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On Jacques Lacan Psychosis Theory and ERPs Analysis

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Abstract. If properly interpreted, some recent neurolinguistic researches, based on the so-called Event-Related Potentials (ERPs) and conducted on patients showing schizophrenic spectrum disorders (SSDs), seem to corroborate some of the main Jacques Lacan theses on psychosis. In this brief note, we simply want to highlight the existence of this possible and interesting link.

1. Introduction

According to (De Vincenzi & Di Matteo 2004), the neurophysiological investigations methodologically based on the *Event-Related Potentials* (ERPs, acronym of Event-Related Potentials) have revealed to be of fundamental importance in the study of neurolinguistic alterations and anomalies, since they are functionally connected with the basic syntactic, semantic and pragmatic aspects of human language. For these reasons, the ERPs analysis is one of the main neurolinguistic experimental research methodologies.

The Event-Related Potentials differ from the simple *Evoked Potentials* (with acronym EPs) for their major specificity of the elicited neurophysiological functions and for a greater information's complexity treated; furthermore, they elicit high and more structured cognitive function responses respect to the simplest ones processed by Evoked Potentials.

In this brief note, we simply want put the attention on the existence of a considerable number of experimental researches based on ERPs and conducted on patients showing disorders belonging to the schizophrenic spectrum, whose results, if opportunely interpreted, might to confirm the main theses on the nature of psychosis according to Jacques Lacan. Moreover, this paper has also been thought with the aim to tribute, for what has been possible to do, a right acknowledgment to the ingenious ideas of this Author, even nowadays little understood[1].

2. The Lacan's Theory of Psychosis: a first brief sketch

According to[2] Rifflet-Lemaire (1970), the main necessary (but not sufficient, in general) condition for the occurrence of a psychotic state, is the structural lack of a particular, but fundamental, Signifier, that of the *Name-of-the-Father*, whose pathological mechanism is named, d'après Lacan, *Forclusion* or *Preclusion*[3] (of The-Name-of-the-Father). This structural lack implies an impediment to the access to Symbolic Order, hence to the language-mediated order of Culture (following Claude Lévi-Strauss[4]). Therefore, due just to this lack, the psychotic's Other is denoted by $\not{A}$ (the *Barred Other*), which also denotes the *Hole* in the Symbolic Order and is determined by the existence of every personal subjectivity; it hinders the possibility of a Signification of the real that the psychotic, accordingly, tries to fill up with other Signifiers (in a manner

[1] From our viewpoint, the various criticisms raised in regards to the Lacanian theories by many authors, may turn out to be quite unfounded from a more properly epistemological stance simply because conducted respect to different knowledge levels not easily comparable.
[2] See also (Di Ciaccia & Recalcati 2000).
[3] See also (Laplanche & Pontalis 1973).
[4] In this regard, see the Introduction of D. Macey to (Lacan 1994), as well as Umberto Eco (1984), who identifies the symbolic with the semiotic, and this with the linguistic order. Certain other authors, with whom we do not agree, argue on the inconsistency of this last identification.

which does not correspond to the usual and common pragmatic rules[5]) different from the paternal one. In particular, and this is an important remark, the psychotic is unable to articulate the *Other of the Signifier* (*A*) with the *Other of the Law* (*a*), that is to say, to build up the binary Algorithm[6] *A/a* just because of the Name-of-the-Father Forclusion, with consequent defects to the Symbolic Order, but not to the Imaginary one. Thus, to definitely shape the rise of a psychotic framework, it would be the pregnancy lack of one of the main Signifiers, precisely that of the Name-of-the-Father which has not been able to inscribe itself in the linguistic register of the individual. All this implies an Hole in the Signifier field which, in turn, induces a collapse of the Signifier chain to detriment of the Symbolic Order[7].

On the other hand, this inaccessibility to the Symbolic Order by psychotic individuals, is also witnessed by the difficulties that there exist in treating these subjects with the usual orthodox Freudian analysis, just due to their impossibility to verbally communicate with the analyst (Schraml 1978). Furthermore, according to Scabini (1973), the Symbolic Order is, roughly, the register of the words and of the language, the latter being meant, in a pregnancy sense, as formed by all the significative expressions, that is to say, it contains all that which may evocates and not all that that informs, this marking the transition from Nature to Culture (according to Lévi-Strauss).

Finally, following Lacan, we recall the assumption of the superiority of the Symbolic Order (that is to say, the priority of the Signifier chains) respect to the remaining other two (namely, the Imaginary and Real ones), so that, now, it is possible to understand what dramatic and harmful consequences can spring out of its defects, like in the psychosis. However, further recalls to Lacan's theory of psychosis will be given in the next Section 4, which will be discussed in relation to what is clinically observed in Section 3.

3. ERPs Analysis on schizophrenic patients

In recent years, many scientific publications related to the analysis of ERPs made on patients classified as having disorders belonging to the schizophrenic spectrum (SSD), have appeared.

Amongst these (see Bagner, D. et al. (2003), Bentin, S. et al. (1985), Bharath, S. et al. (2000), Chenery, H.J. et al. (2004), Condray, R. et al. (2002), Condray, R. (2005), Covington, M.A. et al. (2005), Crow, T.J. (2000), David, A.S. & Cutting, J.S. (Eds) (1994), Ditman, T. & Kuperberg, G. (2007), Fogelson, N. et al. (2004), Friederici, A.D. et al. (1993), Friederici, A.D. et al. (1996), Grillon, C. et al. (1991), Grillon, C. et al (2005), Iakimova, G. et al. (2005), Kiang, M. & Kutas, M. (2005), Kiang, M. & Kutas, M. (2006), Kiang, M. et al. (2007), Kiang, M. et al. $(2007)_1$, Kostova, M. et al. (2005), Kumar, N. & Debruille, B. (2004), Kutas, M. & Hillyard, S.A. (1980), Kutas, M. & Hillyard, S.A. (1983), Lecardeur, L. et al. (2007), Leeson, V. et al. (2006), Manschreck, T.C. et al. (1988), Martìn-Loeches, M. et al. (2004), Matsumoto, A. et al. (2001), Matsumoto, K. et al. (2005), McKenna, P.J. (1994), Mohr, B. et al. (2001), Morgan, C. et al. (2006), Moritz, S. et al. (2002), Moritz, S. et al. (2004), Moritz, S. et al. (2006), Ohta, K. et al. (1999), Ozgürdal, S. et al. (2008), Pancheri, P. (2007), Pardo, J.V. et al. (1995), Quelen, F. et al. (2005), Rossell, S. & David, A. (2006), Rossi, A. (Ed.) (2006), Ruchsow, M. et al. (2003), Salisbury, D. (2010), Sartori, G. et al. (2006), Spitzer, M. et al. (1993), Weinstein, S. et al. (2006), Ye, Z. et al. (2006), and Yoshino, M. et al. (1995)), there is a considerable number which, substantially, show as schizophrenic patients have no remarkable linguistic dysfunctions at the syntactic, phonological/phonemic, morphological and lexical levels, whereas many other papers have instead mainly disclosed that they present anomalies either in the semantic and pragmatic levels, and in the related integration processes; precisely they have disclosed that:

• the schizophrenic patients does not have impaired the main syntactic linguistic structures as detected by the analysis of the ELAN potential[8] (see Ruchsow, M. et al. (2003) and Ye, Z. et al. (2006)), but, instead, they primarily show impairments concerning both the semantic-syntactic integration processes, as proves the

[5] From this point of view, we might also draw a connection line with the conception of schizophrenia meant by Existential-Phenomenological Analysis (*Daseinanalyse*) according to which the schizophrenia should be interpreted as a her or his own mode of being in the world, by the patient.

[6] Which is the reciprocal of the De Saussure's one and that it is, in turn, reconstructed reinterpretating the originary binary Freudian system Ego's Ideal/Ideal of the Ego – see (Roudinesco, 1995) and (Di Ciaccia & Recalcati, 2000). In this regards, see also what thereupon said Lagache (1961) and the related Lacan's reply (see Lacan, 1974).

[7] See, for instance, (Fossi, 1983).

[8] This ERP is detected when syntactically wrong words are present. Furthermore, this potential is believed reflecting the automatic assignment of a grammatical structure to a given word string.

analysis of the P600 (or LPC) potential[9] (see Friederici et al. (1993) and (1996)), and the semantic-pragmatic integration ones, as proves the analysis of the N400 potential[10] (see Ditman, T. & Kuperberg, G. (2007) and Iakimova, G. et al. (2005));

• various deficits of the semantic processes take up a central rule amongst the cognitive anomalies showed by schizophrenic patients whose measured negative values of the N400 potential mainly prove that they are unable in using the contextuality in a suitable and correct manner (see Bharath, S. et al. (2000), Grillon, C. et al. (1991), Kiang, M. & Kutas, M. (2005), Kostova, M. et al. (2005), Martìn-Loeches, M. et al. (2004), Matsumoto, A. et al. (2001), Moritz, S. et al. (2002), Ohta, K. et al. (1999) and Yoshino, M. et al. (1995));

• the anomalous activation of the semantic networks and of the related semantic priming tasks, are at the basis of the formal Thought Disorders (TD) of schizophrenic patients (see Manschreck, T.C. et al. (1988), Quelen, F. et al. (2005) and Spitzer, M. et al. (1993));

• the schizophrenic patients have difficulty to access to the long-term semantic-lexical memory which can be at the origin of specific linguistic processes associated to formal thought disorders and semantic incongruities (see Covington, M. et al. (2005), McKenna, P.J. (1994) and Salisbury, D. (2010));

• the schizophrenic disorders are mainly associated with dysfunctions of the linguistic elaboration as showed by reduced values of the[11] N100/N200 and P300 potentials (see Ozgürdal, S. et al. (2008) and Yoshino, M. et al., (1995)).

In conclusion (see Falzone, A. (2004)), the schizophrenic patients have no remarkable dysfunctions neither at the basic linguistic levels (see Covington, M.A. et al. (2005)), as those perceptive (see Mohr, B. et al. (2001) and Pardo, J.V. et al. (1995)), phonological/phonetic and morphological (see Covington, M.A. et al. (2005)), nor at the syntactic level (see Ruchsow, M. et al. (2003) and Ye, Z. et al. (2006)), as has already been said above. The unique, relevant anomalies and incongruities showed by the language of schizophrenic patients, regard the semantic level (see Bharath, S. et al. (2000), Grillon, C. et al. (1991), Kiang, M. & Kutas, M. (2005), Kostova, M. et al. (2005), Martìn-Loeches, M. et al. (2004), Matsumoto, A. et al. (2001), Moritz, S. et al. (2002), Ohta, K. et al. (1999), Salisbury, D. (2010) and Yoshino, M. et al. (1995)) and the pragmatic one (see Ditman, T. & Kuperberg, G. (2007) and Iakimova, G. et al. (2005)), with their relative integration processes, which, roughly speaking, point out on a clear difficult to insert the word signifieds within the various contexts social-culturally shared. This, if opportunely interpreted, may be related to Lacanian theory, as follows.

4. The Lacan's Theory of Psychosis: further outlines

From what has been said above as regards the aspects of the schizophrenic language, it is evident as such dysfunctions at the semantic and pragmatic levels (with difficulties in the respective integration processes) imply, in turn, inabilities in the use and in the choice of the correct and suitable signifiers (in the semantic sense) and incapacities in their correlations with the related signifieds, within the usual and commonly shared social-cultural context in which the lived experience of the schizophrenic patient has structurally evolved.

On the other hand, following (Bär, 1979), Jacques Lacan has however based the construction of his ingenious theoretical framework on the De Saussure's structural linguistic, but recasting the main aspects and notions of the latter in an original manner suitable for his clinical and theoretical-psychoanalytic purposes. In this historical-epistemological context, the De Saussure's relationship between Signified (roughly, related to the conceptual level) and Signifier (roughly, related to the phonological level) is inverted from the Lacanian viewpoint: in the De Saussure's framework, prevails the ratio *S/s* between Signified (*s*)

[9] This ERP is elicited from syntactically wrong phrases, being associated to semantic-syntactic integration processes.

[10] This ERP is considered as the specific electrophysiological correlate of the semantic incongruities (see (De Vincenzi & Di Matteo, 2004)).

[11] The N100 and N200 potentials are respectively correlated to the elicitation of auditory stimuli and to the temporal processing of semantic and phonological aspects. The P300 potential is generally related to the cognitive functionality (see (De Vincenzi & Di Matteo, 2004)).

and Signifier (*S*) considered respect to a given system of values charactering the linguistic sign, whereas in the Lacan's one this ratio is inverted[12], giving rise to the first Lacanian *matheme S/s*, formalizing, in the Lacanian algebra (not in a mathematical sense), the *Signification* process which characterizes the Symbolic Order. Instead, the De Saussure's ratio *s/S* gives precedence to the thing signified *s* rather than to the signifier *S* (the word), establishing a sort of almost one-to-one correspondence between them, which is more suitable to denote a ''meaning'' process concerning the Imaginary Order and not the Symbolic one (see (Schroeder, 2008)).

Instead, again following (Schroeder, 2008), the Lacanian first matheme m_1, that is to say *S/s*, explicitly invokes the *bar* between *S* and *s*, which refers to the fact that not necessarily does exist a natural one-to-one correspondence between *S* and *s*, since every their possible relationship may be logically arbitrary, contingent and only temporally imposed by the speaker's will, so that this bar indeed denotes the splitting of the subject herself or himself who associates Signifier with Signified, in an unending infinite chain of Signification. On the other hand, this slipping carried out continuous postponements between signifier and signified, in which the signified of a signifier is another signifier[13], that is, the former is explained by the latter through a paradigmatic and/or a syntagmatic axis, in such a manner that each signified is itself a signifier, standing for another signified, which, in turn, stands for another signifier, and so forth. Roughly speaking, this *ad infinitum* process, which gives a *Signification Chain*, may be reflected in the fact that no individual law and no word, have meaning in the abstract but only within the context of a common *legal system* having primary and secondary rules (of change, recognition and adjudication) with principles of interpretation (for individual laws), and, respectively, within the context of a language having a vocabulary and grammar (for words).

According to Lacan, the signifier does not express the meaning but anticipate it, that is to say, it is in the signifier (or signification) chain that the meaning presses, no element of it consisting in the signification of which it is able to express in that moment, whence it follows that the meaning is, as say, subordinated to this signification chain. Therefore, a signification, in the Lacanian view, is always in a state of continuous flux of slippage (or *glissement*) and ambiguity, so that it is necessary to impose the notion of an incessant slipping of the signified under the signifiers, the cross point between the signifier path and the signified slipping ellipses is said to be the *quilting point* (or *point de capiton*, or *anchoring point*), whose lack characterizes many delirant psychotic states (see (Dell'Io, 1994), (Roudinesco, 1995) and also (Filloux, 1994)).

For a subject to can communicate and, hence, in order to the symbolic order can to run or function[14], it is necessary 'to freeze' the shifting of the unending chain of the signifiers, albeit contingently and temporarily. A way to do this is, according to Lacan, through the adoption of a *master signifier* (or a *significant-maître*)

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[12] The separation between conscious and unconscious underwent to the splitting of the subject, is formally described by means of the *Lacanian algorithm S/s* (even if Lacan himself continues to call it *saussurian algorithm*). This type of algorithm includes every ratio of the type

$$\frac{Representative\ Experience\ of\ the\ Reality}{Concrete, Preconceptual\ and\ Biological\ Reality}$$

which, in turn, is structurally formalizable in the form

$$\frac{\begin{cases} S\ (Conscious\ Signifier) \\ S\ (Unconscious\ Signifier) \end{cases}}{s\ (Lost\ Signified)}$$

in turn, equivalent to the following

$$\frac{\begin{cases} Langue \\ Parole \end{cases}}{Thing} = \frac{\begin{cases} Symbolic \\ Imaginary \end{cases}}{Real} = \frac{\begin{cases} Conscious \\ Unconscious \end{cases}}{Biological} = \frac{\begin{cases} Demand \\ Desire \end{cases}}{Need}$$

(see (Galimberti, 1990)). Suitable compositions of them lead to the so-called *Lacan transfer algorithm*, which is related to the structural formation of the *signification chain* by means of metonymy and metaphor.

[13] Which, following R. Jakobson, is correlated with the previous one by means of the unconscious mechanisms of condensation (metaphor) and displacement (metonymy).

[14] According to the ordinary linguistic levels of the syntax, semantics and pragmatics.

stopping the chain of signification of above. These last signifiers are the keys that give meaning to the other signifiers, and are absolutely necessary because a chain of signification stand for nothing but itself. In such a chain, signifier and signified are one and the same, so that it therefore can serve as the period that momentarily ends the run-on sentence of signification. Hence, it is crucial that a symbolic order have master signifiers: in the Lacanian theory, it is assumed as main master signifier that of the *Name-of-the-Father* (in turn, referring to the Phallus symbol).

However, it is fundamental to point out the essential dissimilarity between the main De Saussure's structural linguistic ideas and the Lacanian ones, above all as concerns the notions of signifier and signified with their relationships: in fact, according to Lacan (see (Fages, 1972)), the signifier seems to evolve separately from the signified, this taking also place unbeknownst of the subject. The signifiers are taken into a net of relations (of reciprocal variations and differences) to form an articulated chain (exactly, the *signification chain*), whose elements are structured amongst them through metonymy and metaphor, while the signifieds depend on the personal lived experience of the subject[15] and take their structural coherence only under the determination by signifiers[16].

The Lacanian first matheme *S/s* is therefore quite different from the De Saussure's one: following (Fages, 1972), it would also include the following corresponding Lacan's barred condensations Langue/Parole, Synchrony/Diachrony and Paradigm/Syntagm, according to the following, general table

Signifier (S)	*Signified (s)*
Langue	Parole
Synchrony	Diachrony
Paradigm	Syntagm

in which each column, as elementary category, would contain elements equivalent to the heading element of it (see (Rifflet-Lemaire, 1970)). This revolutionary Lacanian subversion of the elementary categories of the De Saussure's linguistic, is only motivated by clinical applications and oriented to show the supremacy of the signifier on signified, emphasizing the separation bar between them, even if this has no linguistic meaning from the operational point of view but only psychoanalytic value. Indeed, Lacan wants to point out on the essential inaccessibility to the signified sphere, which is mainly unconscious, denoting such a slipping of the signified with a sort of ellipsis[17], schematized by $\Delta \rightarrow \$$ (Lacan preferring barred $\$$ rather than indicate directly s), which continuously intersects the signification chain $S \rightarrow S'$, but always postponing at the Imaginary Order (of the unconscious language), in certain points called *points de capiton* (already mentioned above), often absent in psychotics (see (Dell'Io, 1994)), in which infiltrates, at the moment, the signified.

Therefore, taking also into account certain aspects of the subconscious formation of the language according to (Thass-Thienemann, 1968), from what has been established in the previous Section 3 as regard the semantic and pragmatic anomalies and inabilities, with related inefficiencies about their integration processes, observed in schizophrenic spectrum disorders showing subjects, it necessarily follows as them are unable to construct any signification chain: indeed, if they were able to make this, then it would be possible to yield sense (or meaning) to their discourse since this, as has already been said, basically presses in such a dominant signification chain. Hence, we must conclude affirming as such pathological subjects aren't able to perform such a signification chain, or else, it does not take place the formation of it that, as known, starts from the master signifier called *Name-of-the-Father*. Hence, it follows that they necessarily have rejected (Forclusion) this primary and primordial signifier (the only one that will allow signified's effects), which prevent them the access to the Symbolic Order. In fact, if S_s is a symbolic (conscious) signifier, like the Name-of-the-Father (whose unconscious signifier is that of Phallus), and S_i is an imaginary (unconscious)

[15] Which is just correlated to her or his linguistic pragmatic level, and vice versa, this last being that having the largest number of psychological implications (see (Galimberti, 1992)).

[16] The signifier order and the signified one are structurally thought as two particular nets of relations, whose reciprocal interconnections, according to Lacan, are quite different from those provided by De Saussure: precisely, the net of signifiers and the net of signifieds does not recover one with the other. The first has a synchronic structure whereas the second has a diachronic structure which historically reacts on the first, whose dominant structure, in turn, orders the ways of the second.

[17] This term being understood as a rhetorical figure.

signifier, like the mother desire, then the passage to the symbolic's register takes place by means of the following *Lacanian transfer algorithm*[18]

$$\frac{S_s}{S_i} \cdot \frac{S_i}{s} = \frac{S_s}{s}$$

with S_i often denoted by $\$$ (see (Fages, 1972)) and s belonging to the real's register. In it, the related points de capiton will act suturing the signifier slipping ellipsis $\Delta \rightarrow \$ = S_i$ (this action being just represented by $\cdot$ in the left-hand side of the above transfer algorithm) on the signifier postponement (or slipping) concatenation $S_i \rightarrow S_s$ which marks the corresponding passage from the imaginary register to the symbolic one, with the result given by the right-hand side of the above transfer algorithm.

On the other hand, from the above mentioned table, we may consider the Lacanian algorithm Signifier/Signified *S/s* as an equivalence class of the type

$$\frac{S}{s} \doteq \left\{\frac{L}{P}; \frac{\mathfrak{s}}{\mathfrak{d}}; \frac{\mathcal{P}}{\mathcal{S}}\right\}$$

where, respectively, *L/P* stands for the Lacanian algorithm *Langue/Parole*, $\mathfrak{s}/\mathfrak{d}$ stands for the Lacanian algorithm *Synchrony/Diachrony* and $\mathcal{P}/\mathcal{S}$ stands for the Lacanian algorithm *Paradigm/Syntagm*, with

$$\frac{S}{s} \sim \frac{L}{P}; \quad \frac{S}{s} \sim \frac{\mathfrak{s}}{\mathfrak{d}}; \quad \frac{S}{s} \sim \frac{\mathcal{P}}{\mathcal{S}},$$

that is to say, *S/s* is equivalent, by means of the Lacanian equivalence relation $\sim$ (given by the above table), to each of the Lacanian algorithms contained in the above table (see (Rifflet-Lemaire, 1970)). Therefore, in particular, via this equivalence relation, the above Lacanian transfer algorithm, is also equivalently rewritable in the form

$$\frac{L_s}{P_i} \cdot \frac{P_i}{t} = \frac{L_s}{t}$$

where L_s is the (conscious) *Langue* in the symbolic's register, P_i is the (unconscious) *Parole* in the imaginary's register and t is the (unconscious) *thing*. This algorithm is related to the signifier concatenation $P_i \rightarrow L_s$, marking the passage from the imaginary's register to the symbolic's one, which gives a temporary signifier to the thing t through the suturing points de capiton connected with the related signified slipping ellipsis $\Delta \rightarrow \$$. In particular, the semantic and pragmatic levels act on the Lacanian algorithm L_s/P_i, so that anomalies and dysfunctions at these linguistic levels are, in turn, due to the impossibility to build up this algorithm L_s/P_i which will make that *hole* in the signification chain, recalled in Section 2; all this is just coherent with the detected experimental data of Section 3 as concerns schizophrenic patients.

These last considerations, on the other hand, are also confirmed from what said in (Fages, 1972) just on psychotics. Indeed, this author says that the psychotic is unable to correctly use the language since the linguistic sign *S/s* (or, in our case, its equivalent L_s/P_i) have undergone radical alteration in her or him: precisely, as regards a schizophrenic, every signifier (or each symbol) may points out on the same signified, or else, different signifiers may have the same signified; instead, as regards a deliriant, an unique signifier may points out on every signified, or else, different signifieds may have an equal signifier.

In conclusion, in the light of what has been said so far, it is possible to consider the data of the analyses recalled in Section 3 as a sort of experimental confirmation of the main Lacan's theses on Psychosis.

[18] See what is said in the footnote [12] about some possible equivalent forms of the fundamental Lacanian transfer algorithm, of which, here, we have only used two of them.

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