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Environmental Stimulus Perception as an Incidence Factor in Social Interaction and Personality Development

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Abstract

This paper seeks to analyze the impact of perceptual process, as a way of perceiving ourselves and others, as well as personality development and social attitudes which emerge from early interactions in the primary environment. Although many studies have highlighted the importance of early social interactions for both the genetic and psychobiological components of personality development, there is actually little data that examines the influence of these genetic factors on this process. This study focuses on the genetic bases of the perception process and its role in how we experience emotions and how we perceive the surrounding environment, starting with early interactions with caregivers. The paper examines, moreover, the connections between emotions and Internal Working Models (IWM), as factors that can implement or inhibit such personality development.

Keywords: perception; social attitude; interaction; attachment style; genetic bases; primary environment;

Introduction

Recent studies show how personality traits become stable around 30 years of age in view of the fact that mature features (e.g. greater conscientiousness, emotional stability) are necessary to assume more responsible roles, such as stable employment and the family unit. Obviously, subjects with these features develop stability earlier. This means that there are intrinsic mechanisms responsible for a relatively precocious adulthood (McCrae and Costa 1994; Terracciano, McCrae, and Costa 2006, 2010).

Several factors, both genetic and environmental, play a mutual role in personality development. While genetic factors affect the biological components - from birth, we can have certain predispositions - environmental factors are essential for the development of our cognitive functions. Our way of thinking, experiencing emotions and perceiving external reality are subjective and they become structured during the earliest interactions with the caregiver. In turn, both cognitive functions and the neuronal maps that are at the bases of our memory-building activity, become modelled over time based on these early interactions.

In fact, at birth neurons have many possibilities of interconnecting and are influenced by the surrounding environment, particularly by the early experiences that occur during the relationship between the newborn and his caregiver (Turnbull, Solms, 2002). These capabilities are active until adolescence (although neurons maintain plasticity for most of one's lifetime). Thus, soon after birth, a "pruning" process begins by which the undeveloped networks disappear while the ones in course of development are strengthened. In other words, the connections or, better, the synapses that are not used become atrophic. This "pruning" process continues for one's entire lifetime, even though it is mainly implemented in infancy. The connections that are established during this stage of life may be deleted later during adulthood, when they are no longer used. That is how childhood memory traces, if they are not used in adult

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life, become atrophic, whereas those particular connections that are more used become reinforced. In turn, these connections represent both the internal maps and the external world that is more familiar to us (Turnbull & Solms, 2002). In other words, those particular subsets of connections, that best represent both our internal and the external world, could be the ones to be first activated and then strengthened. They are those sets of connections that we begin selecting from our first interpersonal relations with the significant reference person.

These relationships stand at the bases for the later development of other cognitive functions, such as thinking and, particularly, at the bases of the emotions and perceptions that will be discussed below.

The Genetic Bases of Interaction

Social personality models (SPMs) confirm the importance of genetic influence in facilitating stability traits. This is defined, for example, by the socio-genetic personality model which suggests that the environment influences the activity of the genes and that the genome is highly dependent on its activation and preservation (Roberts & Jackson, 2008, p.1528). In this sense, the 'cumulative continuity principle' and the 'plasticity principle' have shown that one's personality becomes increasingly stable through the course of life (especially after 30 years of age), and that it is always ready for change.

From this perspective, personality traits continue to develop as individuals go on to develop their identity. The plasticity of the personality follows this principle, that is that development must never be considered complete but instead remain open to the impact of the environment.

Advocates of Social Personality Models (SPMs) emphasis the need for mature personality traits to cover certain social roles and highlight an increase in stable personality traits in conscientious, responsible and emotionally stable individuals (Donnellan, Conger & Burzette, 2007; Roberts, Caspi & Moffitt, 2001; cfr. Terracciano et al., 2010).

In according with Terracciano et al. (2010), the effects of genes may be unstable, since environmental conditions can alter genetic expression over the course of life. In active and evocative gene-environment interactions, individuals are predisposed to select different environments based on their preferences, reasons and genetic personality traits. These experiences can, in turn, also influence one's psychological development. Individual differences of thoughts, feelings and behaviour patterns become more stable during the cycle of life (Terracciano et al., 2010).

An increase of phenotypic stability, and genetic and environmental components affect stability with age. At 30 years old, genetic and environmental stability rises more slowly over the lifetime, reaching a good level of stability in old age. Genetic influences exert a relatively constant influence on stability throughout life and fully explain phenotypic stability in young people. Environmental benefits to achieve stability are barely non-existent in early childhood, but middle-aged environments contribute slightly less to phenotypic stability than genetic influence.

This result shows that a trend toward increasing phenotypic stability can be widely explained with the increase in environmental benefits (Donnellan, Conger, & Burzette, 2007; Roberts, Caspi, & Moffitt, 2001; cf. Terracciano et al., 2010).

In other words, a passive gene-environment correlation should be the most relevant factor when children are still living in a domestic setting and during their development, with a higher level of autonomy and a selection of experiences based on their genetic predisposition, they can choose other experiences from a wide variety of environments (Scarr & McCartney, 1983). On the other hand, patterns of active and evocative correlation between genes and the environment could manifest themselves in the increase of heredity and, if recurring or lasting, would affect the increase of the stability of the genetic effects with the progress of age (Scarr & McCartney, 1983). Other studies have shown that the link between parenting and personality development differs as a function of the candidate child's genes involved in neuromodulation (Bakermans-Kranenburg & Van Ijzendoorn, 2006; Belsky & Beaver, 2011; Kaufman et al., 2006; Sheese, Voelker, Rothbart, & Posner, 2007; Smith et al., 2012, but see also Luijk et al., 2011). This link supports the thesis that the genetic baggage, also from a neuromodular transmission point of view, is influenced by the environment starting from the mother-child interaction and in turn will affect the development of single neuronal networks. All this will affect both the personality development but also the predisposition to some diseases, as reported by some studies (Szyf, 2009; Wells, 2007; Champagne, 2008; Gudsnuk et al., 2011; Maccari et al., 2014) . According to Trevarthen (2004), gene molecules act as complements of the genes since they are responsible for the interaction between membranes and folded cellular fibers or between cell clusters and layers.

Thus, they become the "code of life" since they control the destiny of the genes themselves, as evidenced, during cell development, through the phenomenon of cell differentiation. In fact, between them and the exchange of activity, they also intervene in the formation and interruption of tissues from scratch, thus playing a crucial role in the development of the neural network. Furthermore, according to the same author, genes are activated or deactivated in different combinations under the control of external conditions. Gene products themselves must also be considered among these conditions. Also, one gene's activity can be regulated by another gene, thus having a domino or cascade effect.

Recently, several studies on the role of specific genetic components have focused on both the role of arousal and predisposition in the mother-child interaction. According to Purcell (2002), in the early stages of their lives, children, depending on their genotype, can respond differently to the same type of environment provided by caregivers. A study carried out on 51 men, aged between 18 and 35, reported the importance of oxytocin receptor variation (OXTR rs53576) in emotional and physiological reactions of emotional experiences with others (Smith et al., 2014). In particular, this allele showed a higher degree of arousal compared to the allele A carriers (Smith et al., 2014). Another study, conducted on 345 African-American parent-child dyads, has shown how a dopamine transporter (DRD4) can moderate the impact of negative arousal in parental interaction (Beach, 2012). Moreover, in women with children between the ages of 4 to 6 years old, the single nucleotide polymorphism (SNP) (rs53576 and rs1042778) - the gene that encodes the oxytocin receptor - was significantly associated with positive responses to the stimuli of the child, both for parenteral and hemodynamic care. This positive correlation was evidenced by the activation of the orbito-frontal cortex (OFC) and anterior-cingulate cortex (ACC), but also by the hippocampus (Michalska et al., 2014).

A review also highlighted the potential role of oxytocin in the social motivation deficit in autistic subjects. It examined infants aged between 18 and 21 months with the presence of the DRD4 gene 48 polymorphism which is implicated in the development of attention, sensation seeking and attention deficit disorder / hyperactivity. The presence of the DRD4 7-repeat allele has been linked to differences in the influence of parental care in measuring the susceptibility-seeking predisposition, according to parental reports which examined activity levels, impulsivity and high intensity in children (Katherine et al., 2013).

Children born to parents with a higher level of stimulus and with the repetition of allele 7 were more influenced by low quality parental care than those children without the repetition of allele 7. These results are linked to the hypothesis that the repetition of allele 7 and DRD4 7 increases the sensitivity of children to environmental factors such as parenting. This study thus demonstrates that genes influence the relationship between parents and temperament in ways that are important for normal development and psychopathology (Sheese, 2012).

The Impact of Perception in the Formation of Mnemonic Schemes Based on Interaction

The genetic base, that has also highlighted the role of arousal and a child's higher or lower predisposition to interaction, has an important effect on a child's relationships with others, starting with the caregiver. In fact, according to De Casper and Fifer (1980), a newborn baby is already predisposed to communication exchange and is able to perceive the difference between the voice of his mother and another woman. He can also recognize who takes care of him and who gives him emotional support. As Trevarthen (2004, 1) affirms: "inherited and legitimate brain development, is able to create encounter skills in the intersubjective exchanges between the child and who takes care of him".

Some studies have reported similarities between *Rhesus macaques* and the human species. In particular, the macaques were led more to direct their gaze towards subjects of the same species, leading to the hypothesis that both previous experiences and an innate ability could guide social attention. The behavior of the monkeys' gaze was qualitatively similar to human beings, especially during social negative interactions.

The detailed analysis revealed, indeed, that in negative social interactions both species direct the gaze more to the body region than to the face, suggesting that monkeys and humans share a similar pattern in the social attention of the species and context-dependent, which implies a cognitive mechanism of homologous social attention between Rhesus macaques and humans (McFarland et al., 2013). This research, in analogy with other studies (Yu et al., 2013), shows the child's ability from birth to search for a social partner and to create interactions. Therefore, at birth all newborns are predisposed to a relational ability, even if some of them will be almost predisposed to create a relationship with the caregiver, compared to what was said previously on genetic predisposition. On this basis, the newborn will begin to build his own vision, a map of how he should work and adjust all his relationships.

That is how the mother will respond to his stimulus and *viceversa*. A recent study shows how the duration of the gaze towards a specific object depends also on its physical characteristics (Pantelis and Kennedy, 2016). Therefore, the relationship with the mother and first "social partners" is seen to have an influence on future relationships with other representative figures. This also highlights the importance of perception as a way of experiencing oneself and the other.

In this regard, Baron-Cohen (1997) talks about a modular system consisting of 4 stages (ID, EDD, SAM and TOMM). The last of these, based on the theory of the mind (TOMM), has the function to infer, from the behavior, the whole range of mental states. This function, in order to work, needs the ID and EDD inputs and the triadic representations of SAM (shared attention mechanism). In other words, the detector of intentionality (ID) is activated by a perceptual input and connected to the eye detector (EDD). Both give rise to a dyadic representation which could be the mother-child interaction through the gaze. The third function, the mechanism of shared attention (SAM), instead, has the role of constructing a triadic representation with a third object. For instance, the baby tries to gather information on an object placed inside the room through his gaze with his mother. The idea of the intentionality of the mother and the representation of the object (through the mother) takes place through the theory of the mind (TOMM) (Baron-Cohen, 1997).

This model explains how the perceptual stimuli, especially the newborn's first with his caregiver, are fundamental for the construction of a subjective representation of external objects. This, in turn, will influence later representations of all future interactions (starting with those based on relationships with closer family members). Interactive mnemonic perceptual frameworks are therefore created as a base of future autobiographical memory.

Since episodic memory is formed roughly between eighteen months to two years of age due to the anatomical formation of the hippocampus dating back to that period (Squire L.R., Zola-Morgan S., 1991; Perner J, Ruffman T.,1995; Siegel D.J., 1999), a procedural and automatic memory based on primitive perceptions resulting from interactions with the caregiver is present before this period. It means that the child builds his own interactive scheme based on gestures and mutual responses with the mother, within a progressive developmental scheme that Sander (2007) describes in seven steps. The first step begins at birth and extends to the 36th month.

In fact, in his observation of some mother-child dyads, Sander (2007) highlights that, while in the first two steps (first regulation and second mutual exchange) the initiative was more than the mother, subsequently there was a balance in the interaction (in the third and fourth steps: initiative and focus) and a greater initiative of the child is observed in the fifth step (self-assertion). The last two, however, the sixth and the seventh steps (recognition and continuity) were more focused on the perception of the child's internal stimuli, especially with regards to their intentions (sixth) and exploration of their affective states with respect to the surrounding environment, making the coordination of mother-child interaction (seventh) increasingly articulated and conscious. That is, as the latter consolidated the interactive models that had previously begun on a basis of regularity expected of the mutual exchange, the reciprocity of the interaction improved.

According to Beebe and Lachmann (2002), a child at three or four months is already in a position to organise and pre-symbolically represent a rich and varied set of experiences that will obviously be based largely on the interactions with the caregiver and the different environmental stimuli (e.g. the perception of some objects).

This scheme will always remain unconscious and it represents the base from which the following interactions with other significant figures are influenced (See Diagram 1 below).

The development of basic primitive interactions will depend on a genetic predisposition of both the child and the mother. With regards to earlier interactions, McWilliams (1999) describes the case of a young man who, although he had a caring mother, had internalized a rigid and unattached model of her because during the first months of his life she was ill and could not look after him. This could be an example of a primitive scheme of interaction which leaves an unconscious trace and it is compatible with genetic-environmental acquisitions. This case shows how environmental interactions can affect the early stages of life, especially in infancy compared with adulthood, and the stabilization of personality traits. This means that, as the internal mapping (composed of the RIGs) is being structured, the external environment is increasingly affected by internal modeling in the same way. At this point Dickens & Flynn (2001) argue that infrequently experienced environments, that have little chance of being repeated, are unlikely to have any significant effects on psychological development.

In contrast, systematically selected and evoked environments based on gene/environment correlation are likely to be routinely repeated, so as to have pronounced effects on psychological development. Genetic stability will be higher or have a long-term impact when the same types of environments repeat themselves during development (Conley, 1984; Wolf & Weissing, 2012). This means that a child starts selecting experiences from birth in a coherent manner both in his genetic outfit and, in particular, through his genetic-environmental interactions. So the more environmental experiences follow the line of consolidation of the experience initiated in the mother-child interaction, the more easily they will be able to be structured. The others, however, that not in this line, do not need to be represented as they are "scotomized". A **Scotoma** is an area of partial alteration in the field of vision, consisting of a partially diminished or entirely degenerated visual acuity that is surrounded by a field of normal or relatively well-preserved vision (Dizionario Medico Illustrato Dorland, 1985). It does not remove any conscience but some "occasional experiences", not in line with the consolidated ones, will not be processed and they will be regarded with no value and meaning (Rapisarda, 2011).

Incidence of Interaction in the Development of Emotional Patterns

The formation of interpersonal mnemonic patterns within the mother-child relationship, as mentioned above, goes hand in hand with the establishment of a subjective emotional pattern, as some studies have confirmed. According to one of these studies, the emotional salience can be decisive for the attentional allocation in some settings. One of these reports that emotional salience can be decisive for attentional allocation in some scenes (Niu et al, 2012).

As regards to this, further correlation with genetic profiles has been observed. For instance, a study has shown that children (carrying one or two copies of the 5-HTTLPR short allele versus those homozygous for the long allele), whose mothers exhibited high levels of expressed emotion criticism, (EE-Crit) display attentional biases specifically towards expressions of anger, but not of sadness or happiness (Gibb et al., 2011).

Another research study, also carried out on the 5-HTTLPR short allele, has shown that carriers of this allele, versus those with the long allele, displayed a stronger gaze (and, therefore, attentional) bias for positive rather than for negative or neutral stimuli. Considering that this trend increased over time, the authors of the study maintain that it is caused by the presence and development of a strategy to downregulate negative stimuli (Beevers et al., 2011).

According to Damasio (2003), emotions are perceptions and, as such, imply an image of both a physical state and of a peculiarly associated state of mind. Emotions can be compared to other perceptions such as visual ones. In fact, in emotions as well as in sight, at the source of the process there stands an object whose physical features set off a chain of signals that cross the brain maps where the object itself is represented. Precisely as it occurs in visual perception, the phenomenon is due partly to the object itself and partly to its interpretation as given by the brain. That is, the object of perception and the emotional state that it evokes are tightly connected and reciprocally influence each other (as maintained by embodiment theories). For example, I see a person in the crowd and it reminds me of something familiar: this will generate emotions. But the fact that such a shape evokes emotions in me also influences how I perceive it. Therefore, that person might appear to me as pleasant or unpleasant and this will influence future emotions, thus setting off a process of mutual incidence. According to the same author, emotions are not a passive nor flash perception; there are transitions: the perception of giving and taking that is built beginning with the mother-child interaction. The representations of these transitions create subjective pictures which are created at the beginning of the interaction itself.

In fact, children will begin to create their own pictures based on how their mothers react to their stimuli, such as a gesture or a gaze. This is a hypothetical picture based on how the caregiver reacts to certain stimuli and how the child uses this as a basis to develop a specific way of experiencing emotions.

In other words, the representations the children create of themselves and of the objects around them are closely connected to the interactions that they begin to build with the parental figure of reference. These representations are almost stable classifications of information organized in expected interactive sequences and are modelled by an active process of processing and reprocessing of incoming information. This information, in turn, is reinterpreted and reorganized based on past experiences and on current expectations that model the reorganization and transformation of the representations. Therefore, according to this model, development consists of a process of constant restructuring of the relationships between the subject person and his environment (Beebe, Lachmann, 2002).

Basic Emotions and the Creation of Internal Working Models (IWM)

According to Solms et al. (2002), human beings are affectively made up of five basic emotions called systems (seeking, pleasure, anger, fear and panic). The activation of these emotions occurs because, genetically, some external stimuli activate some neurophysiological circuits regulated by several inhibitory (GABA) or excitatory (glutamate, aspartate) neurotransmitters, which are modulated by hormones and peptides. These stimuli are connected to as many internal circuits (e.g. seeing a snake will activate the fear or the panic system). These systems have their own development, so for example, a child born in an area where there are many snakes and who learns how to move without being bitten shall be less fearful when seeing snakes versus another child who has lived in a different environment and who is not used to them.

According to Edelman (2000), perceptions and stimuli which originate from different areas, so both corporeal and neurological, build a mapping. Motor activities are also included among them. For example, when a ping-pong ball is moving, the subject, under the perceptive stimulus of following it, will perform a series of movements. After doing it for the first few times, this action becomes automatic, thus creating categories (categorical automatism). All of these mappings, which subsequently build memory, are not rigid but will tend to be assembled and disassembled with others as well.

According as well to Solms et al. (2002), newborns build their own associative network, beginning from early relational experiences with the caregiver. That is, the synaptic system, through its modulation of neurotransmitters, and how it can also be influenced in its anatomical configuration by the external environment. We create categories that are initially based on the relationship with the caregiver and then, with their decomposition and recomposition, new categorizations which help build a relational pyramid-shaped network (See scheme 1 below). In this way, the representation is a spatial, temporal and affective scheme based on the coordination of the interaction between the child and his partners (Beebe, Stern, 1977; Stern, 1977). In this pyramidal scheme we see how, originally, there is the relationship with the caregiver (the mother), which then evolves into mother 1, mother 2, and so on, as well as those that are to be created later. Mother (1) in her way of bonding has the same root of the mother (0), but similarly she represents something new. In the categories that are to be subsequently formed, the same will happen - for example, we will have wife (0), wife (1) etc. In addition, the same category of wife will have something in common and a root with the mother category (0), but at the same time it will be a category with its own specific characteristics that will face its own evolution (wife 1, wife 2, etc.).

This evolutionary scheme fits well with the studies conducted by Sander (2007), in which it was highlighted that with the progress of the various evolutionary stages there is an evolution in the mother-child interactions. Not only are they increasingly inserted intentional elements of the child in the interaction, but also that every new activity creates a "disturbance" that requires an "adaptation or mutual modification to a new level" (Sander, 2007, p.107). This means that not only will there be an evolution of the mother-infant interaction with the growth of the latter's age, but also that it will increasingly have a greater awareness of how much it will affect its contribution to the interaction that is evolving. As already mentioned, all this is crucial in the construction of interactional mapping, which consists of the creation of specific categories, each of which will have its own characteristics and conditions in common. If, for example, the child has begun to develop a secure attachment with the mother, it will be easier for him to build a relationship with a teacher and then a future wife who both have the same characteristics. Moreover, if there are some common characteristics that link the teacher and wife with the mother, then at the same time there will be (at different ages) a clear distinction that the relationship with the teacher and the mother are not the same thing. According to Kaes (2002) the process of bonding represents those unconscious strategies that are implemented to stay close to the internalized attachment figure (e.g. the attempts made by the baby to arouse the attention of the mother through his gaze and vocal calls). The extension of the concept of bonding to other categories allows us to understand how the original bond established with the mother is so important, but so are those other categories that come later and especially the ways in which these are established.

If, therefore, in the first months of life the mother is fundamental and the main category, then starting from the modalities with which this has been established, other relevant figures are formed such as a father, grandfather, grandmother, until with the growth of age when it becomes for example a friend, wife and so on. Although these new categories will certainly have something in common with the basic mother one, at the same time they will be different from each other, as shown by some studies on multiple caregivers which have been reported by Howes (1999).

Attachment studies also highlight the different attitudes of children that reflect as many IWM as the caregiver and the surrounding environment. For example, in the *Strange Situation*, a child with a disorganized attachment style will be frightened at the mother's view and will implement contradictory behaviors (for example, going to re-embrace the mother and moving away suddenly afterwards).

The attitude and the re-evocation of emotions will be different in a child with a secure attachment. This means that the child in the first example, in relation to the mother, will activate the basic emotion of fear rather than pleasure (although there is often a certain behavioral contradiction in them). The child with secure attachment will look for the mother and will have a more coherent attitude toward her. This will also lead the child to explore the outside environment with greater security, knowing that he/she can rely on a trustworthy attachment figure (Bowlby, 1988). Disorganized attachment, in fact, is very often linked to the presence of mothers with psychiatric disorders (severe depression and/or psychosis).

According to Lorenzini and Sassaroli (1995), each type of attachment has its own specific IWM which is divided into three levels:

1) High: the representations on the outcome of the relationship
2) Intermediate: the model of Self and the attachment figure;
3) Low : the expectations of the relational strategies to be used.

In the second level, the way of perceiving oneself and the other is fundamental and obviously it will affect the relationship outcome of the first level. Indeed, and especially at this level, a different method of bonding is formed, referring to both the third and the first level. A child who has an inadequate father will probably have a more appropriate bond with her grandfather, so as to compensate (or to replace) the one with the father. So even if there are many aspects in common, there will be many variables that will then make a child unique to another one that belongs to the same type of attachment.

In our opinion, each category activates specific basic emotions that will affect the different ways of bonding, which are seen in the intermediate level of the IWM. For example, an insecure-ambivalent attachment will have the predominant emotion of anxiety, arising from the fact that the child does not know how much he can rely on the presence of his caregiver. This means that if a secure child activates certain feelings about his mother, the intensity and articulation of these emotions will not be the same as those that will take place with the grandmother. The child, who has built a secure attachment to his mother, will not recognize the father in the same way and this activates different behavioral patterns and emotions. The same modalities of attachment with the mother, for example, will be implemented with the grandfather.

This perspective is not only in line with the multiple attachment studies mentioned above (see Howes, 1999), but as well in Sander's studies (2007). Certainly, if we start with his mother-child dyad observations (from birth to 36 months) Sander emphasis that in some of these couples (especially in the focalization period, from the 10th to the 14th month) the child can establish a better interaction with the father, compared to the mother. The development of the interactive reciprocal exchange with the mother is only able to advance with a different attitude activated by the mother, but this rarely happens. Specifically, according to Bowlby's attachment theory (1988), a child is naturally predisposed to implement a modality of interaction with the caregiver. But if this figure does not then confirm this relationship model, the child will change his way of dealing with it.

As mentioned in this paper, the perceptual style that characterizes the IWM has an important effect on personality development and on how everything is articulated within the structure and ramification of the different categories. We see the following characteristics, which we have summarized below:

1) The basic category will have, as its predominant characteristic, a perceptual style (both of the external reality, but also the internal one) which, by characterizing the IWM, will affect the creation of the subsequent categories;
2) Each category, even if it has its root linked to the basic one, will have its own features that will activate a specific modulation of the basic emotions, regarding both the type of emotion expressed (especially in an attachment context but also in stressful situations) and the degree of its intensity.

Conclusions

Most recent investigations into the human genome show how our DNA contains genes that are predictors of a certain pathology and, at the same time, shows many that are protective against the same pathology with incidence to their expressiveness of external factors, such as physical activity (Hildebrandt et al., 2000, 2003) and lifestyle (Galas et al., 2015; Weaver et al., 2009).

This is further supported by the many studies on different pathologies: cardiocirculatory_(Tong et al., 2013; Marini et al., 2007; Melling et al., 2007; Morán t al. 2005; Scheinowitz et al., 2003; Um et al. 2008; Bulhak et al. 2007; Thirunavukkarasu et al., 2008), stroke (Hayes et al. 2008), type 2 diabetes (Qi et al. 2011; Lappalainen et al. 2010). In the genetic predisposition when some develop certain psychiatric diseases in adulthood, not only is the mother-infant interaction at neonatal age important, but also subsequent external factors that may affect this during the development period (Gardner et al 2009; Szyf 2013; Claessen et al., 2011; Carli et al., 2011).

The above considerations lead us to the hypothesis that, even with possible developments of specific personality traits, the same thing can occur. This underlines the importance of the environmental affective role that newborns encounter in the early hours after birth, particularly in relation to the caregiver. Therefore, the surrounding environment will highlight certain personality traits in comparison with other potentials, especially in the earlier stages of life up until adulthood.

In our study we have highlighted not only the affective dimension but also the role of the perception function in the earliest phases of interaction with the caregiver, and particularly how we perceive ourselves and others.

We have, moreover, considered how the perception function integrates itself with other cognitive functions, especially with those connected to the affectivity.

In our opinion, and within a critical context such as understanding which factor will mainly affect personality development, it may be useful to think about how different cognitive functions can develop and integrate among themselves. Of course, to better substantiate this topic, it would be necessary to generate more data to fill the current void in literature. Certainly, taking into consideration the subjective way of perception may be of great help in the psychotherapeutic treatment of certain patient groups such as those affected by Alexithymia, a clinical condition where the distinctive feature of personality is the difficulty in recognizing and expressing feelings, even in relation to others. Starting with the subjective perception modality it may be useful to question or challenge the dysfunctional way of "experiencing" emotions. In line with Lorna Benjamin's model (1996), "the relationships between perception, response and internalization" (p. 92) have to corresponding in order to make sense. According to the same author: "behaviour and affective state reasonably correspond to the individual's perceptions. (...) To understand the actions, a clinician has to understand perceptions"(pag.92).

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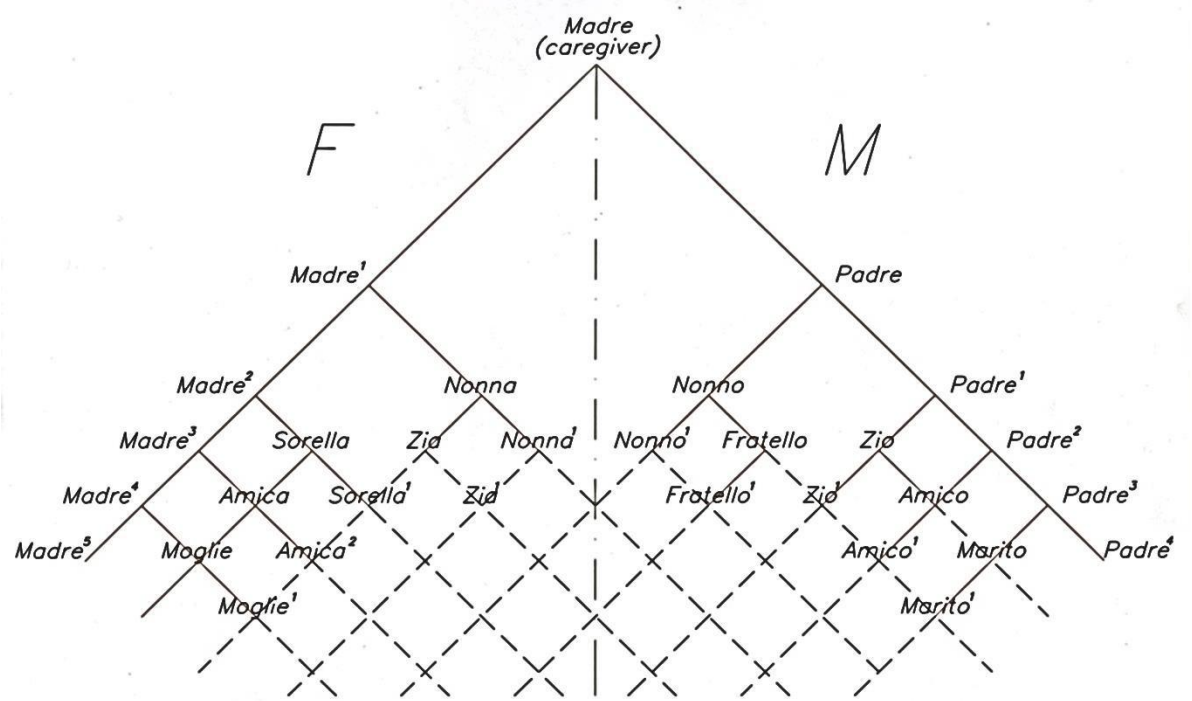
Diagram 1: Relational Pyramid Pattern



(Madre=Mother; Padre=Father; Nonna=Grandmother; Nonno=Grandfather; Sorella=Sister; Fratello=Brother; Zia=Aunt; Zio=Uncle; Amico/a=Friend; Moglie=Wife; Marito=Husband)

In this diagram, the dashed vertical line divides the pyramid into two sections (M = male, F = female), which are connected to each other. With M and F, we mean the bonds that are created respectively with male and female subjects that characterize the various categories (mother, father, grandfather, etc.). Dotted lines indicate that staging (i.e. uncle, uncle 1, etc.) continues with the advancement of age and the development of individual relationships. The solid line indicates the origin of the various categories, which is purely indicative (i.e. a younger brother can build the sister category before his grandparents, since with her, being the eldest, he has been having previous and continuous contact). Having contacts and ongoing relationships with another person leads to the construction of specific categories. As we have mentioned in the article, representative relationships with other important, emotional and successive figures (i.e. grandparents) can affect the relationship with the mother who is the precedent figure.