Reduction of Psychotic Symptoms in People with Schizophrenia, Using Human Systems Therapy
A Randomized Controlled Trial

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Background: The influence of family therapy on the reduction of symptoms of people with schizophrenia is yet not conclusive. However, cognitive therapy has positive results on the reduction of schizophrenic symptoms. Aims: The purpose of this study is to examine the influence of human systems therapy (HST) on the reduction of the psychotic symptoms of people with schizophrenia, acting at the level of both the individuals and their families, after taking into account family studies. Method: The experimental group, which also was under stable medication, consisted of 7 families treated in 7 sessions on average. Some basic principles of HST are presented together with a conceptualization of schizophrenia. The outcome was measured by the Present State Examination (PSE) and the Family Environment Scale (FES). Results: A significant reduction of psychotic symptoms (38.9 %) and of total symptomatology (15.09 %) was found only at the experimental group. There was also a desirable change of family global characteristics but not at a significant level. Conclusions: Psychotic symptoms may be significantly reduced by this type of human systems therapy.

Declaration of interest: This research study was financially supported by the European Community (75%) and the Greek Ministry of Labour in order to help 60 socially excluded persons, including 20 people with schizophrenia to find a job.
συμπτωμάτων στους σχιζοφρενείς δεν είναι ακόμα αδιαμφισβήτητα. Ωστόσο, η γνωστική θεραπεία έχει παρουσιάσει θετικά αποτελέσματα στη μείωση των σχιζοφρενικών συμπτωμάτων. Σκοπός: Ο σκοπός αυτής της μελέτης είναι να εξετάσει την επίδραση της Θεραπείας Ανθρωπίνων Συστημάτων (ΘΑΣ) στη μείωση των ψυχωσικών συμπτωμάτων στους σχιζοφρενείς, παρεμβάνοντας τόσο στο επίπεδο του ατόμου, όσο και στο επίπεδο της οικογένειας και λαμβάνοντας υπόψη τις σχετικές οικογενειακές μελέτες. Μέθοδος: Η πειραματική ομάδα, που περιλάμβανε 7 οικογένειες με σχιζοφρενείς μέλος, και το οποίο βρισκόταν υπό σταθερή φαρμακευτική αγωγή, θεραπεύτηκε για 7 συνεδρίες κατά μέσο όρο. Στο παρόν άρθρο παρουσιάζονται ορισμένες από τις βασικές αρχές της Θεραπείας Ανθρωπίνων Συστημάτων καθώς και η θέωση του νόσου της σχιζοφρένειας που χρησιμοποιήθηκε. Τα αποτελέσματα της παρέμβασης αξιολογήθηκαν με την Εξέταση της Παρούσας Ψυχικής Κατάστασης (Present State Examination) και την Κλίμακα Οικογενειακού Περιβάλλοντος (Family Environment Scale). Αποτελέσματα: Βρέθηκε σημαντική μείωση των ψυχωσικών συμπτωμάτων σε ποσοστό 38,9% καθώς και της γενικότερης ψυχοπαθολογίας σε ποσοστό 15,09%. Επίσης, υπήρξε αλλαγή των σφαιρικών ιδιοτήτων της οικογένειας προς την επιθυμητή κατεύθυνση, αν και όχι σε στατιστικά σημαντικό βαθμό. Συμπεράσματα: Τα ψυχωσικά συμπτώματα είναι δυνατό να μειωθούν ομαλά και ποιοτικά με την εφαρμογή της Θεραπείας Ανθρωπίνων Συστημάτων.

**Introduction**

Schizophrenia, as most mental diseases, is defined in terms of its phenomenology and symptoms. Thus the best and most direct way to evaluate a method of treatment is the reduction of the symptoms. There are reviews of psychological treatments of schizophrenia including family therapy (Barbado and D’Avanzo 2000, Bustillo et al 2001, Pilling et al. 2002, Zimmerman 2005). Regarding family therapy, the results of those reviews conclude that family interventions prevent relapse of schizophrenia in families having a schizophrenic patient with symptoms already reduced due to drugs. These results also imply that family factors concerning relapse are reduced significantly after family therapy. Regarding individual psychotherapy, according to these reviews the best results, are that of cognitive behaviour therapy (CBT) that reduces significantly the schizophrenic symptoms under parallel use of psychotropic drugs. The number of sessions using CBT is usually more than 50 with best results in cases in recent developed people with schizophrenia and positive symptoms (Zimmerman 2005).
This work presents another method based basically on systems science attempting to reduce psychotic symptoms in chronic out-patient people with schizophrenia in less than 10 sessions on average. This Human Systems Therapy (HST) method is a developed form of General Systems Therapy (Paritsis 1989) and is directed to the person with schizophrenia and to his/her family.

Methodology

The sample
The sample of this research comes from a wider study of 18 people with schizophrenia that had previously received vocational training on using computer programmes for finding a job in tourist offices in Crete. The above subjects were randomly assigned to control and experimental group by turning a coin for each subject. The original sample of people with schizophrenia comprised 9 subjects in each group. During the period of vocational training, which lasted about a year, 2 members belonging to the experimental group and 1 member belonging to the control group left the study. Then HST was applied only to the experimental group. The control group received treatment as usual, including visiting to the psychiatrist and receiving drug therapy. Both groups received their pharmacotherapy during our intervention. After the end of HST and its assessment, the experimental group received additional group intervention (of human systems therapy approach) aiming at increasing their motivation and efficiency for finding a job in the free market.

Thus, at the starting point of the present HST, the sample of this study consisted of 7 people with schizophrenia in the experimental group and 8 in the control group. During the family therapy period there were no drop outs. Table 1. shows the average age, sex, duration of illness and degree of psychopathology in both groups. No statistical differences were found between the experimental and the control groups regarding these characteristics. It can be noticed however that the psychopathology in the experimental group was higher.

Table 1. Ages, total PSE scores, years of illness and sex in the experimental and the control group

<table>
<thead>
<tr>
<th></th>
<th>Average values</th>
<th>Significance</th>
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<tbody>
<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
</tr>
<tr>
<td>Age</td>
<td>26.8</td>
<td>25.8</td>
</tr>
<tr>
<td>Years of illness</td>
<td>8.2</td>
<td>12</td>
</tr>
<tr>
<td>Total PSE</td>
<td>28.2</td>
<td>16</td>
</tr>
</tbody>
</table>
In all subjects there was absence of substance use and forensic history. All patients received medication which was not change within the three months of intervention. These patients were outpatients with, more or less, stable symptoms and they were selected in order to be able to participate in a program of vocational training for socially excluded subjects.

**Assessment**

The diagnosis was made by two independent psychiatrists on the basis of DSM IIIR and additionally by PSE CATEGO programme. The same psychiatrists made the assessment of psychopathology, prior and after the family therapy blindly without participating in the treatment.

**Tools of assessment**

*Present State Examination (PSE)* This is a structured, coded psychiatric interview, assessing the present psychiatric state and the symptoms of the patient (Wing et al. 1974). PSE is related to the CATEGO computer program that besides the diagnostic outcome on the basis of present mental state, offers 30 subcategories of syndromes, each of which is based on a number of symptoms and categories related to anxiety, depression, hallucinations and delusions. We were interested in monitoring the categories related to hallucinations and delusions and the total PSE score. CATEGO through its syndromes results in global categories that can be used for the assessment of the degree of psychopathology and of its changes. These categories include total PSE score and psychotic symptoms concerning hallucinations and delusions that were considered suitable for the assessment of the effectiveness of family therapy on schizophrenic psychopathology. PSE was given to both the experimental and the control group prior to the Family Therapy Sessions and after them.

*Family Environment Scale (FES).* It was used for the assessment of the global properties of the family (Moos et al. 1986). It is comprised of 90 items (true-false statements), related to the family environment. This questionnaire is completed by a family member (a parent, usually the mother). It is a self-administered questionnaire, which assesses the family atmosphere through 10 sub-scales, which estimate cohesion, expressiveness, conflict, independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, moral-religious emphasis, organisation and control. The purpose of its use was to determine the influence of family therapy on the global properties of the family and to determine whether change in the psychopathology was related to change in the family parameters. FES was given to both the experimental and the control group before and after the family therapy at the same time with PSE.
Coded structured psychiatric history interview. It was developed in the Psychiatric Clinic of the University Hospital of Iraklion, after a grant from European Community. Systematic observations recognizing family interactions. This tool (Eisler 1985) offers the opportunity for two independent observers to watch video-recorded family sessions and keep notes on important points of the session. On the basis of these notes the observers check the validity of a number of hypotheses and formulate new ones. In our research the observers also made suggestions for the successive sessions of the treatment. This tool was developed mainly for checking preexisting hypotheses on family functioning at the beginning of family therapy. In this study we extended the use of this tool as a general aim of the family therapy, and we used it in all sessions.

Procedure
The coded structured psychiatric history interview was taken at the beginning of the project together with PSE and FES. PSE and FES were also given before and after the family therapy in both the control and the experimental group. The duration of the period of intervention lasted about three months. The meetings were held every 9 days on average. In the beginning, the meetings were held every week and then less frequently. The number of meetings was seven on average. All persons that were involved directly or indirectly in the family therapy, namely the main therapist, the observers and the supervising person, were trained by the last author in the previously-mentioned theoretical framework of HST. One therapist conducted the session. Two other therapists independently, after the session watched the video-taped session and filled in a document according to the procedure described by Eisler (1985). A fourth therapist offered supervision by observing the videotapes in the presence of the therapist.
We used the tool of Eisler (1985) for evaluating hypotheses regarding the family and the individual characteristics of people with schizophrenia described in the bibliography (e.g. Bateson et al. 1956, Hirst and Leff 1975, Vaughn and Leff 1976).
Our interventions in 5 out of 7 families took place only in the presence of the parents. Statistical analysis was made with Wilcoxon test, which is the most appropriate distribution-tree test for independent groups, and paired scores. According to the design of this study, the therapy was terminated as soon as we ran the limit of 10 sessions, or when the family agreed that their original request was satisfied. All 15 families agreed to complete the research programme. The effort made
by the therapist to visit them at home was greatly appreciated by them. All the subjects agreed to be re-tested after the family therapy sessions were over.

**Theoretical framework**

A more elaborated presentation of the HST method and techniques can be found in Paritsis (2009).

**Basic principles and concepts regarding the method of therapy**

The theoretical framework of the HST method of therapy is based on some basic principles of systems science. These principles are the result of further elaboration by the last author. The applications of these principles include the present type of HST.

A preliminary description of this method can be found in Paritsis (1989). This method was developed over more than 30 years. The basic points in its present form are the following (Paritsis 2006):

1. *The definition of a (integrated) system.* A system is defined as a set of elements, its properties, its relations and its emerging properties into a given context, with these sets influencing each other. Under this definition of the family as a system, a schizophrenic patient is a member of the system and schizophrenic psychopathology is considered as a property of the schizophrenic patient and the context is the sociocultural context of the family. Psychopathology can be influenced by intervention on:
   a) The individual, in order to change the individual properties (e.g. behavior, or points of view) in the members of the family such as those of the schizophrenic patient or/and their parents.
   b) The family relations (including the parent-patient relations, or the father-mother relations),
   c) The hierarchical organization, the rules of organization or/and the emerging beliefs and myths of the family as a whole.
   d) The wider socio-cultural context of the family.

This definition allows a more enriched intervention compared to other family therapy methods, including methods of the first and second order cybernetics and of a meta-modern approach.

If the schizophrenic patient is taken as the system for intervention, then the elements of the system are the affective and cognitive components of the system or more complex components such as cognitive/affective structures and schemas. The relations of the system are the relations of cognitive and affective components, emerging properties are the behavior and phenomenology of the schizophrenic patient, and the context is the family as a whole.
This definition allows a multilevel intervention and at each level the emerging properties of the system at the lower level are the properties of the system at the higher level.

2. **Co-synthetic reality.** Reality is relative and depends on the system and on its environment (Paritsis 2005). Thus at the individual level it is neither objectively perceived nor simply constructed. This assumption, followed after color perception research (Paritsis and Stewart 1983). Furthermore, co-synthetic reality recognizes the observation of the meta-system of science, and accepts a more objective meta-scientific knowledge of the therapist. This allows the use of all the scientific knowledge about schizophrenia including family studies as working hypotheses for treatment. In addition this epistemology brings closer the present method to the cognitive therapy in that they both accept realities to a certain extent and a deviation from reality, regarding people with schizophrenia that needs to be corrected.

3. **Increase of variety and order.** Therapy is viewed as a case of systems improvement. The core of this process is the balanced increase of order and variety (Paritsis 1993). An increase of the variety includes the variety of new relations, solutions, points of view. The increase of order includes in the case of therapy of schizophrenia the reduction of conflict (increase of order) as for example the parental conflict (e.g. Hirsch and Leff 1975), their critical comments (e.g. Vaughn and Leff 1976), and the their contradictory messages (Bateson et al. 1956).

4. **Intervention on cognitive-affective structures.** In the context of systemic approach to personality (Paritsis 1987) there is an integration of cognition and affect under the same cognitive emotional structures. This permits the use of some cognitive therapy techniques since cognitive emotional/structures include the cognitive parts. In this context the existence of a kind of schemata not only cognitive but with cognitive and affective components is accepted, that relate and include inputs to outputs reflecting a specific interaction of the human system with its environment. These enriched schemata are named zeugmas by the author (Paritsis 2003, Paritsis 2006). They are activated and deactivated according to internal or external states. The practical implication of zeugmas is that it is not necessary to alter the personality or the beliefs of the individuals or of the family. It may be necessary to only activate other more adaptive zeugmas with different relations of cognitive and affective components or to help the client to formulate a new zeugma. This process has analogies with the schema change in cognitive therapy (Padesky 1994).

**Examples of therapy techniques**
The above basic systemic concepts and principles allowed the use of techniques and methods, from many resources including some from family and cognitive
therapy providing that they were compatible with the previously mentioned general systems theoretical framework. On the basis of this framework it was possible to develop techniques including generalizations of existing ones (Paritsis 2006). Two techniques are going to be described as examples.

**Over positive comments**
Description of the schizophrenic and his family characteristics, (e.g. behaviour, emotions and thoughts) are positive as much as possible, providing that they are (or appear) realistic to a certain extent. This technique is relevant to the “emphasising the positive” (Henggeler 1999). However, it is much stronger than the emphasis of the positive, as overpositive comments and descriptions are aiming to describe positives and negatives issues as positively as possible. This technique can defeat the negative comments and aggression in the family. After practicing this technique the usual response of the family is to see and stretch the positive aspects of the patient and start their own positive comments.

**Following the logical consequences of the ideas, intentions, emotions, and behaviours of the client (that may lead to deadlock)**
The therapist is acting verbally and behaving according to the logical implications of the ideas, intentions, emotions and behaviours of the client. This technique may be viewed as a general one including other sub-techniques as particular cases. It is possibly related to the reality testing of cognitive therapy, the following of the delusions of persecutions of Jackson (Jackson and Weakland 1961) and others. For example when a schizophrenic said that he has a transmitter in his abdomen, the therapist said “this is very important, I will arrange for you to have a surgery as soon as possible”. This technique induces among others
a) the increase of logical order in the system, including the logical and rational thinking
b) shows the practical impossibility of the clients’ goals and desires

**A conceptualization of schizophrenia**
The outlined conceptualization of schizophrenia utilizes some well known empirical results in the areas of the family, the psychological and the brain studies and it is a multilevel systemic approach (Paritsis 1994). The new element in this conceptualization is the way that these parts of empirical knowledge are interrelated and organized into a whole. This conceptualization is based in two interrelated processes leading in two corresponding characteristics of the schizophrenic patient. The first is the development of insecurity and the second is the reduction of rationality.
The development of feelings and beliefs of disability, insecurity, aggression and anxiety

*Family studies* have shown that the parents of people with schizophrenia are in conflict with and aggressive to each other (Hirsch and Leff 1975), which is expected to increase insecurity in the pre schizophrenic. In addition critical comments (Vaughn and Leff 1976) are expected to make the pre schizophrenic feel being wrong in what he thinks and acts and consequently feel unable, insecure, aggressive and anxious. The same result is produced by parents being over-concerned with the patient, thus implying lack of abilities of the schizophrenic and hence insecurity. Similar influence has the emotional over involvement of the parents with the schizophrenic child increasing his insecurity, anxiety and aggression.

*Psychological studies* found that people with schizophrenia believe that they are vulnerable and that other people are dangerous (Morrison et al 2005). It is a logical consequence that these beliefs lead to feelings of disability, insecurity, aggression and possibly anxiety.

*Brain studies* have shown that in people with schizophrenia the limbic system that functions through dopaminergic neurons is excited and that all the antipsychotic drugs reduce dopaminergic transmission. The limbic system is the main place where fear and aggression is realized in man.

*Reduction of the strength of rationality, of logical thinking and of emotional coherence*

*Family studies* have shown that the parents of people with schizophrenia express conflicting messages towards the pre schizophrenic (e.g. Bateson et al 1956). This is expected to reduce the logical strength of schizophrenic thoughts and the logical exclusion of the opposite concepts. Critical comments because of their cognitive content are rejecting indirectly the beliefs of the pre schizophrenic. This is because the parents reject the pre-schizophrenic actions which obviously imply that their beliefs are also wrong. The degree of truth in the schizophrenic beliefs is reduced, and the logical functions based on the two values of Aristotelian logic are expected to be impaired. A more elaborated presentation on the issue can be found in Paritsis (1993b). The parents of people with schizophrenia have difficulty in reaching agreement which is equivalent to contradictory messages, not by one parent alone, as in the case of double bind but through the combination of the parental behavior or through the parental system and its intelligence as a whole. Vagueness of schizophrenic family communication is also expected to contribute to the ambiguity and then to doubt and low degree of truth.

*The phenomenology* of schizophrenic thought is characterized by illogical thinking and irrational beliefs.

*Brain studies* have shown that the functioning of the left hemisphere, related to logical thinking and of the prefrontal lobe, related to rationality, are both reduced in schizophrenic patients (e.g. Cohen et al 1987, Morrison-Stewart et al 1991). For more details on the issue see Paritsis (1994).
Their causal circular relations

Irrational thinking and insecurity are related in many ways, directly or indirectly. The critical comments found in family studies are related to both the induction of insecurity and logical contradiction, according to our previous discussion. At a psychological level the reduction of rationality and logical thinking induces the domination of emotions and needs, related mainly to insecurity, and leads to relevant delusions and hallucinations (e.g. Bleuler 1911, Ciompi 1994). In the brain, the limbic system is excited and reduces the already reduced functioning of the left hemisphere and the prefrontal areas. The reduced functioning of the prefrontal areas further reduces the control of the limbic system. Thus a vicious circle is established. Besides irrationality and aggressivity of the patient and critical comments have also a circular causality. In addition, according to the definition of the system the brain functioning, the emergent properties of the brain, namely the psychological phenomena, and the family context of the system influence each other in a circular way. Thus there are many vicious circles leading to schizophrenia and to its progress. Hopefully, this circularity may be used as a benefit for the therapy at individual and family level as the influence at one level can influence the others.

Procedure of Therapy

The overall procedure of the therapeutic system is basically that of a goal directed system towards the improvement of functioning, health and quality of life of the client, namely, towards the achievement of a better system. The therapeutic system has obvious advantages over the client in order to help the latter such as, a) the therapists’ scientific knowledge on conducting the therapy, b) the therapists’ position as an external observer, c) The therapist’s role as an observer and actor, at more than one level.

Figure 1 presents the main parts of the process of perceiving, thinking, deciding and acting of the therapy team (the therapist and the team as a whole) and its relation with the client system.

Figure 1. Overall therapeutic process based on
1. multi-systems assessment and intervention
2. scientific knowledge coming from
2.1 family and other studies,
2.2 general systems science concepts and principles
2.3 individual and family therapy techniques and methodologies
3. focused intervention
**Procedures of the process of the therapeutic team**

Based on **Scientific knowledge** (meta-knowledge)

- **Shaping of goals**
- Use of knowledge of systems, and of individual and family therapy and studies
- Prediction of results of intervention

**Processes for study and intervention**

- Intra-human psychological
- Intra-family human relations and actions
- Family behavior in its context

**Results**

None of the subjects of the experimental group required hospitalisation or committed suicide.

**Table 2** shows the difference between the mean Total Score of the PSE, prior and after the Family Therapy. The results of Wilcoxon Signed Rank Test showed significant difference between the Total Scores, prior and after the Family Therapy in the experimental group (table 2).
Table 2. The results of Wilcoxon Signed Rank Test on PSE scores in the control (8 persons) and the experimental group (7 persons) before and after the intervention.

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>TIME</th>
<th>MEAN</th>
<th>STD.D</th>
<th>Z</th>
<th>SIG.P</th>
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</thead>
<tbody>
<tr>
<td>EXPERIMENTAL</td>
<td>BEFORE</td>
<td>30.28</td>
<td>17.46</td>
<td>- 2.201</td>
<td>0.028</td>
</tr>
<tr>
<td></td>
<td>AFTER</td>
<td>25.71</td>
<td>18.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTROL</td>
<td>BEFORE</td>
<td>16.62</td>
<td>9.63</td>
<td>- 0.701</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>AFTER</td>
<td>19.25</td>
<td>12.17</td>
<td></td>
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</tbody>
</table>

Table 3. The results of Wilcoxon Signed Rank Test on Del-Hal scores in the control (8 persons) and the experimental group (7 persons) before and after the intervention.

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>TIME</th>
<th>MEAN</th>
<th>STD.D</th>
<th>Z</th>
<th>SIG.P</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPERIMENTAL</td>
<td>BEFORE</td>
<td>9.57</td>
<td>8.07</td>
<td>- 2.03</td>
<td>0.042</td>
</tr>
<tr>
<td></td>
<td>AFTER</td>
<td>5.85</td>
<td>5.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTROL</td>
<td>BEFORE</td>
<td>5.25</td>
<td>5.28</td>
<td>- 0.17</td>
<td>0.865</td>
</tr>
<tr>
<td></td>
<td>AFTER</td>
<td>4.87</td>
<td>6.35</td>
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Furthermore, and most importantly, the subjects of the experimental group had a significant reduction in the syndrome of Delusions and Hallucinations (DAH) after the family therapy was completed (Table 3).

Regarding the results from FES, the following changes have been observed at non statistically significant level:

a) An increase in the organisation of the family (“The degree of importance of clear organisation and structure in planning family activities and responsibilities”), being close to the significant level (p= 0.145) implying increase in order in the family.

b) A decrease in the item “conflict” (“The amount of openly expressed anger, aggression and conflict among family members”), implying also an increase of order in the family.

c) A decrease in expressiveness (“The extent to which family members are encouraged to act openly and to express their feelings directly”).

d) An increase of the independence (The extent to which family members are assertive, are self sufficient and make their own decisions), implying an increase in variety.
In the control group there were no statistically significant changes in PSE and in FES during the time of family therapy of the experimental group. Between the experimental and the control group there was not a statistically significant difference in their final psychopathology. However, this is compatible with a successful intervention in the experimental group, since the psychopathology was greater in the experimental group and its reduction would result in smaller difference between the two groups.

Discussion
Since the experimental group had higher psychopathology, the control group could not be used as a mean of finding a difference in the psychopathology after the family therapy, between the control and the experimental group, because, a successful intervention in the experimental group would diminish and not increase the difference between the two groups. The value of using the control group is that it shows that during the same period and under similar conditions the psychopathology in the control group did not change while in the experimental group did.
Regarding the aetiology of schizophrenia we view schizophrenia from a systemic perspective (Paritsis 1994) according to which there is a number of circular causation(s) at many levels of human systems (biological, psychological, familial) where change at one level could influence the change in the others (Paritsis 1989). In this sense familial, psychological and biological characteristics of schizophrenia could be developed through circular causation and thus a psychotherapeutic change on the parental and patients’ behaviour, the family relations, or on the family as a whole, would have, directly or indirectly, a therapeutic result on schizophrenia and its psychopathology.

One difference between the methodology of the present approach and other forms of therapeutic trials towards the reduction of psychopathology of schizophrenic patients is the definition of a system that allowed a multilevel view of the identity of schizophrenia. If schizophrenia has multilevel causes then a multilevel intervention would be appropriate. Multilevel causality and identity lead to the inquiry and use of scientific knowledge coming from family, psychological and brain studies on schizophrenia. The family characteristics of schizophrenic patient as found in family studies has the stronger contribution to schizophrenia. This multilevel approach enriches the use of many techniques and methods. Compatible with the multilevel intervention is the focusing of our intervention on the behavior and attitudes of the parents, the behavior and beliefs and emotions of the patient, the family relations and the global family characteristics.

After the above, the first and second order cybernetic principles, methods and techniques applied on family therapy can more easily be integrated and implemented. In that the first order cybernetics applied to family therapy is focused on the organization of the relations in the family such as the hierarchical structure and the rules of contact. While the second order cybernetics applied to family therapy is focused on the family beliefs in their cultural context.

Regarding the results of our study in relation to the duration of the illness these results refer to a sample of patients with an average severity of schizophrenia. Regarding the results of the Family Environment Scale, the reduction in the values of expressiveness (possibly of expressed emotions) and conflict, and the increase of organisation and independence were towards the desirable direction, although not to a significant level. The reduction of psychopathology at a significant level without global family changes (measured by FES) at a significant level, is possibly an indication that the changes in psychopathology were not achieved mainly through changes in the family system as a whole, as the classical systemic family therapists would expect. It is an indirect indication that the changes on psychopathology are mainly due to a focused intervention on the patient.
The knowledge from the researches regarding conflict between parents (Hirsch and Leff 1975), critical comments (Vaunh and Leff 1976) and the conflicting messages (Bateson et al 1956) was influencing the intervention resulting in the desirable changes in FES. The characteristics of the family of people with schizophrenia mentioned above may be related with the psychological characteristics of schizophrenia, such as beliefs “I am vulnerable” and “other people are dangerous” (Morrison et al 2005) and illogical thinking. Our intervention is expected then directly and/or indirectly to reduce these psychological characteristics of the person with schizophrenia (see also the techniques described above).

Regarding CBT there is an overlap with HST in the sense that systems approach on human personality accepts that affective and cognitive components are at one level separate and at a higher level integrated (e.g. Paritis 1987). This view and the resulting therapy, includes the cognitive components and structures that cognitive therapy directs its intervention. This view of systems leads, as a logical consequence, to the existence of zeugmas and “zeugma therapy” as an enriched schema and schema therapy. Additionally, since the framework and context is taken into account in systems science, it is expected to be an intervention in the family context of schizophrenic as well. It is also included in the zeugma the representation of the interaction of the human system with its environment. In principle some techniques of CBT could be incorporated in the present approach and vice versa.

This study cannot answer the question of effectiveness of HST compared with CBT. This is because the present sample is relatively small and just one trial while in the meta-analysis of Zimmerman et al (2005), 14 studies with 1484 patients were included and proved the effectiveness of CBT. However, the results of the HST in the present study may be considered comparable with that of CBT in terms of reducing hallucinations and delusions. In view of this, it is worthwhile to undertake further research testing HST as an alternative psychotherapy of schizophrenia that also may possibly contribute to integration of psychotherapies for schizophrenia.

Regarding other family therapies of schizophrenia and especially that of systems approaches in their attempt to reduce psychotic symptoms, HST in the present study gave better results. This is because reviews about family therapies in general, show that although their effect on preventing relapse of schizophrenia was proved, their effect on reducing symptoms of schizophrenia was inconclusive (Barbado and D’Avanzo 2000, Bustillo et al 2001, Pilling et al 2002). The practical characteristics of HST include an intervention focused on specific elements and levels, preferably related to circular causal loops within and
between levels of individual and family hierarchical organisation. The choice of the points of specific interventions is specified according to information from the family and from bibliography.

In conclusion, the results of this study show that psychotherapy using HST, after added to pharmacotherapy have the potential to further reduce psychotic symptoms of schizophrenia relatively fast.

Limitations of this work include the small size of the experimental and control group. However, since this intervention resulted in a statistically significant difference in the experimental group after intervention, it shows that there is possibly a strong influence of the particular method towards the desirable change.

A second limitation is that there is not a follow up. This is because according to the project plan - that was financed in order for the people with schizophrenia to find a job - there was after family therapy a group therapy sessions in order to motivate and advice the patients towards their employment. Hence, it was impossible to monitor in a follow up the results of therapeutic intervention.

A third limitation is that we cannot specify what part or parts, of the theoretical framework and/or its specific implementation in treating people with schizophrenia, contributed (more) to the change in psychopathology. In order to clarify the above further research is needed.

A first clinical implication is that the present method as a package can be used as an additional treatment to other types of treatment of people with schizophrenia including the use of drugs. We hope that this publication offers enough details to enable an understanding of the basic parts of this method, enabling other groups to repeat and further test the method, without the limitations of the present study. We are also available for any support for offering more details and specific additional training to those interested.

A second clinical implication is that a more effective psychotherapy of schizophrenia has to take into account the results of family studies.

A third possible indirect clinical implication may include the conceptualisation of schizophrenia as described above since this conceptualization possibly contributed to a successful intervention in reducing the schizophrenic symptoms.

A fourth clinical implication could be that the results of this intervention support the suggestion that a focused parallel intervention or therapy at many levels (individual and the family, emotions and cognitions and their relations), has not just an additive but a more complex non-linear result. This is compatible with the circular causation between levels.

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