

Diagnostic and therapeutic potential of the Elementary Pragmatic Model

Potenziale diagnostico e terapeutico del Modello Pragmatico Elementare

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SUMMARY. This article describes the major results obtained from studies with the Elementary Pragmatic Model (EPM) composed by 16 Functions (F). The model has undergone experimentation using the Synthesis and Scission Sentences procedure (SISCI test) described in this paper. In functioning individuals there is a prevailing tendency to “maintain their world” (F3) and to decrease the “empty mind” (F0) and “chaos or impossible to select” (F15). On the contrary, individuals with psychiatric disorders, compared with functioning show a decreased degree of “maintaining their world” (F3), a higher degree of “empty mind” (F0) and of “chaos or impossible to select” (F15). The results are useful for both development of creativity in problem solving in business and for improve treatments to psychiatric disorders.

KEY WORDS: Elementary Pragmatic Model, core of the mind, final states.

RIASSUNTO. Questo articolo descrive i principali risultati del Modello Pragmatico Elementare (EPM). Il modello è stato sottoposto a sperimentazione utilizzando la procedura del test Sintesi e Scissione (SISCI test) descritto in questo lavoro. Abbiamo rilevato che nelle persone normali, prevale la tendenza a “mantenere il loro mondo” (F3) rispetto “al vuoto mentale” (F0) e al “caos” nel senso di incapacità a selezionare (F15). Al contrario, gli individui con disturbi mentali hanno mostrato una diminuzione nel “mantenere il loro mondo” (F3) e un più elevato livello di “vuoto mentale” (F0) e “caos” nel senso di incapacità a selezionare (F15). I risultati sono utili sia per lo sviluppo della creatività sia nel problem solving nelle aziende sia per migliorare i trattamenti dei disturbi mentali.

PAROLE CHIAVE: Modello Pragmatico Elementare, nucleo della mente, stati finali.

INTRODUCTION

The Elementary Pragmatic Model (EPM), proposed by De Giacomo and Silvestri (1) in the '60s-'70s, refers to the interactive conception of the mind originated by Gregory Bateson (2). The model simplifies the interaction between two individuals by reducing the subsequent exchange of “propositions” regarded as “bits” of information. Each interaction gives rise to a change in mental status, which will be called the “world” of the two interacting participants. Following this exchange four possible outcomes might occur with different probabilities U1, U2, U3 and U4. These probabilities are coordinates that describe the “state” of the partic-

ipant and can be estimated experimentally by the frequency with which they occur in a broad sequence of interactions. Their definitions are as follows:

- U1 (Anti-function, that may be translated as “abstraction”): acceptance of what does not exist either in one’s own or the other person’s world;
- U2 (Acceptance) acceptance of the other person’s world, but not of the one’s own world;
- U3 (Maintenance): acceptance of the one’s own world, but not acceptance of the other person’s world;
- U4 (Sharing): acceptance of a thesis (content) only if it exists in both worlds.

THE SISCO TEST

The SISCO test was used to estimate the value of the four coordinates. This experimental method is based on the outcome at the onset of repeated statements about the evaluation of ink-blot figures taken from the Holtzman test (3). Recently, the SISCO test was based on evaluation propositions with kaleidoscopic figures (4) and sentences with a strong psychological impact (5-9).

In the SISCO test administration, 90 figures or sentences are presented sequentially. Participants must record their positive or negative choice for each figure or sentence. Subsequently, 40 of the previous figures or sentences chosen at random are presented to the same participant, pointing as corresponding positive evaluation of the other participant. Then, participants are asked to reformulate the initial choices administering the same set of 90 figures or sentences without having access to the first record.

Denoting with $n(1,1,0)$ the number of cases in which the positive choice (1) of the first participant followed by a positive choice (1) of the second corresponds to a negative final choice (0) and similarly with $n(1,1,1)$, $n(1,0,0)$, $n(1,0,1)$, $n(0,1,0)$, $n(0,1,1)$, $n(0,0,0)$ and $n(0,0,1)$ the numbers of other combinations resulting from the test, we can evaluate the frequencies and estimate the coordinates:

- Anti-function: $U1 = n(001) / (n(001) + n(000))$;
- Maintenance: $U2 = n(101) / (n(101) + n(100))$;
- Acceptance: $U3 = n(011) / (n(011) + n(010))$;
- Sharing: $U4 = n(111) / (n(111) + n(110))$.

The SISCO test, administered over the years to several groups of people separated for homogeneous classes (e.g. university students, industry leaders, employees in health care facilities, individuals with mental disorders, etc.), shows a considerable stability in the statistical difference between groups of “normal” individuals and groups of individuals with psychiatric disorders. Numerous experiments, performed for years, suggest that the results are practically independent of the figures or sentences choice with a high psychological impact, indicating no influence by possible logical elements in the evaluation of sentences.

THE 16 RELATIONAL FUNCTIONS

In the EPM pattern are defined 16 relational functions that describe the behavior of an individual in association with the transformation of his/her “world” following the exchange of information bits. With 0 and 1 representing the positive or negative decisions resulting from the different propositions of the SISCO test, we can construct a table (**Table 1**) where the columns a and b indicate the initial choices of the two interacting participants and F0 to F15 columns indicate the final choices of the participant. For example, the F0 column indicates the relational function of a hypothetical individual who makes a negative final choice, whatever were the previous choices for the same proposition, F1 indicates the behavioral function of a subject who chooses positively only the propositions positively chosen by both parties, and so on.

The 16 relational functions may be related to the Venn diagram (**Figure 1**) in which the right circle represents the world’s first participant, the left circle the world’s second participant, the intersection is the common world between participants. The space outside the two circles is neither the world of the first participant nor the world of the second participant.

DESCRIPTION OF THE “WORLD” OF A PARTICIPANT AS AN OVERLAPPING OF FUNCTIONS

Based on the results of SISCO test, you can describe the “world” of the examined participant as a weighted sum of contributions of the 16 relational functions. It is evident that cannot be deduced uniquely the values of the 16 weights to be attributed to the contributions of different styles with only the information of the four coordinates U1, U2, U3 and U4 estimated by SISCO test. Further information can be introduced, however, assuming that the weights must all be positive and that their sum must be 1. From a mathematical point of view, the problem remains entirely indeterminate and we need additional assumptions. The analytical procedures used in the evaluation presented in this work are described by Silvestri (10) and Guerriero (11). Apply-

Table 1. The logic of the sixteen functions

a	b	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15
0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
0	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
1	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1

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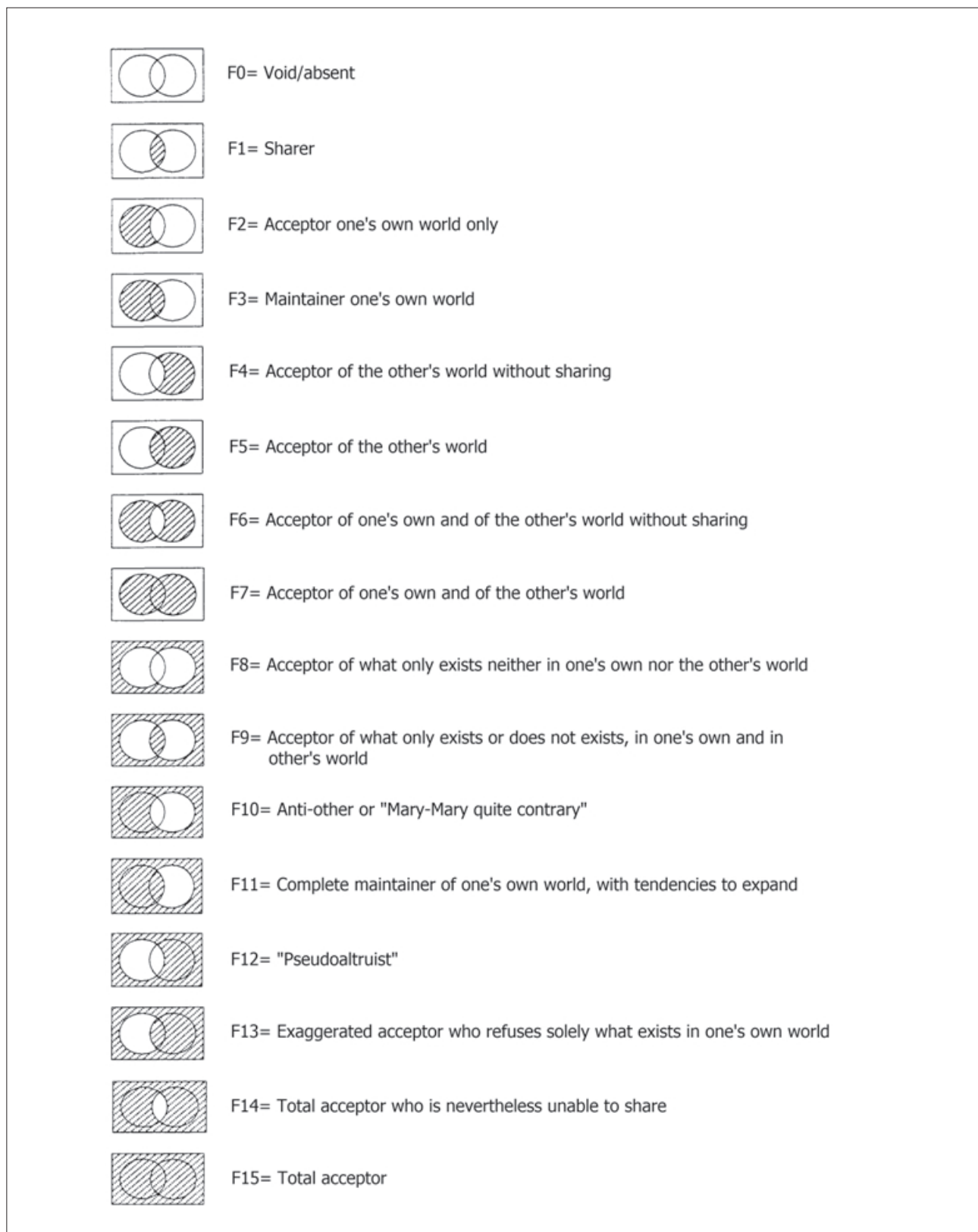


Figure 1. Venn diagrams translated in behavioural functions.

ing these procedures to the results of SISCI, each individual can be described by the profile of the weights corresponding to the 16 behavioral functions. The results highlight how the average profile of different groups of “normal” individuals is substantially the same while there is a statistically significant difference with the individuals affected by psychosis (**Figure 2**).

of three basic states among the 16 functions above described: the first is the world of the participant “Self”, clearly identifiable with the F3 function, corresponding to the maintenance of the “world” of the participant. The two alternatives to the Self of the participant are: a) the total vacuum, corresponding to the F0 function, defined as “void mind”; b) the acceptance of everything without exclusions, corresponding to the F15 function, defined as chaos in the sense of inability to choose. In other words, in contrast to the world of the participant (F3), on the one hand there is the absence of any choice, and then the vacuum (F0) as a sort of white cloth that is a picture without content. On the other hand there is a sort of chaos (F15) which does not allow to distinguish

FROM THE WEIGHTS OF THE 16 FUNCTIONS TO THAT OF THE 3 BASIC FUNCTIONS

The psychological tradition that starts from the concept of Self by Sigmund Freud, leads to the recognition

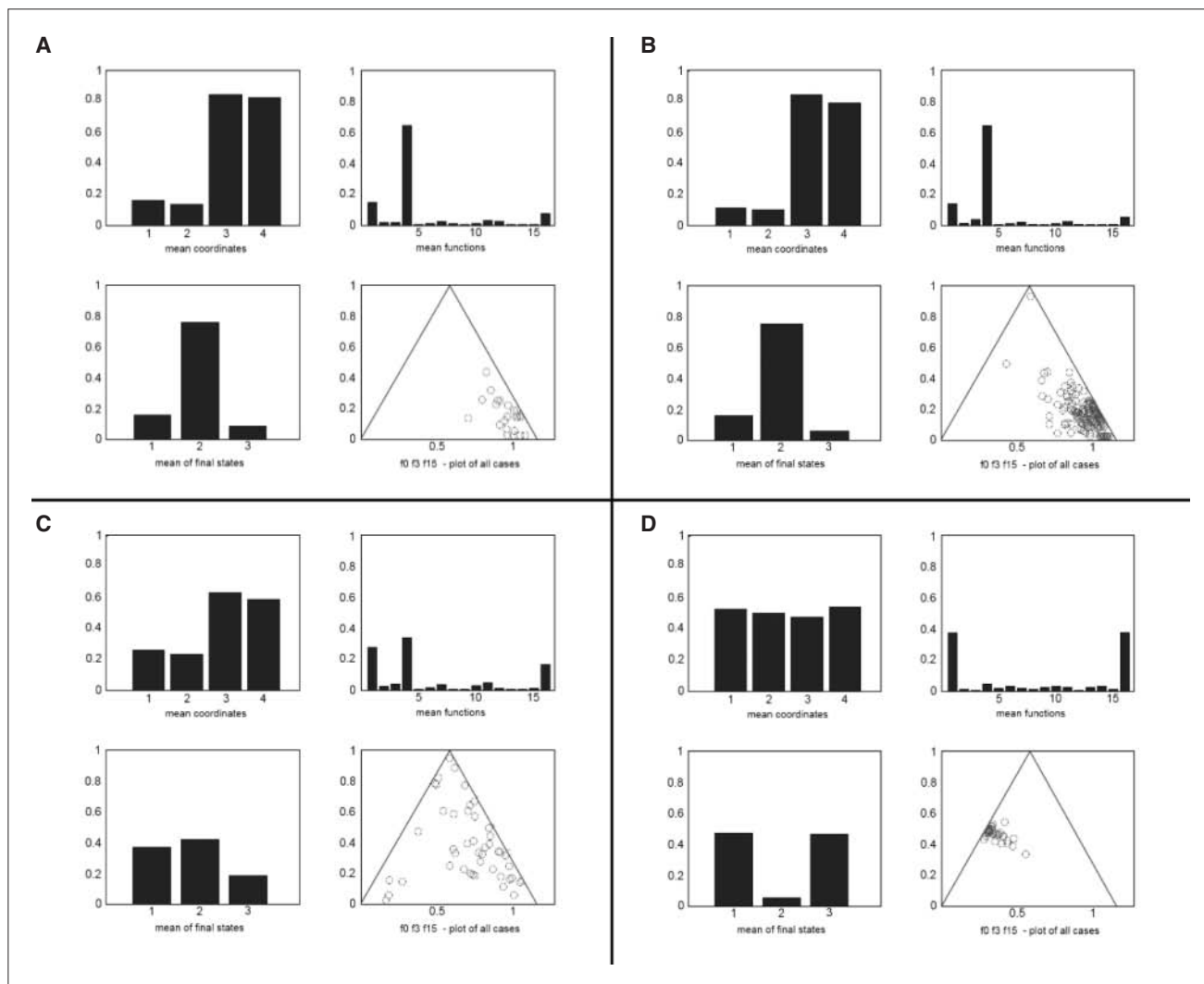


Figure 2. The four panels show the differences between groups of participants. Normal participants (Managers fig. 2A and Students fig. 2B) compared to Psychotics (fig. 2C) show a higher value of the coordinates U3 and U4 and a lower value of the coordinates U1 and U2. About the three final states the figure shows a higher value of F3 and a lower value of F0 and F15 in normal people. Panel 2D shows the results of random selection.

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and choose. In fact, the F15 function corresponds to deliver a positive response to any proposal provided by the participant, without any selectivity. Human beings in their lives must constantly choose whether to accept or reject the proposals that come from their interactions with the “world”. From the characteristics of the choice process can therefore deduce information on the organization of mental processes evaluating if a prevailing tendency to maintain their world (F3) compared to the emptiness of the mind (F0) and chaos in the sense of inability to choose (F15).

To simplify the description of each participant obtained from the 16 weights of the functions deduced from SISCI, a different mathematical solution that can explain the values of the four coordinates obtained from SISCI based on the 3 functions fundamental behavioral was found. The weights of these three functions for each individual can be represented by a point in a triangular diagram. The different points distribution of the normal individuals compared to individuals with mental diseases is clear. This evidence supports the validity of the methodology already developed.

COMPARISON BETWEEN NORMAL AND PATHOLOGICAL PARTICIPANTS

Different experimental data have been collected over the years to verify the validity of the model (5). **Figure 2** shows the statistical differentiation between normal individuals and individuals with mental illness. **Figure 2D** is a completely random distribution obtained by a sequence SISCI performed with a series of random extractions. The normal participants (managers 2A and students 2B) compared with abnormal participants (psychotics, 2C) show a lower value of the coordinates U1 and U2 and a higher value of the coordinates U3 and U4. The distributions of the three final states in the triangular diagrams show a higher value of F3 and a lower value of F0 and F15. In normal participants compared to pathological cases the ability to maintain their world clearly prevails (F3).

POSSIBLE THERAPEUTIC USE OF THE ELEMENTARY PRAGMATIC MODEL

Normal people are not and may not be the only keepers of their world but they must also have in their minds chaotic aspects that facilitate such creativity and gaps as a sort of blank canvas on which to paint. Nor-

mality should provide a balance between empty, chaos and maintenance of their world with the prevalence of the latter but not the complete exclusion of the other two. This balance is altered in case of illnesses that cause vacuum increases and/or chaos and reduction (is a constant sign of dysfunctionality) of maintenance of their world (5). According to our clinical experience in depressive disorders an increase in F0 prevails while in schizophrenic disorders an increase in F15 prevails. From a biological point of view the pure F0 should correspond to coma while pure F15 would correspond to a confusional state, a delirium.

Previous studies have shown that the use of psychotropic drugs in psychiatric patients has led pathological participants towards pattern corresponding to those of normal control participants (12). Recently other studies on normal participants showed the possibility of modifying the pattern of the three functions that increase the F3 function of maintaining their world and decreased F0 (empty mind) and F15 (chaos or impossible to select) with the administration of tasks based on reflection (in writing) on sentences with a high psychological impact selected among the 90 sentences of SISCI through a computer program (7-9).

Therefore we could hypothesize therapeutic strategies with the objective to restore the balance between the three states (13). Positive signs in this direction have been obtained in the field of pathology for anorexia nervosa (14), schizophrenia (15) and the functionality of corporate teams (8).

CONCLUSION

In this work the main results of the relational Model of the Mind defined as the Elementary Pragmatic Model (EPM) (16,17) are summarized which allows the adoption of a different perspective from the traditional psychology, which leads to propose an organization of the mind essentially based on three states (functions): the emptiness of the mind, chaos in the sense of inability to choose and maintenance of their world. These three basic states, derived in turn by four interactive modes (four coordinates) deduced from an experimental test. The experimental application of the model has led to observe the differences between normal participants and patients with mental disorders, and opens the perspectives in the development of creativity in problem solving in business and in the treatment of mental disorders.

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REFERENCES

1. De Giacomo P, Silvestri A. The elementary pragmatic approach to the study of Interactional behaviour. New horizons in psychiatric research. Kyoto: WPA, 1982.
2. Bateson G. Mind and nature: a necessary unit. New York: Dutton, 1979.
3. Holtzman WH. The Holtzman Inkblot Technique (form A and B). New York: Psychological Corporation, 1961.
4. Pereira OG, Ferriera CP. Applicazioni del modello di De Giacomo e Silvestri in psicologia. In: Cipolli C, Silvestri A (eds). Comunicazione e sistemi. Milano: Franco Angeli, 1985.
5. De Giacomo P, L'Abate L, Santamato W, et al. "Compass" sentences with strong psychological impact in family therapy: preliminary investigations. *J Fam Psychother* 2007; 18: 45-69.
6. De Giacomo P, De Giacomo A, Margari F, Masellis R, Santamato W. Methodological psychotherapy. In: L'Abate L (ed). Toward a science of clinical psychology: laboratory evaluations and interventions. New York: Nova Science Publishers, 2008.
7. De Giacomo P, L'Abate L, Margari F, De Giacomo A, Santamato W, Masellis R. Sentences with strong psychological impact in psychotherapy: research in progress. *J Contemp Psychother* 2008; 38: 65-72.
8. De Giacomo P. Mind and creativity in the universities and in organizations. In: L'Abate L, De Giacomo P, Capitelli M, Longo S (eds). Science, mind, and creativity: the Bari symposium. New York: Nova Science Publishers, 2009.
9. De Giacomo P, L'Abate L, Margari F, et al. A program that selects sentences with strong psychological impact based on Elementary Pragmatic Model. *J Contemp Psychother* 2009; 39: 165-9.
10. Silvestri A, De Giacomo P. A computerized laboratory for a systematic approach to relational psychotherapy. In: Barber B, Gremey F, Uberla K, Wagner G (eds). Medical informatics. Berlin: Springer, 1979.
11. Guerriero L. Mathematical description of the Elementary Pragmatic Model. In: Capitelli M, De Giacomo P, L'Abate L, Longo S. Science, mind and creativity: the Bari symposium. New York: Nova Science Publishers, 2009.
12. De Giacomo P, Silvestri A, Pierri G, Lefons E, Corfiati L, Tangorra F. Research on the effects of psychodrugs on human interaction. *Acta Psychiatr Scand* 1986; 74: 417-24.
13. De Giacomo P, L'Abate L, Margari F, et al. Il Modello Pragmatico Elementare: una nuova prospettiva in psicoterapia. *Riv Psichiatr* 2012; 47: 40-9.
14. De Giacomo P, Margari F, Santoni Rugiu A. Successful one-session treatments of anorexia nervosa: a report on fifteen cases. *International Journal of Family Psychiatry* 1989; 1/2: 123-32.
15. De Giacomo P, Pierri G, Santoni Rugiu A, Buonsante M, Vadrucchio F, Zavoiani L. Schizophrenia: a study comparing a family therapy group following a paradoxical model plus psychodrugs and a group treated by the conventional clinical approach. *Acta Psychiatr Scand* 1997; 95: 183-8.
16. De Giacomo P, Silvestri A. An Elementary Pragmatic Model in family therapy. *International Journal of Family Psychiatry* 1985; 6: 245-69.
17. De Giacomo P, Silvestri A. Un modello teorico delle relazioni umane. *Riv Sper Freniatr* 1979; 53: 1-23.