognizing a distinctive emotional state. The statistical analyses confirm a significant result.

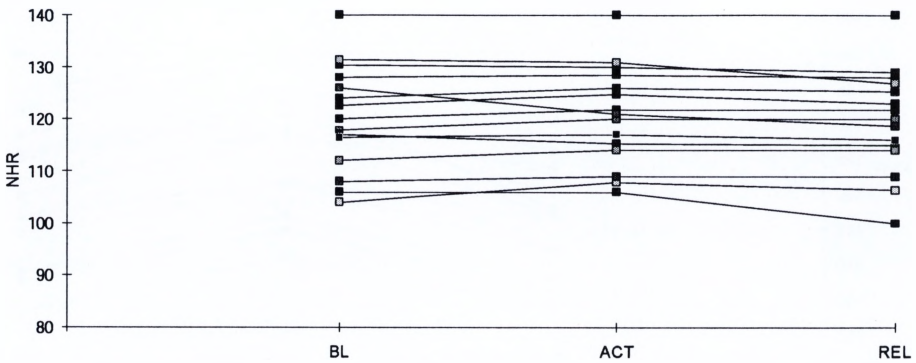


Fig. 6. Level of newborn heart rate with control stimulus “another mother” (BL = base line, ACT = activation, REL = relaxation).

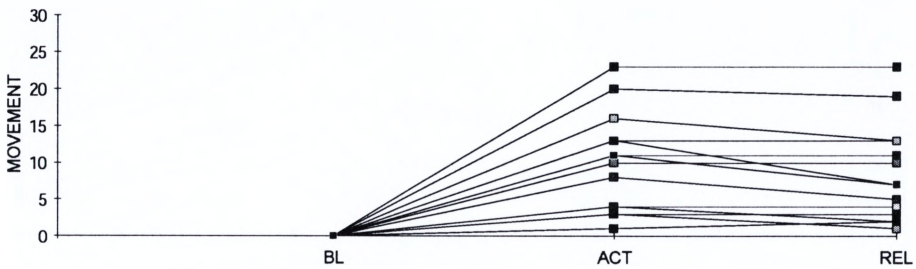


Fig. 7. Number of newborn movement with control stimulus “another mother” (BL = base line, ACT = activation, REL = relaxation).

## Conclusion

### *Mattia: Example of Qualitative Analysis*

Mattia (son of the subject 05): the physiological canned values with Mattia are very expressive. The woman 05 has entered a strong state of nervousness to the vision of the slide 4Act. (serpent) and it is just in the fraction of these 20 seconds of exposure that the more interesting data have been registered.

The MHR has achieved a value of 100 (from BL = 90.2) while the fetus HR has arrived to 150 (on BL = 138) in the preceding slides 4 movements (tonic) have been registered while for this only slide 4Act. 5 movements have been registered (for a total of 11 adding the time of exposure to the slides 5Act. and 6Act.) of which three tonic, one reflex (pseudo-respiratory), and a tonic strong are that has brought the fetus from a right cephalic position to a left cephalic position with a kind of “twirl” round to the central axle of the body.

This coincides with an increase of MHR and a movement as marked in the fetus (with adjunct increase of FHR) to make to believe to the right side report of broadcast of emotional states between mother and fetus.

In relaxant condition, the woman 05 has engaged a calmer posture achieving a cardiac value of 92 pulsations a minute; the fetus has issued 6 movements and has achieved a HR of 140. Similar situation in neonatal phases with “Own Mother”



(NHR = 117 vs 129 vs 120; Movement = 14 vs 7); in “Extraneous Mother” condition the NHR have a little significant from the base line values (117 vs 115.3 vs 115) and the Movements are 4 in Activation and 2 in Relaxation.

During the period in which I have followed the pregnancy of the woman I have had the opportunity to notice the top emotional and psychological implication that had determined the delay of a son beyond that in the woman also in the husband that I have seen follow his wife on each occasion.

It is like if the husband participates to each state and psychological implication of the wife and of the future-child (before) and child (after).

In the case of this family I could confirm together with the right report of emotional implications Mother-Fetus-Newborn also the importance of inserting the father figure in this booming chain of formation of a family.

### *The Prenatal Ego States*

The Emotional Mother-Fetus-Newborn Dialogue has been examined using the two levels of Activation and Relaxation that, in according to the psychophysiology, could be advised the extreme to adopt to explain any form of emotion. To say that a mother in activation state (or to be contrary of relaxation) induces change in the fetus, it means to say that between the two a strong emotional relation exists.

With this research has been possible to highlight that, i) the emotional maternal state influences the fetal one, and that; ii) the newborn recognizes the cardiac pulsation of his mother when, after the birth, he is made to listen to the fonocardiac-signal registered in having activated or relaxed (during the pregnancy).

It seems that the newborn has a better ability of recognizing his mother but no an extraneous mother: while in the comparison with an extraneous mother the newborn answers to the “rhythmics” listened during the nine preceding months, in the comparison with its mother, it not only answers with activation or relaxation, but also seems to be able to recognize and then to offer a more “creative” response.

In the chain of the emotional relationship Mother-Fetus-Newborn, the stimulus-response report doesn't become an exhausted mechanic in way and decided, difficult to impersonate, but that however seems to exist.

The statistical study of the result has allowed to give a precise meaning to the ideas you formulate during all the work, while the qualitative analysis and the psychological inferences have offered the possible interpretations among those that has been canned (HR and Movement) and those that have been observed (character of the mother, role of the future-father, attitudes and behaviors of the newborn).

From the analysis of the obtained result it is possible to hypothesize that the prenatal period is the result of more Ego States [Berne, 1971; Federn, 1976; English, 1977] that are originated and they weave and it can also be considered legitimate the notional basic idea of all this work on the existence of some *Prenatal Ego States* [Righetti, 1996b; Righetti, 1998] and emotional relationship Mother-Fetus in a prenatal education project [Righetti, Soldera, 1996; Righetti, 1998b].

Pregnancy is a piece of everybody's life, it is the first piece of human experience, the most important period for the physiological, physical, biological development,

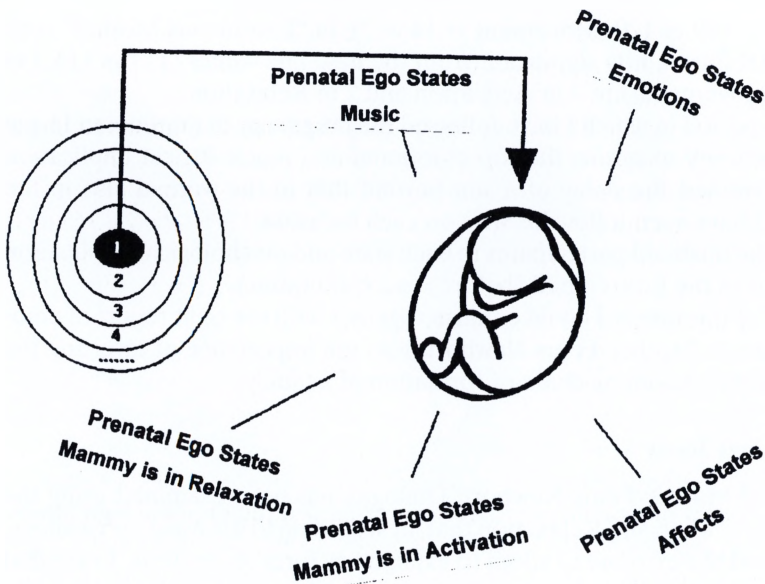


Fig. 8. Example to the Prenatal Ego States

for the constitution of man-as-organ, but, above all, it is important for the birth and development of a psychic life. It is a psychological period, a wholeness of stimuli that will remain for a whole life. This psychological period is made up formed by the sum of several Ego State that by agglomerating originate a Prenatal Ego which, in turn, is the “progenitor” of the Ego of a subject. It is thus more correct to speak of a Prenatal Ego as a moment in everybody’s psychic life: a Prenatal Ego is already defined in itself, since some autonomous skills are acknowledged to the fetus too, but it is not wholly defined. It is a piece of psychic life that evolves and constitutes the Ego of the subject.

This whole process of development leads us to evaluate the total dynamism which is involved by the passage from one psychological period to another one. There is a prenatal period, a neonatal period, a first-infancy period, an adolescence period, and an adult period; all pieces of a psychological life that (summed up) together build up along with one’s own development, the personality of any individual.

Terms like “period” and “piece” have been used to indicate out particular moments of the psychic life, and these are two terms that can be recognized through their synonym “Ego State”.

An Ego State can be described from the phenomenological point of view as a coherent system of feelings, and from the operative point of view as a whole of coherent behavioural models, or from the pragmatic point of view as a system of feeling motivating a correlated whole of behavioural models [Berne, 1971; Federn, 1976]. An Ego State is a “psychic condition”, an “emotional state”, it is the effectively experienced reality of one’s own mental and corporal ego together with the contents of the period that one is actually living. The Ego States are emotion, behaviours, parts of a psychic time, psychic conditions linked dependant on partic-

ular stimulations, affections, feelings . . . they are all what constitutes up the Ego. So far the existence of some skills peculiar to the fetus, as well as its own creative and autonomous existence have been pointed out. The fact that intrauterine life represent a piece of psychic life, and by comparing these considerations to those expressed by other authors, leads us to believe that prenatal life, which is characterized by a precise Prenatal State, is a period conditioned by the presence of several Ego States: thus the fetus's life is the result of several Prenatal Ego States.

It is thus possible to extend these authors' conclusion to the description of the fetus's psychic life, and also to use the theorisations that have been expounded, to describe what we define the Prenatal Ego States.

Therefore the Prenatal Ego is a continuous real experience constituted by several Prenatal Ego States. These Ego States are pieces of past and present experience. During pregnancy the fetus is unceasingly subject affected by experiential fluxes giving consistency to its own Ego. The stimulations, the emotions, and the relation with the internal (intrauterine) an external world are dynamic forces involved in the process of psychic origin and maturing. All the Prenatal Ego States lie in strata within the psyche, the memory and the unconscious of the subject and can be recalled post partum. The Prenatal Ego State is then to be understood as the result of this dynamic associating, summing up, agglomerating of emotions, feeling, and experience of the Ego States that the fetus undergoes. Considering the Prenatal Ego States under the so far expounded terms, means further confirming that the fetal life is a fragment in the process of the psychological growth of each individual. It means believing that notwithstanding its shortness, the pregnancy period has a role utmost importance for everybody's psychic becoming. It means considering gestation as the first link in a chain which, like all the following ones, gives this chain consistency and shape: the psychic life.

In this experimental research the relationship between the emotional states Mother-Fetus and Mother-Newborn has been studied, have valued the type of connections that exists between the pre- and peri-natal life, but above all have been able to confirm (at least in part) that the prenatal period is characterized by many aspects (and incitements) that offer the fetus the capability to apprehend, to form, and then to be gifted with a big "baggage of experiences" and of multifarious ability. The results obtained (which should perhaps be reexamined in the light of other variables) are certainly curious and suggest the need for further investigations in this area. To the initial question "Is there psychological and emotional life from before birth?" we can reply "Yes, there are some Prenatal Ego States".

## References

- Berne E (1971) *Analisi Transazionale e psicoterapia*. Astrolabio, Roma
- Bowlby J (1989) *Una base sicura*. Raffaello Cortina Editore, Milano
- De Casper AJ, Sigafos D (1983) The intrauterine heartbeat: a potent reinforce for newborns. *Infant Behavior and Development* 6: 19-25
- English F (1977) *What Shall I Do Tomorrow*. In: Barnes G (ed.) *Transactional Analysis after E. Berne: teachings and practices of three T. A. School*. Harper's College Press, New York
- Federn P (1976) *Psicosi e psicologia dell'Io*. Boringhieri, Torino

- Ianniruberto A, Iaccarino M, Tajani E (1978) Lo studio del feto con gli ultrasuoni a tempo reale. Simposio Internazionale di Medicina Fetale. Monduzzi Ed., Gorizia Bologna
- Ianniruberto A, Tajani E (1980) Functional evaluation of fetal movements by real time. In: Kurjak A (ed.) Recent-Advances in ultrasound diagnosis II. Excerpta Medica, Amsterdam, pp 537-541
- Ianniruberto A, Tajani E (1981) Ultrasonographic study of fetal movements. Seminar in Perinatology 5 (2): 175-181
- Lang PJ, Ohmann A, Vaitl D (1988) International Affective Picture System: Slide catalogue. Center of research in psychophysiology, Univ. of Florida, Gainesville
- Murooka H (1974) Sound of the main artery of the mother, Lullaby from the womb. Capitol Records
- Nathanielsz PW (1994) Life before Birth and A Time to be Born. Prometheus Press, Ithaca
- Righetti PL (1995a) Fetus Ergo Sum. Sull'Inizio dell'Esperienza Emotiva. Tesi di Laurea, Università degli Studi di Padova, Facoltà di Psicologia
- Righetti PL (1995b) Le esperienze emotive del feto. Consultorio familiare, Anno IX, n. 3
- Righetti PL (1996a) Gli Stati dell'Io Prenatale. Atti I Convegno Nazionale ANEP, Milano, 20 Aprile 1996
- Righetti PL (1996b) Gli Stati dell'io Prenatale, Psicologia Psicoterapia e Salute (già Polarità, rivista di Psicologia e Analisi Transazionale), volume 2, n. 2
- Righetti PL (1998a) Le Emozioni e gli Stati dell'Io Prenatale, Atti del III° Congresso Internazionale "Fondamenti Biologici e Psicologici dell'Educazione Prenatale", organizzato dalla Organizzazione Mondiale per l'Educazione Prenatale (OMAEP), dal Movimento per la Vita, dall'Associazione Nazionale per l'Educazione Prenatale (ANEP), dall'Università La Sapienza di Roma, Roma, 18-21 Marzo
- Righetti PL (1998b) Il progetto Educativo Prenatale, Atti del II° Congrès Européenne de Psychopathologie de l'Enfant et de l'Adolescent (AEPEA), Spagna, Siviglia, 15-17 Ottobre
- Righetti PL, Soldera G (1996) Educazione Prenatale: una lettura preventiva al rapporto Madre-Figlio, Atti del "1 Congrès Européen de Psychopathologie de l'Enfant et de l'Adolescent"
- Stern DN (1987) Il mondo interpersonale del bambino. Boringhieri, Torino
- Van den Bergh BRH (1990) The influence of maternal emotions during pregnancy on fetal and neonatal behavior. Pre- and Peri-Natal Psychology 5 (2): 119-130
- Verny T, Kelly J (1981) Vita segreta prima della nascita. Mondadori Edit., Milano