

# Integrating Neuroscience Into psychoclinical Practice: A Psychosynthesis Analyses

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## ABSTRACT

**Background:** Recently, there is a huge interest to make a connection between different constituencies of mental illness treatments from a range of backgrounds with a specific focus on enhancing the development of appropriate psychological interventions. In particular, the question is to explore the potential for basic neuroscience to support the development of more effective psychological treatments in practice. Therefore, it is started with an introduction that makes us understand why and how neuroscience offers the great contribute in psychological treatments work. It is an important link for psychoclinical practice because professional requirements are imposing a greater knowledge of the structure and functioning of the brain. Moreover, that the rationale for the unique domain that clinical practice occupies within academic discipline is the analysis and understanding of the interaction between the social, psychological, and biological determinants of behavior. Clinician work is based both on scientific knowledge and, to a large extent, on an empathic understanding of the patient’s history as well as his or her verbal and non-verbal expressions/as a consequence, the orientation of brain based philosophy and mind should also be included in the intellectual framework. **Aim:** The aim of this paper is to integrate the channels of communication between neuroscience and psychoclinical practice to the best advantage for a holistic cooperation. **Methodology:** An evidence based practice case approach and psychosynthesis analysis. **Conclusion:** The key tenet of psychosynthesis analyses brings out that there is no universal, uniform pattern to which the question adheres. However, in meantime, it reveals that there are at least ten reasons why human service professionals should embrace the integration of neuroscience into psychoclinical practice. **Suggestions:** It is advisable for human service professionals such as clinical psychologists, psychotherapists, and mental health social workers continue to study and be updated about brain structures and functions as new findings may provide further support for our work and suggest specific guidelines for a better practice.

**Key words:** psychosynthesis, brain and mind, neuroscience, psychology, clinical practice

## INTRODUCTION

In the last few decades, there have been enormous advances in our understanding of the links between the mind, the brain, and behavior. How would we know when we have achieved something? What are the farthest reaches of the human mind? Why a lot of people suffer of mental illness? Why a lot of people cannot read, or cannot relate to others? The absorption with such questions eventually led me to study furthermore about brain and mind and we became attracted to the question of human capacities and potentials.

The more one knows about the question, the more one understands how much is left to learn. Of the many interesting topics associated with human potential, one quickly has caught our attention – brain and psychic experiences. When we have been little children, we have gone to the public library and read the fairy tales, mythology, parables, and science fiction. In those fictional realms, it was taken for granted that the mind had exceptional powers and capabilities, and it all seemed perfectly reasonable to our youthful intuition.

However, through the years, studying the branch of clinical psychology, and cognitive neuroscience of language at

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Basque Center on Brain, Cognition, and Language, we are striving to understand that such abilities were not portrayed as supernatural fairy tales but scientifically. By reading articles and books from the neuroscientists point of view that has conducted experiments, and by working daily in clinical practice with clients, I find myself becoming excited about the prospects of exploring the frontiers of the brain and human mind.

The compounds great debate for years and it surely will not be settled in the near future. But I hope to illuminate the issue from a particular perspective, the one of neuroscience. It looks a nice effort-using the knowledge and collecting intelligence of other intentions – with potential application that extend well beyond the theory.

## BACKGROUND

Experiences, thoughts, actions, and emotions actually change the structure of our brains. Indeed, once we understand how the brain develops, we can train our brains for health, vibrancy, and longevity. - John Ratey.

The first decade of the new millennium in 90's could well be called the decade of the social brain. Over the past 10 years, research into the inner workings of the human brain has shifted from its century-long emphasis on the brain in isolation, with its “almost restrictive focus on cognition.” This is, maybe due to the fact that we live in the world of thoughts or, as modern cognitive psychology states, according to Kellogg and Ronald,<sup>[1]</sup> we base our perception of the world on mental representations. However, can we rely solely on these to have the perception of ourselves and the world we live in?

As hard sciences like physics Greene, 2004 and neurobiology Dispenza, 2007 advance the understanding of the worlds within and without, so it seems does the descriptive science<sup>[2]</sup> of psychology. At its core, psychology of science is the empirical study of the biological, developmental, cognitive, personality, and social influences of scientific thought and behavior.<sup>[3]</sup> Moreover, according to the proper author, biological-neuroscience explores the link between brain, mind, and behavior; cognition examines how we perceive, think, remember, speak, and solve problems.

Looking deeper in the literature, it comes out that has remained elusive how the brain drives our thoughts and actions. Is this because of “cognitive continuity?”<sup>[4]</sup> Another affirmation comes from Kandel<sup>[5]</sup> who determines that all processes of the mind are born as the products of brain cells, the genes directing the formation of the tracks and connections of nerve cells and regulating psychic life, as well as behavior. However, genes alone do not explain everything. Going further, recapitulation is the idea that ontogeny and phylogeny are related processes. This principle holds true for

the development of scientific thinking.<sup>[3]</sup> Quite an interesting read, but it can be said that was not the tightest book I have read. Brain imaging studies have revealed that specific parts of the brain are active for specific types of information. Regarding to this Gazzaniga,<sup>[6]</sup> gives an example: ‘When you look at a tool (a man-made artifact created with a specific purpose in mind), your entire brain is not engaged in the problem of studying it; rather there is a specific area that is activated for tool inspection’.

But does it happen the same in clinical populations? Can they have this capacity? Having jumped headfirst into this question, it is to continue asking then: If they do not have the capacity because of not handling the clinical problem, what could help us understanding better the problems of clinical population? In this regard, recently, there is a huge interest to make a connection between different constituencies of mental illness treatments from a range of backgrounds with a specific focus on enhancing the development of appropriate psychological interventions. It has reached an important point where it now has an instantaneous meaning for clinical practice and its outcomes.

Neuroimaging and other knowledge from neurobiological disciplines have found that measurable structural changes occur in client brains as a result of cognitive and interpersonal therapy.<sup>[7]</sup> With growing sophistication in its methods, according the proper author, neuroscience has started to identify neural correlates not only of mental disorders but also of therapeutic changes.

Moreover, advances in positron emission tomography scans and functional magnetic resonance imaging have made it possible to measure these changes in areas of the brain that – light up or – fire under various stimulus conditions. And, as<sup>[8]</sup> states, it is not just the client who develops new neurons and neural nets in the process of psychotherapy; the psychotherapist's brain is changing as well. Moreover, therapy changes the brains of clients because they are in the presence of an attuned brain. The clients' nervous systems become more regulated in the presence of a calm, regulated nervous system. After all, in science, like in other things, it is easier to kick than to build and we may accept to have shared sometimes the kicking process. However, in case, we would prefer to defend this, by adding the explanation given by Fuchs<sup>[7]</sup> that the changes happen because the process of psychotherapy implies a mutual creation of meaning which is not a “state in the head” but arises from the “between”, or the system, of patient and therapist.

Interestingly, current research in neuroscience and cognitive science is highly supportive of the emphasis on listening, empathic understanding, and building strengths and wellness and provides ample support for the microskills.<sup>[9]</sup> There is evidence that this might be true because functional imaging

studies on person perception, for example, have focused on implicit or explicit judgments on the basis of socially relevant cues in the human face such as emotional expressions, facial attractiveness, or trustworthiness. In addition, a stream of studies has investigated our ability to decode social signals on the basis of biological motion.<sup>[10]</sup>

Indeed, a close look uncovers another revealing detail according to Deceity (2010), – “Our biology has helped shape the social environments we have created, and our social environment has helped shape our genes, brains, and bodies. The bridge between biological and psychological processes is erasing the old distinction between mind and body, between mind and brain – the mind is the brain.”

Subsequently, in this sense, it comes a position to highlight that the main domain of clinical practice occupies within academic discipline is the analysis and understanding of the interaction between the social, psychological, and biological determinants of behavior. It is included here as well the spiritual perspective in human life.<sup>[11]</sup> It is an important link for clinical practice because professional requirements are imposing a greater knowledge of the structure and functioning of the brain. Clinician work is based both on scientific knowledge and, to a large extent, on an empathic understanding of the patient’s history as well as his or her verbal and non-verbal expressions/as a consequence, the orientation of brain based philosophy and mind should also be included in the intellectual framework.<sup>[12]</sup> Therefore, it is necessary learning which therapy fundamentally influences the network between the nerve cells and thus the individual biology and psychology.

By way of reminder, this congruence enables understanding that the idea of the universe as an interconnected whole is not new. What is new is that Western science is slowly beginning to realize that some elements of those ancient times might have been correct. Of course, adopting a new ontology is not to be taken lightly.<sup>[13]</sup> When it comes to serious topics like one’s view of reality, it is sensible to adopt the conservative maxim, “if it ain’t broke, don’t fix it.<sup>[13]</sup>” Hence, it is an obligation to carefully analyze the evidences. If the conclusion is positive, then the given assumptions are wrong and we’ll need to come up with alternatives. Therefore, the aim of this paper is to integrate the channels of communication between neuroscience and psychology to the best advantage for the holistic cooperation.

## RESEARCH METHODOLOGY

It is given an evidence based practice case and psychosynthesis analysis. The latter one is based on a theoretical background. To comprehend the issue in hand, books, and scientific articles of interest were studied, analyzed, and evaluated.

### An evidence based practice case approach

S. B is a male, single, age 25, orphan. He suffers from behavioral disorder. He was left at orphanage since a little

child. He mentions to have met his father only once. He describes his father emotionally distant. He denies having any significant mental health or physical health problems in his childhood. In the clinical file, data are given that his mother during birth had significant complications. He reminds the fact that due to his strong abilities; he could be the favorite of his caregivers. However, he described one significant traumatic event in his childhood. Specifically, he described witnessing to have seen other children being abused physically. S.B indicated that this event severely affected him, as well as his entire friend with whom was living. Hence, he raised up having in his mind one thought: “you have to be very strong that the other can’t dare to pick him up or use violence against him. He went on to report that he still felt responsible for not preventing his friend’s physical violence. He stipulated into his mind that next time would not let the others use violence. The second traumatic event was when his father did not come back any more. He stayed near the windows for days and nights to see if his father was coming to take him away. He noted that began to become aggressive and very furious to others as to tell that he is not weak at all. Despite this, he tells the same all the time that he did not receive any mental health treatment during his childhood or after these events, though he indicated that he began to do illegal actions (theft in caretaker bags) after these traumatic events in his youth. By 10 years old, he was transferred to another home care. He reminds to have been very irresponsible, impulsive, and chaotic by creating often problems. At adolescence, he admits to have used hashish as well as daily use of alcohol, drinking as much of beer per day until he passed out by bursting out and fighting physically with others. He soon began to associate with street boys and experienced a number of traumatic incidents. However, the traumatic event that he identified as most distressing and anxiety-provoking was physical rape of a young boy and attempts to stab him. He tells to have been immediately distressed by the event, and a need to evaluate his psychological mood because of his increasing re-experiencing and hypervigilance symptoms. Other accompanying conditions are the injury itself such as cutting the hand with a gauze or knife. He is obsessed with pets and insects. Occasionally, he exhibits infantile behavior and seeks pathological affection (e.g., by squeezing another person tightly). Furthermore, constantly makes pathological requests (unlike other resident in home care). He uses an unbridled vocabulary and refuses food consistently. It tends to stay awake until late at night and wake up very early in the morning, this way you break the daily rhythm. When the requirements are not met, he tries to injure himself or use violence against others that he deems inferior. Furthermore, when a young person appears (may be female or male) he tends to attach oneself to them to appropriate material goods from them. Furthermore, when persons with high legal position appear, it attracts attention with unusual or violent actions. However, when he stays in good company, he changes positively in behavior. After displaying his impulsivity, he goes for a walk and calms down. Usually,

accepts verbally the psychological treatment but usually offers justification of not attending. He refuses categorically taking any medicament. Has done clinical examinations like CT head and has resulted in no head injuries. He usually willingly participates in small therapeutic groups or group counseling sessions. (But does not follow them regularly). Despite all, this helps it stabilize oneself for a while. He is one evaluated from a neuropsychiatrist and met diagnostic criteria for behavioral disorder associated with post-traumatic stress disorder. To S. B is provided feedback about his assessment results in a session focused on an overview of his psychological assessment results. After providing feedback about his assessment, the psychotherapist has given to him an overview of individual eye movement desensitization and reprocessing psychotherapy (EMDR) sessions, with an emphasis on its trauma-focused nature, expectation of out-of-session practice adherence, and the client's active role in getting well. S.B is thinking out whether to sign or not a "Psychological Treatment Contract." In his brain he still believes and broods that: "he is strong and does not need to be told what to do"

Note: Once one reads out the evidence based practice, needs to know as following:

- Describe the progression of psychopathological symptoms and how these relate to brain regions affected by the disease
- Describe the criteria for the given diagnosis
- Explain the biological mechanism underlying treatment options including side effects of a possible pharmacological treatment
- List known causes and risk factors for psychopathological symptoms and explain the difference
- Compare and contrast the given diagnosis to other co-related disorders
- Apply knowledge of pathological symptoms to explain why the given case diagnosis is not the one
- Describe the significance of the substantia nigra and the anatomical progression of psychopathological symptoms
- Describe the neural pathways that are implicated in distorted cognitive processing
- Describe how the brain develops through different usages.

### **Psychosynthesis analysis**

Bearing in mind, the given case, and clinical theoreticians have often attempted to present a unique system of thinking about clinical practice. This has led to a confusing array of theories, often describing similar, if not identical, phenomena using different language.

Here, it is attempted to avoid overly theoretical discussions, and although to explain how can neuroscience help one to understand the given case, there are presented some of the elements of psychosynthesis analyses of brain and mind, by not attempting a unified theory of the relationship

between them. Instead, it is preferred to support that such a relationship exists and highlight some of the ways that it becomes manifest and it is necessary in the clinical practice.

Thus, it is plausible to mention that recent developments in neuroscience research have highlighted a new and paradoxical fact: "The principles that Roberto Assagioli have enunciated in the last 100 years now find a precise correspondence in the data and models of neuroscience". The paradox is that psychosynthesis, which focuses on the individual's uniqueness has always been based on soft, subjective evidence.<sup>[14]</sup> The entire context means that everything in nature appears to be evolving towards increased wholeness. Psychosynthesis cooperates with this process. An atom comes together with other atoms to form a molecule, and these form cells, which then group into tissues which become organs that make up a whole body.<sup>[14]</sup> A similar process of synthesis can be seen in our psychological world, too, as all the parts of us come together to make us into one, whole person.

Therefore, it is argued in this paper through psychosynthesis analyses that there are at least ten reasons. Let us then begin a little bit with the eye of Leonardo da Vinci. Understanding a phenomenon, for him, meant connecting it with other phenomena through a similarity of patterns. He paid particular attention to the connections between the eye and the brain, which he demonstrated in a series of beautiful drawings of the human skull.<sup>[15]</sup> This is a fairly claim before we start as following. Leonardo's exceptional ability to interconnect observations and ideas from different disciplines lies at the very heart of approach to learning and research.

### **Brain and mind**

The question of how to combine neurobiological and psychological knowledge in everyday work is common in clinical practice, but progress in neuroscience over the past few decades has thrown up new and challenging questions.

At the end of the twentieth century, neurobiologists turned their attention to neural networks.<sup>[5]</sup> It seems that this new network model can explain the multifaceted etiology of mental illnesses better than earlier, more focused models, by incorporating the functions of different parts of the brain system. According to Kandel's principles,<sup>[5]</sup> we can follow the hypothesis that a disconnection between the neural junctions and neural network can lead to a psychosis.

In retrospect, Sperry (1993) explains that "The emergent character of mind does not mean that it is absolutely free of its parts, but that it overrides the physical and chemical elements giving it birth, and, in turn, can exert downward control over neural activity." According to the proper author, the causal chains in the brain are two-fold and cybernetic. First, we have the upward chain of causation going from the parts to the

emergent mind. Second, we have the downward control by the mind to the parts from which it originally arose.

Next, neuroscience has driven a final stake into the heart of Locke's "tabula rasa" theory wherein mind is conceived as an empty slate "writ" on by experience and passively mirroring "what is." As Lakoff and Johnson (1999) argue in the book: *Neurosociology: The Nexus between Neuroscience and Social Psychology*, the "correspondence theory" is dead in the water. The brain consistently sees patterns where there are none, and much of it is designed to get to the "gist of things" rather than precise details.<sup>[16]</sup>

Summing up, it can be said that although it exists a relationship between brain and mind, it is complex. Simply one may ask, from an evolutionary point of view why we can make sense of why we should have two systems, one that (re)acts and one that recognizes.<sup>[4]</sup>

Theoretically, it should be for all the people but practically it does not since there are a range of people with clinical problems. Is this because a specific area of brain does not work properly or is the mind that does not have the capacity and potential? What should clinical populations write in the "tabula rasa" then? It remains an open debate.

### How and why is neuroscience a relevant integration to clinical practice?

Looking at the collection of the revised literature, we can respond nicely as<sup>[4]</sup> states that once we start looking inside the brain we cannot escape the fact that it processes information. We do not even have to look beyond a single neuron.

Therefore, our insightful illustration provides some nice observation from "classical sandwich conception of brain and the mind". Hence, neuroscience provides research that suggests most of clinical theory and practice issues. Let's see then the reasons why are neuroscience relevant to clinical practice?

1. The genetic material (constituting the DNA) in each of the brain's 10 billion neurons shapes the cascade of processes in each neuron. Inherited genetic thresholds modulate many neural functions.<sup>[17]</sup> Moreover, all information transfer in the brain consists of these electrical and chemical processes. Which subset of networks is active at any moment, is possibly selected according to competitive principles of natural selection that best achieve our adaptive needs at that moment.<sup>[17]</sup> Example: Referring the case: The mother had complication during his birth
2. Neurogenesis: It is known, for instance, that new nerve cells can in fact grow in adults, and such growth is especially likely in the hippocampus, the brain structure most active in learning and memory. The underlying mechanism of such growth is the presence of neural stem cells. As the neuroscientist Terrence Deacon has made

clear, the process of neural growth is not prewired by genetic factors, nor are clusters of neurons terribly specific – they can end up doing many different things. Much neural growth is general and nonspecific with neurons growing at first in some – what indiscriminate directions, then being guided by many different mechanisms, such as growth factors, cell adhesion, and synchronicity of neural firing. All of which leads to a second important principle of neuroscience: Neurogenesis is Darwinian perspective in nature. In other words, like all living things neurons compete for survival, and generally the strongest and best adapted to their environment survive while those least adapted die. Up through and following birth there is a tremendous explosion in the number of neurons in the brain.<sup>[3]</sup> Then, psychotherapy and counseling can support the building of new neurons! One of the most startling findings is that completely new neurons can be generated in the learning process, even in older adults. We develop new neural networks throughout the lifespan in response to new situations or experiences in the environment. Example: Referring the given case, he changes due to circumstances

3. Rhythms of brain: Brains are foretelling devices and their predictive powers emerge from the various rhythms they perpetually generate.<sup>[18]</sup> At the same time, brain activity can be tuned to become an ideal observer of the environment, due to an organized system of rhythms. The specific physiological functions of brain rhythms vary from the obvious to the utterly impenetrable. Exposing the mechanisms that allow complicated things to happen in a coordinated fashion in the brain has produced some of the most spectacular discoveries of neuroscience. Nature is both periodic and perpetual. This law of the universe governs all manifestations of living and non-living. Example: Referring the given case: He acts due to his emotional emergencies, self-causation things, and non-adaptation, changing the daily rhythms. In other words, the functional connectivity of the brain and the algorithms generated by such continuous modifications are derived from interactions with the body, the physical environment, and to a great extent, other beings
4. Pruning: During critical early periods in brain development "pruning" occurs of those networks that were not selected. There are a number of mechanisms that operate at this neural network scale. A key mechanism thought to constitute learning in the brain is reinforcement of connections between neurons that fire simultaneously and is known as Hebb's rule.<sup>[17]</sup> Neural pruning, in other words, is closely associated with "learning". At the neuronal level, learning involves strengthening synaptic connections, and this occurs when certain neurons consistently fire together (synchronicity). Psychologist Donald Hebb first described this principle with a phenomenon that has been described with the phrase "cells that fire together, wire together." It is not

too difficult to see how clusters of synaptic connections (“cell assemblies”) that “win out” form the foundation for “learned associations” (although how precisely these neural clusters and “associations” become “ideas” and “thoughts” is still anybody’s guess).<sup>[3]</sup> Such evidence gives another reason that should be taken into account into clinical practice because it means how plastic the brain can be and how the brain is molded by its specific environment or circumstances. It is during the period of psychotherapy that a person can achieve the peak in neural growth – in particular events and experiences that can change positively. Example: Referring the given case: He learns and changes positively in good company and after attended in group counseling session

5. Neuroplasticity. The brain can change – it is not fixed and it responds to external environmental events and to actions initiated by the individual. The traditional assumption that the brain does not change is wrong. Throughout the lifespan new connections and new neural networks are developed. Therefore, we may assume that effective psychotherapy and counseling not only changes minds but it also changes brains as well. And this includes our own brain, as helpers.<sup>[17]</sup> We now know that the brain is much more malleable and open to environmental influence; much of the wiring (neural connections) in the brain requires experience to be formed. Experience literally shapes neural connections and hence the brain. In other words, the environmental is not completely separable from the biological.<sup>[3]</sup> Example: Referring the given case: He changes his mind in good company
6. Clarifying our Understanding of Emotions. Brain imaging reveals that specific emotions fire different parts of the brain. Again, we see that our basic concepts are verified. The amygdala is the major seat of the negative emotions of sad, mad, and fear, but it is also an energizer for learning and absorbing new input and memories. Many areas of the brain are activated by positive emotions. Thinking and feeling positively is heavily influenced by executive cognition functions. There is a good reason also to rely on this evidence since the main objective a therapy has is to make a person who suffers from clinical problems think positively. Example: Referring the given case: he expresses one’s emotions in good company and in group counseling sessions
7. Focusing on Wellness and the Positives. Psychotherapists or other Clinical Practitioners focus on negative issues and problems builds a self-reinforcing circularity between the —turbulence of the amygdala and the frontal cortex. Result – negative thinking, accompanied by negative feeling, characteristic of depression. However, there is clear research evidence that an effective executive frontal cortex focusing on positives and strengths can overcome the negative. Appropriate medication (e.g., Lexapro,) can enhance positive thinking through increasing the supply

of serotonin. Ellis and Beck’s cognitive behavioral counseling does the same thing. Keep in mind that wellness activities such as interpersonal relationships, meditation, and leisure all facilitate our ability to control and demons of negative thinking and feeling. Example: Referring the given case: He goes out for a walk and releases one “self”

8. Empathy and Mirror Neurons. Empathy is not just an abstract idea; empathy is identifiable and measurable in the physical brain. Research on brain activity validates what the helping field has been saying for years.<sup>[19]</sup> Comments —The basic building blocks (of empathy) are hardwired into the brain and await development through interaction with others. empathy (is) an intentional capacity. Mirror neurons are neurons that fire when we behave, think, or feel and they also fire when we see others behave, think, or feel.<sup>[4]</sup> Mirror neurons enable a psychotherapist to sense and understand what the client is saying and feeling. These neurons fire and even impact your internal bodily responses when you are truly empathically experiencing the world of the client. Moreover, as the clients restore their issues, new neural connections are born. The psychotherapist’s empathic behavior and the relationship are central to change. Needless to say, this emphasizes the importance of a positive approach to change. Example: Referring the given case, despite the empathy he finds at psychotherapist, he does not allow one-self to be helped in the long run and individually
9. Human Language – it is caused by neuronal activity and any speech signal necessarily activates neurons in the brains of listeners when being perceived. It is the purpose of language science to specify these processes and their underlying mechanisms.<sup>[20]</sup> Therefore, it comes out another very important reason, why should clinical practitioner rely on neuroscientific data; language is the highest cognitive process, through it can be realized the process of therapy and influence in the mood and mind of the client. A clinical practitioner needs to know the underlying structure of language in order that can perform better in the therapeutically process. Example: Referring the given case, he uses an unbridled language as a defense mechanism but that helps us understand that he is looking at the others for the soft language he lacks in himself
10. The brain develops through different usages. The development of the brain is use/experience dependent and use/experience expectant. It relies on sensory bathing. According,<sup>[21]</sup> at birth, most of a person’s neurons have been generated, but most are not connected in networks. Brain development is about forming and reinforcing the connections. The whole brain is a highly interconnected system, functionally as well as anatomically. The coherence of its functions are dependent on the interaction between specialized networks, on the one hand (e.g., reflex, sensory, motor, language, and face

processing), and non-specialized more integrative networks on the other. In order that a clinical practitioner can succeed in therapeutically process by following the client in a holistic therapeutically process, needs to have a very good knowledge of how the whole human brain performs. Example: Referring the given case, one can understand how he is raised and how he is coping with his brain to survive in a pathological way.

## CONCLUSIONS

The primary goal of this article is to integrate a channel of communication for psychoclinical practice willing to rely on the information from neuroscience in clinical work with clients. Such a perspective:

- 1- Challenges clinical practitioners to explore our own professional beliefs, and thus offers opportunities for both growths.
- 2- Psychosynthesis analyses reveal that there is no universal, uniform pattern to which the question adheres. Indeed, the complexity of human life defies even the most elegant and seemingly comprehensive of theories, there may be no answers here. However, the best hope is to integrate channels of communications between neuroscience and psychology more clearly.
- 3- In light of current brain research and trends toward supporting the relationship between brain and mind, it also provides a clearer understanding of why neuroscience is important for clinical practice and how to improve it.
- 4- Neuroscientific evidence suggests that without a meaningful and effective environment, we cannot grow and change. The neuroscientific evidence demonstrates that we are a unique social species with highly developed cultures and social institutions.<sup>[6]</sup> In clinical practice, this means that the key word relationship is all that more important and that we need to honor and respect what we have done and what we can do in the future. Process of therapy builds new brain networks. Neuroscience research also demonstrates the factors that negatively affect the brain. It is hoped here, this article captures some of the flavor and elements of this journey. As it happens in clinical practice, in the beginning of a therapy.

### And lastly looking to the future

Wheeler proposed that we live in a participatory universe in which we – our act of asking questions of Nature – participate in the creation of the observed world. “every it – every particle, every field of force, even the space time continuum itself – derives its function, its meaning, its very existence entirely – even if in some contexts indirectly – from the answers to yes-or-no questions, binary choices, bits.”<sup>[13]</sup>

- 1- Professional of psychoclinical practice should embrace neuroscience research since it provides an important biological foundation for understanding the impact

of clinical work. The very act of interviewing and counseling produces changes in client memory (and the therapist). Always be aware that new ideas and learning are being constructed in the session.

- 2- Professional of psychoclinical practice is suggested to continue studying and learning about brain structures and functions as new findings may provide further support for our work and suggest specific guidelines for practice. Data are beginning to suggest that effective counseling and psychotherapy in many cases can be more long lasting than medication. Why? We are clearly impacting neurotransmitters in the process of developing new neural networks that contain our thoughts and feelings, leading to behaviors. And, we are simultaneously teaching skills that will last after medication has ceased.
- 3- Professional of psycho clinical practice should keep in mind that brain research is not in opposition to the cognitive, emotional, behavioral, and meaning emphasis of interviewing, psychotherapy, and counseling. Rather, it will help us pinpoint types of interventions that are most helpful to the client. In fact, one of the clearest findings is that the brain needs environmental stimulation to grow and develop. Referring to Kandel,<sup>[5]</sup> who presents the idea that the future mind and brain researcher should have an interscientific and broadly based understanding to avoid the currently accepted limiting, biologically materialistic conclusions of the human being; we also advocate the integration of counseling, psychotherapy, neuroscience, molecular biology, and neuroimaging, and the infusion of knowledge from such integrated fields of study to practice, training, and research.

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