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Artigo Original

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Effectiveness of the speech language intervention on the communicative behavior in groups of individuals diagnosed with schizophrenia

A efetividade da intervenção fonoaudiológica grupal no comportamento comunicativo de indivíduos com diagnóstico de esquizofrenia

Keywords

Speech, Language, and Hearing Sciences
Rehabilitation of Speech and Language Disorders
Group Structure
Mental Health Assistance
Schizophrenia

ABSTRACT

Purpose: To verify the effectiveness of the speech language intervention in the communicative behavior in group of individuals diagnosed with schizophrenia. **Methods:** This is a semi-experimental, quantitative analytical-exploratory study. Users of a Psychosocial Care Center III (CAPS III) with a diagnosis of schizophrenia were included, divided into 2 groups: Experimental Group (EG), comprising the Speech Therapy Intervention Group (STIG) and Control Group (CG). The communicative behavior was evaluated through the Brief MAC Battery. The STIG was performed in 2 weekly sessions, during 12 weeks, totalizing 24 sessions. After this period, individuals were reassessed. Data were analyzed through Mann Whitney non-parametric Test, and Pearson's Correlation Test. **Results:** A total of 19 individuals of both sexes participated, who are between 19 and 59 years old with a minimum schooling of 5 years, 14 participating in EG and 5 in CG. In the EG, it was possible to observe that there was improvement in the communicative behavior after the speech language intervention in all the tasks evaluated, except in the writing task. In CG, no significant changes were observed comparing evaluation and reevaluation after 12 weeks. **Conclusion:** The speech-language intervention in group was effective as a socialization tool and contributing to the improvement of the living conditions of these people with schizophrenia.

Descritores

Fonoaudiologia
Reabilitação dos Transtornos da Fala e da Linguagem
Estrutura de Grupo
Assistência à Saúde Mental
Esquizofrenia

RESUMO

Objetivo: Verificar a efetividade da intervenção fonoaudiológica grupal no comportamento comunicativo de indivíduos com diagnóstico de esquizofrenia. **Método:** Trata-se de um estudo quase experimental, quantitativo analítico-exploratório. Foram incluídos usuários de um Centro de Atenção Psicossocial III (CAPS III) com diagnóstico de esquizofrenia, divididos em 2 grupos: Grupo Experimental (GE), compondo o Grupo de Intervenção Fonoaudiológica (GIF) e Grupo Controle (GC). O comportamento comunicativo foi avaliado através da Bateria MAC Breve. O GIF foi realizado em 2 sessões semanais, totalizando 24 sessões. Após esse período, os indivíduos foram reavaliados. A análise ocorreu por meio dos Testes não paramétricos de Mann Whitney e o Teste de Correlação de Pearson. **Resultados:** Participaram 19 indivíduos, de ambos os sexos, com idade entre 19 e 59 anos, escolaridade mínima de 5 anos, sendo que 14 participaram do GE e 5 do GC. No GE, foi possível observar que houve melhora no comportamento comunicativo após a intervenção fonoaudiológica em todas as tarefas avaliadas, exceto na tarefa de Escrita. Já no GC, não foram observadas alterações significativas comparando a avaliação e a reavaliação após 12 semanas. **Conclusão:** A intervenção fonoaudiológica grupal foi efetiva, utilizando a comunicação como instrumento de socialização e contribuindo para a melhoria das condições de vida de indivíduos com diagnóstico de esquizofrenia.

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INTRODUCTION

Historically, psychiatric institutions have presented invasive and alienating conditions to people diagnosed with mental disorders, subjecting them to lengthy hospitalizations, with the primary objective of social isolation, which lasted until a strong worldwide tendency to challenge this model, mainly after the Second World War[1].

In this context, the process of Psychiatric Reform in Brazil emerged in the mid-1970s in search of better conditions of assistance to people with mental disorders. Thus, new devices are being created to construct a new social place for the individual with mental disorders[2]. According to these precepts, the Psychosocial Care Centers (CAPS in Portuguese) represent the main strategies for the organization of Mental Health[3].

CAPS is an open, community, and interdisciplinary mental health service that serves people in mental distress in a given territorial unit and is organized into different types according to its complexity, the target audience, and the number of inhabitants, being classified as CAPS I, II, III, Alcohol and Drugs (AD), AD III, and Children (i)[4].

Teamwork is one of the main devices in the CAPS dynamics, and speech therapy grows in this new form of considering mental health care when there is an increase in the work of multi and interdisciplinary teams and in the challenge of changing this paradigm.

In the Mental Health service, the speech therapist can stimulate creativity, collective participation, and learning to favor conditions that facilitate the social reintegration of the person diagnosed with a mental disorder[5]. Additionally, this professional can promote oral and written communication through workshops or groups. However, the lack of a broad understanding regarding the concept of mental health can lead to the prevalence of the traditional clinical model, which aims to cure at the expense of health promotion actions[6]. This new look at mental health is constantly evolving, and innovative approaches are emerging as a resource for action in this field, mainly through group work.

Schizophrenia, schizotypical, and delusional disorders are, in general, the most prevalent in CAPS[3]. People with schizophrenia have deficits in various domains, including perception, attention, memory, processing speed, reasoning, problem-solving, and social cognition[7].

In clinical practice, it is relatively common to find verbal dysfunctions in individuals diagnosed with schizophrenia, and inferences about thinking are primarily based on the subject's discourse[8]. Thought disorders can be considered a failure to maintain speech pattern and, thus, cover many abnormalities of a logical sequence of ideas. However, the connection between language and these disorders is not well established[9].

In 2014, researchers evaluated the communicative behavior of individuals diagnosed with schizophrenia who use an outpatient mental health service through the discursive, inferential, semantic, and prosodic aspects of language[10]. The authors identified changes in communicative behavior in all assessed tasks.

Thus, considering the social and communicative difficulties faced by this public and the scarcity of research regarding the performance of speech therapy in this area, the objective of this study was to verify the effectiveness of group speech-language therapy intervention in the communicative behavior of individuals diagnosed with schizophrenia.

METHODS

This is a longitudinal, quasi-experimental study of an analytical-exploratory quantitative character[11]. The study included individuals diagnosed with schizophrenia, of both sexes, aged between 19 and 59 years, with at least five years of schooling, users of the Psychosocial Care Center (CAPS) III located in a rural municipality of São Paulo, Brazil.

The sample composition was for convenience, considering the inclusion criteria and the consent of the participants. Individuals who did not meet the criteria for inclusion in the research or who presented comorbidities, such as associated neurological disorders, were excluded from the study.

The project of the present study was appreciated and approved by the Research Ethics Committee Involving Human Beings at the Ribeirão Preto Nursing School, Universidade de São Paulo, in compliance with the rules established by Resolution 466/12 of the National Health Council, under Opinion nº 1,780,875. The study subjects were only inserted after agreeing to participate in the research, signing the Informed Consent Form (ICF).

Data collection for the evaluation of communication was conducted using the Montreal Assessment Communication Brief Battery - MAC B[12], which examines four main communicative processes: word and sentence level (lexicon-semantics); prosody in sentences and speech (prosodic), and sentence and speech level with processing inferences (pragmatic and discursive), divided into ten subtests: consciousness of difficulties; conversational discourse; narrative discourse; metaphor interpretation; interpretation of speech acts; free Verbal fluency; semantic judgment; emotional prosody - production; reading and writing.

The conversational discourse task assesses expression skills, understanding, non-verbal behavior, and emotional linguistic prosody. The Narrative discourse task assessed the storage capacity and understanding of complex linguistic material and the production of narrative discourse. This ability was assessed in parts, considering the total information remembered regarding the text, the essential information, the creation of a title, the answer to questions regarding the text, and the understanding index.

Metaphor interpretation aimed to assess the ability to interpret the figurative or non-literal meaning of metaphorical sentences. The Interpretation of Speech Acts aimed to assess the ability to understand direct and indirect speech acts from a brief situational context.

The Free Verbal fluency assessed the ability to explore lexical-semantic memory in free word evocation. The Semantic judgment assessed the ability to identify categorical semantic relationships between words.

Emotional Prosody - Production aimed to assess the ability to produce emotional intonations based on the affective and

communicative context of situations presented that involved the emotions "anger", "joy", and "sadness".

The Reading task used activities to assess the individual's ability to read a text aloud and understand it. The Writing task used automatic name dictation and writing to assess different skills involved in the act of writing.

MAC B was considered a useful tool to achieve the objective of this study. According to its authors, although it was developed mainly for individuals with lesions in the right hemisphere, it can assist in the investigation of sequelae in communication in psychopathology cases such as schizophrenia, in its most observed aspects in clinical practice, and provide a faster application when compared to the expanded version.

In this study, we chose not to evaluate the task "Questionnaire on the Consciousness of Difficulties" since the questions made references to neurological traumas, which did not fit the evaluated public. The exclusion of this task did not affect the results regarding the proposed objectives. Each assessment lasted approximately 40 minutes.

After the first assessment, the speech therapy intervention began in a group format, with a maximum of 14 participants in the Speech Therapy Intervention Group (STIG), composing the Experimental Group (EG). The initially assessed participants who did not accept or gave up participating in the STIG formed the Control Group (CG) and did not participate in any speech therapy intervention, performing only the reassessment after the program. The activities were conducted in a large and reserved room within the mental health service mentioned above. The frequency was two weekly meetings, each lasting one hour, for 12 weeks, totaling 24 meetings.

STIG stimulated the linguistic processes evaluated in this study, consisting of storytelling activities (discourse), games of semantic relation and lexical evocation (lexicon-semantics), singing and dramatization of scenes (prosody), and metaphor games and indirect speech (pragmatic). The activities were directed to the prevalent age group, with dynamics geared to participant interests and current and daily themes. The STIG Program was divided into the following phases: 1) Initiation of the project's bond and agreement; 2) Stimulation of free discourse, attention, and concentration; 3) Narrative discourse work; 4) Work with the lexicon and the semantic categories; 5) Stimulation of the understanding and production of linguistic and emotional prosody; 6) Promotion of the use of language in different contexts (Pragmatics); 7) Development of Reading and Writing; and 8) Review of concepts and general evaluation of the group.

At the end of the 24 meetings, the members of the EG and CG (who were only evaluated before STIG began, without participating in it) were reassessed with the same initial assessment instrument (MAC Battery).

The characterization of the sample was analyzed through a descriptive statistical analysis - frequency, mean, and standard deviation. The data were analyzed using inferential statistics. The Kolmogorov Smirnov test was performed to verify whether the data had a normal distribution. The T-Student Test for related (paired) samples was performed when the data were parametric, and the Wilcoxon Test, for dependent data, when they were non-parametric, to compare pre and post-intervention means between EG and CG[11]. The Mann Whitney non-parametric test was used to compare the mean scores of the communicative elements before and after intervention between EG and CG, which corresponds to the Wilcoxon test for independent samples. Pearson's Correlation test was performed to correlate participant demographic characteristics and communicative aspects[11]. The statistical software R, version 2.11.0, was used with a significance level of 5%.

RESULTS

Table 1 presents the sample characterization data regarding the research subjects' age, sex, and education. The ages ranged between 19 and 59 years, with the age group of 40 to 59 years prevailing both in EG and CG. The number of female individuals was also more frequent in both study groups. There was a variation between five and 11 years regarding schooling, with a range of five to eight years of schooling prevailing in both groups. The frequency of participation was over 70%. That is, most participants were present in from 17 to 24 sessions.

Figure 1 illustrates the evolution in performance of all variables analyzed in EG and CG.

The conversational discourse showed no significant change in the variable in question, both in EG and CG. Despite this, the first group (EG) presented all averages increased, while in the second (CG), they decreased. The Narrative discourse showed a significant increase after the intervention only in EG.

The metaphor interpretation and interpretation of speech acts showed a statistically significant increase in the EG scores in all domains when comparing the pre and post-intervention moments. There was no significant change in CG for these aspects and their domains.

The free verbal fluency showed that only the correct answers score presented no significant increase for EG, ranging between 90-120 seconds, whereas no score increased for CG.

The correct scores for identifying semantic relations and explanations in semantic judgment increased significantly in EG, whereas nothing changed in CG.

The emotional prosody – production presented a significant increase in the EG score. In the CG, there was no change in the scores before and after the intervention.

The reading task showed that the errors reduced after the speech therapy intervention. The other variables referring to these aspects did not undergo significant changes after the intervention, despite increased means.

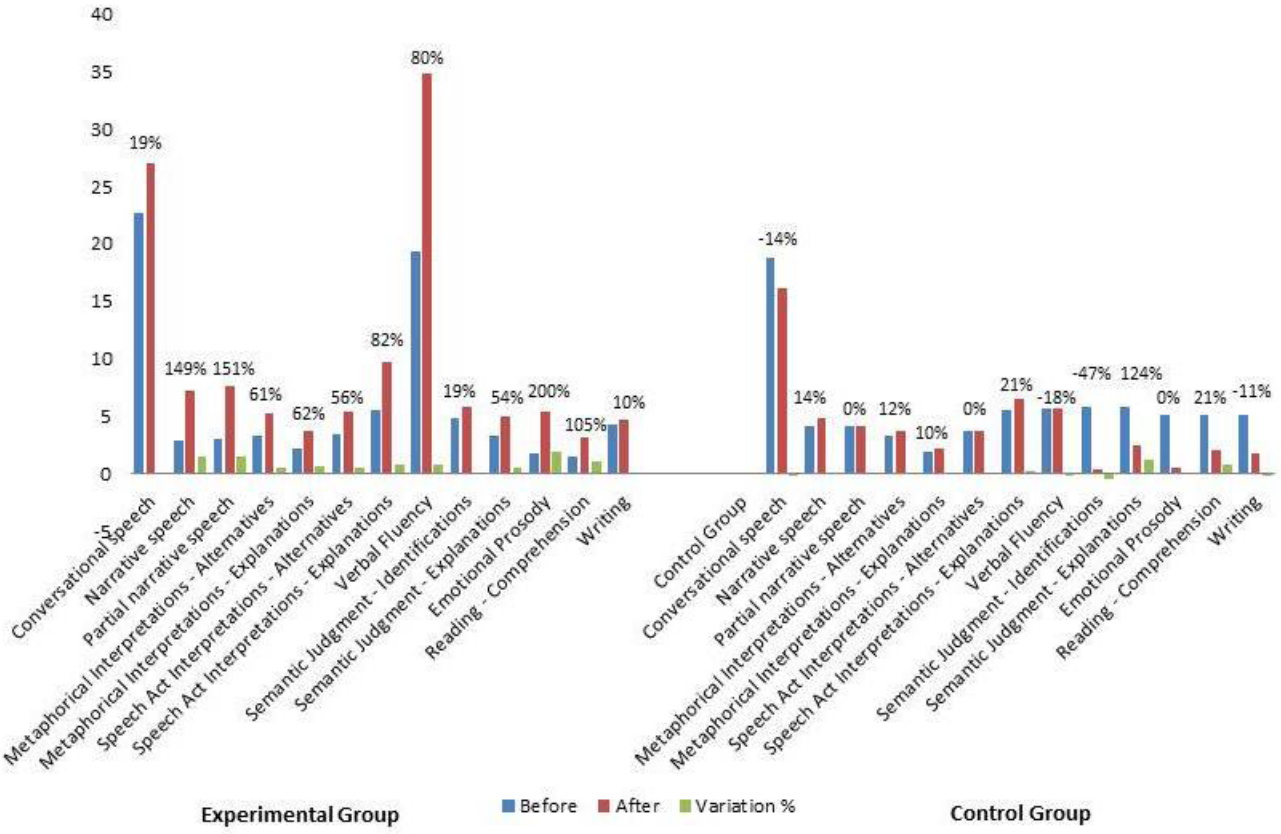
The writing task showed that the variables did not undergo significant post-intervention changes in either EG or CG.

When the presence in the intervention sessions and the communicative aspects of the individuals in the EG were correlated, a strong and positive correlation was observed with variables related to the aspects of conversational and narrative discourse, interpretation of speech acts, reading, and writing. Thus, the higher presence in the sessions results in higher scores regarding these communicative aspects (Table 2).

Tables 3 and 4 compare EG and CG before and after the speech therapy intervention. At first, the participants had similar communicative aspects, considering that there was no difference between means of any variable before the intervention, which allows the comparison.

When comparing the scores of the communicative aspects after the intervention, EG scores were higher than those of CG, and the difference between the means stood out in domains of all aspects, except for those regarding writing, which showed no differences in the post-intervention means between both groups.

The results showed improved communicative performance after the speech therapy intervention in all assessed tasks, except writing.



Source: Research data (2017)

Figure 1. Percentage of evolution in the performance of the variables analyzed before and after the intervention in Experimental Group and Control Group

Table 1. Characterization of the sample of individuals with schizophrenia of CAPS III, Ribeirão Preto

Variables	Experimental Group		Control Group	
	N	%	N	%
Age Group				
19 to 39 years	4	28.6	1	20.0
40 to 59 years	10	71.4	4	80.0
Sex				
Female	9	64.3	4	80.0
Male	5	35.7	1	20.0
Years of Schooling				
5 to 8 years	11	78.6	3	60.0
9 to 11 years	3	21.4	2	40.4
Presence in the Sessions				
1 to 8 sessions	3	21.4	-	-
9 to 16 sessions	5	35.7	-	-
17 to 24 sessions	6	42.9	-	-

Source: Research data (2017)

Table 2. Correlation between the presence in intervention sessions and communication aspects of individuals with schizophrenia of CAPS III, Ribeirão Preto - EG

Variables	Test Statistics	p-value
NUMBER OF SESSIONS PRESENT		
Conversational discourse – total score	0.608	0.005*
Conversational discourse – expression index	0.609	0.008*
Conversational discourse – understanding index	0.380	0.019*
Full narrative discourse	0.442	0.019*
Narrative discourse – Questions	0.443	0.005*
Narrative discourse – Understanding index	0.618	0.005*
Interpretation of speech acts– Explanations –indirect situations	0.677	0.031*
Interpretation of speech acts– Explanations – total	0.634	0.016*
Interpretation of speech acts– Alternatives – indirect situations	0.661	0.010*
Interpretation of speech acts –total score	0.603	0.022*
Reading retelling	0.706	0.004*
Reading – Title	0.697	0.007*
Dictation – correct score	0.498	0.045*

Test: Pearson's Correlation; *p<0.05
Source: Research data (2017)

Table 3. Comparison of the score means of the variables regarding the communication aspects of individuals with schizophrenia of CAPS III, Ribeirão Preto, inter-groups EG and CG, **before** the intervention

	Variable	Experimental Group		Control Group		p-valor
		Mean	Standard Deviation	Mean	Standard Deviation	
BEFORE INTERVENTION	**CONVERSATIONAL DISCOURSE**					
	Total score	22.71	11.14	18.80	5.26	0.468
	Expression index	8.00	3.78	6.40	3.05	0.408
	Understanding index	3.21	2.88	2.40	1.94	0.570
	Behavior index	4.00	1.79	3.80	1.78	0.833
	Emotional prosody index	7.50	4.25	6.20	2.49	0.532
	NARRATIVE DISCOURSE					
	Partial – Essential information	3.07	2.84	4.20	2.49	0.444
	Partial – Present information	2.64	2.87	2.80	3.03	0.919
	Full	0.36	0.63	0.40	0.54	0.895
	Title	0.14	0.53	0.20	0.44	0.834
	Questions	2.43	2.53	3.60	2.30	0.377
	Understanding index	2.93	3.49	4.20	2.95	0.480
	METAPHOR INTERPRETATION					
	Explanations– New metaphors	0.86	1.16	0.86	1.16	0.936
	Explanations– Idioms	1.71	1.81	0.80	1.78	0.586
	Explanations– Total score	2.57	2.27	1.20	1.64	0.665
	Alternatives – New metaphors	1.21	0.89	2.00	3.08	0.046*
	Alternatives – Idioms	2.07	1.07	2.20	0.83	0.157
	Alternatives – Total score	3.29	1.81	1.20	1.30	0.908
	INTERPRETATION OF SPEECH ACTS					
	Explanations– Direct situations	2.86	2.47	4.00	2.12	0.373
	Explanations– Indirect situations	2.50	2.06	1.20	2.68	0.278
	Explanations– Total	5.36	4.27	5.20	4.20	0.944
	Alternatives – Direct situations	1.79	0.80	2.20	1.30	0.411
	Alternatives – Indirect situations	1.64	1.00	1.60	1.34	0.941
	Alternatives – Total	3.43	1.34	3.80	2.28	0.664
	VERBAL FLUENCY					
	Total correct score	19.36	12.47	16.20	6.87	0.600
	Correct score 0 to 30 sec	6.57	3.10	4.80	1.78	0.249

Test: Mann Whitney (independent samples); *p<0.05
Source: Research data (2017)

Table 3. Continued...

	Variable	Experimental Group		Control Group		p-valor
		Mean	Standard Deviation	Mean	Standard Deviation	
BEFORE INTERVENTION	Correct score 30 to60 sec	3.21	2.32	3.20	1.48	0.990
	Correct score 60 to 90 sec	3.43	2.73	3.20	1.30	0.861
	Correct score 90 to 120 sec	3.14	2.24	1.60	0.89	0.160
	Correct score 120 to 150 sec	3.00	3.11	3.40	2.40	0.799
	SEMANTIC JUDGMENT					
	Identifications – correct score	4.93	1.14	4.80	0.83	0.822
	Explanations– correct score	3.29	1.85	2.80	1.09	0.593
	EMOTIONAL PROSODY PRODUCTIONS	1.79	1.88	0.60	0.89	0.200
	READING					
	Error score	0.57	0.75	0.60	0.54	0.940
	Retelling	0.71	0.91	1.00	0.70	0.537
	Title	0.29	0.46	0.00	0.00	0.199
	Understanding score	1.57	2.02	1.60	1.14	0.977
	WRITING					
	Dictation – Correct score	2.71	1.81	3.20	1.64	0.607
	Name writing – Correct score	1.64	0.49	1.80	0.44	0.543
	Total correct scores	4.36	2.17	5.00	2.00	0.570

Test: Mann Whitney (independent samples); *p<0.05
Source: Research data (2017)

Table 4. Comparison of the score means of the variables regarding the communication aspects of individuals with schizophrenia of CAPS III, Ribeirão Preto, inter-groups EG and CG, **after** the intervention

	Variable	Experimental Group		Control Group		p-value
		Mean	SD	Mean	SD	
AFTER INTERVENTION	**CONVERSATIONAL DISCOURSE**					
	Total score	27.07	10.73	16.20	5.26	0.011*
	Expression index	9.14	3.99	6.20	2.49	0.041*
	Understanding index	4.21	2.69	2.00	2.12	0.046*
	Behavior index	4.21	1.71	3.80	1.78	0.667
	Emotional prosody index	9.50	3.63	6.00	2.12	0.023*
	NARRATIVE DISCOURSE					
	Partial – Essential information	7.71	3.36	4.20	3.11	0.039*
	Partial – Present information	6.64	3.17	3.40	2.30	0.036*
	Full	0.86	0.86	0.60	0.54	0.046*
	Title	0.57	0.75	0.40	0.54	0.650
	Questions	5.86	4.58	3.80	3.49	0.326
	Understanding index	7.29	5.94	4.80	4.08	0.328
	METAPHOR INTERPRETATION					
	Explanations– New metaphors	4.29	1.81	0.40	0.89	0.0001*
	Explanations– Idioms	3.64	2.30	1.80	1.64	0.043*
	Explanations– Total score	7.93	3.68	2.20	2.16	0.001*
	Alternatives – New metaphors	2.57	0.64	2.00	1.00	0.284
	Alternatives – Idioms	2.71	0.61	1.80	1.09	0.138
	Alternatives – Total score	5.29	1.13	3.80	1.78	0.141
	INTERPRETATION OF SPEECH ACTS					
	Explanations– Direct situations	5.71	0.46	4.80	1.64	0.284

Test: Mann Whitney (independent samples); *p<0.05
Source: Research data (2017). Ribeirão Preto - SP, 2017

Table 4. Continued...

	Variable	Experimental Group		Control Group		p-value
		Mean	SD	Mean	SD	
AFTER INTERVENTION	Explanations– Indirect situations	4.21	1.84	1.80	1.30	0.010*
	Explanations– Total	9.77	2.00	6.60	1.81	0.012*
	Alternatives – Direct situations	2.71	0.46	1.80	0.47	0.005*
	Alternatives – Indirect situations	2.64	0.47	2.00	0.70	0.115
	Alternatives – Total	5.36	0.74	3.80	1.09	0.029*
	VERBAL FLUENCY					
	Total correct score	34.79	15.87	16.00	5.65	0.001*
	Correct score 0 to 30 sec	10.93	4.25	5.20	1.30	0.0001*
	Correct score 30 to60 sec	6.43	3.75	3.20	1.30	0.013*
	Correct score 60 to 90 sec	5.64	2.56	2.20	1.64	0.005*
	Correct score 90 to 120 sec	5.43	4.05	2.60	1.51	0.041*
	Correct score 120 to 150 sec	6.36	4.37	2.80	1.78	0.023*
	SEMANTIC JUDGMENT					
	Identifications – correct score	5.86	0.36	5.20	0.44	0.025*
	Explanations– correct score	5.07	1.68	4.00	2.44	0.404
	EMOTIONAL PROSODY PRODUCTIONS	5.36	1.15	0.60	0.89	0.0001
	READING					
	Error score	1.21	0.89	0.60	0.54	0.048*
	Retelling	1.43	1.50	1.60	1.51	0.834
	Title	0.57	0.93	0.20	0.44	0.265
	Understanding score	3.21	2.80	2.40	2.07	0.511
	WRITING					
	Dictation – Correct score	3.07	1.77	3.00	1.41	0.930
	Name writing – Correct score	1.71	0.46	1.80	0.44	0.727
	Total correct scores	4.79	2.11	4.80	1.78	0.989

Test: Mann Whitney (independent samples); *p<0.05
Source: Research data (2017). Ribeirão Preto - SP, 2017

DISCUSSION

The results showed that most of the sample consisted of female individuals, aged between 40 and 59, with a low level of education in both groups. Sociodemographic factors are significantly associated with the social adjustment of people diagnosed with schizophrenia. Therefore, factors such as sex, age group, schooling, among others, influence the social insertion process[13].

The predominance of females in this population corroborates some studies[14,15], while other studies showed a predominance of males[3,13,16]. Even with this reference discrepancy, there is a supposed vulnerability and natural predisposition of women to mental suffering when the psychiatric diagnosis becomes the consolidation of the various forms of gender relations[17]. There is a greater possibility for women to participate in group activities, considering that women presented a much lower restriction when invited to participate in the research compared to men. This may be because men are more likely than women to be affected by negative symptoms, and women are more likely to have better social functioning than men[18].

Regarding the age group, studies indicate mainly the age group between 36 and 46 years[3,14,16]. This is a productive age group, when most have already entered the job market, which reinforces the condition that schizophrenia can compromise the individual's autonomy, directly or indirectly affecting various spheres of the person's life, especially their professional life[19].

As for education, most of the assessed individuals had between five and eight years of study. This interruption in elementary education is common in people with severe mental disorders[3]. Furthermore, the years of schooling correlated strongly and positively with various aspects evaluated for this population. In other words, the more years at school, the better the communicative performance. However, the instrument used for assessment considers the years of study in the scores of the tasks, which prevented the education variable from becoming a bias.

One of the possible associations between schizophrenia and the low level of education is a reflection of the social imbalance caused by the disorder in the lives of these participants[20] since schizophrenia generates considerable losses for the regular

participation of people in social activities essential to their lives, such as studying[19]. As a result, the low level of education reduces access to jobs with better pay and housing conditions, limiting the social conditions of the individuals, which contributes to the worsening of their quality of life[13].

Regarding the communicative behavior of the participants, all tasks evaluated improved after the intervention, except for writing. This result suggests that writing requires more time in the learning process, indicating the need for more sessions to develop this task.

Discourse is often less informative for people who have neurological or psychiatric disorders, such as schizophrenia, and deficits in their macrostructure may be present at receptive and expressive levels, indicating a loss of inferential and synthesis skills and certain executive function components[21].

A study[10] evaluated the storage capacity and language comprehension and the capacity to produce narrative discourse and synthesize and infer information on 50 individuals diagnosed with schizophrenia who use an outpatient mental health service in the state of São Paulo. The authors concluded that individuals diagnosed with schizophrenia presented deviant communicative behaviors in conversation, such as difficulties in narrative discursive processing, understanding, text synthesis, and discursive understanding and information storage, which may compromise communicative interaction. On the other hand, a survey conducted in 2021 investigated and compared the speech of individuals diagnosed with schizophrenia with that of a Control Group and found that, due to possible cognitive problems, participants with schizophrenia use shorter, simpler sentences instead of complex phrases compared to healthy individuals[22]. Therefore, considering speech as a key instrument for social interaction, developing and stimulating it can contribute to the treatment process in schizophrenia.

Pragmatics, which studies the use of language in its different contexts and functions, and requires the individual to make inferences based on knowledge of the world and explicit or lite information of the message[21], was one of the most altered aspects in this evaluation. The high frequency of pragmatic impairment in schizophrenia, such as difficulties in expressing and understanding jokes, ironies, metaphors, and indirect speech acts, is directly related to the quality of life of these individuals, as it interferes with the essential functions of human communication[23].

Regarding lexical-semantic difficulties, individuals with schizophrenia have less organized semantic memory networks, and these aspects are more affected than phonological ones in this audience[24]. A 2014 study reported that elucidating the dynamics of semantic networks in the attribution of meaning and organization of language are promising issues for future research on the treatment of psychotic conditions and the development of intervention practices that encourage these skills[25]. In other words, contributing to the increase in vocabulary and understanding semantic meanings and categories is essential in constructing effective communicative behavior.

Regarding the prosody aspect, STIG participants began to express their emotions more effectively through emotional intonations. This result is significant, given that affective dullness is one of the most socially limiting negative symptoms of schizophrenia. The development of expressing emotions and affection can bring these individuals closer to society, contributing to the psychosocial rehabilitation process. Studies corroborate the results of this research, indicating that individuals who have schizophrenia manifest deficiencies in social cognition characterized by deficits in detecting prosody, concluding the need for intervention directed to this skill[26,27].

Regarding the effectiveness of STIG, other studies have highlighted the importance of intervention in specific communicative skills in this population. The efficiency of a program to improve the communicative-pragmatic skills of individuals diagnosed with schizophrenia was verified in 2016. The program consisted of 20 group sessions of 17 participants focused on various linguistic, extralinguistic, and paralinguistic modalities. They were tested before and after the intervention, using a battery of tests to assess the understanding and production of pragmatic phenomena, such as direct and indirect speech acts, irony, and deception. The results showed a significant improvement in the participants' performance after the program, understanding and production tasks, and all communication modalities assessed[28].

A literature review on speech therapy intervention with individuals diagnosed with schizophrenia showed 14 studies - of a total of 18 - presenting improvements in language or speech skills. Most of these studies comprised pragmatic or expressive discursive skills as the sole objective of the therapy or part of it. In this review consisted of a wide range of therapy settings, from individual therapy - twice daily - to weekly group therapy. The authors stated that, although the evidence tended to show that some regions of language are treatable through therapy, it remains challenging to indicate the type of approach that should be favored and implemented to treat language impairments in schizophrenia[29].

Attendance at sessions also proved to be an important factor for the effectiveness of the intervention. When the correlation test between the presence in the STIG sessions and the communicative aspects was performed, a strong and positive correlation was observed with variables regarding conversational and narrative discourse, interpretation of speech acts, reading, and writing. Thus, the greater the presence in the sessions results in more benefits regarding these communicative aspects, which reinforces the importance of this intervention.

Studies on speech-language therapy intervention in all aspects of communicative behavior of individuals diagnosed with schizophrenia are still scarce. Although there are other works on this subject, this study presents new data because it conducted a fuller assessment and intervention directed to the main linguistic aspects affected in this disorder.

CONCLUSION

This study sought to verify the effectiveness of speech-language therapy intervention in the communicative behavior of individuals diagnosed with schizophrenia.

The STIG Program was developed considering strategies commonly used in clinical speech-language therapy practice to work on communicative skills, considering the public in

question according to the age group, education, diagnosis, and, especially, the interests of these individuals.

Initial resistance to participation and the attendance of STIG participants was a significant challenge. Factors such as difficulty establishing routine and participating in new and unknown activities, common in some psychiatric conditions, require stimulating planning and strategies from the mediator. The speech therapist must always consider the real needs of the person receiving therapy, both clinical and personal, since these will interest the individual in following the treatment and obtain more effective results.

The reassessment of language through the MAC Brief Battery after participating in the STIG indicated the effectiveness of speech-language therapy intervention, given the improvement demonstrated in all tasks, except writing, which indicates that writing requires more time in the learning process.

There was an improvement in the speech, use of language (pragmatic), vocabulary (lexical-semantics,) and, especially, emotional prosody - production, which indicates that the participants began to express their emotions for through emotional intonations more effectively. In this perspective, the speech therapist can significantly contribute to clinical care and formulation of intervention programs in mental health.

This work is expected to motivate the development of other groups of speech-language therapy intervention in mental health. Few studies in speech-language therapy focus on this area, hence the importance of new research that demonstrates the need for speech therapists in the various mental health services. These studies provide (directives to future public policies) basic subsidies that support the real need for permanently inserting the speech therapist in the referred services, thus contributing to comprehensive and effective assistance to individuals in mental distress.

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Author contributions

AES participated in the idealization of the study, data collection, analysis, and interpretation, and writing of the article; LJP participated in the idealization of the study, advising, and writing of the article; NEZA participated in the elaboration of the Speech Therapy Intervention Program and in the data discussion; JDLF participated in all data collection, assisting in the Speech Therapy Intervention Group sessions; AMPC participated in the data discussion and study review.