NEUROSCIENCES AND GROUPANALYSIS: AN EXPLANATORY HYPOTHESIS

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Summary/Abstract/Résumé:

The author presents a critical overview of the most recent advances in the neurosciences. Based on this perspective the author considers some of the mental phenomena that arise within the therapeutic situation of groupanalysis.

The author's aim is that by the end of this article the following formulation might be understood:

1. The indissociable body-mind connection.
2. That there exists two kinds of memory: explicit and implicit
3. Hypothesis: If in groupanalysis one works using implicit memory (through the transference) then the "cure" involves an analytic experiencing of novel "bodily" experiences which allow the mentalization and the creation of new cerebral circuits which are more adapted to life.

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The present work endeavours to reflect a few of my thoughts with respect to a subject which has been of great interest to me recently: the neurosciences. I consider the recent advances in this area to be an extremely stimulating source of material that might permit a reorganization of our knowledge of psychodynamics and above all an everlasting source of reflection on the clinical work for which I hold such high regard: groupanalysis

1. THE BODY-MIND CONNECTION

If we consider a typical emotion, certain regions of the brain which form part of the neural system of the emotions send messages to other regions of the brain and also to almost all regions of the body. These messages are sent along two pathways: one is that of the bloodstream along which the messages are sent in the form of molecules which act on the receptors of the cells which constitute body tissues. The other pathway consists of neurons, and the messages travelling along this path use electrochemical signals which act upon other neurons, upon muscle fibres or upon viscera (e.g. the supra-renal grandula). The latter, in turn, can release chemical substances into the bloodstream. (Damásio 1994 and 1999).

The result of these coordinated messages is a global **modification of the state of the organism**. The organs become modified.

As a result of these messages, the muscles, from the smooth muscles of the walls of blood vessels to the striate muscles of the face and limbs, move in conformity with what was asked of them. The brain modifies itself in an equally striking fashion. The release of substances such as monoamines and peptides from nuclei of the brain stem and from the basal prosencephalon alters the functioning of many cerebral circuits, sets into motion certain specific behaviour (for example, relating to, playing, searching for) and modifies the way body states are represented in the brain.

Two additional steps are needed in order for an emotion to be *recognised.* The first of these is **feeling**, and the transformation of these changes into images. The second is the application of nuclear consciousness to all these phenomena. To recognise an emotion – to experience a feeling – can only take place after these two steps.

Underlying the representation of the emotions is a collection of neural bundles in certain areas of the brain but usually found in the sub nuclear cortices of the brain, the hypothalamus, the basal prosencephalon and amygdala. These configurations are implicit "dormant" representations and are not accessible to consciousness. They exist in the form of patterns of potential activity within neuronal clusters. Once activated, these configurations can determine certain consequences.

Neural patterns which underlie a feeling occur in two classes of biological modifications: modifications related to the body state and modifications related to the cognitive state: it is not possible to disconnect the body from the mind.

2. MEMORY

Memory is a general property of the cerebral cortex taken as a whole. However, there exist types of memory, and certain areas of the brain are more important for some than for others.

Brenda Milner, received her doctorate at Cambridge and went to work in the department of Psychology in Canada where she worked with Donald Hebb studying patients who had been operated on by Wilder Penfield. She discovered that the human memory involves two memory systems. (cf. Kandel et al, 2001).

So we can say that there exist fundamentally two types of memory: **explicit** (or declarative) and **implicit** (or procedural).

Explicit memory enables us to learn about the world: we acquire knowledge about people, places and things which are accessible to conscience.

Implicit memory enables us to learn how to do things: we acquire motor or perceptual skills which are not accessible to conscience.

Explicit memory encodes information about autobiographical events as well as factual events. Its formation depends on cognitive processes such as appraising, comparing and inferring. Explicit memories may be remembered through a deliberate action which requisites information, whether it be autobiographical " Catarina was my school friend" or factual "Gold is a metal".

Today, it is believed that autobiographical and factual knowledge correspond to different mechanisms based at the level of the temporal lobe. On the other hand, it is believed that the hippocampus appears to be a temporary location or a facilitating system for long-term memory which it later transfers to the cerebral cortex where it is stored permanently.

Implicit memory is characteristically automatic or reflex. Its formation, as well as the ability to remember, does not depend absolutely on conscience or cognitive processes. The biological base of this kind of memory is found at the level of the cerebellum and the

amygdala. It is formed slowly through the multiple repetition of certain events (basically - rehearsals) and is expressed, not through words, but through deeds and acts which become increasingly perfect.

Examples of implicit memory are perceptual and motor skills and the learning of certain types of procedures or rules such as grammar.

A number of experiments on learning have revealed that this contains conjointly both explicit and implicit elements and that constant repetition can transform an explicit memory into an implicit one, such as happens for example when one is learning to drive a car or ride a bike.

To what degree can we trust explicit memory? This is a question which has often been asked. Daniel Schacter speaks of the seven sins of memory: transitivity, lack of attention, memory blanks, false recognition, suggestibility, retrospective distortions and the unprecedented persistency of certain memories (Schacter, 2001). Elisabeth Loftus (1989) also studied the creation of false memories during badly conducted psychotherapeutic processes.

Two points should be born in mind. In the first place the information stored in our explicit memory is a product of the processing of our perceptual apparatus. In the second place the individual interprets external reality not only from the point of view of a specific moment in space, but also from the pint of view of a specific moment in their own personal history.

From the above it is evident that implicit memory is more precise than explicit memory which is more misleading. This leads us to consider that in Darwinian/evolutionist terms implicit memory was that which was selected and which has greater capacity for survival. This certainly brings us more advantages as Damásio says: emotions are not a luxury, they help us to survive, to maintain our internal homeostasis, and in terms of memory this concept is equally relevant.

Another aspect that I wish to point out lies in the fact that implicit memory is earlier than explicit memory. Lynn Nadel e Jake Jacobs (1998) suggests that the key to infantile amnesia resides in the period of prolonged development since this impinges on the hippocampus.

In fact, the amygdala attains maturity before the hippocampus, which means that implicit memory is mature before explicit memory (cf Rudy, 1994). Learning exists in the fist years of life, even in the womb, before the system of explicit memory even exists.

3. INFERENCES FOR GROUPANALYSIS

I believe that the analytic process evolves at two levels which are not necessarily divided into phases and which may co-exist albeit with different intensities as the process develops.

At one level, the analysands search within themselves for explicit memories of their autobiography of which they will be afforded interpretations at a genétic-evolutive level.

At another level, implicit memories will be brought onto the stage in a transferencial context. The analysand repeats faithfully, in the relationship with the analyst and with the others, procedures, feelings, attitudes: behaviour that is recorded in implicit memory in an unconscious form, as we have already seen. These correspond to the true history of the analysand are not distorted with the declarative data of explicit memories.

I am now going to try with you to peer into a kind of human microscope - which is what happens during an analytic transferencial process:

1. In the relationship with the analyst a certain situation arises which evokes in the analysand another situation in their biography: they feel as if the analyst were one of their parental figures.
2. The analysand lives through the primal emotion in the context of the analytic setting, as we know, at two levels: at the body level and at the mind level
3. A procedural implicit memory is brought into awareness. A learning experience of which the analysand is not conscious and as such will proceed according to that which is recorded within themselves. In other words, they repeat with the analyst that which they “learned” to do with their parents.

4. A number of circuits of specific neuronal activity are triggered, together with a particular interpretation at cellular level which was created over the years. At the same time, this type of procedimental memory which uses sub-cortical structures, leaves the cerebral cortex free, permitting parallel rationalisations to be made which prevent the analysand from realising what they are really doing.

And so the circle is closed again, the individual, whatever their personal situation might be, always reacts in the same manner, the manner that was memorised implicitly in the relationship with their parental figures. Throughout their lives, they systematically repeat the same behaviour. It is a closed circle from which the human being cannot escape and which, probably, Freud called compulsive repetition.

What do I think happens when the analytic register is one of genetic-evolutive interpretation? The analysand is afforded a new explicit memory which, as we have seen, is erased at the first gust of wind. I do not wish to diminish the importance of this kind of interpretation, insofar as I consider them to be a starting point for a therapeutic alliance, contribute to the enrichment of other interpretations (which act at the level of implicit memory), furnish a meaning to the biography of the analysand and respond to the curious impulse of the individual.

In practice it seems to me that this phase in analysis is reflected in the phrase which analysands regularly mention. “OK, now I understand where this came from. So what now? What do I do about this? What does this change in my life?” It probably corresponds to changes at the cognitive level, at the level of explicit memories, but implicit memories remain thereby structuring the actions of the individual, that is to say, the mental apparatus remains without any difference in its structure.

What happens when one interprets in the transference?

In interpreting in the transference the analyst is doing two things:

1. Identifying an emotion/feeling which is being experienced indissociably in the body and mind of the individual, in the group context, and of which they usually are not conscious.
2. Identifying an unconscious reply on the part of the individual to this emotion which is recorded on their implicit memory.

In this way the analyst is enabling the transformation of an implicit memory into an explicit one, that is to say, he is making conscious that which is unconscious, he is promoting the creation of new information circuits in the patient's brain. That which was probably being processed in the sub-cortical structures now has the ability to be expanded to higher cortical structures.

The analysand now has the possibility of mentalizing something that he was not identifying because other kinds of biological vantage had been relegated to more primary structures. I wish here to point out that if this opportunity were not given to the analysand i.e. interpretation in the transference then it would be a case of something he would never have access to alone, given the characteristics of biological organisation.

In groupanalysis, this process is undoubtedly magnified, not only due to the possibility of lateral transferences (which to my mind should whenever possible be directed towards the analyst), but also though the possibility of amplifying perceptual experiences which give rise to this type of memory.

As we know, memories can be evoked through the experiencing of a situation which resembles the past event in question. The group, by imitating our early surroundings, the family, allows the recall of implicit memories, which would probably not arise in the dual registry.

But we have now reached a hypothetical blind alley. If, in the treatment of an individual, we discover through the analysis of the transference, implicit memories which result in their behaving less than adequately when faced with reality and prejudicial for themselves, then they will attempt not to use them. What then should the groupanalyst put forward as a solution? the experiencing of new situations essentially with the analyst, but allowing them to occur with the other members of the group.

How does this process function? I feel that there are various factors involved. On the one hand we have what Zimerman (1999) calls **interpretative activity**. On the other hand, and to my mind the most important factor, is the way in which the analyst relates to his or her analysand. I believe that it was to this that Kohut was referring when he said that more important was not what the analyst does, but what the analyst is.

Translating into neuroscientific language: another kind of relationship with the analyst puts the analysand in a novel situation and for which new circuits will need to be

created to take the place of the old ones which were pathogenic, maladapted. If not, there remains an emptiness which is referred to by some analysands.

It is this new relationship which is going to allow that awakening of new emotions, experienced in body and mind throughout the course of the analysis. These will be recorded as new implicit memories and which are formed, as we have already seen from a novel repetition. Sometimes remains of old circuits are maintained - archaeological remnants which we on occasion revisit but do not use.

It is not by accident that analysts have to undertake their own personal analysis. To know the theory and to make splendid interpretations is not enough. We must be able to establish a true and healthy relationship with our analysands, a relationship likewise experienced in our own body and mind. We also need to be received in order to give. And in our countertransference are our own parents but above all our analysts and our supervisors.

Imitations are not possible on the part of the analyst, neutral albeit personal, of course. Above all in groupanalysis, the analyst is exposed to the perceptual apparatus of the analysands, they can see him; the binome body mind is visible and cannot be disguised, the analysands detect this immediately either consciously or unconsciously.

I would again like to point out that interpretations and elaborations at the level of explicit memory do not bring about change. Something has to be experienced in the body at the level of transference in order for a more adequate programming of new circuits – the body too has to “understand”. The pathways of the brain cannot be cheated; they have to follow the given neuronal paths and therefore, rational interpretations alone do not produce effect.

Studies have revealed that our brain can in fact change at the macroscopic level (new circuits) and also at the microscopic level (new cellular mechanisms), and this is what probably happens during the analytic process. But for this to happen physical time is needed as well as a true relationship experienced at the body and mind level

In a certain way both analyst and analysand evolve conjointly during this process of construction since on analysing our own countertransference we are forever allowing this spiral to grow unending. These are the tacit agreement/understanding felt either consciously or unconsciously in both partners It is these tacit agreement/understanding,

felt either consciously or unconsciously by both, which provide the energy for this creative process which is groupanalysis.

In groupanalysis the group's echo increases the number of possible associations of each emotional experience and also increases the perceptions which evoke the original family group. Groupanalytic treatment makes possible the phenomenon of resonance described by Foulkes (Foulkes, 1975). In fact the relating of an emotional experience by one of the elements of the group may evoke, by association, the forgotten memory of another experience of another member of the group.

To what extent do the experiences/memories which reverberate within the group allow the analysands to establish contact with the various parts of their self and concomitantly with the diverse dimensions of the primal self objects of their life?

Maria Rita Mendes Leal (1969/70) speaks about the "internal inter-relational matrix", referring to the fact that the regression induced in each group member may lead to the reactualization not only of parental figures but of the entire family group of each one.

César Dinis is of the opinion that (2000) the countertransference precedes the transference and that in this case it is the analyst who chooses those members who will constitute the group.

Isaura Neto (2000) maintains that, in choosing the members of the group, the analyst is choosing parts of his/her self and consequently parts of the significantly affective figures of his past (self objects).

In keeping with these premises we could say that when explicit and implicit memories appear in the group, and which illustrate emotional states, one is coming into contact with the different dimensions of self objects, provided by the mother together with the different dimensions of the family group, both from the transferencial and countertransferencial standpoints.

At the level of the transference, very archaic implicit memories of the early relationship are being relived in the sense that the psychic world is still concomitantly split into various good and carious bad parts. The internal psychic world has therefore the opportunity to appear in its most raw and ancient form, full of splitting (apportioned among the different elements of the group) and far from the more elaborated processes of

rationality (something which is heightened by regression). On the other hand, the counter -transference, which precedes the transference, is also present with exactly the same characteristics. It is for the analyst to unravel these entangled webs, without slipping simply into the here and now of the group.

From what has been stated above, it is clear that the groupanalyst increases the possibilities of entering the psychic world. Not only at the level of structuring of the psychic apparatus and its instances, but also at the level of restructuring of the self, according to the way Kohut conceptualised it.

In her work "How does the group cure? How does the groupanalyst cure? It is not enough simply to appear to be so! The analyst has to be authentic", Isaura Neto (2001) reflects and discusses the ways in which, in groupanalysis, we experience the moments of meeting conceptualised by Stern (1998):

Moments when each partner captures an essential characteristic of the motivations of the other and in which both recognise a mutual adequacy. These moments demand a doubling of attention and imply a choice: whether to remain within the usual working pattern thereby forcing the therapist to make a stand: interpretation, an unusual reply in the relational evolutive movement or silence. (Neto, 2001)

Isaura Neto considers, like Stern, that these are the moments of considerable analyst/patient – group empathy which may alter the implicit relational understanding since they can transform the relational pattern with the other(s). A correlation is therefore established between the acts of encounter and the possibility of creating a corrective emotional experience. Isaura Neto emphasises, furthermore, that in groupanalysis this process is helped by the fact of seeing oneself and being seen, which allows the clear declaration of affective genuineness.

I believe that these authors are speaking to us about the importance of specific moments of great emotional tension, in the creation of new implicit memories (affective and relational). What is taking place in these acts of encounter which arise in the course of an analysis?

McGaugh and Larry Cahill (1995) proved that the release of adrenalin, in moments of heightened emotional tension, intensifies the formation of explicit memories.

It appears that the adrenalin somehow returns to the brain and influences the functioning of the memory system of the temporal lobe. (cf LeDoux, 2000)

However, as we have already seen, explicit memories created in emotional situations are not necessarily trustworthreliable, rather the opposite in fact, as the various works of Elisabeth Loftus have shown (1989, 1993).

Occasionally, when confronted with a traumatic event, the registering of explicit memories is not even possible. Furthermore, the same quantity of *stress* which might be the root cause of the amnesia of a trauma might intensify implicit or unconscious recollections which were formed during the traumatic event itself.

Keith Corodimas, Jay Schulkin and Joseph LeDoux (1994) formed the hypothesis that intense *stress* can favour learning and the memory processes which depend on the amygdala, and they examined the effects of an overloading of the *stress* hormone on the behaviour of conditioned fear. T*he unconscious recollections of fear created through the amygdala seem to be indelibly stamped on our brain. They probably remain with us forever* (LeDoux, 2000)

Returning to our question:: What is happening in these acts of encounter which arise during the course of an analysis? I would say that these moments of unexpected mutual tension and empathy are moments of great *biological stress*, characterised by high levels of stress hormones, and as we have seen, of moments of great capacity for the implicit and even certain levels of explicit memorization of *stress.*.

Who has not already felt these moments of encounter during which our body explodes in a reply coordinated by the autonomous humoural nervous system. My personal experience as groupanalysand and groupanalyst easily recognises them, in an implicit awareness. I feel that the reader who has passed through one of these experiences will likewise have no difficulty in recognising them.

These findings are based on results obtained by Stern (1998): most people who successfully complete a period of treatment remember two basic kinds of events which brought about change - key interpretations and moments of authentic interpersonal relationship. I would translate the creation of new explicit memories and moments of great biological tension with the creation of new implicit memories.

I believe that these moments are a kind of biological window which permit change, in groupanalysis, the formation of new implicit memories.

This question leads us to another: to what extent does the neuronal plasticity of the human brain allow these changes to take place in adulthood?

In his work, "Some neurological bases of repetition compulsion and of psychic change", Maurício Marx e Silva and his colleagues (2002), consider to what extent the concepts of maturation window and neoteny help us to understand the possibility for psychic change in psychoanalysis.

The concept of **maturation window**, was popularised by the Austrian aetiologist Konrad Lorenz. His aetiological studies demonstrated the reciprocal and complementary influence between genetic and environmental factors. The maturation window corresponds to that brief period of time, programmed genetically, during which an object is identified as caregiver. (Guell-Mann, 1996). During this period cerebral plasticity is maximum (window open) decreasing immediately afterwards (window closed).

In human beings the maturation period is longer due to a phenomenon called neoteny.

A baby is born in a state of *neoteny, that is to say, it is born prematurely,* in the sense that it shows, compared to any other member of the animal kingdom, a prolonged motor, neurological, maturational deficiency which leaves it in a state of absolute dependence and defencelessness. In fact cerebral maturation in human beings is a much more drawn-out process than in other species, the implications of which are that, concomitantly, neuronal plasticity is also prolonged through time. (Gould, Bjorklund)

Rolls (1999) mentions that the neotenic nature of human beings permits the existence of neuronal plasticity is prolonged into adulthood and that this is increased in a setting of extreme affective intensity. This ties in with the above-mentioned findings which show that in situations of great emotional intensity thee is an increase in the ability to memorize.

PET follow-up studies (Positron Emission Tomography), Chugani (1998) have shown that the last cerebral area to increase metabolic rate, on reaching its neuronal plasticity window, is the pre-frontal area. . This area is related to the executive functions of the Ego and Superego and increases dramatically its metabolic rate in the final three

months of the first year after birth. At the age of ten the metabolic rates begin to decrease and reaches the adult plateau at the age of 18.

In my clinical work I have witnessed change in my analysands, change occurring in relational patterns. This experience leads me to consider the possibility of a neuronal plasticity which allows change. I believe that there are different people, different pathologies and different capacities for change. My clinical results together with those available in the literature lead me to consider that there are cerebral circuits which are more immutable than others.

Perhaps within the circuits of implicit memory, the circuits have different plasticities and as such different capacities for change. As we have seen, from the neurobiological point of view, everything sees to indicate that the more archaic circuits are more difficult to modify than more recent ones.

. We also know, from the psychodynamic viewpoint, that psychotic structures, which have their origins in more early developmental disorders, are also more difficult to treat.

It would appear that the seriousness of the pathology, that is to say, the earliest period in which certain neuronal circuits were formed, and which suffered imprinting of certain maladapted, pathological relational patterns, conditions to a certain extent the possibility for change.

But there is also an empirical factor which I have found from my clinical experience which is that for the same type of pathology, adaptive difficulty, or personality structure; there exist different capacities for change.

Perhaps there are different neuronal plasticities depending on the individual. It is clear that, as in the case of other human characteristics, perhaps these different abilities depend on each individual's genome, as well as on environmental factors.

I believe that groupanalyis has proved itself to be a valuable therapeutic process, a process which we are now beginning to understand in a much broader and at the same time much deeper way. Gradually its biological bases are beginning to be unravelled, which does not imply that they be reduced simply to this. On the contrary, I believe that to understand the biological ABC can only lead to the writing of an even richer psychoanalytic story.

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