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Validity of a social skills training program for schizophrenic patients

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In the 1980's, Robert P. Liberman and his team from UCLA designed the Social Independent Living Skills Modules. Since then, their methods have spread throughout the world and their effectiveness has been demonstrated. It seems that the application of these methods is beginning to disappear and there are practically no publications that support the continuity of these treatments.

In this article, the results of the Social Skills Training Program (SSTP) are presented in a sample of 57 schizophrenic patients. The results are evaluated with the Positive and Negative Symptoms Scale (PANSS) and the Social Behavior Assessment Schedule (SBAS) scale and with the Social Interaction Self-Statements Test (SISST) and AI-F questionnaires. The negative symptoms of the patients improved after the therapeutic intervention. The patients acquired new social roles and their frequency of assertive behavior increased. Their relatives also improved their emotional burden and stress level. In any event, these improvements decreased at 6 months of follow-up without therapeutic intervention.

Key words:
Schizophrenia. Social skills training program. Psychosocial rehabilitation. PANSS. SBAS

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Validez de un programa de entrenamiento en habilidades sociales para pacientes esquizofrénicos

En la década de 1980 Robert P. Liberman y su equipo de la UCLA diseñaron los Módulos de Habilidades Sociales para la Vida Independiente. Desde entonces sus métodos se han extendido a lo largo del mundo y su efectividad ha sido demostrada. Parece que actualmente está empezando a quedar en desuso la aplicación de estos métodos y prácticamente no hay publicaciones que avalen la continuidad de estos tratamientos.

En este artículo se presentan los resultados de un Programa de Entrenamiento en Habilidades Sociales (PEHS) en una muestra de 57 pacientes esquizofrénicos. Se evaluaron los resultados con las escalas *Positive and Negative Symptoms Scale* (PANSS) y *Social Behavior Assessment Schedule* (SBAS) y con los cuestionarios *Social Interaction Self-Statements Test* (SISST) y AI-F. Con posterioridad a la intervención terapéutica los pacientes mejoraron en síntomas negativos, adquirieron nuevos roles sociales y aumentaron la frecuencia del comportamiento asertivo. También los familiares vieron mejorada su sobrecarga emocional y el nivel de estrés. De todos modos estas mejorías decrecieron a los 6 meses de seguimiento sin intervención terapéutica.

Palabras clave:
Esquizofrenia. Programa de entrenamiento en habilidades sociales. Rehabilitación psicosocial. PANSS. SBAS.

INTRODUCTION

During the 1980s, Robert Paul Liberman and his team at UCLA designed the SILS (Social Independent Living Skills) modules in order to increase the patients' skills to cope with stress, achieve better personal independence and to encourage active participation of the patients in their psychiatric treatments[1-4].

During the 1990's, there were numerous publications on psychosocial rehabilitation of schizophrenia. In 1997, Bellack et al.[5] published a practical training manual on social skills whose use has extended throughout the world. Other authors, such as Roder[6] included the social skills module within their intregrated psychological therapy (IPT) program. However, with the change of century, the publications progressively decreased to give way to other types of studies that focused more on individual psychotherapy and cognitive rehabilitation. Without reducing the importance in any way of these new intervention modalities, that are being evaluated with scientific rigor and with evidence based studies, we should not overlook the importance of group psychotherapy interventions and especially of the social skills training programs.

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As it is shown in different reviews published, the effectiveness of the SILS modules has been widely demonstrated[5,7,11]. There is solid evidence that those programs that add psychosocial approaches to the drug treatment are more effective in reducing relapses and improving psychosocial functioning[12]. An extensive review by Bustillo and his team[13] in 2001 stressed the importance of social skills training to improve social competence (including social adjustment, capacity to live independently, learning skills for daily life and cognitive improvements).

On the contrary, a meta-analytic analysis conducted by Pilling et al.[14] that was published in 2002 concluded that social skills training and cognitive rehabilitation do not seem to provide clear benefits for patients with schizophrenia and cannot be recommended in the clinical practice. Clearly, we disagree with this statement and both our results and our clinical experience support us to defend the recommendation of integral therapy in schizophrenia that includes drug therapy together with psychosocial interventions for the patients and family.

MATERIAL AND METHOD

In the present article, the results of a program applied to 57 patients diagnosed of schizophrenia (ICD-10 criteria) who participated in a Social Skills Training Program (SSTP) as outpatients are presented. The purpose of the study was to evaluate the efficacy of the program in comparison with the standard treatment.

The research project was designed as a prospective study with random distribution of the patients into two groups (experimental and control). Two treatments were compared: social skills training program (SSTP) together with antipsychotic treatment (experimental group) versus only antipsychotic treatment (control group). The effect of withdrawal of SSTP at six months of follow-up was also evaluated.

Participants

Table 1 shows the sociodemographic and clinical characteristics of the patients in the sample at baseline. There were no statistically significant differences between the control and experimental groups in the sociodemographic and clinical variables at the onset of the program. None were suffering from acute exacerbation when they entered the study (table 1).

Table 1 Sociodemographic and clinical characteristics of the patients

		Experimental group (n = 35)	Control group (n = 22)
Age	Mean (SD)	27.7 (6.52)	27.8 (5.79)
Gender			
Men	n (%)	21 (60)	14 (63.6)
Woman		14 (40)	8 (36.4)
Living situation			
Alone		1 (2.9)	1 (4.5)
With parents		30 (85.7)	18 (81.8)
With other relatives		2 (5.7)	2 (9.1)
With partner	n (%)	2 (5.7)	1 (4.5)
Study level			
Secondary		21 (60)	7 (31.8)
Primary	n (%)	10 (28.6)	12 (54.6)
Upper		4 (11.4)	3 (13.6)
Work status			
Active	n (%)	5 (14.3)	3 (13.6)
Unemployed		28 (79.9)	16 (72.8)
Student		1 (2.9)	3 (13.6)
Protected work		1 (2.9)	–
Family social class			
Upper	n (%)	6 (17.1)	5 (22.7)
Middle		16 (45.8)	7 (31.7)
Lower		13 (37.1)	10 (45.5)
Years of evolution of disease	Mean (SD)	8.25 (6.05)	8.36 (5.34)
Number of admissions	Mean (SD)	1.48 (1.94)	2 (2.33)
Neuroleptic treatment mg (chlorpromazine equiv.)	Mean (SD)	271.64 (232.70)	223.45 (202.42)
Intelligence quotient			
WAIS vocabulary	Mean (SD)	108.14 (13.83)	107.72 (15.25)
WAIS cubes		97.85 (15.82)	98.86 (16.89)
WAIS similitude		113.57 (13.26)	114.77 (15.77)
PANSS initial	Mean (SD)	75.05 (18.86)	67.04 (16.72)

Hypothesis test for a proportion and Wilcoxon Test. SD: standard deviation; n: number of patients. There are no statistically significant differences in any variable of this table.

The experimental group obtained a global score on the PANSS scale of 75.05 (SD = 18.86) and the control group of 67.04 (SD = 16.72). There were no statistically significant differences. Both groups were within the mild symptoms area, according to the Voruganti criteria[15]. Patients with negative type schizophrenia predominated, that is, those patients who scored 4 or more (moderate symptoms) on three or more items of the PANSS-N subscale.

All the patients were taking antipsychotic medication that was prescribed by their psychiatrist on a regular basis. In order to be able to compare the drug doses of the sub-

jects, their equivalences with chlorpromazine were used (according to the Ban and Foster transformation proposals).

Mean age of the patients was approximately 27 years. In both groups, approximately 60% were men. They mostly lived with their parents (81.8%-85.7%). One patient from each group lived alone although they were in daily contact with their family. Between 4.5% and 5.7% lived with a partner and between 5.7% and 9.1% lived with other relatives.

The study level located the mode in middle studies (54.6%-60%). Social class of the sample was middle-low level and the most frequent occupational status was unemployed (72.8%-79.9%). A total of 14% of the sample were active, working part or full time and there were few students (2.9%-13.6%). One patient worked in a protected workshop.

Age of onset of the disease of the patients was mostly between 17 and 25 years of age (77.1%-86.4%). Disease evolution time was at about 8 years. The patients had been admitted to psychiatric hospitals a mean of 1.48 times (SD = 1.94) in the experimental group and 2 times (SD = 2.33) in the control group.

Estimate of general intelligence, measured with the WAIS-vocabulary subtest, found that the patient IQ level average was within normality (between 107.72 and 108.14). Manipulative intelligence, estimated with the WAIS-cubes subtest, placed those patients at an IQ level between 113.57 and 114.77.

Procedure

The 35 patients in the experimental group were subdivided into therapeutic groups of between six and eight persons to participate in the SSTP. Each group attended a weekly session of one and a half hours for 20 weeks under the responsibility of two experienced therapists in the psychosocial therapies.

All the components related with social communication skills (verbal and non verbal) were treated with a cognitive-behavioral approach and behavioral trials (role playing) were performed to train the behaviors learned and strategies for assertive behaviors and problem solving techniques were used. The patients in the control group, who only received psychiatric care, were offered the opportunity to enter into the SSTP group once the study was completed.

Evaluation

The evaluations were made at three different times: pre (baseline evaluation), post (evaluation at end of intervention) and follow-up (evaluation at six months of treatment withdrawal), except in the control group in which no follow-up evaluation was made. Each evaluation referred to the changes observed during the previous six months, except for the PANSS scale that evaluated the changes in symptoms during the 30 days prior to the interview.

The evaluation protocol included two semistructured interviews (one with the patient and another with a close family member) and two self-administered tests. The test series collected information from different points of view: evaluation of the clinician, perception from their social setting and self-perception of the behavior and cognitions.

The first semistructured interview administered was the PANSS scale (The Positive and Negative Syndrome Scale)[16] using the Spanish version of Peralta and Cuesta[17].

The second semistructured interview, SBAS (Social Behaviour Assessment Shedule[18]), is a social performance scale that evaluates the subject's social skils from the point of view of his/her interaction with the setting. The version that we applied was the Spanish SBAS, adapted by Otero[19]. This interview was made with a close relative or person close to the patient who maintained daily contact with him/her.

The SBAS is based on the «performance» construct that means that the behavior of the subject is compared with the expectations about the subject within his/her own sociocultural and familial context. This is a scale that makes it possible to observe several behaviors of the subject and give four scores to each one of them: *a)* recent social functioning of the subject; *b)* the changes in his/her performance; *c)* stress caused to the informer (significant person of the patient), and d) the informer's burden, separating the objective changes of the informer's life from the stress caused by the patient (subjective burden). The support that the informer receives as well as the relapses of the patient are also evaluated.

Finally, using different studies on the validity of self-administered tests as useful tools to evaluate schizophrenic patients as a basis[15,20], two questionnaires were included: the SISST (Social Interaction Self-Statement Test[21]) and the AI (Assertion Inventory[22]). The SISST evaluates the positive and negative cognitions that intervene in social interaction situations and the AI collects information on assertive behavior.

RESULTS

Descriptive methods and inferential methods were used for the statistical analysis. Frequencies and percentages were calculated with qualitative type variables. In the case of the quantitative type variables, means, standard deviations, ranges and medians were calculated.

The Standardized Effect Size Index (ESI)[23] was calculated with all the differences found between means that reached

statistical significance ($p<0.05$ or $p<0.001$). This index was obtained based on the difference between the two means, divided by the standard deviation of the former. The ESI was used to evaluate if certain changes detected, potentially induced by the SSTP, could be considered as clinically relevant. Using the scale proposed by Cohen, mentioned by Casado[23], it was considered that an ESI was small when it was less than 0.35, median when it was between 0.35 and 0.65 and large when it was greater than 0.65 (table 2).

At baseline in the PANSS scale, no statistically significant differences were observed between the two study groups. As a result of the therapeutic intervention, the experimental group patients significantly improved in several of the symptoms on the PANSS scale (table 2). The comparison of the mean scores between the pre and post evaluations indicated that the difference was statistically significant for the experimental group in the items: N02 ($p<0.05$; ESI=0.56), N04 ($p<0.001$; ESI=0.54), N06 ($p<0.05$; ESI=0.41), G02 ($p<0.05$; ESI=0.49), G11 ($p<0.05$; ESI=0.31), G13 ($p<0.001$; ESI=0.46), G15 ($p<0.05$; ESI=0.48) and G16 ($p<0.001$; ESI=0.38). In the control group, there was only a statistically significant difference in item G16, in the sense of worsening ($p<0.05$; ESI=0.34).

In the comparison between post-evaluation and follow-up evaluation, statistically significant differences were observed in the experimental group for items N01 ($p<0.05$; ESI=0.34); N07 ($p<0.05$; ESI=0.51) and G13 ($p<0.05$; ESI=0.37). These differences indicated that the scores of the patients returned to their initial scores or even worsened when the treatment program was interrupted. For items G02 and G11 the differences, although they were not statistically significant, obtained a $p=0.07$ (fig. 1 and 2).

In the four basic subscales of the SBAS, there were also no statistically significant differences between the two patient groups at the onset of the program. In the post-evaluation, we observed changes in the experimental group, with some statistically significant differences ($p<0.001$). According to the evaluation of the informers, the patients improved their general psychopathological condition (Subject behaviors subscale) (fig. 1) and performed social roles

Table 2 PANSS. Mean scores of the patients in the three evaluations of the study

Item	Group	Pre Mean (SD)	Post Mean (SD)	p^1	ESI^1	Follow-up Mean (SD)	p^2	ESI^2
N01: Blunted affect	Experim.	2.97 (1.44)	2.66 (1.16)	ns	–	3.06 (1.30)	*	0.34
	Control	3.05 (1.36)	3.18 (1.26)	ns	–	–	–	–
N02: Emotional withdrawal	Experim.	3.40 (1.26)	2.69 (1.23)	*	0.56	2.83 (1.32)	ns	–
	Control	2.77 (1.31)	3.09 (0.97)	ns	–	–	–	–
N03: Poor rapport	Experim.	2.43 (1.07)	2.14 (0.97)	ns	–	2.37 (1.00)	ns	–
	Control	2.32 (0.95)	2.55 (1.22)	ns	–	–	–	–
N04: Social withdrawal	Experim.	3.89 (1.55)	3.06 (1.55)	**	0.54	3.23 (1.68)	ns	–
	Control	3.59 (1.68)	3.68 (1.67)	ns	–	–	–	–
N06: Lack of spontaniety flow of conversation	Experim.	2.80 (1.28)	2.37 (1.06)	*	0.41	2.51 (1.01)	ns	–
	Control	2.86 (1.04)	2.82 (1.30)	ns	–	–	–	–
N07: Stereotyped thinking	Experim.	2.49 (1.12)	2.23 (1.11)	ns	–	2.80 (1.21)	*	0.51
	Control	2.59 (1.18)	2.82 (1.05)	ns	–	–	–	–
G02: Anxiety	Experim.	3.11 (1.32)	2.46 (1.15)	*	0.49	2.80 (1.38)	ns[a]	–
	Control	2.77 (1.51)	3.05 (1.76)	ns	–	–	–	–
G07: Motor retardation	Experim.	2.83 (1.34)	2.51 (1.07)	ns	–	2.43 (1.14)	ns	–
	Control	2.55 (1.37)	2.41 (1.10)	ns	–	–	–	–
G11: Poor attention	Experim.	2.91 (1.29)	2.51 (1.17)	*	0.31	2.94 (1.21)	ns[a]	–
	Control	2.95 (1.29)	2.95 (1.09)	ns	–	–	–	–
G13: Volition disturbance	Experim.	2.77 (1.37)	2.14 (1.24)	**	0.46	2.60 (1.22)	*	0.37
	Control	2.82 (1.14)	3.18 (1.40)	ns	–	–	–	–
G15: Preoccupation	Experim.	3.11 (1.28)	2.49 (1.22)	*	0.48	2.77 (1.21)	ns	–
	Control	2.64 (1.33)	2.95 (1.25)	ns	–	–	–	–
G16: Active social avoidance	Experim.	3.40 (1.65)	2.77 (1.35)	**	0.38	2.89 (1.45)	ns	–
	Control	2.68 (1.46)	3.18 (1.50)	*	0.34	–	–	–

Wilcoxon Test. ESI: effect size index; SD: standard deviation; p^1: comparison between pre and post evaluation; p^2: comparison between post evaluation and follow-up evaluation; * $p<0.05$); ** $p<0.001$); ns[a]: $p=0.07$; ns: non-significant. If the score decreases, the patient improves.

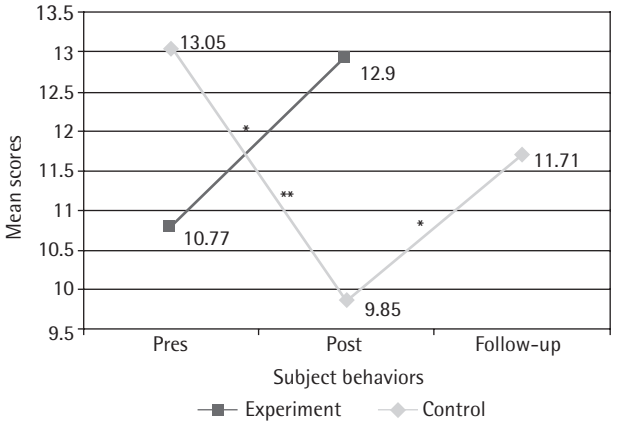

Figure 1 *SBAS. Subject behavior subscale. Wilcoxon Test. *p<0.05; **p<0.001.*

to a greater degree (Social role performance subscale) (fig. 2), with a median effect size (ESI=0.53 and ESI=0.59, respectively). On the other hand, the sensation of emotional burden (family burden subscale) (fig. 2) decreased, with a median effect size (ESI=0.48) and the stress experienced (Informer stress subscale) (fig. 2) decreased, with a high effect size (ESI=0.71).

In the control group, the pre-post comparison only indicated a statistically significant difference (p<0.05) in the subject Behaviors subscale (fig. 1). This change was in the direction of worsening, with a small effect size (ESI=0.35). The scores on the remaining three subscales were maintained without significant changes (fig. 2).

At six months of drug withdrawal, statistically significant differences were found in the experimental group in the mean scores of the subject Behaviors subscale (p<0.05; ESI=0.27) (fig. 1) and informer Stress subscale (p<0.001; ESI=0.60) (fig. 2).

The results of the Social role performance subscale of the SBAS are shown in table 3. There were statistically significant changes in the following social roles: leisure and free time activities (p<0.05; ESI=0.40), daily conversation with the informer (p<0.05; ESI=0.35), support offered by the informer (p<0.001; ESI=0.57), relationship of affect and friendship with the informer (p<0.001; ESI=0.41), involvement in the work and study activities (p<0.05; ESI=0.45), capacity for decision-making at home (p<0.05; ESI=0.35), interest in social-cultural events (p<0.05; ESI=0.47) and interest in interpersonal relationships: friends, neighbors, family (p< 0.001; ESI=0.68). In the control group, no statistically significant pre-post changes in any social role were found.

During the follow-up period, the experimental group maintained the improvements achieved in all the social roles developed with the SILS. There were no statistically significant movements of deterioration (fig. 3).

In regards to the self-administered test AI-F, comparison of the mean scores of the two groups did not reveal any statistically significant differences when the program was initiated. With the application of the SILS, a statistically significant improvement was observed in the experimental group (p< 0.05; ESI=0.35) (fig. 3). On the contrary, no statistically significant differences were observed in the control group.

In the follow-up period, there were no statistically significant differences in the AI-F. In any event, when the Pre-evaluation was compared with the follow-up evaluation, highly significant differences were found (p<0.001), with an ESI=0.37 (figs. 3 and 4).

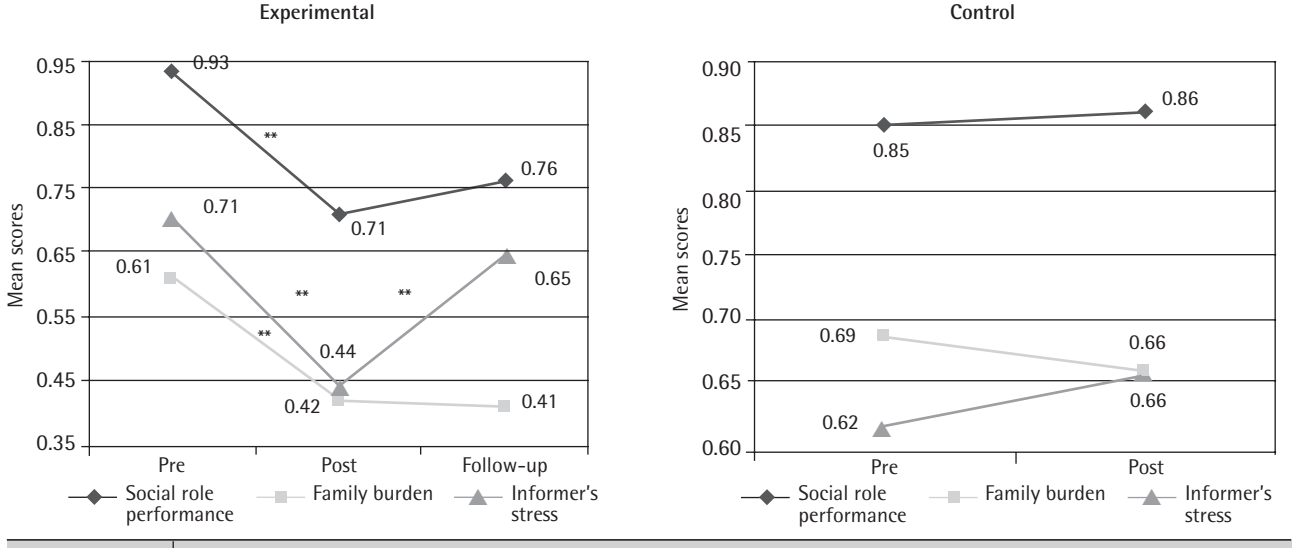

Figure 2 *SBAS. Social performance, family burden and stress subscales. Wilcoxon Test. *p=0.05; **p<0.001.*

Table 3 | *Social Behavior Assessment Schedule* **(SBAS). Evaluation of the changes observed by close relatives in the social roles performance subscale in the three evaluations of the study**

Item	Group	Pre Mean (SD)	Post Mean (SD)	p[1]	ESI[1]	Mean Follow-up (SD)	p[2]
Leisure and free time activities	Experim.	1.08 (0.70)	0.80 (0.75)	*	0.40	0.91 (0.78)	ns
	Control	1.18 (0.73)	1.22 (0.68)	ns	–	–	–
Daily conversation	Experim.	0.60 (0.65)	0.37 (0.64)	*	0.35	0.48 (0.70)	ns
	Control	0.59 (0.73)	0.63 (0.58)	ns	–	–	–
Support given to the informer	Experim.	0.65 (0.76)	0.22 (0.59)	**	0.57	0.34 (0.63)	ns
	Control	0.50 (0.74)	0.63 (0.72)	ns	–	–	–
Affect and friendship	Experim.	0.37 (0.64)	0.11 (0.32)	**	0.41	0.20 (0.47)	ns
	Control	0.36 (0.79)	0.59 (0.85)	ns	–	–	–
Partner relationships	Experim.	1.65 (0.76)	1.62 (0.73)	ns	–	1.62 (0.77)	ns
	Control	1.13 (0.99)	1.31 (0.94)	ns	–	–	–
Work/studies	Experim.	1.68 (0.58)	1.42 (0.85)	*	0.45	1.54 (0.74)	ns
	Control	1.40 (0.79)	1.27 (0.82)	ns	–	–	–
Decision making capacity	Experim.	0.91 (0.74)	0.65 (0.76)	*	0.35	0.60 (0.69)	ns
	Control	1.40 (1.86)	0.90 (0.75)	ns	–	–	–
Management of community resources	Experim.	0.54 (0.70)	0.40 (0.60)	ns	–	0.42 (0.65)	ns
	Control	0.90 (1.97)	0.68 (0.83)	ns	–	–	–
Interest for social-cultural events	Experim.	0.91 (0.78)	0.54 (0.70)	*	0.47	0.62 (0.69)	ns
	Control	0.90 (0.75)	1.00 (0.75)	ns	–	–	–
Interpersonal relationships	Experim.	1.28 (0.75)	0.77 (0.73)	**	0.68	0.85 (0.84)	ns
	Control	1.09 (0.68)	1.09 (0.75)	ns	–	–	–

Wilcoxon Test. ESI: effect size index; SD: standard deviation; p[1]: comparison between pre and post evaluation; p[2]: comparison between post evaluation and follow-up evaluation; * $p < 0.05$; ** $p < 0.001$); ns[a]: $p = 0.07$; ns: non-significant. If the score decreases, the patient improves.

The mean baseline scores of SISST in the two groups of the sample were practically the same, there being no statistically significant differences. The pre-post comparison of the SISST-P subscale (fig. 4) did not show any statistically significant differences in either the experimental or control group. However, in the pre-follow-up comparison statistically significant differences were found for the experimental group ($p<0.05$), with an ESI=0.42, considered median.

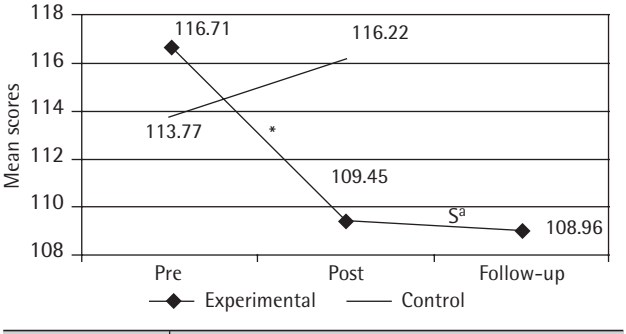

Figure 3 | *Assertive behavior (AI-F). Wilcoxon Test. *$p<0.05$; S^a: $p<0.001$, comparing pre and follow-up.*

On the other hand, there were also no statistically significant differences in the pre-post comparison in either the control or experimental group on SISST-N subscale (fig. 4). In the experimental group, the negative self-statements of the patients had a tendency to decrease during the intervention, almost reaching statistical significance ($p=0.06$). When the pre-follow-up comparison was made, these differences reached statistical significance ($p<0.05$; ESI=0.18). On the contrary, there were no changes in the control group.

DISCUSSION

The results of this study provide scientific evidence on the beneficial effects of the social skills training program (SSTP) for a group of patients with schizophrenia and their families. The patients who participated in the SSTP increased their capacity for social development. This improvement was reflected in the different variables studied (schizophrenia symptoms, social role performance, frequency of assertive behaviors and self-statements of social interactions). Our results coincide with previous reviews that indicated that training in social skills significantly increased social be-

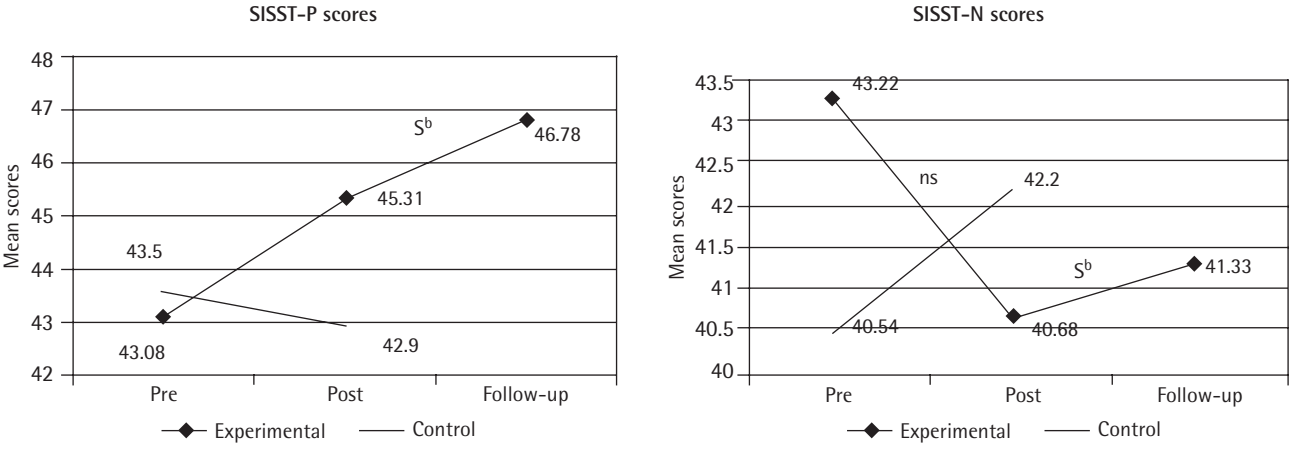

Figure 4 *Cognitions that intervene in the social interaction (SISST). Wilcoxon Test. *p<0,05; S[a]: p<0,001, comparing pre- and follow-up.*

havior[7,11]. This demonstrates that in spite of their serious deficits, persons with schizophrenia are capable of learning a wide range of social skills[24]. Thus, it can be stated, as several reviewers on research on psychosocial rehabilitation programs have affirmed, that improvement in social skills is directly related with training[4,8,13,24,25] and that this does not have a significant relationship with the patient's symptoms[26].

After participating in the training program, the patients of the SSTP group were successful in decreasing their scores on several symptoms of the disease and evaluated with the PANSS scale. Improvement in three negative symptoms (emotional withdrawal, social withdrawal and lack of spontaneity/flow of conversation) with a median clinical relevance was reflected in the fact that the patients increased their interest for social contacts once they learned to express themselves with greater capacity both on the verbal and nonverbal skills. The patients from the experimental group increased their emotional response and modulation of feelings. Their facial and gesture expressivity were greater and they also had increased initiative and interest in social relationships. They became more participatory in daily activities. The normal flow of communication increased, apathy improved and abulia decreased. This was manifested by increased fluency and productivity of the verbal processes of communication.

The intervention program was also able to significantly improve other symptoms of schizophrenia. The improvement observed in five symptoms of the PANSS-G subscale (anxiety, attention deficit, disturbance of volition, preoccupation and active social avoidance), with a clinical relevance between small and median, made us think that the SSTP should also be able to indirectly influence different nonspecific aspects. Participation in the therapy group succeeded in decreasing the anxiety and worrying levels of the patients. They also improved their cognitive capacities, specifically, attention and concentration. In turn, improvement in the volition disorders was observed, probably derived from the stimulation that the therapy exerted on the patients to remain active and to develop their social initiatives. Furthermore, we verified that the tendency of these patients to manifest active social avoidance was stopped.

In any event, the withdrawal of the therapeutic intervention led to a deterioration of the advances achieved. In only six months, the group that participated in the program no longer maintained their improvements and the results in the group were found to be close to the untreated group. In some symptoms, the clinical relevance of the deterioration was low (blunted affect) while in others, the deterioration had a median effect size (stereotyped thinking and volition).

Probably, some symptoms of the disease require a treatment continued over time. Penn and Mueser[24] stated that these treatments should be extended over a long period of time for the training programs in social skills to be effective. Future studies could evaluate how long a training program in social skills should last in order to obtain better long-term results.

The effect of the SSTP treatment was evaluated very positively by the relatives or close persons to the patients treated. According to the informers, not only the SSTP might improve the global psychopathological condition of the patients and the advance in the social roles performance (SBAS subscales: Behaviors of the subjects and role performance) but it also helped to modify the subjects' well-being (SBAS subscales: Family burden and informer stress). That is, the treatment made was not only effective with the patients but had an indirect repercussion on relieving the sensation of burden and stress experienced by the persons in the patient's family setting. Studies on interventions have demonstrated that they are capable of reducing the emotional burden of the relatives of schizophrenic patients[24,27].

In our case, it was interesting to observe that the sensation of burden and level of family stress also decreased even though no direct intervention was made with the relatives.

According to the subjective evaluation of the informers, the patients who received SSTP treatment improved their performance of several social roles: better participation in leisure and free time activities, increase of daily conversation, greater involvement in occupational or educational activities, greater capacity to make decisions and extension of interpersonal relationships. Clearly, all these social behaviors allow the patients to reincorporate more capably into the community and improve their functioning in it. The informers described the patients at the end of the treatment as persons with greater interest for social relationships, more sensitive to affect and to the needs of others and with greater sociocultural interests. According to the relatives, training in social skills had an influence on the increase in capacity to express emotions towards persons in their natural environment.

In the group of patients treated only with medication (control group), these favorable changes were not observed in the patients. In addition, the informers commented on differences in the sensation of emotional burden or stress. In fact, the informers negatively considered the course of the patients and, in general, their subjective evaluation indicated worsening of the psychopathology (SBAS subscale Subject behaviors).

However, the positive results achieved in the experimental group during the treatment were not as optimistic in the long term. When SSTP was withdrawn, the scores on the SBAS subscales Behaviors of the subject and Stress of the informer progressively worsened. According to the informers, the global psychopathological condition of the patients (subscale Behaviors of the subject) was deteriorating, considerably increasing their own stress level. This evaluation of the informers coincided with the clinical information obtained from the PANSS. Precisely, our clinical experience indicates to us that the volition disorder (item G13 of the PANSS) is one of the schizophrenic symptoms that causes the most stress to those persons who live with the patients and that this symptom worsens after SSTP is discontinued.

Based on these results of the SBAS, we deduced that the stress levels of the relatives are probably basically related with the symptoms of the patients and, on the other hand, the role performance, with the sensation of emotional burden. Because the subjects maintained their performance in the social roles during the follow-up period, the sensation of emotional burden did not increase. On the contrary, the stress level increased because the symptoms had worsened.

With the results obtained from the AI-F questionnaire, a beneficial effect of the SSTP could also be seen on the assertive behavior of the patients. According to their own perception, the patients assured that they had increased the frequency of assertive behaviors after participating in the treatment program and that they could face conflict situations more decisively. On the contrary, the control group did not increase the frequency of assertive behaviors. This fact demonstrated once more that non-intervention does not achieve changes in the behaviors of schizophrenic patients.

In the follow-up period, the patients who participated in the SSTP continued to inform that they maintained the improvement achieved in assertiveness and their scores had even become more distant from the starting point, reaching greater significance. This information is important to keep in mind because, on the contrary to other interventions, training in assertive behavior may achieve long-term improvements even if the intervention is interrupted. Further studies should determine what parts of the SSTP would be necessary to maintain for a prolonged time and what parts could be discontinued after the therapeutic intervention.

As the two groups began at the same point on the SISST questionnaire added to the fact that no changes were observed in the control group and that there was a tendency in the experimental group to increase cognitions that facilitated social interaction, we reaffirm the idea that the SSTP had positively intervened in the experimental group. Internally, the experimental group patients perceived the social contacts as less anxiogenic and that they sent messages to themselves with less negative burden after their participation in the therapy groups. Although the pre-post changes did not reach statistical significance ($p=0.09$) in the experimental group, we can consider them favorable. The patients continued to increase their positive self-verbalizations after treatment was discontinued, something that confirms to us the tendency towards improvement observed after the therapeutic intervention.

The SSTP had also been successful in facilitating a tendency towards the decrease ($p=0.06$) of the self-verbalizations of social interaction in the experimental group. In the follow-up period, these differences became greater regarding the initial moment. This makes us consider that the cognitive changes have a tendency to occur slowly and progressively and are not as observable as the behavioral changes.

It is well-known that it is difficult to retain this type of patients. In this study, there were patient dropouts during the different phases of the process. In any event, we realized that participation in the therapy group favored the continuance of the patients for much more time than with the drug treatment alone (23.9% loss in the experimental group versus 45% in the control group). We studied if there were significant differences in the clinical and social cultural characteristics among the patients who dropped out in both groups and we did not find any.

One of the limitations of the study presented herein refers to the evaluation systems used. We think that the four

tests used with the information obtained with each one of their subscales supplied a large amount of information although we are aware that the spectrum that covers the tests is not sufficient to include all the components of social skills and perhaps that it would be interesting to add observational tests for the nonverbal behaviors of the patients.

FINAL COMMENTS

In the first place, it seems to be very clear that the SSTP helped the patients in our study. It decreased their symptoms, they learned adequate social roles and their assertive behavior improved. Both a tendency towards the increase of the positive cognitions intervening in social situations as well as the tendency towards a decrease of negative cognitions were observed. The patients continued in therapy for a longer time and the SSTP also benefited their direct family members, their emotional stress and family burden decreased.

All of this suggests that in spite of the tendency towards a chronic evolution of schizophrenia, demonstrated when psychosocial programs are not used or when these are discontinued, in those patients who participate in social skills training programs, there is an improvement in their psychotic symptoms, they become capable of learning social roles and maintaining them[28] and the family dynamics improves. There are many evidence-based studies that demonstrate that pharmacotherapy contributes to the improvement of the disease symptoms. However, these treatments have a limited effect on improving the social deficits characteristics of schizophrenia[11]. The antipsychotics, administered exclusively, do not help the patients to achieve understanding of their problems nor does it help them to improve their own self-perception. They also do not help the patient to be able to reconnect with daily reality after they have passed through a devastating experience such as psychoses[6]. Thus, on the contrary to that proposed[14], we consider that no efforts should be spared to help these patients and their close ones, offering them the opportunity to participate in SSTP type psychosocial rehabilitation programs

Based on the results of this study, some precise therapeutic recommendations are obtained: *a)* the need to complement drug treatment with psychosocial interventions; *b)* the importance of maintaining rehabilitation treatment over a prolonged period, and *c)* the need to determine what factors may maintain the improvements achieved with the rehabilitation treatment in the long term.

There is currently a considerable amount of scientific literature that demonstrates the efficacy of the psychosocial interventions in schizophrenia, but this does not seem to be sufficient guarantee to be used to apply these therapies in a generalized way[9,29,30]. In fact, in recent years, the number of publications on this subject has greatly decreased and it seems that the scientific community is losing interest in psychosocial rehabilitation.

The findings obtained in this and other studies should have a practical projection and these psychosocial rehabilitation programs should become a coadjuvant therapy of choice for schizophrenia. It has been demonstrated that these programs are valid and highly recommended[31,32]. Mueser and team initiated the EBP Project that consists in expanding and establishing some standardized intervention packages based on scientific evidence studies. The objective is to facilitate access of all the patients who need it to a program that includes: collaborative psychopharmacology, assertive community treatment, family psychoeducation, supported employment, illness managament and recovery skills, and integrated dual disorders treatment[25]. We are following their example.

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